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SIDEWALK REPAIR PROGRAM ENVIRONMENTAL IMPACT REPORT

APPENDICES A THROUGH L

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FOR THE

SIDEWALK REPAIR PROGRAM

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ENGINEERING
CITY OF LOS ANGELES

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Chapter 1
Introduction

The City of Los Angeles Bureau of Engineering (BOE) has prepared this Initial Study (IS) and Environmental Checklist to evaluate the potential environmental impacts associated with the Sidewalk Repair Program (proposed Project).

One of the main objectives of the California Environmental Quality Act (CEQA) is to disclose the potential environmental effects of proposed activities on the public and decision-makers. Under CEQA, BOE as the lead agency has prepared this IS and Environmental Checklist and determined that an environmental impact report (EIR) is needed. CEQA requires that the potential environmental effects of a project be evaluated prior to implementation. This IS includes a discussion of the proposed Project's effects on the existing environment and identifies potential avoidance, minimization, and mitigation measures.

Authority

CEQA was enacted in 1970 and is codified in the California Public Resources Code (Sections 21000 et.al.). The CEQA statute contains detailed rules governing the content of environmental documents and the environmental review process by state and local agencies. The environmental review process provides decision-makers and the public with information regarding environmental effects of a proposed project, identifies means of avoiding environmental damage, and discloses to the public the reasons behind a project's approval even if it leads to environmental impacts. BOE has determined the proposed Project is subject to CEQA, and no exemptions apply.

This IS has been prepared in accordance with CEQA (Public Resources Code §21000 et seq.) and the State CEQA Guidelines (Title 14, California Code of Regulations, §15000 et seq.).

Lead, Responsible, and Trustee Agencies

The City of Los Angeles is the lead agency for the proposed Project, pursuant to Section 15367 of the State CEQA Guidelines, because it has the greatest degree of discretion to approve or deny the proposed Project. Approvals of permits include, but are not limited to, those required during final design of public facilities and construction contracts.

In addition to the lead agency, several other agencies have special roles with respect to the proposed Project as responsible or trustee agencies. These agencies will use the EIR once prepared as the basis for their decisions to issue any approvals and/or permits that may be required. Permits and approvals noted in Table 3 are anticipated to be required to implement the proposed Project.

Scope of the Initial Study

This IS evaluates the proposed Project's effects on the following resource areas:

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

Impact Terminology

The following terminology is used to describe each impact's level of significance:

Potentially Significant Impact. This category is only applicable if there is substantial evidence that an effect may be significant, and no feasible mitigation measures can be identified to reduce impacts to a less-than-significant level.

Less than Significant After Mitigation Incorporated. This category applies where the incorporation of mitigation measures would reduce an effect from a "Potentially Significant Impact" to a "Less-than-Significant Impact." The lead agency must describe the mitigation measure(s), and briefly explain how it would reduce the effect to a less than significant level (mitigation measures from earlier analyses may be cross-referenced).

Less-than-Significant Impact. This category is identified when a proposed project would result in impacts below the threshold of significance, and no mitigation measures are required.

No Impact. This category applies when a proposed project would not create an impact in the specific environmental issue area. "No Impact" answers do not require a detailed explanation if they are adequately supported by the information sources cited by the lead agency, which show that the impact does not apply to the specific project (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., a proposed project would not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

BOE and other public agencies have identified applicable "thresholds of significance" for certain types of environmental impacts, such as traffic, noise, and air quality impacts. Thresholds of significance for the proposed Project are based on the *City of Los Angeles CEQA Thresholds Guide* (2006), and are identified in this IS where applicable.

Document Format

This IS contains six chapters:

Chapter 1. **Introduction.** This chapter provides an overview of the proposed Project and the CEQA environmental documentation process.

Chapter 2. Project Description. This chapter provides a detailed description of the proposed Project objectives and components.

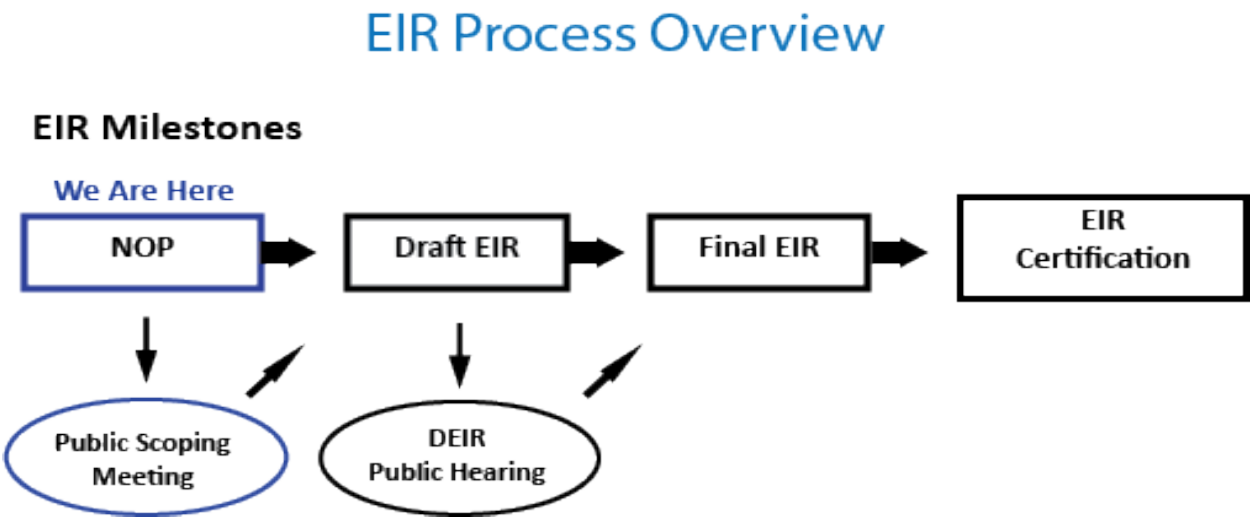
Chapter 3. Initial Study Environmental Checklist. This chapter presents the CEQA checklist for all impact areas and mandatory findings of significance.

Chapter 4. References. This chapter provides a list of reference materials used during the preparation of the IS.

Chapter 5. Preparers and Contributors. This chapter provides a list of key personnel involved in the preparation of the IS.

Chapter 6. Acronyms and Abbreviations. This chapter provides a list of acronyms and abbreviations used throughout the IS.

CEQA Process and Availability of the Initial Study



The CEQA process is initiated when the lead agency identifies a proposed project. The lead agency then normally prepares an IS to identify the preliminary environmental impacts of the proposed project. This IS determined that the proposed Project could have significant environmental impacts that would require further study and the need to implement mitigation measures. Therefore, the lead agency has decided to prepare an EIR. A Notice of Preparation (NOP) is prepared to notify public agencies and the general public that the lead agency is starting the preparation of an EIR for the proposed Project. The NOP and IS are typically circulated for a 30-day review and comment period. During this review period, the lead agency requests comments from agencies, interested parties, stakeholders, and the general public on the scope and content of the environmental information to be included in the Draft EIR.

After the close of the comment period for the IS, the lead agency will continue the preparation of the Draft EIR and associated technical studies (if any). Once the Draft EIR is complete, a Notice of Availability (NOA) is prepared to inform agencies and the general public of the availability of the document and where the document can be reviewed. The Draft EIR and NOA are typically circulated for a 45-day review period to provide agencies and the general public an opportunity to comment on the adequacy of the analysis and the findings regarding potential environmental impacts of the proposed Project.

After the close of the comment period, responses to all comments received on the Draft EIR are prepared. The lead agency prepares a Final EIR, which incorporates the Draft EIR or revisions to the Draft EIR, Draft EIR comments and list of commenters, and a response to comments discussion. In addition, the lead agency must prepare findings of fact for each significant effect identified, a statement of overriding considerations if there are significant impacts that cannot be mitigated, and a mitigation monitoring and reporting program (MMRP) to ensure that all proposed mitigation measures are implemented.

The Board of Public Works will consider the Final EIR and make a recommendation to the Los Angeles City Council (Council), as the governing body of the City of Los Angeles (City), regarding certification of the Final EIR and proposed Project approval. The Council may certify and approve the Final EIR or may choose to not approve the proposed Project.

During the environmental review and project approval process, people and/or agencies may address the Board of Public Works and Council regarding the proposed Project. Public notification of agenda items for the Board of Public Works are available at:

http://bpw.lacity.org/Agendas.html

Council agenda items are posted 72 hours prior to the public meeting. Agendas can be accessed via the internet at the following location:

http://lacity.org/city-government/elected-official-offices/city-council/council-calendar.

Alternatively, agendas can be obtained by visiting City Hall:

City Hall
200 North Spring Street
John Ferraro Council Chamber, Room 340
Los Angeles, CA 90012

Within five days of project approval, the BOE will file a Notice of Determination (NOD) with the County Clerk. The NOD will be posted by the County Clerk within 24 hours of receipt. This begins a 30-day statute of limitations on legal challenges to the CEQA approval by the lead agency. The ability to challenge the approval in court may be limited to those persons who objected to the approval of the proposed Project and to issues that were presented to the lead agency by any person in writing during the public review and comment periods regarding the EIR.

Availability of the Initial Study

In accordance with the CEQA statutes and Guidelines, the NOP/IS is being circulated for a minimum of 30 days for public review and comment. The public review period for this NOP/IS is scheduled to begin on July 27, 2017, and will conclude on September 15, 2017. The NOP/IS has been distributed to interested or involved public agencies, organizations, and private individuals for review. The NOP/IS is available online at:

http://sidewalks.lacity.org/environmental-review-process

Copies are available for review at 35 library locations, as listed in Appendix A. For example, these locations include:

- San Pedro Regional Library, 931 S. Gaffey Street, San Pedro, CA 90731
- Westwood Branch Library, 1246 Glendon Avenue, Los Angeles, CA 90024
- Los Angeles Central Library, 630 W. 5th Street, Los Angeles, CA 90071
- Encino-Tarzana Branch Library, 18231 Ventura Boulevard, Tarzana, CA 91356

Approximately 630 notices were sent to community residents, stakeholders, and local agencies about the availability of the NOP/IS and the opportunity to attend a public meeting to learn more about the proposed Project and provide comments on the NOP/IS.

Scoping Meetings

Three public scoping meetings will be held to obtain input on the NOP/IS and the scope and contents of the EIR:

- August 9, 2017, 6 p.m.–8 p.m., Ronald F. Deaton Civic Auditorium, 100 W 1st St (Main), Los Angeles, CA 90012
- August 14, 2017, 6 p.m.–8 p.m., Mid-Valley Senior Citizen Center, 8825 Kester Ave, Panorama City, CA 91402
- August 24, 2017, 6 p.m.-8 p.m., Westchester Senior Citizen Center, 8740 Lincoln Boulevard, Los Angeles, CA 90045

During the scoping period, the public has the opportunity to provide written comments on the information contained within this NOP/IS or provide comments at a public meeting. Comments on the NOP/IS and responses to comments will be included in the record and considered by BOE during preparation of the Draft EIR.

In reviewing the NOP/IS, responsible and trustee agencies and interested members of the public should focus on the sufficiency of the document in identifying and analyzing potential proposed Project impacts on the environment, and ways in which the potential significant effects of the proposed Project could be avoided or mitigated. Comments on the NOP/IS should be submitted in writing by **September 15, 2017**. Please submit written comments to:

Shilpa Gupta, Environmental Supervisor I
Los Angeles Bureau of Engineering, Environmental Management Group
1149 S. Broadway, Suite 600, Mail Stop 939
Los Angeles, CA 90015

Written comments may also be sent via email to Shilpa.Gupta@lacity.org. Comments sent via email should include "SRP" in the subject line and a valid mailing address in the email.

If you have any questions regarding the environmental review process for the proposed Project, you can go to:

http://sidewalks.lacity.org/environmental-review-process

or contact:

Shilpa Gupta, Environmental Supervisor I
Los Angeles Bureau of Engineering
213.485.4560
Shilpa.Gupta@lacity.org

Chapter 2
Project Description

Introduction and Overview

The proposed Project would repair and upgrade sidewalks and curb ramps throughout the City. Figure 1 shows the proposed Project location. In August 2010, a class action lawsuit between the Willits et al. plaintiff group and the City of Los Angeles addressed the need to repair damaged sidewalks in the City to ensure compliance with the Americans with Disabilities Act (ADA) and the Rehabilitation Act of 1973. In May 2015, the Council approved the *Willits v. City of Los Angeles* Settlement Term Sheet (Settlement), which includes various City actions that provide improved access to persons with mobility disabilities in accordance with local, state, and federal accessibility requirements.

The proposed Project would implement improvements to pedestrian facilities over approximately 30 years. The Settlement defines pedestrian facilities as "any sidewalk, intersection, crosswalk, street, curb, curb ramp, walkway, pedestrian right-of-way (ROW), pedestrian undercrossing, pedestrian overcrossing, or other pedestrian pathway or walkway of any kind that is, in whole or in part, owned, controlled or maintained by or otherwise within the responsibility of the City of Los Angeles." The broad purpose of the proposed Project is to make City pedestrian facilities compliant with applicable accessibility requirements. Street tree removals and replacements, along with utility relocations may be needed. The City may adopt policies and/or ordinances to assist in the administration of the proposed Project and its objectives.

Project Background

The City maintains approximately 11,000 miles of sidewalks. Conditions of these existing sidewalks vary greatly, as depicted on Figure 2. This figure also documents deteriorating infrastructure and the necessity to comply with applicable accessibility requirements. The City's Bureau of Street Services (BSS) has historically been responsible for routine sidewalk repairs and maintenance throughout the City. However, the 2010 *Willits v. City of Los Angeles* class action lawsuit prompted the City to accelerate and improve sidewalk repair efforts by developing the Safe Sidewalks LA Program.

In February 2015, the Council instructed BOE to work with various other City departments and utilize the existing City contracts for sidewalk repairs adjacent to City facilities as matter of "urgent necessity" and established BOE as the program manager.

In May 2015, the Council approved the Settlement, and the City Administrative Officer (CAO) released a report that recommended sidewalk repair policies for a City program that (1) is permanent and ongoing, (2) is consistent with the Settlement, (3) shares responsibility for maintenance and repair with adjacent property owners, and (4) ensures accessibility in areas with the most significant safety hazards. The CAO report was prepared in consultation with the various City departments and agencies. According to the CAO report, the City should prioritize sidewalk-related access improvements addressing access barriers and the most significant safety hazards. The City launched Safe Sidewalks LA in 2016 to begin to meet these requirements.

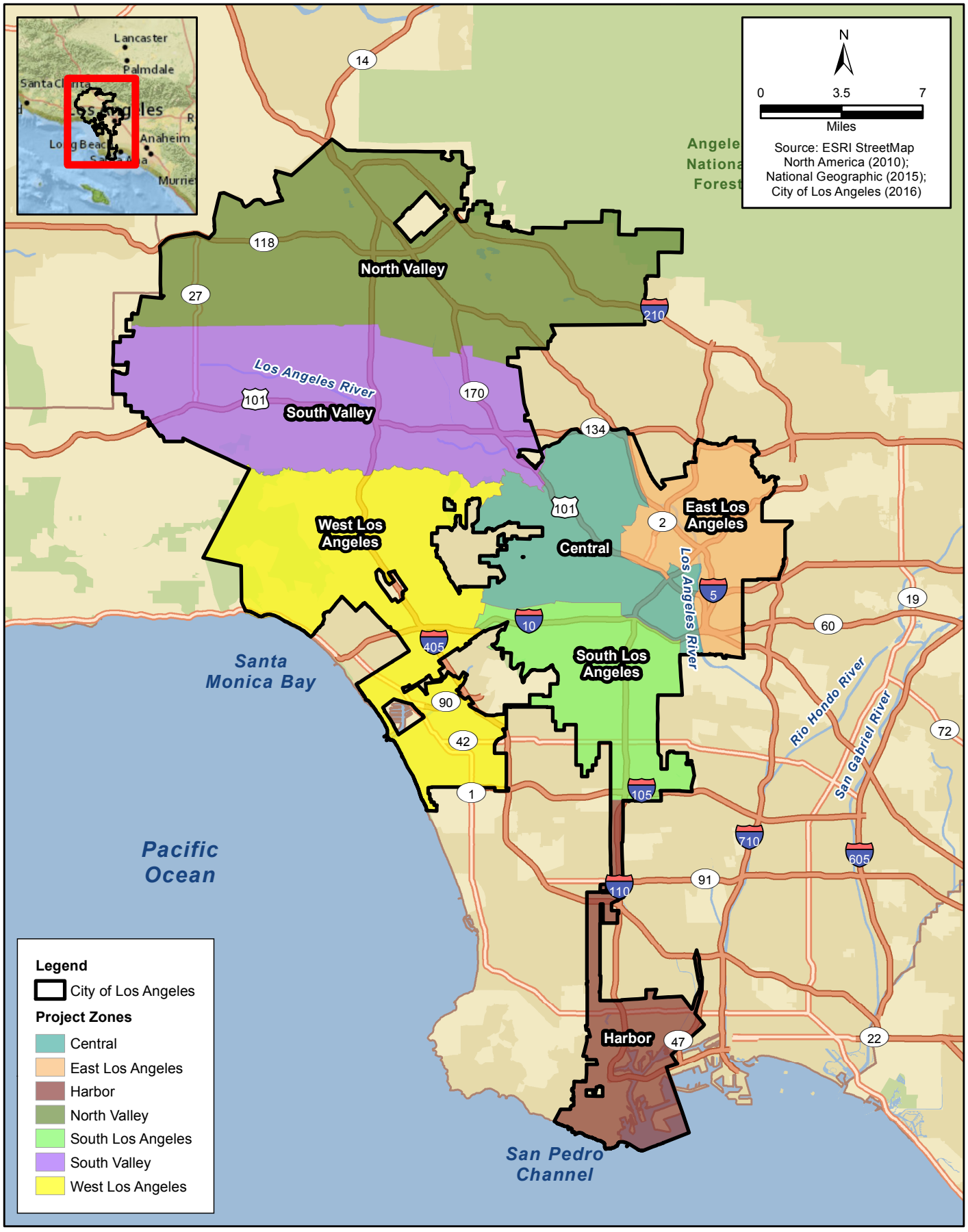
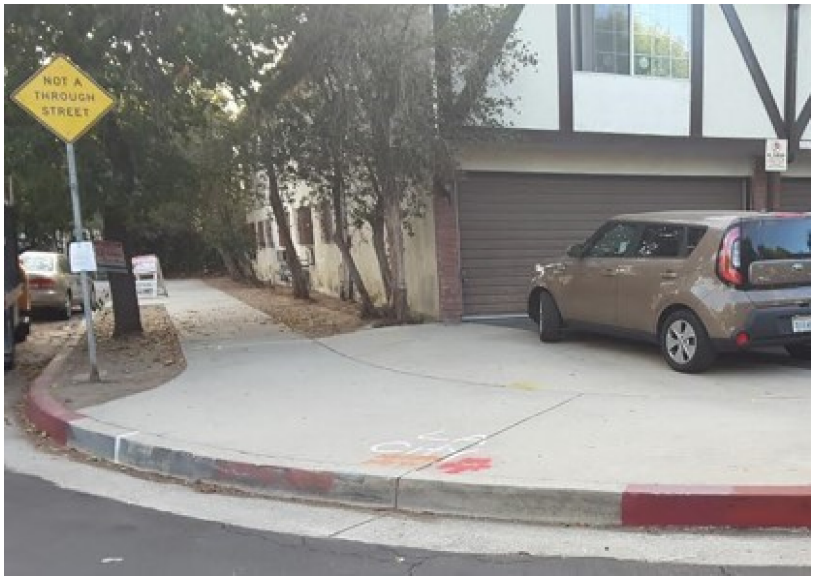


Figure 1
Project Location
Sidewalk Repair Program



Curb Ramp Needed

Uplift

Cracking

Figure 2
Examples of Sidewalk Damage and Access Barriers
Sidewalk Repair Program

However, additional Council approvals, including certification of an EIR in compliance with CEQA, are required to expand current activities and implement Safe Sidewalks LA over the next approximately 30 years. Sections 15300 to 15322 of the State CEQA Guidelines identify classes of projects that are categorically exempt from provisions of CEQA because they do not ordinarily result in a significant effect on the environment. Minor repairs to existing sidewalks typically fit the definition of a Class 1 existing facility identified under Section 15301 (c). As the proposed Project consists of a long-term sidewalk repair program, with an expected consistent level of funding and activities, additional review under CEQA is required to analyze the impact of these activities collectively, over time. The proposed Project will potentially result in the removal of large quantities of mature street trees, as well as temporary street and sidewalk closures during construction activities. The street trees are expected to be replaced at a 2:1 ratio consistent with current City policy (Board of Public Works street tree removal permit process and policy). The Draft EIR will identify the environmental impacts associated with the implementation of Safe Sidewalks LA and recommend appropriate mitigation measures, as necessary.

Safe Sidewalks LA Program

Under California law, property owners are responsible for the repair and maintenance of all sidewalks, driveway approaches, curb returns, and curbs on their property. In 1973, the City voluntarily took over the responsibility to repair and maintain these improvements if the damage was caused by root growth from public street trees. In November 2016, the City adopted an ordinance amending Section 62.104 of the Los Angeles Municipal Code and established a fix and release program. Through the ordinance and fix and release program, responsibility for the repair and maintenance of sidewalks, driveway approaches, curb ramps, and curbs is transferred back to the property owner. The transfer of responsibility occurs after the City inspects the sidewalk for ADA compliance. If the inspection reveals that the sidewalk is non-compliant with the ADA, then the City repairs the sidewalk, to achieve compliance, up to $20,000 per lot.

Once a sidewalk is repaired and complies with applicable accessibility requirements, BOE issues a Certificate of Sidewalk Compliance. When issued, a 20-year Sidewalk Repair Warranty for residential property and a 5-year warranty for commercial property begins. During the warranty period, the City guarantees a one-time repair of the sidewalk as deemed necessary. However, the Sidewalk Repair Warranty would be waived if the property owner elects to retain a street tree that has been recommended for removal. Repairs to these sidewalks would be the sole responsibility of the property owner.

In general, Safe Sidewalks LA offers three programs for constituents to repair sidewalks: Access Request, Rebate, and Report a Sidewalk Problem. These programs are currently being implemented in an effort to comply with the Settlement and address access barriers.

Ongoing repairs conducted under Safe Sidewalks LA are currently performed adjacent to City facilities and through the Access Request and Rebate programs. These requests are made by constituents and received through the MyLA 311 service request system.

Access Request

Under the Access Request program, individuals with a mobility disability may submit a request to the City for sidewalk repairs due to physical access barriers such as broken sidewalks, missing or broken curb ramps, or other access barriers in the public right-of-way.

Rebate

Under the Rebate program, any residential or commercial property owner may voluntarily undertake sidewalk repair work that meets accessibility requirements, and then receive a rebate in a specified amount. The Rebate Program is intended to accelerate sidewalk repairs in residential and commercial areas and leverage available City funds.

Report a Sidewalk Problem

Under Report a Sidewalk Problem, the general public may report a sidewalk in need of repair.

Prioritization Matrix and Scoring System

As required under the terms of the Settlement in conjunction with criteria set forth by the Council, BOE has developed a sidewalk repair Prioritization Matrix and Scoring System (Prioritization System) to guide implementation of Safe Sidewalks LA. Due to the significant number of requests received for sidewalk repair, the Prioritization System will help to provide clear and objective guidance for prioritizing work. The Prioritization System will not be applicable to the Rebate Program, and it will be presented to Council for consideration.

Project Objectives

The proposed Project is intended to meet the following objectives:

1. Comply with the requirements of the Settlement Agreement, and amend the existing program, as needed, for sidewalk and curb ramp repairs within the City in accordance with applicable accessibility requirements. Street tree removal and replacement, and utility relocation may occur, as necessary, for implementation.
2. Identify criteria for street tree preservation, and removal and replacement requirements where street trees are the cause of sidewalk damage and recommend policies and/or an ordinance related to these criteria to implement the proposed Project.
3. Consider the City's sustainability goals when implementing the Sidewalk Repair Program.

Proposed Project

Proposed Project Activities

The proposed Project would continue, amend, and expand implementation of Safe Sidewalks LA over the next 30 years to meet the provisions of the approved Settlement Agreement. Existing sidewalks and walkways, and gaps of missing sidewalks, would be repaired or replaced under the proposed Project.

Work under the proposed Project may include the following types of improvements to meet applicable accessibility requirements:

- Installation of missing curb ramps.
- Repair of street tree damage to sidewalk or walkway surfaces.

- Upgrades to existing curb ramps.
- Repair of broken and/or uneven pavement in the pedestrian rights of way.
- Repair of vertical or horizontal displacement or upheaval of the sidewalk or crosswalk surfaces.
- Correction of non-compliant cross-slopes in sidewalks or sections of sidewalks.
- Removal of protruding and overhanging objects and/or obstructions.
- Widening of restricted pedestrian rights-of-way when required.
- Providing clearance to the entrances of public bus shelters.
- Repair of excessive gutter slopes at the bottom of curb ramps leading into crosswalks.
- Elimination of curb ramp lips on curb ramps.
- Installation of utility covers.
- Repair of driveways, curb and gutter.
- Street tree preservation, removal, and/or replacement.
- Street tree root pruning and canopy pruning as appropriate.
- Installation of tree wells and other compliant remediation.
- Addressing other non-compliant accessibility conditions, as required.

Proposed Sidewalk Repair Program Ordinance and/or Policy Related to Street Trees

As part of the proposed Project, an ordinance and/or policy could be developed to establish criteria for street tree preservation, and removal and replacement where street trees are the cause of sidewalk damage. A proposed ordinance or policy could guide proposed Project implementation and establish a more efficient approval procedure. The ordinance could set forth ministerial permit requirements for street tree removal and replacement for work conducted under the proposed Project. The City's current practice is to obtain permits for street tree removals when conducting sidewalk repairs. The current Board of Public Works Street Tree Removal Permit Process and Policy (Policy) sets the requirements for replacement, such as ratio, size, and location, and generally requires a 2:1 ratio of street tree replacement within the City. While this replacement ratio is expected to continue for the proposed Project, additional policies related to street tree preservation and replacement may be developed. As the City develops criteria for street tree preservation, and removal and replacement requirements for the proposed Project, the criteria could be reflected in the proposed ordinance and/or modified Policy. Proposed language for a draft Sidewalk Repair Program ordinance or policy related to street trees would be included in the Draft EIR for public and agency review and comment. Table 1 identifies the various environmental resource sections in this Initial Study that discuss street tree preservation, removal, and replacement activities.

Table 1. Initial Study Environmental Resource Areas that Discuss Street Tree Preservation, Removal, and Replacement Activities

Initial Study Environmental Resource Areas	Page Number
I. Aesthetics	3-4
IV. Biological Resources	3-13
V. Cultural Resources	3-18
VII. Greenhouse Gas Emissions	3-24
VIII. Hazards and Hazardous Materials	3-26
IX. Hydrology and Water Resources	3-31
X. Land Use and Planning	3-38
XII. Noise	3-41
XVIII. Utilities and Service Systems	3-54
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Typical Construction Scenarios

To quantify the potential environmental impacts associated with the proposed Project, construction scenarios have been created to best describe the type of work that would likely occur at each proposed Project site. It should be noted that the actual construction process and schedule would be determined by the contractor at the time of construction; therefore, the information presented below should be regarded as illustrative of similar typical construction processes. Repairs requiring new ROW or access easements may, be needed to meander around a tree to complete repairs. Additionally, repairs occurring within culturally sensitive areas will be discussed in the Cultural Resource section of the EIR.

The following two prototypical construction scenarios were developed for the purposes of the environmental impact analysis. It is assumed for the purposes of this analysis that each construction scenario would be analyzed by parcel (i.e., each individual property owner) and by block (i.e., several repairs occurring at the same time within a city block). Impacts would be addressed at the local level (parcel/block), as well as aggregated into an annual average expected level of activity. These scenarios are representative of various configurations depending on the conditions of each site. All construction activities may not occur at each proposed Project location. These scenarios represent the range and general durations of the construction activities that may occur. For example, not all sidewalk repairs would involve street tree removals.

Scenario 1: Sidewalk Repair with Curb Ramp Repairs, Street Tree Removals and Replacements, and Minor Utility Work

This scenario represents combinations of the following construction activities:

- Sidewalk repair work, including fixing broken concrete, cracks, uplifts, driveways, curb and gutter, and making required accessibility improvements such as cross slope work.
- Curb ramp repairs or installation.

- Street tree removal and replacement.
- Minor utility work such as utility box adjustments.

Sidewalk Repair

Typical sidewalk repair for sidewalks, driveways, curb and gutter, and curb ramps in any one location typically takes 3–4 days for construction: for example, 1 day for demolition of existing sidewalk; 1 day for grading and formwork; 1 day for construction; and 1 day for cleanup and restoring the parkway. Repairs for an entire block face can take around 2 weeks for a standard 9-person crew. In some instances, soil compaction may be required. The depth of excavation for sidewalks usually would not be greater than 8 inches: 3–4 inches for concrete removal and 4 inches for untreated base material. The depth of excavation at driveways would typically be 12 inches: 6 inches for concrete removal and 6 inches for untreated base material. Construction equipment for sidewalk repair may include standard tools: jackhammer for removing the sidewalk, a concrete truck for delivery, tamper rammer for soil/gravel compaction, and a skid steer and dump truck for existing concrete removal.

Curb Ramp Repairs

Curb ramp repairs may require a similar level of effort and equipment as sidewalk repair. A curb ramp typically takes 3–4 days for construction: 1 day for demolition; 1 day for grading and formwork; 1 day for construction; and 1 day for cleanup and restoring the parkway. Curb ramps could potentially have an impact on pedestrian traffic and may require temporary ramps. Temporary ramps would not damage existing pavement, curbs, or gutters near the proposed work.

Street Tree Removal and Replacement

For street tree removals, required equipment typically includes rigging equipment, rope, chainsaw and gear, saw wenches, wedges and clearing and cleaning tools. Street tree removal vehicles and grinders may be on site for 1–2 days, depending on the number of street trees being removed. The street would not be closed to vehicular traffic, but traffic flagpersons and/or devices would need to be placed during street tree removal in order to protect all vehicles from unforeseen falling debris. Bicycle lanes will likely be merged into traffic lanes if adequate lane width is available. If traffic lane width is not adequate then bicyclists would likely be routed to an adjacent street. Pedestrians would be rerouted to the other side of the street for the entire block in most cases.

For some street tree replacements, Underground Service Alert may be contacted prior to excavation to identify any existing utilities in the planting area. Depending on the location of the existing utilities and the number of plantings to be performed, equipment could include a back hoe, mini excavator, or shovel. A root barrier is recommended to be installed that is 18 inches deep and 10 feet long between the street tree and the sidewalk. The street tree is planted and stakes are typically installed and secured to the street tree. Decomposed granite is often placed in street tree wells and dirt is placed in parkways. New street trees are watered during a 3-year establishment period typically with a water truck.

Minor Utility Work

Minor utility relocations usually are restricted to the relocation of utility laterals that interfere with the construction of city sidewalks, like gas and water service laterals to businesses and homes. The utility relocation typically requires a trench up to 36 inches deep and require mini-excavators,

staging areas for excavated soils, and a tamper rammer for compacting soils. The utility relocation could take 3–4 days. When the concrete is being poured, cement trucks will generally occupy one lane in the ROW. The street will not be closed in most cases, but flagpersons and or devices may need to be placed on both sides of the cement truck in order to control traffic. Bicycle lanes will merge into traffic lanes if adequate lane width is available. If traffic lane width is not adequate then bicyclists will be routed to an adjacent street. Pedestrians could be rerouted to the other side of the street for the entire block. The utility relocation could require an approval from the utility owner that could take 3–6 months for a relocated lateral. As relocation could take several days, plates could be placed over the excavated areas. In addition, coordination would typically be required with the utility company for disconnecting, reconnecting, and recommissioning the new line. If an existing utility lid or cover is damaged or missing, it would be replaced. Coordination of the utility work may be required between the utility owner and construction work personnel.

Staging

Generally, construction staging would likely be placed on the parcel adjacent to the sidewalk improvements (when possible). This may impact adjacent sidewalk areas, and the street in front of the sidewalk improvement area. Traffic control would likely be needed to re-route pedestrians around the sidewalk construction area. A localized, mid-block crossing is not recommended because of the impact on traffic and pedestrian safety. Bicyclists and motor vehicles would either need to be routed away from the curb or to an adjacent block where a sidewalk exists. Private driveways may be closed for up to 1 day, and construction staging areas could occupy 3–4 parking spaces. All lane closures and construction activities adjacent to the ROW may require coordination with the Los Angeles Department of Transportation (LADOT), the Los Angeles Fire Department (LAFD), and the Los Angeles Police Department (LAPD).

Scenario 2: Sidewalk Repair with Curb Ramp Repairs, Crosswalk Repaving, Street Tree Removals and Replacements, and Major Utility Work

This scenario represents combinations of the following construction activities:

- Sidewalk repair work including fixing broken concrete, cracks, uplifts, driveways, curb and gutter, and making required accessibility improvements such as cross slope work.
- Curb ramp repairs or installations.
- Crosswalk Repaving.
- Street tree removals and replacements.
- Major underground and/or overhead utility relocation work.

Sidewalk Repair

Same as Scenario 1 with the potential addition of required coordination between subcontractors due to major utility work in this scenario.

Curb Ramp Repairs

Same as Scenario 1 with the potential addition of required coordination between subcontractors due to major utility work in this scenario.

Crosswalk Repaving

Crosswalk construction may include grinding, paving, and striping to alleviate existing shoving, cracks, or uplifts from curb ramp to curb ramp. Crosswalk construction generally is performed outside of peak travel times, which are typically the morning and afternoon commute period. Curb ramps leading to the crosswalk must be barricaded in a manner that walkways remain accessible. Equipment may include grinders, asphalt pavers, and striping machines.

Street Tree Removal and Replacement

Same as Scenario 1 with the potential addition of required coordination between subcontractors due to major utility work in this scenario.

Major Utility Work

Major utility relocation for overhead lines could be a possibility for a block, from intersection to intersection. This is relevant when overhead poles are placed on a sidewalk that restricts the path of travel to less than 4 feet in width. Depending on the amount of overhead lines on a utility, utility relocation of an overhead line for one parcel could take 1–2 weeks, while removal and replacement of several lines could take approximately 4–5 weeks. Utility relocations may require improvement plans from the utility owner for construction. These utility plans generally take 6–12 months of design work prior to acceptance and issuance from a dry utility company. Construction of the utility relocation may require a minimum of two trucks with bucket loaders for each pole installation, an auger for removal of soils for a new base, and a concrete truck for delivery of structural base concrete. This may require closing one lane of traffic, which could have the same traffic constraints as sidewalk construction. Coordination would be required with the utility company for disconnection and reconnection and recommissioning.

Depending on the type of utility being rerouted, additional trucks and equipment could possibly be required that will take up more space for construction staging and parking areas. Traffic signals may be affected, and coordination will be required with the authorizing agencies, including LADOT. Depending on the time of day and type of utility being relocated, temporary power may be required. For below ground utility relocation, 36- to 76-inch-deep trenching and shoring could be required in the relocation areas. The construction equipment may likely include mini-excavators, four-wheel drive backhoes, shoring equipment, and compactors, as well as a staging area to hold excavated soils. These utilities may require the same traffic control measures as overhead power lines. Plates would have to be placed over the trenching areas during non-working hours.

Catch Basin and Storm Drain Reconstruction

Catch basin and storm drain reconstruction may be necessary for ADA compliant sidewalk repairs. The reconstruction of these structures would require excavation and trenching to a minimum depth of 4–15 feet, depending on the elevation of the outflow pipes and whether full replacement of the structure is required. Additional trucks and equipment, such as excavators, backhoes, shoring equipment, compactors, and additional concrete trucks may be necessary, along with additional staging and parking areas. This work could require an additional 3 to 7 days for cast in place structures.

Staging

Same as Scenario 1 with the potential addition of required coordination between subcontractors due to major utility work in this scenario. As discussed, construction durations may be longer with the additional and more complex work related to this project construction scenario.

Location and Existing Conditions

Location

The City of Los Angeles, located within Los Angeles County, contains 467 square miles or 302,596 acres. Approximately 76 percent (230,337 acres) is developed and 24 percent (72,219 acres) is undeveloped. Land use within the City is primarily residential, as it constitutes 60 percent of all acreage within the City. Public land is the second most common land use, representing 20 percent of acreage within the City, while commercial and industrial land uses each represent 7 percent of acreage within the City.[1] Within these land uses, approximately 15 percent of all land in the City consists of streets.

The City is bordered by the cities of Calabasas, Hidden Hills, and Santa Monica and the Pacific Ocean to the west; the cities of Burbank, Glendale, Pasadena, and the Angeles National Forest to the north; the cities of South Pasadena, Alhambra, Commerce, Vernon, and South Gate to the east; and Compton, Carson, Gardena, Inglewood, Culver City, and El Segundo to the south. In addition, West Hollywood, Beverly Hills, and San Fernando are islands within the City of Los Angeles, and pockets of unincorporated Los Angeles County land lie within and adjacent to the City of Los Angeles.

Existing Conditions

To organize the environmental impact analysis within the proposed Project area, the City has been organized into seven regional project zones that overlap with the boundaries of existing Area Planning Commissions (APCs) within the City: North Valley, South Valley, West Los Angeles, Central Los Angeles, East Los Angeles, South Los Angeles, and Harbor. APCs are used by the City Planning Department to help determine significant planning and land use issues for proposed plans and projects. Details regarding the geographic project zones that correlate with the seven APCs within the City are summarized in Table 2. All data pertaining to each project zone APCs were obtained from the City's Department of City Planning website.[2]

The project zones range from approximately 33.9 to 126.8 square miles. The City is also divided into 15 Council Districts. In most cases, the project zones contain more than one Council District, and Council Districts are located in more than one project zone, as shown on Figure 3.

[1] Data from the City of Los Angeles website: http://cityplanning.lacity.org/DRU/StdRpts/StdRptsCw/

[2] http://cityplanning.lacity.org/DRU/Locl/LocRpt.cfm?geo=AP&sgo=CP#. Accessed: 12/27/2016.

Table 2. Project Zone Summary

Project Zone	Total Area (square miles)	Council Districts	Population	Housing Units
North Valley	126.8	2,3,6,7,12	707,390	203,971
South Valley	97.6	2,3,4,5,6, 12	758,815	288,505
West Los Angeles	90.0	4,5,11	431,348	194,409
Central Los Angeles	48.8	1, 4, 5, 9, 10, 13,14	733,525	291,297
East Los Angeles	37.6	1,4, 13,14	432,611	130,516
South Los Angeles	43.8	1, 8, 9, 10, 15	734,593	218,287
Harbor	33.9	15	205,218	67,000

Source: TAHA 2016

Project Zones

North Valley

The North Valley project zone is located in the northernmost portion of the City and covers approximately 127 square miles. It includes the following communities: Chatsworth-Porter Ranch, Northridge, Granada Hills-Knollwood, Mission Hills-Panorama City-North Hills, Sylmar, Arleta-Pacoima, Sun Valley-La Tuna Canyon, and Sunland-Tujunga-Shadow Hills-Lakeview Terrace-East La Tuna Canyon.

South Valley

The South Valley project zone is located south of the North Valley project zone and covers approximately 98 square miles. It includes the following communities: Canoga Park-West Hills-Winnetka-Woodland Hills, Reseda-West Van Nuys, Encino-Tarzana, Van Nuys-North Sherman Oaks, Sherman Oaks-Studio City-Toluca Lake-Cahuenga Pass, and North Hollywood-Valley Village.

West Los Angeles

The West Los Angeles project zone is located in the western portion of the City, below the South Valley project zone, covers approximately 90 square miles, and falls within the California Coastal Zone. This project zone includes the following communities: Brentwood-Pacific Palisades, Bel Air-Beverly Crest, Westwood, West Los Angeles, Palms-Mar Vista, Venice, Del Rey, Westchester, Playa Del Rey, and the Los Angeles International Airport (LAX). Street tree removals and replacements in the California Coastal Zone would require approval from the California Coastal Commission and the City.

Central Los Angeles

The Central Los Angeles project zone is located in the central portion of the City and covers approximately 49 square miles. It includes the following communities: Hollywood, Wilshire, Westlake, Central City, and Central North.

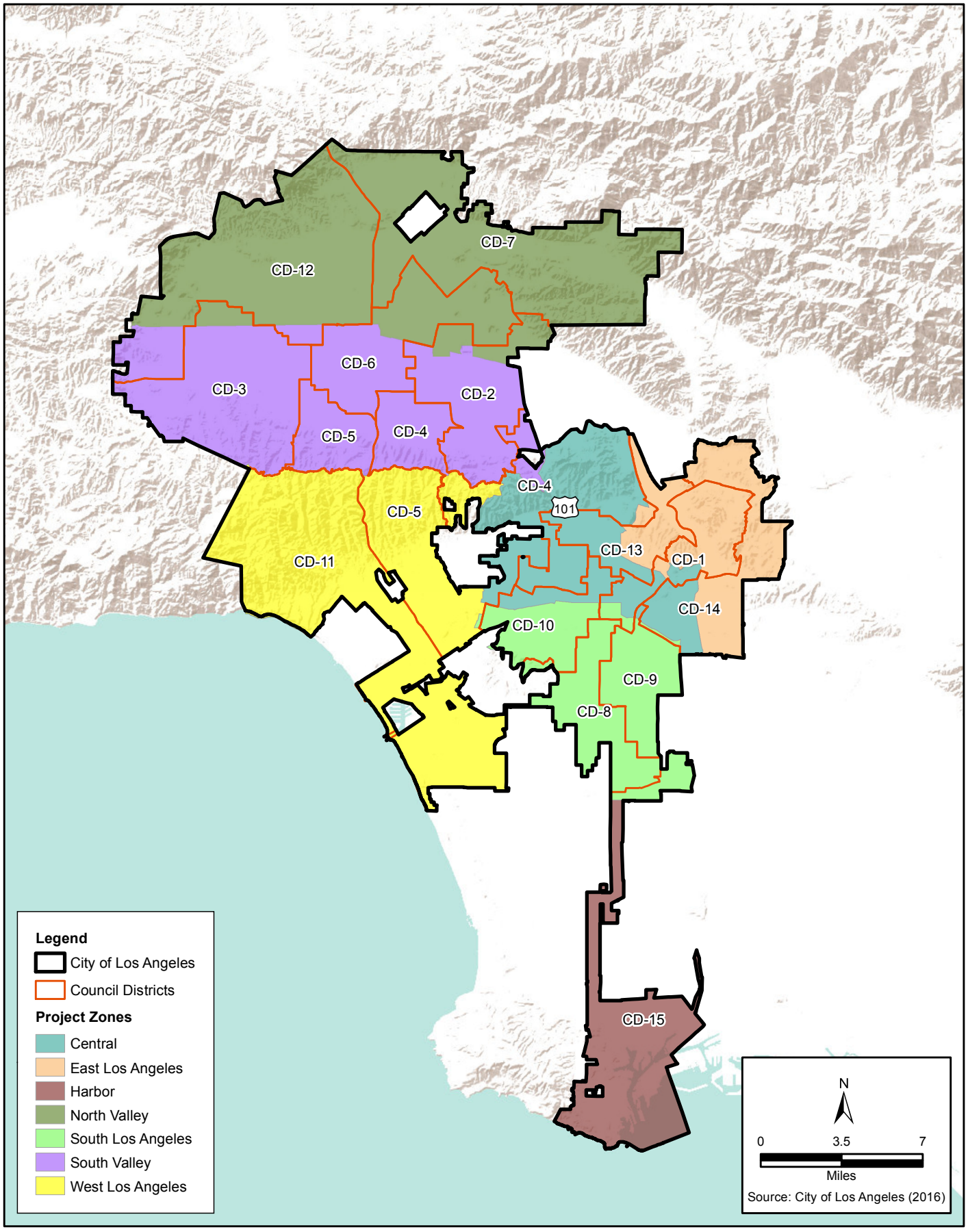

Figure 3
City of Los Angeles Council Districts
Sidewalk Repair Program

East Los Angeles

The East Los Angeles project zone is located east of the Central Los Angeles project zone and covers approximately 38 square miles. It includes the following communities: Silver Lake-Echo Park, Northeast Los Angeles, and Boyle Heights.

South Los Angeles

The South Los Angeles project zone is located south of the Central and East Los Angeles project zones. It covers approximately 44 square miles and includes the following communities: West Adams-Baldwin Hills-Leimert, South Los Angeles, and Southeast Los Angeles.

Harbor

The Harbor project zone is located in the southernmost portion of the City and covers approximately 34 square miles and also falls within the California Coastal Zone. It includes the following communities: Harbor-Gateway, Wilmington-Harbor City, San Pedro, and the Port of Los Angeles. Street tree removals and replacements in the California Coastal Zone would require approval from the California Coastal Commission and the City.

Built Historic Resources

Geographic Information System (GIS) databases of built historic resources are currently available from City sources (Cultural Affairs Department and Department of City Planning). The City has numerous Historic Preservation Overlay Zones (HPOZs), which are governed by certified Historic Resource Surveys and Historic Preservation Plans. HPOZs, commonly known as historic districts, require review of all proposed exterior alterations and additions to historic properties within designated districts. The South Valley project zone does not currently contain any HPOZs. Construction of the proposed Project in historic districts will be discussed further in the Draft EIR.

Permits and Approvals

Table 3 lists the permits and approvals that most likely will be required for the proposed Project. The need for these permits will be verified through agency correspondence during the CEQA process.

Table 3. Anticipated Permits and Approvals for the Sidewalk Repair Program

Agency	Permit/Approval	Issue
Local		
City of Los Angeles, City Council	CEQA document	Certification of the EIR. The EIR will analyze proposed Project activities and expected impacts over the next 30 years.
City of Los Angeles, City Council	Proposed ordinance and/or policy implementing Sidewalk Repair Program street tree criteria	If approved, the proposed ordinance and/or policy could establish criteria for street tree preservation, removal, and replacement where street trees are the cause of sidewalk damage.

Agency	Permit/Approval	Issue
City of Los Angeles, Department of Public Works Bureau of Engineering	Class A Permit	Allows for minor construction work in the public ROW.
City of Los Angeles, Department of Public Works Bureau of Engineering	Class B Permit	Allows for extensive improvements in the public ROW, including street widening and relocation of traffic signals.
City of Los Angeles, Department of Public Works Bureau of Street Services	Street Tree Removal Permit	Permits are needed for street tree removal and replacement and root pruning. This may change for the proposed Project if an ordinance or policy for Sidewalk Repair Program implementation related to street trees is approved.
City of Los Angeles, Department of Public Works Bureau of Engineering	Revocable Permit	Permit is needed for non-standard items (planters, pavers, sculptures, etc.) to remain in the public ROW.
Regional		
Los Angeles Regional Water Quality Control Board (RWQCB)	National Pollutant Discharge Elimination System (NPDES) Construction Stormwater Pollution Prevention Plan permit	Water quality and placement of discharges associated with dewatering activities; no permit required for discharges to sewer (general permit saves time with RWQCB).
State		
California Coastal Commission	Local, and potentially state, coastal development permits	For projects in the coastal zone, access, habitat disturbance, street tree removals, street tree plantings, utility relocations, parking, and traffic during construction could be issues.

Coordinating Plans

There are many existing City policies and plans that will guide implementation of the proposed Project. These include Mobility Plan 2035 (2016), an update to the General Plan's Transportation Element, which incorporates "Complete Streets" principles and lays the policy foundation for the safety and accessibility of pedestrians, cyclists, transit riders, and motorists when interacting with the City's streets. Another important city initiative is Vision Zero, established by Mayor Garcetti's Executive Directive No. 10 (2015), which seeks to reduce traffic fatalities and declares safety to be the number one priority in designing and building streets and sidewalks. The proposed Project would also address the goals of the City sustainability report (The pLAn), for infrastructure. These and other coordinating policies and plans will be discussed further in the EIR.

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Chapter 3

Initial Study Environmental Checklist

1. **Project Title:** Sidewalk Repair Program
2. **Lead Agency Name and Address:** City of Los Angeles, Department of Public Works, Bureau of Engineering
   Environmental Management Group
   1149 S. Broadway, Suite 600
   Los Angeles, CA 90015
3. **Contact Person and Phone Number:** Shilpa Gupta, Environmental Supervisor I
   Los Angeles Bureau of Engineering
   213-485-4560
   shilpa.gupta@lacity.org
4. **Project Location:** City of Los Angeles
5. **Project Sponsor's Name and Address:** City of Los Angeles, Department of Public Works, Bureau of Engineering
6. **General Plan Designation:** Various
7. **Zoning:** Various
8. **Description of Project:**

   The proposed Project would include the repair of sidewalks and curbs and associated improvements, which could include street tree removal and replacement, curb ramp improvements, and utility relocations.
9. **Surrounding Land Uses and Setting:**

   Various
10. **Other Public Agencies Whose Approval is Required:**

    See Table 3.

Environmental Factors Potentially Affected

The environmental factors checked below would potentially be affected by this proposed Project (i.e., the proposed Project would involve at least one impact that is a "Potentially Significant Impact"), as indicated by the checklist on the following pages.

☒ Aesthetics	☐ Agricultural and Forestry Resources	☒ Air Quality
☒ Biological Resources	☒ Cultural Resources	☐ Geology/Soils
☒ Greenhouse Gas Emissions	☒ Hazards and Hazardous Materials	☒ Hydrology/Water Quality
☒ Land Use/Planning	☐ Mineral Resources	☒ Noise
☐ Population/Housing	☐ Public Services	☐ Recreation
☒ Transportation/Traffic	☒ Tribal Cultural Resources	☐ Utilities/Service Systems
☒ 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 to 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 an impact on the environment that is "potentially significant" or "potentially significant unless mitigated" 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 ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the project, nothing further is required.

Signature _____ Date 7/18/2017

Jan Green Rebstock CA BOE

Printed Name For

Evaluation of Environmental Impacts

1. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained if it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
2. All answers must take account of the whole action involved, including offsite as well as onsite, cumulative as well as project-level; indirect as well as direct; and construction as well as operational impacts.
3. Once the lead agency has determined that a particular physical impact may occur, the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is

substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an Environmental Impact Report (EIR) is required.

4. "Negative Declaration: Less than Significant with Mitigation Incorporated" applies when the incorporation of mitigation measures has reduced an effect from a "Potentially Significant Impact" to a "Less-than-Significant Impact". The lead agency must describe the mitigation measures and briefly explain how they reduce the effect to a less-than-significant level.
5. Earlier analyses may be used if, pursuant to tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration [Section 15063(c)(3)(D)]. In this case, a brief discussion should identify the following:
    a. Earlier Analysis Used. Identify and state where earlier analyses are available for review.
    b. Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards and state whether such effects were addressed by mitigation measures based on the earlier analysis.
    c. Mitigation Measures. For effects that are "Less than Significant with Mitigation Incorporated," describe the mitigation measures that were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.
6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, when appropriate, include a reference to the page or pages where the statement is substantiated.
7. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.
8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.
9. The explanation of each issue should identify:
    a. the significance criteria or threshold, if any, used to evaluate each question; and
    b. the mitigation measure identified, if any, to reduce the impact to a less-than-significant level.

I. Aesthetics	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Have a substantial adverse effect on a scenic vista?	☒	☐	☐	☐
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings along a scenic highway?	☒	☐	☐	☐
c. Substantially degrade the existing visual character or quality of the site and its surroundings?	☒	☐	☐	☐
d. Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?	☐	☐	☒	☐

Would the project:

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

Reference: L.A. CEQA Thresholds Guide (Sections A.1 and A.2); City of Los Angeles General Plan & Community Plans.

Comment: A scenic vista generally provides focal views of objects, settings, or features of visual interest; or panoramic views of large geographic areas of scenic quality, primarily from a given vantage point. A significant impact may occur if the proposed Project either introduced incompatible visual elements within a public field of view containing a scenic vista or substantially altered a view of a scenic vista.

Potentially Significant Impact. The study area (City of Los Angeles) is mostly urbanized and contains a mixture of residential, public facilities, commercial, and industrial land uses (amongst others). The quality of and impacts on views and scenic vistas (unofficial and officially designated) throughout the City are highly dependent on the position, angle, and speed of the viewer (as well as their visual preferences), and their proximity to visual resources and/or other visual elements, such as street trees/vegetation, that enrich their viewshed or create visual interest. Therefore, and because the proposed Project could include street tree removal and replacement (street trees are often considered visual resources) and work in coastal zones and culturally sensitive areas, the potential visual impacts of the prototypical project types/construction scenarios within each project zone will be further analyzed in the EIR using a selection of key viewpoints. In addition, the proposed Project would include changing the permit process for street tree removal, which could include an ordinance and/or policy setting criteria for street tree replacement ratios or specifying species, size, or location of replacement street trees. This issue will be further analyzed in the EIR.

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

Reference: L.A. CEQA Thresholds Guide (Sections A.1 and A.2); City of Los Angeles General Plan & Community Plans; Venice Local Coastal Program; and California Department of Transportation (Caltrans), California Scenic Highway Mapping System website (http://www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm). Mobility Plan 2035 Appendix A Inventory of Designated Scenic Highways and Guidelines.

Comment: A significant impact may occur where scenic resources within a state scenic highway would be damaged or removed as a result of the proposed Project.

Potentially Significant Impact. No officially designated state scenic highways traverse the limits of the City. However, within the City, portions of the following roads are considered eligible state scenic highways (not officially designated) and/or historic parkways: US-101, CA-27, US/CA-110, I-210 and State Route (SR-) 1 (Pacific Coast Highway) (Caltrans 2011). In addition, Mobility Plan 2035 identifies designated scenic highways as well as guidelines for development. Because the proposed Project could include street tree removal and replacement (street trees are often considered visual resources) and work in culturally sensitive areas that may contain historic resources that have visual merit, the potential visual impacts of the various prototypical project types/construction scenarios within each project zone will be further analyzed in the EIR.

c) Substantially degrade the existing visual character or quality of the site and its surroundings?

Reference: L.A. CEQA Thresholds Guide (Sections A.1 and A.2).

Comment: A significant impact may occur if the proposed Project introduced incompatible visual elements to the proposed Project sites or visual elements that would be incompatible with the character of the area surrounding the proposed Project sites.

Potentially Significant Impact. As previously discussed, land uses and topographical forms vary throughout the City. As a result, the visual character of the City varies greatly depending on the proximity to visual resources and/or other visual elements, such as street trees/vegetation, that enrich their viewshed or create visual interest. Therefore, and because the proposed Project could include street tree removal and replacement (street trees are often considered visual resources) and work in coastal zones and culturally sensitive areas that may have unique character or offer high-quality views, the potential visual impacts of the various prototypical project types/construction scenarios within each project zone will be further analyzed in the EIR using a selection of key viewpoints. In addition, the proposed Project would include changing the permit process for street tree removal, which could include an ordinance and/or policy setting criteria for street tree replacement ratios or specifying species, size, or location of replacement street trees. This issue will be further analyzed in the EIR.

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

Reference: L.A. CEQA Thresholds Guide (Section A.4).

Comment: A significant impact would occur if the proposed Project caused a substantial increase in ambient illumination levels beyond the property line or caused new lighting to spill-over onto light-sensitive land uses such as residential, some commercial and institutional uses that require minimum illumination for proper function, and natural areas.

Less-than-Significant Impact. While nighttime construction is not anticipated, there may be rare instances where some possibility of nighttime lighting at the construction sites would occur. In these cases, lighting would be directed downward, and spill light would be minimized to the greatest extent possible in accordance with Los Angeles Municipal Code requirements. Therefore, significant changes in ambient illumination levels as a result of the proposed Project sources during construction are not expected, and construction lighting would not be expected to be a nuisance to nearby residents and businesses. Furthermore, due to the limited duration of the construction period(s), any impacts of this nature would be considered temporary. Other than the occasional and temporary reflection potentially produced by construction vehicle windshields, no glare-producing surfaces would be present on the construction sites. Signage and screening around the construction sites may be made of low-gloss materials and would produce little to no glare.

Operational lighting would include limited security lighting/lamp posts associated with sidewalk repair, as necessary. However, any street light signals and/or poles associated with operation of the proposed Project would relocate or replace existing light sources. Therefore, the proposed Project would not introduce any substantial increases in light above and beyond ambient illumination levels that would result in spill-over effects onto light-sensitive land uses. Similarly, no substantial glare-producing materials would be used in the sidewalk repairs compared to existing conditions. Impacts under construction and operation of the proposed project would be less than significant and this issue will be further analyzed in the EIR.

II. Agricultural and Forestry Resources	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
In determining whether impacts on agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts on forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project, and forest carbon measurement methodology provided in the 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?	☐	☐	☐	☒
b. Conflict with existing zoning for agricultural use or conflict with a Williamson Act contract?	☐	☐	☐	☒
c. Conflict with existing zoning for, or cause rezoning of forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	☐	☐	☐	☒
d. Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e. Involve other changes in the existing environment 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?	☐	☐	☐	☒

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?

Reference: California State Department of Conservation Farmland Mapping and Monitoring Program website (http://www.conservation.ca.gov/dlrp/FMMP/Pages/Index.aspx); City of Los Angeles General Plan Conservation Element; Zone Information & Map Access System (ZIMAS).

Comment: A significant impact may occur if the proposed Project were to result in the conversion of state-designated agricultural land from agricultural use to a non-agricultural use.

No Impact. According to the *Los Angeles County Important Farmland 2014* map prepared by the California Department of Conservation, the City does not contain any Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. Therefore, the proposed Project would not convert any Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, and no impact would occur. This issue will not be further discussed in the EIR.

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

Reference: California State Department of Conservation Farmland Mapping and Monitoring Program website (http://www.conservation.ca.gov/dlrp/FMMP/Pages/Index.aspx) and California State Department of Conservation Land Conservation Act (ftp://ftp.consrv.ca.gov/pub/dlrp/wa/LA_12_13_WA.pdf); City of Los Angeles General Plan Conservation Element, ZIMAS.

Comment: A significant impact may occur if the proposed Project were to result in the conversion of land zoned for agricultural use, or indicated under a Williamson Act contract, from agricultural use to a non-agricultural use.

No Impact. According to the LA City Zone Information and Map Access System (ZIMAS), the City contains A1, A2, RA, and PF zones, all of which allow for agricultural uses. The proposed Project would repair curbs and sidewalks, to applicable accessibility requirements, and could remove and replace street trees and utilities in the public ROW. As such, proposed Project activities would take place on built sidewalks, curbs, and public ROWs to restore or improve these areas when compared to their original surface conditions. If Project activities occur adjacent to properties that are zoned A1, A2, RA, or PF, they would not conflict with the zoning, as they would not preclude agricultural uses on these properties. Any temporary construction-period impacts that would occur adjacent to zoned areas that allow agricultural use would not change the underlying zoning such that long-term use of the properties would be affected. Construction and operational activities would not result in the conversion of land zoned for agricultural use. No impact would occur, as the proposed Project would not conflict with zoning for agricultural use.

According to the *Los Angeles County Williamson Act FY 2015/2016* map prepared by the California Department of Conservation, the City does not contain land protected under Williamson Act contract, and no impact related to Williamson Act contracts would occur as a result of implementation of the proposed Project. This issue will not be further discussed in the EIR.

c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)) or timberland (as defined in Public Resources Code Section 4526)?

References: City of Los Angeles General Plan Conservation Element

Comment: A significant impact may occur if the proposed Project were to conflict with an existing zoning classification of forest land or timberland, or cause rezoning of an area classified as forest land or timberland.

No Impact. According to the *City of Los Angeles General Plan Conservation Element* the City does not contain zoning for forest land or timber land. Angeles National Forest on the north and Santa Susana Mountains to the northwest are located outside the City's boundaries. Therefore, the proposed Project would not conflict with existing zoning for, or cause rezoning of, forest land or timberland. No impact would occur. This issue will not be further discussed in the EIR.

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

References: City of Los Angeles General Plan Conservation Element

Comment: There are no designated forest land uses in the City of Los Angeles.

No Impact. There are no designated forest land uses in the City of Los Angeles; therefore, no loss of forest land to non-forest use would occur and there would be no impact. This issue will not be further discussed in the EIR.

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?

Reference: City of Los Angeles General Plan Conservation Element

Comment: The proposed project would take place within existing urban areas within the public ROW.

No Impact. The proposed Project activities would take place on built sidewalks, curbs, and public ROWs, and would not involve the conversion of farmland to non-agricultural use. As discussed in II.b., if Project activities occur adjacent to properties that have farmland, Project activities would not conflict with the use, as they would not preclude agricultural uses or change the underlying zoning on these properties. There are no existing forest lands or forests as discussed in II.c. As such, no forest land would be converted to non-forest use as a result of Project implementation. No impacts related to the conversion of farmland to non-agricultural use or conversion of forest land to non-forest use would occur as a result of Project implementation. This issue will not be further discussed in the EIR.

III. Air Quality	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
When available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a. Conflict with or obstruct implementation of the applicable air quality plan?	☒	☐	☐	☐
b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☒	☐	☐	☐
c. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	☒	☐	☐	☐
d. Expose sensitive receptors to substantial pollutant concentrations?	☒	☐	☐	☐
e. Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

Would the project:

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

Reference: L.A. CEQA Thresholds Guide (Sections B.1 and B.2); South Coast Air Quality Management District, Final 2012 Air Quality Management Plan, February 2013; City of Los Angeles General Plan.

Comment: A significant impact may occur if the proposed Project would conflict with or obstruct implementation of the applicable air quality plan.

Potentially Significant Impact. The proposed Project is located in the South Coast Air Basin (Basin), which is regulated by the South Coast Air Quality Management District (SCAQMD) under the Clean Air Act. During the construction period, criteria pollutant and toxic air contaminant (TAC) emissions would result from the use of construction equipment and the transport of workers and materials to and from the project sites. Once construction activities are complete, operation of the proposed Project would provide improved sidewalks that would not involve pollutant emissions. No permanent change to vehicle circulation is anticipated following the completion of construction activities, and, therefore, there would be no change in operational emissions from vehicles as a result of the proposed Project. Based on the emissions that would result from construction activities, the proposed Project could have a potentially significant impact related to conflicting with or obstructing implementation of an applicable air quality plan. This issue will be further analyzed in the EIR.

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Reference: L.A. CEQA Thresholds Guide (Sections B.1 and B.2); South Coast Air Quality Management District, Final 2012 Air Quality Management Plan, February 2013, CEQA Air Quality Handbook, 1993.

Comment: A significant impact may occur if the proposed Project would violate any air quality standard or contribute substantially to an existing or projected air quality violation.

Potentially Significant Impact. As stated above for III.a, the proposed Project would result in the emissions of criteria and TAC pollutants during the construction period. These emissions may exceed the regional or localized significance thresholds for criteria pollutants established in the SCAQMD *CEQA Air Quality Handbook*. Therefore, the proposed Project could violate air quality standards or contribute substantially to an existing or projected air quality violation, and impacts are considered potentially significant. This issue will be further analyzed in the EIR.

c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?

Reference: L.A. CEQA Thresholds Guide (Sections B.1 and B.2); 2015 State Area Designation Maps (http://www.arb.ca.gov/desig/adm/adm.htm).

Comment: A significant impact would occur if the proposed Project's incremental air quality effects are considerable when viewed in connection with the effects of past, present, and reasonably foreseeable future projects.

Potentially Significant Impact. As discussed above in III.a and III.b, proposed Project-related construction activities would emit criteria pollutants (and precursor emissions) for which the Basin is not in attainment under the Clean Air Act. Therefore, the proposed Project could result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal or state ambient air quality standard (including emissions that exceed quantitative thresholds for ozone precursors), and, therefore, impacts may be potentially significant. This issue will be further analyzed in the EIR.

d) Expose sensitive receptors to substantial pollutant concentrations?

Reference: L.A. CEQA Thresholds Guide (Sections B.1, B.2, and B.3).

Comment: A significant impact may occur if construction or operation of the proposed Project generated pollutant concentrations to a degree that would significantly affect sensitive receptors. Sensitive receptor locations include residences, board and care facilities, schools, playgrounds, hospitals, parks, childcare centers, and outdoor athletic facilities.

Potentially Significant Impact. Sensitive receptor locations close to the proposed Project sites include residential uses, schools, playgrounds, hospitals, parks, childcare centers, and outdoor athletic facilities that would be adjacent to sidewalk repair sites. Criteria pollutant and TAC emissions would occur during project construction, potentially exposing sensitive receptors to substantial pollutant concentrations. Therefore, the potential for the proposed Project to expose sensitive receptors to substantial pollutant concentrations and result in a potentially significant impact will be further analyzed in the EIR.

e) Create objectionable odors affecting a substantial number of people?

Reference: L.A. CEQA Thresholds Guide (Sections B.1 and B.2).

Comment: A significant impact would occur if the project created objectionable odors during construction or operation that would affect a substantial number of people.

Less-than-Significant Impact. According to the SCAQMD *CEQA Air Quality Handbook*, land uses associated with odor complaints typically include agricultural uses, wastewater treatment facilities, food processing plants, chemical plants, composting areas, refineries, landfills, dairies, and fiberglass molding facilities. The sidewalks that would be repaired under the proposed Project would be within the public ROW, and would not include any of the land uses associated with odor complaints. During the construction period, some limited odor may result from asphalt paving activities, which may be detectable by people immediately adjacent to work sites. However, asphalt paving would occur for a limited time period at each site, and the locations of paving activities would be distributed throughout the City such that impacts at any particular location would not be substantial. Furthermore, SCAQMD Rule 402 prohibits the discharge of air contaminants that cause nuisance or annoyance to the public, including odors. SCAQMD maintains both a toll-free phone line (1-800-CUT-SMOG) and a web-based platform (http://www.aqmd.gov/contact/complaints) for reporting complaints related to air quality, including odors. Given the limited duration and location of asphalt paving, mandatory compliance with SCAQMD Rule 402, and ability for the public to report complaints to SCAQMD, proposed Project-related construction activities would not create a significant level of objectionable odors affecting a substantial number of people. This issue will be further analyzed in the EIR.

IV. Biological Resources	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
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?	☒	☐	☐	☐
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☒	☐	☐	☐
c. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marshes, vernal pools, coastal wetlands, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☒	☐
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☒	☐	☐	☐
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☒	☐	☐	☐
f. Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan?	☒	☐	☐	☐

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?

Reference: L.A. CEQA Thresholds Guide (Section C); City of Los Angeles General Plan.

Comment: A significant impact may occur if the proposed Project would remove or modify habitat for any species identified or designated as a candidate, sensitive, or special status species in local or regional plans, policies, or regulation, or by the state or federal regulatory agencies cited.

Potentially Significant Impact. The proposed Project sites are located in a highly urbanized area. A query of the California Natural Diversity Database (CNDDB) and California Native Plant Society (CNPS) databases conducted for the proposed Project sites and surrounding topographic quadrangles indicates that there are 14 plants and 20 listed animals that are either considered threatened and/or endangered under the Federal Endangered Species Act and/or California Endangered Species Act, and an additional 58 animal species considered California Species of Special Concern, that have been recorded and/or are known to occur within the areas queried.

The City contains over 80 communities and distinct neighborhoods. Many of these communities have local community plans and policies. The proposed Project may adversely affect specific species or habitats protected in these plans and policies.

While construction of the proposed Project would occur on paved, previously disturbed surfaces, the work would require the use of construction workers, materials, and machinery. These activities could result in adverse noise effects on sensitive species known to occur adjacent to the work areas. In addition, the proposed Project could remove or prune a large number of street trees with the potential to support nesting birds protected by the Migratory Bird Treaty Act (MBTA) and protected tree-roosting bat species.

Based upon the analysis above, the proposed Project could have a substantial adverse effect, either directly on nesting birds or roosting bats, or through noise impacts on 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 (CDFW) or U.S. Fish and Wildlife Service (USFWS), and, therefore, could result in a significant impact. In addition, the proposed Project would include changing the permit process for street tree removal, which could include an ordinance and/or policy setting criteria for street tree replacement ratios or specifying species, size, or location of replacement street trees. These issues will be further analyzed in the EIR.

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?

Reference: See IV.a above.

Comment: See IV.a above.

Potentially Significant Impact. The proposed Project sites are located in a highly urbanized area. Although the proposed Project sites do not contain sensitive plant communities, habitats, or species, there are adjacent areas designated as Environmentally Sensitive Habitat Areas (ESHA) by the County of Los Angeles, and some repairs may occur adjacent to riparian areas. Direct impacts on sensitive or riparian habitats could occur through sedimentation, erosion, or hazardous materials spills associated with repair work and which may enter adjacent riparian or sensitive habitat area. Implementation of standard construction best management practices (BMPs) may mitigate these effects. Street tree removal may also be inconsistent with ESHA regulations.

The City contains over 80 communities and distinct neighborhoods. Many of these communities have local community plans and policies. The proposed Project may adversely affect specific species or habitats protected in these plans and policies.

The proposed Project sites could be adjacent to, and may adversely affect, riparian habitat or sensitive natural communities identified in these local plans or policies.

Based upon the analysis above, the proposed Project could have a substantial adverse effect on a riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS and result in a significant impact. This issue will be further analyzed in the EIR.

c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Reference: L.A. CEQA Thresholds Guide (Section C); City of Los Angeles General Plan

Comment: A significant impact may occur if federally protected wetlands, as defined by Section 404 of the Clean Water Act, would be modified or removed.

Less-than-Significant Impact. The proposed Project sites would be located in a highly urbanized area. Sidewalk repair may also occur adjacent to wetlands and waters of the United States and California, under the jurisdiction of the U.S. Army Corps of Engineers (USACE) and CDFW, respectively. However, the work activities would not involve direct removal, filling, or hydrological interruption to federally protected wetlands. Direct impacts on wetlands could occur through sedimentation, erosion, or hazardous materials spills associated with repair work and which may enter adjacent wetlands. However, implementation of standard construction BMPs would ensure that impacts would remain less than significant. This issue will be further analyzed in the EIR.

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

Reference: L.A. CEQA Thresholds Guide (Section C).

Comment: A significant impact may occur if the proposed Project interfered with or removed access to a migratory wildlife corridor or impeded the use of native wildlife nursery sites.

Potentially Significant Impact. A query of the CNDDB and CNPS databases conducted for the proposed Project sites and surrounding topographic quadrangles indicates that there are several native bat species that may use street trees as day roosts and breeding sites (maternity colonies) and that have been recorded and/or are known to occur within the areas queried. The proposed Project could remove or prune a large number of street trees with the potential to support maternity colonies for native bat species. Street tree pruning or removal also has the potential to directly affect nesting native bird species. Repair activities in the vicinity of bat maternity colonies or nesting birds may also disrupt reproductive activities through noise and disturbance. Sidewalk repair activities would be restricted to paved surfaces and are unlikely to interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites for other species beyond tree roosting/breeding bats and tree-nesting birds, as described above.

Based upon the analysis above, the proposed Project could interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. Thus, there could be a significant impact. This issue will be further analyzed in the EIR.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Reference: L.A. CEQA Thresholds Guide (Section C); City of Los Angeles General Plan; Venice Community Plan; Venice Local Coastal Program.

Comment: A significant impact may occur if the proposed Project would result in a conflict with local regulations pertaining to biological resources.

Potentially Significant Impact. The proposed Project would include repair work in the California Coastal Zone, which includes the communities of Venice, Playa Del Rey, Pacific Palisades, and San Pedro. These areas are subject to coastal development permit conditions when tree removals are required. Currently, any street tree removals and replacements require approval from the California Coastal Commission, which meets once a month in various locations throughout the state. This process can be time consuming on a tree-by-tree basis. The City may develop a blanket permit within the California coastal zone whereby all street tree removals and replacements performed under the proposed Project and with specific types of sidewalk repairs would obtain approval. This option's feasibility is yet to be determined.

The City's Urban Forestry Division maintains a list of Significant Street Trees. The street trees may be of importance due to their size, species, appearance, growth habits, flowers, or a combination of these characteristics. The proposed Project could conflict with protections afforded to Significant Street Trees.

The City's Protected Tree Ordinance provides protections to specific Southern California native tree species measuring 4 inches or more in cumulative diameter, 4.5 feet above ground level at the base of the tree. The ordinance also affords protections to street trees officially designated as an historical monument or as part of a HPOZ. The proposed Project would be evaluated for consistency with the Protected Tree Ordinance.

Based upon the analysis above, the proposed Project could conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance and result in a potentially significant impact. In addition, the proposed Project would include changing the permit process for street tree removal, which could include an ordinance and/or policy setting criteria for street tree replacement ratios or specifying species, size, or location of replacement street trees. These issues will be further analyzed in the EIR.

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?

Reference: City of Los Angeles General Plan; L.A. CEQA Thresholds Guide (Section C); CDFW: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=68626&inline.

Comment: A significant impact may occur if the proposed Project would be inconsistent with the provisions of the adopted local, regional, or state Habitat Conservation Plans (HCPs).

Potentially Significant Impact. As noted above in IV.a, some proposed Project sites may be adjacent to resources identified as ESHAs.

The Rancho Palos Verdes NCCP boundary is located within the southern portion of the proposed Project area, specifically within the San Pedro Community Plan Area. Due to the relatively noninvasive nature of the proposed Project activities, it is unlikely that the proposed Project would

conflict with the Rancho Palos Verdes NCCP. However, certain project prototypes/construction scenarios would require tree removal, utility relocation, new rights-of-way, or easements, and may or may not take place in biologically sensitive areas as identified in the Rancho Palos Verdes NCCP. No other NCCP/HCPs are identified within the proposed Project area.

Based upon the analysis above, the proposed Project could conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or state HCP and result in a significant impact. This issue will be further analyzed in the EIR.

V. Cultural Resources	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	☒	☐	☐	☐
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☒	☐	☐	☐
c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☒	☐	☐	☐
d. Disturb any human remains, including those interred outside of dedicated cemeteries?	☒	☐	☐	☐

Would the project:

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

Reference: L.A. CEQA Thresholds Guide (Section D.3), California Register of Historical Resources.

Comment: A significant impact may result if the proposed Project caused a substantial adverse change to the significance of a historical resource.

Potentially Significant Impact. Sidewalks and California Register of Historical Resources–related landscape components have the potential to be associated features of a historic resource or a collection of historic resources in the City as determined under State CEQA Guidelines, Article 5, Section 15064.5(a). Because the proposed Project would consist of a comprehensive project that would be implemented on a case-by-case basis, there is the potential for sidewalk repair work to impact individual historical resources and contributing elements of HPOZs within the City. The City's Urban Forestry Division maintains a list of Significant Street Trees, which may be of importance due to their size, species, appearance, growth habits, flowers, or a combination of these characteristics. Impacts are potentially significant; therefore, this issue will be further analyzed in the EIR.

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

Reference: L.A. CEQA Thresholds Guide (Section D.3) and General Plan Framework (EIR Cultural Resources Chapter Figure CR-1)

Comment: Although there are no known archaeological resources in or directly adjacent to the proposed Project area, proposed construction and operation of the proposed Project could result in the exposure or destruction of as yet undiscovered archaeological resources.

Potentially Significant Impact. If any archaeological resources are encountered during construction, the damage to or destruction of the resource would be a potentially significant impact. This issue will be further analyzed in the EIR.

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

Reference: L.A. CEQA Thresholds Guide (Section D.1); Venice Community Plan; Standard Specification for Public Works Construction ("Greenbook").

Comment: A significant impact may occur if grading or excavation activities associated with the proposed Project would disturb unique paleontological resources or unique geologic features.

Potentially Significant Impact. Sidewalk repairs in themselves are unlikely to impact paleontological resources; however, related ground-disturbing activities such as utility relocation, street tree removal and replacement, or building of retaining walls have the potential to expose and disturb unique paleontological resources or unique geologic features. For example, major utility relocation excavations can reach depths of 76 inches—more than 6 feet, which can result in excavation into older Pleistocene alluvium; or in hillslope areas, cutting for a retaining wall could take place within exposed fossil-bearing sedimentary bedrock. Because the proposed Project is a comprehensive project that would be implemented throughout the City on a case-by-case basis, there is the potential for sidewalk repair work to impact fossil-bearing sediments or to disturb previously disturbed resources. Although these scenarios are unlikely in most cases, the potential to impact paleontological resources would be considered. This issue will be further analyzed in the EIR.

d) Disturb any human remains, including those interred outside of dedicated cemeteries?

Reference: L.A. CEQA Thresholds Guide (Section D.2); Standard Specification for Public Works Construction ("Greenbook").

Comment: A significant impact may occur if grading or excavation activities associated with the proposed Project would disturb interred human remains. No known human remains are present on the proposed Project sites or within the immediate vicinity. However, ground disturbance related to development projects have, in the past, resulted in the inadvertent discovery of previously unrecorded human remains.

Potentially Significant Impact. Although not anticipated, human remains could be identified during site preparation and grading activities, which could result in a significant impact. This issue will be further analyzed in the EIR.

VI. Geology and Soils	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii. Strong seismic ground shaking?	☐	☐	☒	☐
iii. Seismically related ground failure, including liquefaction?	☐	☐	☒	☐
iv. Landslides?	☐	☐	☒	☐
b. Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c. Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project and potentially result in an on-or or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☒	☐
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☒
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of waste water?	☐	☐	☐	☒

Would the project:

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?

Reference: L.A. CEQA Thresholds Guide (Section E.1) General Plan Framework EIR Table GS-1.

Comment: A significant impact is not expected even though proposed Project elements are located within a state-designated Alquist-Priolo Zone or other designated fault zone.

Less-than-Significant Impact. The proposed Project would repair curbs and sidewalks at various locations throughout the City. Los Angeles City contains ten faults with mapped surface tracks and four blind or buried thrust faults that could result in seismic activity in Los Angeles. Any exposure of construction personnel to earthquakes would be for a short duration. Standard construction safety protocols would be followed, clear access to ingress emergency purposes would be identified, and use of proper safety gear would be implemented. Furthermore, the proposed Project features would not include the construction of habitable structures, and all the improvements would be conducted under the purview of LADOT, the Los Angeles Department of Public Works (LADPW), the Los Angeles Department of Building and Safety (LADBS), and the Los Angeles Bureau of Street Lighting. The proposed Project would comply with all applicable Occupational Safety and Health Administration (OSHA) safety requirements for worker safety. Thus, impacts would be less than significant. This issue will be further analyzed in the EIR.

ii. Strong seismic ground shaking?

Reference: L.A. CEQA Thresholds Guide (Section E.1) General Plan Framework and EIR Table GS-1.

Comment: A significant impact is expected if proposed Project elements are located within an active seismic area.

Less-than-Significant Impact. Southern California is a seismically active region. The City is located in Seismic Zone 4, which is a designation used in the Uniform Building Code to denote the areas of the highest risk to earthquake ground motion (California Seismic Safety Commission 2005). Due to the nature of the proposed Project construction activities, the proposed Project would require construction personnel on site. However, exposure of construction personnel to strong seismic ground shaking is unlikely and, in the case of an earthquake, would be for a short duration. Furthermore, the proposed Project features would not include the construction of habitable structures, and all the improvements would adhere to LADOT, LADPW, LADBS, and Los Angeles Bureau of Street Lighting requirement standards. The proposed Project would comply with all applicable OSHA safety requirements for worker safety. Thus, impacts would be less than significant. This issue will be further analyzed in the EIR.

iii. Seismically related ground failure, including liquefaction?

Reference: L.A. CEQA Thresholds Guide (Section E.1); NavigateLA (http://navigatela.lacity.org/navigatela);General Plan Framework EIR Table GS-1.

Comment: A significant impact is not expected even if proposed elements are located within an area prone to liquefaction.

Less-than-Significant Impact. The possibility of liquefaction occurring is dependent upon the occurrence of a significant earthquake in the vicinity, sufficient groundwater to cause high pore pressures, grain size, plasticity, relative density, and confining pressures of the soils present at the site. Liquefaction usually occurs when the underlying groundwater table is less than 50 feet below ground surface. Proposed improvements would occur throughout the City, and, as such, it is possible that they could occur within an area prone to liquefaction.

Construction activities would require construction personnel to be on site on a limited basis. Any exposure of construction personnel to ground failure, including liquefaction, would be for a short duration. Furthermore, proposed Project features would not include the construction of habitable structures, and all improvements would be conducted under the purview of LADOT, LADPW, LADBS,

and Los Angeles Bureau of Street Lighting. The proposed Project would comply with all applicable OSHA safety requirements for worker safety. Thus, impacts would be less than significant. This issue will be further analyzed in the EIR.

iv. Landslides?

Reference: L.A. CEQA Thresholds Guide (Section E.1). General Plan Framework EIR Geology Section Map, GS-4.

Comment: A significant impact is not expected if proposed Project elements would be located within an area prone to landslides.

Less-than-Significant Impact. As a whole, the City has wide-ranging topography. Proposed improvements are set to occur throughout the City, and, as such, it is possible that they may occur in areas designated as prone to landslides. Landslides can occur wherever there is a sloped undeveloped area. This issue will be further analyzed in the EIR.

Construction activities would require construction personnel to be on site on a limited basis. Any exposure of construction personnel to landslides would be for a short duration. Furthermore, proposed Project features would not include the construction of habitable structures and all improvements would be conducted under the purview of LADOT, LADPW, LADBS, and the Los Angeles Bureau of Street Lighting. The proposed Project would comply with all applicable OSHA safety requirements for worker safety. Thus, impacts would be less than significant.

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

Reference: L.A. CEQA Thresholds Guide (Section E.1). General Plan Framework EIR Geology Section Map, GS-4.

Comment: A significant impact may occur if the proposed Project were to expose large areas of soil to the erosion effects of wind or water.

Less-than-Significant Impact. Construction activities would include street tree root pruning, street tree removal, street tree planting, sidewalk repaving, enlarging street tree wells, relocation of street signs and street lights, and construction of walls, as well as utility relocation. Thus, it is possible that construction activities—such as sidewalk, crosswalk, or curb excavation; street tree removal and replacement; and utility relocation, all of which would all involve excavation and exposure of soils—would expose soils to potential erosion. However, compliance with National Pollutant Discharge Elimination System (NPDES) requirements for soil stabilization and construction BMPs would ensure that any soil erosion would be minimal or nonexistent. Thus, impacts would be less than significant. This issue will be further analyzed in the EIR.

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?

Reference: L.A. CEQA Thresholds Guide (Section E.1).

Comment: A significant impact is not expected if proposed Project elements are located atop an unstable geologic unit or soil.

Less-than-Significant Impact. Proposed improvements would occur throughout the City, and, as such, it is possible that they could occur in unstable geologic or soil areas.

Construction activities would require construction personnel to be on site on a limited basis. Any exposure of construction personnel to unstable soils would be for a short duration. Furthermore, proposed Project features would not include the construction of habitable structures, and all improvements would be conducted under the purview of LADOT, LADPW, LADBS, and the Los Angeles Bureau of Street Lighting. The proposed Project would comply with all applicable OSHA safety requirements for worker safety. Thus, impacts would be less than significant. This issue will be further analyzed in the EIR.

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

Reference: CEQA Guidelines Appendix G (Section VI).

Comment: A significant impact is not expected if proposed Project elements would be located in areas of expansive soils.

No Impact. Expansive soils generally have a substantial amount of clay, which has a high shrink/swell potential with varying water content, and can compromise the integrity building foundations and other structures in certain circumstances. Because proposed Project improvements would occur throughout the City, it is possible that Project activities could occur in areas containing expansive soils. The proposed Project would not change the underlying presence of expansive soil and would not place new structures on expansive soils, and therefore the potential for impacts related to expansive soils would not change as a result of implementation of the proposed Project. All construction activities would be consistent with City standards, including the City's *Permit & Procedure Manual for Work in the Public Right-Of-Way*, which states that a specified base material may be required where expansive soil is present (Standard Specifications Appendix:1). No creation of substantial risks to life or property would occur as a result of Project implementation, and no impact would occur. This issue will not be further discussed in the EIR.

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?

Reference: CEQA Guidelines Appendix G (Section VI); General Plan Framework EIR Geology Section Map, GS-5; NPDES Construction Stormwater Pollution Prevention Plan permit.

Comment: The proposed Project would not feature the use of septic tanks or alternative wastewater disposal systems.

No Impact. The proposed Project would repair existing sidewalks and curbs and remove and replace street trees and utilities. The work would be on disturbed land and built land with sewers readily available. No septic tanks or alternative wastewater disposal systems would be used or required under the proposed Project. Compliance with NPDES requirements of Los Angeles Regional Water Quality Control Board may require onsite treatment for proper disposal of wastewater. Portable restrooms would be available for construction personnel, thus eliminating the need for septic tanks or other alternative wastewater disposal systems. Therefore, there would be no impact. This issue will not be further discussed in the EIR.

VII. Greenhouse Gas Emissions	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☒	☐	☐	☐
b. Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☒	☐	☐	☐

Would the project:

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

Reference: SCAQMD (http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/ghg-significance-thresholds); and CEQA Greenhouse Gas (GHG) Significance Threshold, October 2008.

Comment: There are currently no established quantitative thresholds of significance for GHG emissions on a local, state, or national basis that are applicable to the proposed Project. However, as the City is located within the South Coast Air Basin, the proposed Project is under the local jurisdiction of the SCAQMD. Currently, the SCAQMD has developed a recommended interim threshold for assessing the significance of potential GHG emissions that uses a tiered approach to determining significance. At this time, the interim GHG significance threshold applies only to stationary source/industrial projects for which the SCAQMD may be the lead agency or projects that require air quality permits from the SCAQMD. The preferred significance threshold for GHG emissions from industrial projects is <10,000 metric tons of carbon dioxide equivalent (CO_2e) per year, which includes construction emissions amortized over 30 years and then added to operational GHG emissions. The screening level for significance for residential/commercial projects is 3,000 metric tons of CO_2e per year, which also includes construction emissions amortized over 30 years and then added to operational GHG emissions to determine total project GHG emissions. SCAQMD staff is in the process of determining a final significance threshold for residential and commercial projects. In the absence of an adopted threshold by SCAQMD that is applicable to the proposed Project it is reasonable for the Lead Agency to consider other available thresholds that may be more appropriate to assess potential GHG impacts resulting from the proposed Project. Given that the proposed Project is not a land use development, does not have an operational component, and will only generate temporary construction-related emissions, the use of a screening threshold may be appropriate to determine whether the proposed Project would require further analysis and mitigation with regard to climate change. One of the available screening-level thresholds that can be considered for the proposed Project is the California Air Pollution Control Officers Association's (CAPCOA) recommended screening criteria of 900 metric tons (MT) per year of CO_2e, which is a conservative threshold that has also been referred to in SCAQMD's *Interim GHG Significance Threshold* document. This particular threshold as well as other available screening-level thresholds will be considered in consultation with the Lead Agency for the purpose of evaluating the Project's potential GHG impacts.

Potentially Significant Impact. The sidewalk improvements and street tree/vegetation replacements occurring under the proposed Project will generate GHG emissions from onsite construction equipment use, commute trips by construction workers, and travel to and from the proposed Project sites by haul/delivery trucks. In addition, although the proposed Project does not have an operational component that will generate direct GHG emissions, the tree and/or vegetation removal or trimming associated with the proposed Project would result in the release of GHG emissions. This is because trees and other vegetation act as both carbon sinks (defined as a natural environment that absorbs more CO_2 than it releases) and carbon sources. As a prominent GHG, CO_2 is absorbed from the atmosphere by vegetation, which then releases oxygen (photosynthesis) and retains the carbon. In this capacity vegetation acts as a carbon sink. Trees/vegetation also act as a carbon source when they die and decompose as the carbon that was stored in their biomass is re-released and reacts with the oxygen in the air to form CO_2. Thus, the removal and disposal of the existing street trees/vegetation in the City will emit CO_2 as the plant tissues decay over time. However, replacement of the removed street trees/vegetation with new ones under the proposed Project will provide continued uptake (sequestering) of CO_2 from the atmosphere. It should be noted that the sequestration capacity of vegetation is determined by the area available for vegetation and the types of vegetation installed. Additionally, different types of trees also sequester different amounts of CO_2. Consequently, the amount of carbon sequestration that will occur under the proposed Project may be different than that currently occurring under existing conditions. As part of the analysis for the proposed Project, the total sequestration capacity of the new street trees/vegetation and that of the existing street trees/vegetation will be calculated and compared against each other to determine the net change that would occur from Project implementation. Overall, because construction activities and alterations to street trees and vegetation would occur, the proposed Project could generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. The removal and replacement of street trees could also result in an overall reduced canopy within the City, which in turn can contribute to urban heath island effects within the Project study area. Thus, urban heat island issues will also be considered as these are related to the sidewalk surface material as well as the street tree canopy. Furthermore, the proposed Project will include changing the permit process for street tree removal, which could include an ordinance and/or policy setting criteria for street tree replacement ratios or specifying species, size, or location of replacement street trees. These issues will be further analyzed in the EIR.

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

Reference: California Air Resources Board, The California Global Warming Solutions Act of 2006 (Assembly Bill [AB] 32), 2006; City of Los Angeles, Green LA – An Action Plan to Lead the Nation in Fighting Global Warming, 2007; City of Los Angeles, Climate LA – Municipal Program Implementing the Green LA Climate Action Plan, 2008.

Comment: A significant impact may occur if the proposed Project would conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHG.

Potentially Significant Impact. As discussed in VII.a, above, GHG emissions would occur as a result of proposed Project construction activities and street tree/vegetation removal. Implementation of the proposed Project could, therefore, result in potentially significant impacts by conflicting with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHG. This issue will be further analyzed in the EIR.

VIII. Hazards and Hazardous Materials	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. ɛate a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☒	☐	☐	☐
c. Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☒	☐	☐	☐
d. Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☒	☐	☐	☐
e. For a project located within an airport land use plan area or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☒	☐
f. For a project located within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☒	☐
g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
h. Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☒	☐

Would the project:

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

Reference: L.A. CEQA Thresholds Guide (Sections F.1 and F.2)

Comment: A significant impact related to the routine transport, use, or disposal of hazardous materials under the proposed Project is not expected.

Less-than-Significant Impact. The proposed Project would provide repair and upgrades to sidewalks, pavement, curbs, and non-compliant slopes throughout the City. Construction activities associated with the proposed Project would include street tree root pruning, street tree canopy pruning, street tree removal, street tree planting, sidewalk repaving, enlarging street tree wells, relocation of street signs and street lights, construction of walls (under 3 feet), and replacement of utility covers. These activities would occur over the life of the proposed Project (approximately 30 years), during which time routine transport, use, and disposal of hazardous materials to complete these activities such as fuel, solvents, paints, and oils would occur. Such transport, use, and disposal must be compliant with applicable regulations such as the Resource Conservation and Recovery Act (RCRA), Department of Transportation (DOT) Hazardous Materials Regulations, Los Angeles County General Plan goals and policies, and other regulations. Although hazardous materials such as fuel, solvents, paints, and oils would be transported, used, and disposed of during each sidewalk improvement event, these materials are typically used in construction projects and would not represent the transport, use, and disposal of acutely hazardous materials. Furthermore, hazardous waste handled as a result of the proposed Project construction activities is expected to be handled, stored, and disposed of according to applicable regulations. Proposed Project implementation involves sidewalk improvements as described above, and, as such, operation of the proposed Project would not involve transport, use, storage, or disposal of hazardous materials.

Adherence to aforementioned requirements would ensure proper handling and usage of hazardous materials in order to safeguard life and property and would ensure that the transport, use, and disposal of hazardous materials would not create a significant hazard to the public or environment. Therefore, impacts would be less than significant. This issue will be further analyzed in the EIR.

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?

Reference: L.A. CEQA Thresholds Guide (Sections F.1 and F.2)

Comment: A significant impact may occur if proposed Project elements are located on sites with a history of hazardous material releases and, as a result, would potentially create a significant hazard to the public or the environment.

Potentially Significant Impact. Sidewalk improvements conducted under the proposed Project would occur throughout the City and on previously disturbed sites. As such, construction activities could occur on or near sites with a history of hazardous materials releases. Sites with a history of releases have the potential of exposing construction personnel and the surrounding environment to contaminated media and/or soils. This issue will be analyzed further in the EIR.

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

Reference: L.A. CEQA Thresholds Guide (Section F.2)

Comment: A significant impact may occur if proposed Project elements are located within 0.25 mile of an existing or proposed school site and handled acutely hazardous materials and/or released toxic emissions, thus posing a hazard.

Potentially Significant Impact. As detailed in Chapter 2, *Project Description*, sidewalk improvements conducted under the proposed Project would occur in numerous locations throughout the City. As such, it is very likely that construction activities could occur adjacent to schools. However, as described in VIII.a, hazardous materials used during construction activities would be used, stored, and disposed of in accordance with applicable federal, state, and local regulations. Furthermore, the small amounts of hazardous materials used during construction activities would be materials typically used in construction equipment and construction sites, and would not include materials classified as acutely hazardous.

Conversely, and as mentioned under VIII.b, it is likely that construction activities could occur near sites with a history of hazardous materials releases. Sites with a history of releases have the potential of exposing the surrounding environment to contaminated media and/or soils, including schools located within 0.25 mile of the proposed Project elements. This issue will be analyzed further in the EIR.

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?

Reference: L.A. CEQA Thresholds Guide (Section F.2)

Comment: A significant impact may occur if proposed Project elements were 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 potentially create a significant hazard to the public or the environment.

Potentially Significant Impact. Sidewalk improvements conducted under the proposed Project would occur throughout the City. As such, it is very likely that construction activities could occur on or near sites listed in a hazardous materials database, including sites listed pursuant to Government Code Section 65962.5. Sites with a history of releases have the potential of exposing construction personnel and the surrounding environment to contaminated media and/or soils. This issue will be analyzed further in the EIR.

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

Reference: L.A. CEQA Thresholds Guide (Section F.1); City of Los Angeles General Plan.

Comment: A significant impact is not expected in terms of the proposed Project elements being located within a public airport land use plan area, or within 2 miles of a public airport.

Less-than-Significant Impact. Sidewalk improvements conducted under the proposed Project would occur throughout the City. As such, it is very likely that construction activities could occur in areas within an airport land use plan or within 2 miles of a public airport such as LAX. However, the

proposed Project involves improvement activities such as repair and upgrades to pre-existing sidewalks, pavement, and curbs and does not include structures or skyward features that would interfere with airport activities. Thus, improvements would result in circumstances similar to the existing conditions. Additionally, construction activities associated with sidewalk improvements would be temporary and occur outside airport footprints and, therefore, would not interfere with day-to-day airport operations. Based upon the analysis above, the proposed Project would not result in a safety hazard for people residing or working in locations within an airport land use plan or within 2 miles of a public airport. Therefore, impacts would be less than significant. This issue will be further analyzed in the EIR.

f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

Reference: L.A. CEQA Thresholds Guide (Section F.1)

Comment: A significant impact is not expected in terms of proposed Project elements being located in the vicinity of a private airstrip.

Less-than-Significant Impact. The analysis under VIII.e also applies to private airstrips. Impacts would be less than significant. This issue will be further analyzed in the EIR.

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

Reference: L.A. CEQA Thresholds Guide (Section F.1)

Comment: Proposed Project elements are not expected to substantially interfere with roadway operations used in conjunction with an emergency response plan or evacuation plan, nor would they generate sufficient traffic to create traffic congestion that would interfere with the execution of such plans.

Less-than-Significant Impact. During construction, traffic may need to be routed around the construction area, and street parking may be temporarily limited in the area. However, traffic control measures, including traffic signs and traffic cones, would be required. Construction activities would occur in smaller areas and would not result in substantial traffic queuing along any major arterial. Moreover, the proposed Project would not include any characteristics (e.g., permanent road closures, long-term blocking of road access) that would physically impair or otherwise interfere with emergency response or evacuation in the vicinity. The proposed Project would also be required to comply with the City's Fire and Police Departments' emergency access requirements during construction. Based upon the analysis above, the proposed Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan, and, therefore, impacts would be less than significant. This issue will be further analyzed in the EIR.

h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

Reference: L.A. CEQA Thresholds Guide (Section F.1).

Comment: A significant impact is not expected in terms of proposed Project elements being located in wildland areas or adjacent to wildland areas.

Less-than-Significant Impact. Sidewalk improvements conducted under the proposed Project would occur throughout the City. As such, it is possible that construction activities could occur in areas near wildlands. However, the proposed Project would involve improvement activities such as repair and upgrades to pre-existing sidewalks, pavement, and curbs, which would result in circumstances similar to the existing conditions and would not include structures meant for human occupancy. Additionally, construction personnel would be at any given location only for a brief amount of time resulting in a minimal exposure to potential wildfire risks. Based upon the analysis above, the proposed Project would not result in a significant risk of loss, injury or death involving wildland fires. Therefore, impacts would be less than significant. This issue will be further analyzed in the EIR.

IX. Hydrology and Water Quality	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Violate any water quality standards or waste discharge requirements?	☐	☒	☐	☐
b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge, resulting in a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☒
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site?	☐	☐	☒	☐
d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site?	☒	☐	☐	☐
e. Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐
f. Otherwise substantially degrade water quality?	☐	☐	☒	
g. Place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h. Place within a 100-year flood hazard area structures that would impede or redirect floodflows?	☐	☐	☒	☐
i. Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
j. Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

Would the project:

a) Violate any water quality standards or waste discharge requirements?

Reference: L.A. CEQA Thresholds Guide (Section G.2)

Comment: A significant impact may occur if the proposed Project discharged water that did not meet the quality standards of agencies that regulate surface water quality and water discharge into stormwater drainage systems, such as the Los Angeles Regional Water Quality Control Board (RWQCB). These regulations include compliance with the NPDES requirements for Municipal Separate Storm Sewer System (MS4) and Construction General Permits (CGP) requirements to reduce potential water quality impacts.

Less-than-Significant with Mitigation Incorporated. The proposed Project would provide repair and upgrades to sidewalks, pavement, curbs, and non-compliant slopes throughout the City. Construction activities associated with the proposed Project would include street tree root pruning, street tree canopy pruning, street tree removal, street tree planting, sidewalk repaving, enlarging street tree wells, relocation of street signs and street lights, construction of walls (under 3 feet), and replacement of utility covers. During construction activities associated with existing sidewalk removal and excavation, activities could expose soil and temporarily increase the amount of suspended solids (sediment) in sheet flow or runoff into the existing storm drain system. In addition to potential pollutant contributions from exposed soil areas, the delivery, handling, and storage of construction materials and wastes, as well as the use of construction equipment, could introduce a risk for stormwater contamination that could affect water quality. Spills or leaks from heavy equipment and machinery can result in oil and grease contamination. Larger pollutants, such as trash, debris, and organic matter, are also associated with construction activities. Furthermore, concrete used for sidewalk repairs could be a potential source of water quality pollution if any of the material was spilled or deposited on unprotected surfaces. Thus, surface water quality could potentially be temporarily affected by construction activities. The proposed Project is anticipated to replace existing impervious surfaces with new impervious surfaces. However, the amount of impervious surfaces is not anticipated to increase over existing conditions.

The proposed Project collectively would repair over 1 acre of sidewalk throughout the City. However, each individual sidewalk repair section is likely to be less than one acre. In addition, it is anticipated that sidewalk repair would occur in smaller sections throughout the City. As such, the majority of the proposed Project would implement erosion and sediment control BMPs in accordance with the City's MS4 Permit (Order No. R4-2012-0175) for areas under 1 acre. The MS4 Permit includes construction requirements for implementation of minimum construction site BMPs for erosion, sediment, non-stormwater management, and waste management on all construction sites under 1 acre. For any portion of the proposed Project replacing over 1 acre of sidewalk, the proposed Project would be required to comply with the CGP through the State Water Resources Control Board. The CGP and associated NPDES requirements include development and implementation of a Stormwater Pollution Prevention Plan (SWPPP) with associated monitoring and reporting. Stormwater BMPs are required to control erosion, minimize sedimentation, and control stormwater runoff water quality during construction activities. Additional source control BMPs would also be required to prevent contamination of runoff by potentially hazardous materials and eliminate non-stormwater discharges.

Compliance with the minimum construction site BMP requirements in the MS4 Permit or CGP SWPPP that require construction phase BMPs would ensure that construction activities would not degrade the surface water quality of receiving waters to levels below standards considered acceptable by the Los Angeles RWQCB or other regulatory agencies or impair the beneficial uses of the receiving waters. Construction would not result in a violation of any water quality standards or waste discharge requirements, would not provide substantial additional sources of polluted runoff, and would not substantially degrade water quality.

Because the proposed Project would be constructed adjacent to storm drains, the potential exists for construction-phase impacts related to disruption of sediments and sediment-bound pollutants. Although the proposed Project could violate water quality standards or waste discharge requirements, standard regulatory compliance measures and, if necessary, mitigation measures could be implemented to reduce impacts. Therefore, impacts associated with construction would be less than significant with mitigation incorporated. This issue will be further analyzed in the EIR.

Because the proposed Project is considered a maintenance project that is replacing existing sidewalk with new sidewalk (original purpose of facility), MS4 Permit redevelopment requirements do not apply. As a result, no post-construction BMPs or hydromodification requirements are anticipated.

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge, resulting in a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?

Reference: L.A. CEQA Thresholds Guide (Sections G.2 and G.3)

Comment: A project would normally have a significant impact on groundwater supplies if it were to result in a demonstrable and sustained reduction of groundwater recharge capacity or change the potable water levels sufficiently that it would reduce the ability of a water utility to use the groundwater basin for public water supplies or storage of imported water, reduce the yields of adjacent wells or well fields, or adversely change the rate or direction of groundwater flow.

No Impact. The existing locations of the proposed Project (sidewalks) are not areas that are used for recharge purposes. Aside from the minor amounts of water used for landscaping for the street trees, the proposed Project would not pump groundwater from the aquifer. Groundwater impacts within the project limits would be less than significant because the proposed Project entails repairing and improving existing sidewalks within the City, an existing urbanized area with impervious surfaces. In addition, the proposed Project would not require the construction of a groundwater well or the use of groundwater supplies, and would not interfere with recharge of a local aquifer. The proposed Project sites are within an established urban community serviced by the Los Angeles Department of Water and Power, the proposed Project does not propose to pump groundwater, and no groundwater dewatering is anticipated. Water needed for the proposed Project would be associated with construction activities and would be obtained from available public or private sources (e.g., water trucks). However, the proposed Project would include street tree removal and street tree planting. The City is responsible for watering and maintaining all street trees for 3 years. Routine watering would increase the amount of water used from current conditions. The street trees located within the sidewalk do provide a permeable area for water to infiltrate into the ground, albeit minor. While these areas can infiltrate water, they do not contribute significantly to groundwater recharge. Further, street trees would be replanted in its place. As such, no impacts on the local aquifer would occur. This issue will not be further discussed in the EIR.

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on or off site?

Reference: L.A. CEQA Thresholds Guide (Sections G.1 and G2)

Comment: A significant impact may occur if the proposed Project resulted in a substantial alteration of drainage patterns that caused a substantial increase in erosion or siltation during construction or operation.

Less-than-Significant Impact. Implementation of the proposed Project would not substantially affect the existing drainage pattern of the proposed Project sites. No component of the proposed Project would result in substantial alteration of the existing drainage pattern of the sites. The proposed Project would comply with all applicable BOE and City standards for maintaining slopes with regards to drainage and slopes. The proposed Project sites are currently developed as sidewalks within the City. The City is an urbanized community consisting of pervious and impervious surfaces that would be reconstructed or repaired. The rate and amount of surface runoff is determined by multiple factors, including topography, the amount and intensity of precipitation, the amount of evaporation that occurs in the watershed, and the amount of precipitation and water that infiltrates to the ground. According to the Western Regional Climate Center, average annual rainfall in Los Angeles totals approximately 15 inches, with the highest monthly averages occurring in January and February (about 3 inches per month) (Western Regional Climate Center 2017). No increase in impervious surfaces is anticipated for sidewalk repairs, and, therefore, the proposed Project would not have the potential to result in an increase in erosion potential of downstream receiving water bodies during a rain event compared to existing conditions. Sidewalk repairs and other construction activities would not substantially alter the existing drainage pattern of the sites or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off site. As such, impacts are anticipated to be less than significant. This issue will be further analyzed in the EIR.

d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site?

Reference: L.A. CEQA Thresholds Guide (Sections G.1)

Comment: A significant impact may occur if the proposed Project resulted in increased runoff volumes during construction or operation that would cause flooding conditions affecting the proposed Project sites or nearby properties.

Potentially Significant Impact. See IX.c. with respect to impacts from construction activities and operation of the proposed Project. Nevertheless, it is possible that removal of street tree canopy, if substantial in a particular location, could affect flooding conditions on the street and result in a faster-than-existing volume of runoff into the storm drain system. This issue will be analyzed further in the EIR. As such, the proposed Project could substantially alter the existing drainage pattern of a site or substantially increase the rate or amount of surface runoff in a manner that would result in substantial erosion, siltation, or flooding on or off site. This issue will be further analyzed in the EIR.

e) Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

Reference: L.A. CEQA Thresholds Guide (Section G.2)

Comment: A significant impact may occur if the volume of runoff were to increase to a level that exceeded the capacity of the storm drain system serving a project site. A significant impact may also occur if the proposed Project would substantially increase the probability that polluted runoff would reach the storm drain system.

Less-than-Significant Impact. See the discussion under IX.a and IX.c. While the capacities of the conveyance facilities serving the proposed Project sites are unknown, the proposed Project may result in impervious surfaces that could increase stormwater runoff into the drainage system or provide substantial additional sources of polluted runoff. Standard BMPs and NPDES requirements would reduce impacts to less than significant. This issue will be further analyzed in the EIR.

f) Otherwise substantially degrade water quality?

Reference: Refer to IX.a above.

Comment: Refer to IX.a above.

Less-than-Significant Impact. See discussion under IX.a. The proposed Project would comply with all requirements related to water quality and would not otherwise substantially degrade water quality. Impacts would be less than significant. This issue will be further analyzed in the EIR.

g) Place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

Reference: L.A. CEQA Thresholds Guide (Sections G.1 to G.3); City of Los Angeles General Plan Safety Element.

Comment: A significant impact may occur if the proposed Project were to place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.

No Impact. The Safety Element of the City's General Plan indicates that several portions of the proposed Project area are located within a 100-year flood plain. However, the proposed Project would not include the construction of housing, and, therefore, no impacts would occur. This issue will not be further discussed in the EIR.

h) Place within a 100-year flood hazard area structures that would impede or redirect floodflows?

Reference: L.A. CEQA Thresholds Guide (Sections G.1 and G.3); City of Los Angeles General Plan Safety Element.

Comment: A significant impact may occur if the proposed Project were to place within a 100-year flood hazard area structures that would impede or redirect floodflows.

Less-than-Significant Impact. As noted in IX.g, several portions of the proposed Project sites are located within a 100-year flood plain. Pursuant to the recent California Supreme Court decision in *California Building Industry Association v. Bay Area Air Quality Management District*, CEQA does not require an analysis of how the existing environmental conditions will affect a project's residents or

users unless the project would exacerbate those conditions. Therefore, when discussing impacts of the environment on the proposed Project, such as placing structures within a 100-year flood hazard area that would impede or redirect floodflows, the analysis will first determine if there is a potential for the proposed Project to exacerbate the issue. If evidence indicates it would not, then the analysis will conclude by stating such. If it would potentially exacerbate the issue, then evidence is provided to determine if the exacerbation would or would not be significant. The proposed Project would not impede or redirect floodflows and, as such, would result in a less-than-significant impact. This issue will be further analyzed in the EIR.

i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?

Reference: L.A. CEQA Thresholds Guide (Sections E.1 and G.3); City of Los Angeles General Plan, Safety Element.

Comment: A significant impact may occur if the proposed Project were located in an area where a dam or levee could fail, exposing people or structures to significant risk of loss, injury or death.

No Impact. Pursuant to the recent Supreme Court case decision in *California Building Industry Association v. Bay Area Air Quality Management District*, CEQA does not require an analysis of how the existing environmental conditions will affect a project's residents or users unless the project would exacerbate those conditions. Therefore, when discussing impacts of the environment on the proposed Project, such as placing structures within a levee or dam inundation area that would impede or redirect floodflows, the analysis will first determine if there is a potential for the proposed Project to exacerbate the issue. If evidence indicates it would not, then the analysis will conclude by stating such. If it would potentially exacerbate the issue, then evidence is provided to determine if the exacerbation would or would not be significant. Several portions of the proposed Project are located in a levee or dam inundation area. However, the proposed Project is repairing existing sidewalks and curbs located throughout the City and would not expose people or structures to significant risks involving flooding, including flooding as a result of the failure of a levee or dam. No impact would occur. This issue will not be further discussed in the EIR.

j) Contribute to inundation by seiche, tsunami, or mudflow?

Reference: LA CEQA Thresholds Guide (Section E.1); City of Los Angeles General Plan Safety Element; and California Department of Conservation (http://maps.conservation.ca.gov/cgs/informationwarehouse/index.html?map=regulatorymaps)

Comment: A significant impact may occur if the proposed Project would cause or accelerate geologic hazards, which would result in substantial damage to structures or infrastructure, or expose people to substantial risk of injury.

No Impact. Portions of the proposed Project area are located adjacent to the Pacific Ocean. A review of the California Department of Conservation's tsunami regulatory maps and the City's Safety Element indicates that portions of the proposed Project sites are located within a Tsunami Hazard Zone. In addition, the proposed Project is located adjacent to several dams, reservoirs, and large bodies of water (e.g., Baldwin Hills Dam and Van Norman Dam) that may be subject to a seiche. Additionally, there are hillside slopes that could be at risk for mudflow. Pursuant to the recent Supreme Court case decision in *California Building Industry Association v. Bay Area Air Quality Management District*, CEQA does not require an analysis of how the existing environmental conditions will affect a project's residents or users unless the project would exacerbate those

conditions. The proposed Project is repairing existing sidewalks and curbs located throughout the City. The repair and replacement of existing sidewalks would not exacerbate inundation by seiche, tsunami, or mudflow. The proposed Project would not result in a greater risk than currently exists. As such, no impacts would occur. This issue will not be further discussed in the EIR.

X. Land Use and Planning		Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:					
a.	Physically divide an established community?	☐	☐	☒	☐
b.	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☒	☐	☐	☐
c.	Conflict with any applicable habitat conservation plan or natural community conservation plan?	☒	☐	☐	☐

Would the project:

a) Physically divide an established community?

Reference: LA CEQA Thresholds Guide (Section H.2); City of Los Angeles General Plan and Municipal Code; Community Plans.

Comment: A significant impact would occur if the project includes features such as a highway, above-ground infrastructure, or an easement that would cause a permanent disruption to an established community or would otherwise create a physical barrier within an established community.

Less-than-Significant Impact. The proposed Project would include repairs and upgrades to sidewalks, pavement, curbs, and slopes that are not compliant with applicable accessibility requirements throughout the City. As such, proposed Project activities would take place on previously disturbed, urban areas and would result in a minor alteration of land that would restore or improve disturbed areas when compared to their original surface conditions. Under all prototypical project types/construction scenarios, the proposed Project would not include highway work, substantial above-ground infrastructure, or easements that would cause a permanent disruption to an established community or would otherwise create a physical barrier within an established community. Therefore, the proposed Project would not physically divide an established community, and impacts would be less than significant. This issue will be further analyzed in the EIR.

b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

Reference: LA CEQA Thresholds Guide (Sections H.1 and H.2); City of Los Angeles General Plan; ZIMAS.

Comment: A significant impact may occur if the proposed Project were inconsistent with the General Plan, or other applicable plan, or with the site's zoning if designated to avoid or mitigate a significant environmental impact.

Potentially Significant Impact. The proposed Project would occur at various locations throughout the City, governed by its General Plan's Land Use Element, which is made up of 35 distinct community plans. Due to the relatively noninvasive nature of the proposed Project activities, it is unlikely that the proposed Project would conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the proposed Project adopted for the purpose of avoiding or mitigating an environmental effect. However, certain project prototypes/construction scenarios would require tree removal and replacement, utility relocation, new rights-of-way or easements, and may or may not take place in culturally sensitive areas/HPOZs and/or Coastal Zones. Though specific requirements associated with street tree removals would be identified separately, and replacement would occur consistent with the City's replacement ratios, due to the variety of potential land use considerations, land use consistency evaluations should be made on a more thorough case-by-case basis, considering the location of repair work and governing policies at each location (i.e., examinations of land use policies in existing Area Planning Commission areas, relative to each prototypical project types/construction scenarios), to the extent practicable In addition, the proposed Project would include changing the permit process for street tree removal, which could include an ordinance and/or policy setting criteria for street tree replacement ratios or specifying species, size, or location of replacement street trees. This issue will be further analyzed in the EIR

c) Conflict with any applicable habitat conservation plan or natural community conservation plan?

Reference: LA CEQA Thresholds Guide (Sections H.1 and H.2); City of Los Angeles General Plan; Los Angeles County Draft General Plan; Rancho Palos Verdes NCCP/HCP (https://www.wildlife.ca.gov/Conservation/Planning/NCCP/Plans/Rancho-Palos-Verdes).

Comment: A significant impact may occur if the proposed Project were located within an area governed by an HCP or NCCP and would conflict with such plan.

Potentially Significant Impact. The Rancho Palos Verdes NCCP boundary is located within the southern portion of the proposed Project area, specifically within the San Pedro Community Plan Area. Due to the relatively noninvasive nature of the proposed Project activities, it is unlikely that the proposed Project would conflict with the Rancho Palos Verdes NCCP. However, certain project prototypes/construction scenarios would require tree removal and replacement, utility relocation, new rights-of-way, or easements, and may or may not take place in biologically sensitive areas as identified in the Rancho Palos Verdes NCCP. No other NCCP/HCPs are identified within the proposed Project area. Therefore, a potentially significant impact could result under all prototypical project types/construction scenarios, and this issue will be further analyzed in the EIR.

XI. Mineral Resources	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
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?	☐	☐	☐	☒
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?	☐	☐	☐	☒

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?

Reference: L.A. CEQA Thresholds Guide (Section E.4); City of Los Angeles General Plan Conservation Element; California Division of Oil, Gas, and Geothermal Resources (http://maps.conservation.ca.gov/doggr/#close); City of Los Angeles 2001: Exhibit A.

Comment: A significant impact may occur if the proposed Project is in an area used or available for extraction of a regionally important mineral resource, if the proposed Project converts a regionally important mineral extraction use to another use, or if the proposed Project affects access to such use.

No Impact. As described in the Conservation Element of the City of Los Angeles General Plan, the California State Geologist classifies areas in which sand, gravel, and oil deposits can be found. The Conservation Element identifies the locations of Mineral Resource Zones (MRZ). MRZ-2 mineral resource zones are areas where sand and gravel extraction has occurred historically, which are in the eastern portion of the San Fernando Valley and around downtown Los Angeles. State-designated oil fields have been identified in the northern portion of the San Fernando Valley, the Mid-City area, near Playa del Rey, and to the north of San Pedro. Because the proposed Project would repair existing sidewalks and curbs and these areas are developed and not used for mineral resource extraction at present, 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. This issue will not be further discussed in the EIR.

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?

Reference: Refer to XI.a above.

Comment: Refer to XI.a above.

No Impact. As discussed in XI.a. and the Conservation Element of the City of Los Angeles General Plan, the locations of surface and subsurface mineral resource deposits have been identified in several parts of the City of Los Angeles. The proposed Project would repair existing sidewalks within public rights of way. Because these sidewalks are developed, they are not used as locally-important mineral resource recovery sites at present. Therefore, no impact would occur. This issue will not be discussed further in the EIR.

XII. Noise	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies?	☒	☐	☐	☐
b. Expose persons to or generate excessive ground-borne vibration or ground-borne noise levels?	☒	☐	☐	☐
c. Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
d. Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☒	☐	☐	☐
e. Be located within an airport land use plan area, or, where such a plan has not been adopted, within two miles of a public airport or public use airport and expose people residing or working in the project area to excessive noise levels?	☐	☐	☒	☐
f. Be located in the vicinity of a private airstrip and expose people residing or working in the project area to excessive noise levels?	☐	☐	☒	☐

Would the project:

a) Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Reference: City of Los Angeles Municipal Code (Chapter IV, Article 1, Section 41.40; Chapter XI).

Comment: A significant impact may occur if the proposed Project were to expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

Potentially Significant Impact. Construction activity would involve the use of various noise-generating construction equipment. Even the simplest proposed Project element would likely involve equipment such as a jackhammer, concrete truck, tamper, skid steer, dump truck, stump grinder, and/or reciprocating saw. More complex repairs and street tree removals could require additional equipment such as a chainsaw, bucket loaders, an auger, mini-excavators, backhoes, shoring equipment, and compactor. These types of equipment typically generate maximum noise levels in the range of 76–89 A-weighted decibels (dBA) at a distance of 50 feet. Repair times could range from 2–3 weeks for an entire block with standard nine-man crew, to more than 5 weeks for more complex repairs (such as those involving major utility relocation work). Proposed Project

construction would occur throughout the City, including in residential neighborhoods and adjacent to other potentially noise-sensitive land uses. Based on the high noise levels generated by the proposed construction equipment, coupled with the proximity of sidewalks to the neighboring land uses, the proposed Project could result in exposure of persons to or generation of noise levels in excess of standards established in the general plan or noise ordinance, or applicable standards of other agencies, and, as such, impacts could be potentially significant. This issue will be further analyzed in the EIR. It is possible that some of the construction activity would not be subject to City noise standards based upon exemptions or variances within the code; the applicability of any such exemptions or variances will be investigated further in the EIR.

The proposed Project is not anticipated to generate any significant noise impacts after construction is complete, both because sidewalks are generally passive land uses, and because the new sidewalks would be direct replacements and improvements of the existing sidewalks.

b) Expose persons to or generate excessive ground-borne vibration or ground-borne noise levels?

Reference: L.A. CEQA Thresholds Guide (Section I); City of Los Angeles General Plan; City of Los Angeles Municipal Code.

Comment: A significant impact may occur if the proposed Project were to expose persons to or generate excessive ground-borne vibration or ground-borne noise levels.

Potentially Significant Impact. The proposed Project is not anticipated to use high-impact construction methods such as pile-driving or blasting. Nonetheless, construction equipment such as jackhammers, loaded trucks, augers, heavy earthmoving equipment (excavators, backhoes, etc.), and compactors have the potential to generate perceptible ground-borne vibration at nearby locations. Based on the likely proximity of proposed Project construction activity to homes or other sensitive buildings, the proposed Project could result in exposure of persons to excessive ground-borne vibration or ground-borne noise levels from construction activities, and, as such, impacts could be significant. This issue will be further analyzed in the EIR.

Because there are no operational elements of the proposed Project that would be sources of perceptible vibration, the proposed Project would not generate any ground-borne vibration impacts after construction is complete.

c) Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

Reference: L.A. CEQA Thresholds Guide (Section I).

Comment: A significant impact may occur if the proposed Project were to substantially and permanently increase the ambient noise levels in the proposed Project vicinity above levels existing without the proposed Project.

No Impact. The primary noise source associated with the proposed Project would be construction activity, which would be temporary and not permanent. The proposed Project consists of an infrastructure project and would not introduce population into the City. As noted under VII.a, sidewalks are generally passive land uses that would not generate significant noise levels. Any changes to the sidewalks that would occur as a result of the proposed Project would not change the ambient noise environment in the surrounding community. As a result, the proposed Project would have no impact. This issue will not be discussed in the EIR.

d) Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Reference: L.A. CEQA Thresholds Guide (Section I); City of Los Angeles Municipal Code.

Comment: A significant impact may occur if the proposed Project were to create a substantial increase in the ambient noise levels on a temporary or periodic basis.

Potentially Significant Impact. The only temporary or periodic noise source associated with the proposed Project would be construction activity. As described in VII.a, construction equipment generates typical maximum noise levels in the range of 76–89 dBA at a distance of 50 feet. Such noise levels have the potential to significantly increase ambient noise levels at nearby noise-sensitive receptors on a temporary or periodic basis, and, as such, impacts could be significant. This issue will be further analyzed in the EIR.

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

Reference: None.

Comment: A significant impact may occur if the proposed Project would expose people residing or working in the proposed Project area to excessive noise levels due to the proposed Project sites being located within an airport land use plan or within 2 miles of a public airport where such a plan has not been adopted.

Less-than-Significant Impact. The proposed Project would occur at various locations throughout the City, and it is likely that at least some of these locations will be close to one of the region's airports, such as LAX. Specifically, construction activities could occur near airports. However, the proposed Project would not build any permanent structures or directly lead to any new people residing in the proposed Project area. Construction workers working in the vicinity of an airport would use ear protection in compliance with applicable OSHA regulations, which would reduce the exposure to airport noise to less than significant. Furthermore, the proposed Project would not affect airport flight operations or change the associated noise levels. This would be considered a less-than-significant impact. This issue will be further analyzed in the EIR.

f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

Reference: None.

Comment: A significant impact may occur if the proposed Project would expose people residing or working in the proposed Project area to excessive noise levels in the vicinity of a private airstrip.

Less-than-Significant Impact. The proposed Project would occur at various locations throughout the City, and some of these locations may be close to a private airstrip. However, the proposed Project would not build any permanent structures or directly lead to any new people residing in the proposed Project area. Construction workers working in the vicinity of an airstrip would use ear protection in compliance with applicable OSHA regulations, which would reduce the exposure to airstrip noise to less than significant. Furthermore, the proposed Project would not affect airstrip flight operations or change the associated noise levels. This would be considered a less-than-significant impact. This issue will be further analyzed in the EIR.

XIII. Population and Housing	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Induce substantial population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?	☐	☐	☐	☒
b. Displace substantial numbers of existing housing units, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Would the project:

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

Reference: L.A. CEQA Thresholds Guide (Section J.1); Willits v. City of Los Angeles Settlement Term Sheet.

Comment: A significant impact may occur if the proposed Project induced substantial population and housing growth through new development in undeveloped areas or by introducing unplanned infrastructure that was not previously evaluated in the adopted community plan or general plan.

No Impact. The proposed Project would not include housing or commercial development. In addition, proposed Project construction would not indirectly induce growth in the area because the proposed Project would not include the extension of roads or other infrastructure. The proposed Project would provide repairs to curbs and sidewalks to comply with the applicable accessibility requirements and remove and replace street trees and utilities throughout the City. As such, proposed Project activities would take place on previously disturbed, urban areas and would result in a minor alteration of land that would restore or improve disturbed areas when compared to their original surface conditions. Because of the highly specialized nature of most construction projects, workers are likely to be employed on the job site only for as long as their skills are needed to complete a particular phase of the construction process. For that reason, it is reasonable to assume that most construction workers would not relocate their households to work on the proposed Project. Therefore, the proposed Project would not induce substantial population growth either directly or indirectly, and there would be no impacts. This issue will not be further discussed in the EIR.

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

Reference: L.A. CEQA Thresholds Guide (Sections J.1 and J.2); Willits v. City of Los Angeles Settlement Term Sheet.

Comment: A significant impact may occur if the proposed Project displaced substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere.

No Impact. The proposed Project would not displace existing housing and would not necessitate the construction of housing elsewhere because this is an infrastructure project. The proposed Project would not include housing or commercial development. In addition, proposed Project construction would not indirectly induce growth in the area because the proposed Project would not include the extension of roads or other infrastructure. The proposed Project would provide repairs to curbs and sidewalks to comply with the applicable accessibility requirements and remove and replace street trees and utilities throughout the City. As such, proposed Project activities would take place on previously disturbed, urban areas and would result in a minor alteration of land that would restore or improve disturbed areas when compared to their original surface conditions. Therefore, no impacts would occur. This issue will not be further discussed in the EIR.

c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

Reference: See XIII.b above.

Comment: A significant impact may occur if the proposed Project displaced substantial numbers of people, necessitating the construction of replacement housing elsewhere.

No Impact. The proposed Project would not displace substantial numbers of people and would not necessitate the construction of housing elsewhere because this is an infrastructure project. The proposed Project would not include housing or commercial development. In addition, proposed Project construction would not indirectly induce growth in the area because the proposed Project would not include the extension of roads or other infrastructure. The proposed Project would provide repairs to curbs and sidewalks to comply with the applicable accessibility requirements and remove and replace street trees and utilities throughout the City. As such, proposed Project activities would take place on previously disturbed, urban areas and would result in a minor alteration of land that would restore or improve disturbed areas when compared to their original surface conditions. Therefore, no impacts would occur. This issue will not be further discussed in the EIR.

XIV. Public Services	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or a 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 following public services:				
Fire protection?	☐	☐	☒	☐
Police protection?	☐	☐	☒	☐
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒

Would the project:

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?

Reference: L.A. CEQA Thresholds Guide (Section K.2); City of Los Angeles General Plan Safety Element.

Comment: A significant impact may occur if the proposed Project required the addition of a new fire station or the expansion, consolidation, or relocation of an existing facility to maintain service.

Less–than-Significant Impact. The proposed Project sites are served by various battalions and stations of LAFD throughout the City. The proposed Project would not result in a substantial increase in population and, thus, would not generate a need for new or altered fire protection facilities. Under all prototypical project types/construction scenarios, the proposed Project would be constructed in accordance with all applicable fire codes set forth by the state Fire Marshal and LAFD. Therefore, the proposed Project would not be considered a fire hazard and would not exceed the capacity of LAFD with respect to serving the site or other areas with existing fire protection services. The nearest local fire responders would be notified, as appropriate, of traffic control plans during construction so as to coordinate emergency response routing during construction work. Construction and operation of the proposed Project would not create hazards that would increase the need for fire protection. All construction would require prior coordination with the LAFD to ensure that emergency access is maintained at all times. Therefore, this impact would be less than significant. This issue will be further analyzed in the EIR.

ii. Police protection?

Reference: L.A. CEQA Thresholds Guide (Section K.1); City of Los Angeles General Plan Safety Element.

Comment: A significant impact may occur if the proposed Project were to result in an increase in demand for police services that would exceed the capacity of the police department responsible for serving the site.

Less-than-Significant Impact. The proposed Project sites would be served by various divisions and stations of LAPD throughout the City. Typically, demand for additional police protection is created when there is an increase in the residential, commercial, or industrial population in an area. Under all prototypical project types/construction scenarios, the proposed Project would not require additional police protection beyond what is currently provided throughout its service areas because there would be no population growth associated with the proposed Project. The nearest local police station would be notified, as appropriate, of traffic control plans to coordinate emergency response routing during construction work. During construction, the proposed Project sites and areas would be fenced and screened, nighttime lighting provided, and access controlled to deter theft. Similarly, during proposed Project operation, an increase in calls to police is not anticipated due to the nature of the proposed work, repairing sidewalks. All construction would require prior coordination with LAFD to ensure that emergency access is maintained at all times. Therefore, this impact would be less than significant. This issue will be further analyzed in the EIR.

iii. Schools?

Reference: L.A. CEQA Thresholds Guide (Section K.3).

Comment: A significant impact may occur if the proposed Project included substantial employment or population growth that could generate demand for school facilities that exceeded the capacity of the school district responsible for serving the project site.

No Impact. The proposed Project would not include a housing component, nor would it directly or indirectly generate substantial employment or population growth, which usually results in the need for new schools or additional school population. Therefore, new or physically altered school facilities would not be required. The purpose of the proposed Project is to repair the sidewalks and other pedestrian passageways in urban areas. It does not entail the construction of residential, commercial, or industrial land uses that are normally associated with employment and population growth. Therefore, the proposed Project would not generate demand for school facilities that would exceed the capacity of the school district(s) responsible for serving the project site(s) under all prototypical project types/construction scenarios. Proposed Project construction could, however, potentially re-route pedestrian and vehicle traffic while repairs are being made. During this period of temporary disruption, access to school facilities would be maintained, and construction signage would delineate alternate access routes as necessary. Therefore, no impacts would occur, and this issue will not be further discussed in the EIR.

iv. Parks?

Reference: L.A. CEQA Thresholds Guide (Section K.4).

Comment: A significant impact may occur if the recreation and park services available could not accommodate the population increase resulting from the implementation of the proposed Project and new or physically altered facilities were needed.

No Impact. No new or physically altered government facilities, such as recreation and park services, would be needed to accommodate population increases resulting from the implementation of the proposed Project. The purpose of the proposed Project is to repair the sidewalks and other pedestrian passageways in urban areas. It does not entail the construction of residential, commercial, or industrial land uses that are normally associated with such impacts. Therefore, it would not lead to an increase in population, nor would it induce growth or strain park services through direct or indirect means under all prototypical project types/construction scenarios. Proposed Project construction could, however, potentially re-route pedestrian and vehicle traffic while repairs are being made. During this period of temporary disruption, access to park and recreational facilities would be maintained, and construction signage would delineate alternate access routes as necessary. Therefore, no impacts would occur, and this issue will not be further discussed in the EIR.

v. Other public facilities?

Reference: None applicable.

Comment: A significant impact would occur if the proposed Project results in the need for new or altered public facilities, such as libraries, due to population or housing growth.

No impact. Typically, demand for new or altered public facilities such as libraries is created when there is an increase in the residential population in an area. The proposed Project would not result in an increase of residential units, nor would it contribute to overall population or housing growth under all prototypical project types/construction scenarios. Thus, the proposed Project would not result in the need for new or altered public facilities, such as libraries. No other facilities would be constructed or operated as a result of this proposed Project. No impacts would occur, and this issue will not be further discussed in the EIR.

XV. Recreation	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
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?	☐	☐	☐	☒
b. Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	☐	☒

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?

Reference: L.A. CEQA Thresholds Guide (Section K.4); City of Los Angeles, Department of Parks and Recreation (http://www.laparks.org/department/who-we-are).

Comment: A significant impact may occur if the proposed Project included substantial employment or population growth that generated demand for public park facilities that exceed the capacity of existing parks or that substantially affected the level or service of existing park facilities.

No Impact. The City of Los Angeles contains 444 park sites with athletic fields, playgrounds, tennis courts, recreation centers, fitness areas, swimming pools and aquatic centers, senior centers, skate parks, golf courses, museums, and dog parks. Implementation of existing sidewalk and curb repair, and removal and replacement of street trees and utilities would not generate demand for public park facilities that would exceed the capacity of existing parks and recreational facilities. There would be no introduction of new population or housing in the City as a result of the proposed Project. It would not induce growth and would not strain park services through direct or indirect means under all prototypical project types/construction scenarios. Therefore, no impacts would occur, and this issue will not be further discussed in the EIR.

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

Reference: None.

Comment: A significant impact may occur if the proposed Project would require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment.

No Impact. The City of Los Angeles contains 444 park sites. The proposed Project would not include recreational facilities, nor would it require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment. The only areas that would be affected by the proposed Project would be sidewalks surrounding the recreational facilities. Proposed Project activities would take place on previously disturbed areas, would be temporary in duration, and would result in a minor alteration of land that would restore or improve disturbed areas when compared to their original surface conditions. Therefore, no impacts would occur, and this issue will not be further discussed in the EIR.

XVI. Transportation/Traffic	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation, including mass transit and non-motorized travel and relevant components of the circulation system, including, but not limited to, intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☒	☐	☐	☐
b. Conflict with an applicable congestion management program, including, but not limited to, level-of-service standards and travel demand measures or other standards established by the county congestion management agency for designated roads or highways?	☒	☐	☐	☐
c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☒	☐
d. Substantially increase hazards because of a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
e. Result in inadequate emergency access?	☐	☐	☒	☐
f. Conflict with adopted policies, plans, or programs regarding public transit, bicycle or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☒	☐	☐	☐

Would the project:

a) Exceed the capacity of the existing circulation system, based on an applicable measure of effectiveness (as designated in a general plan policy, ordinance, etc.), taking into account all relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

Reference: L.A. CEQA Thresholds Guide (Section L).

Comment: A project would have a significant traffic impact if the traffic volume to roadway capacity ratio (V/C) is increased, as follows:

- V/C ratio increase >0.080 if final Level of Service (LOS) is C.
- V/C ratio increase >0.040 if final LOS is D.
- V/C ratio increase >0.020 if final LOS is E or F.

"Final LOS" is defined as projected future conditions including project, ambient, and related project growth but without project traffic mitigation.

Potentially Significant Impact. During the course of construction activities, work zones would be established within and adjacent to existing roadways, potentially requiring lane or parking zone closures for approximately 2–3 weeks or more than 5 weeks. Temporary signage, traffic cones, fencing, and barriers would be placed where needed during the construction period. In addition, staging areas and work zones could displace existing parking at various locations (e.g., schools and roadways). Following construction activities, sidewalks would be repaired, and there would be no proposed Project-related adverse effects on roadway operations. The potential for construction activities to conflict with the performance of existing public transit, bicycle, or pedestrian facilities will be further evaluated in the EIR. In addition, the proposed Project would include changing the permit process for street tree removal, which could include an ordinance and/or policy setting criteria for street tree replacement ratios or specifying species, size, or location of replacement street trees. This issue will be further analyzed in the EIR.

b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

Reference: L.A. CEQA Thresholds Guide (Section L).

Comment: A significant impact may occur if the proposed Project conflicts with the 2010 Los Angeles County Metropolitan Transportation Authority Congestion Management Program.

Potentially Significant Impact. As described in XVI.a, the proposed Project could disrupt traffic and conflict with congestion management plans or existing level-of-service standards during construction period, as temporary lane or parking zone closures could be required. The potential for the proposed Project to conflict with congestion management plans or level-of-service standards related to the circulation system will be further analyzed in the EIR.

c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks?

Reference: L.A. CEQA Thresholds Guide (Section L).

Comment: A significant impact may occur if the proposed Project results in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks.

Less-than-Significant Impact. The proposed Project would involve repairing sidewalks and would therefore not result in a change in air traffic patterns. Construction activities may occur in areas within airport influence areas, but would not be adjacent to existing runways such that an alteration of air traffic patterns would occur. Therefore, this impact would be less than significant, and this issue will be further analyzed in the EIR.

d) Substantially increase hazards because of a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Reference: L.A. CEQA Thresholds Guide (Section L.5).

Comment: A significant impact may occur if the proposed Project substantially increased road hazards due to a design feature or incompatible uses.

Less-than-Significant Impact. During the construction period, work zones would be established within and adjacent to roadways and would include heavy machinery, handheld equipment, and street tree/vegetation removal activities; and lane and parking zone closures could be required for

some work zones. Following the construction period, no adverse operational effects related to traffic hazards would occur. The proposed Project sites would be compliant with applicable accessibility requirements, which would reduce design hazards and improve intersection functionality and safety. Therefore, there would be a less-than-significant impact, and this issue will be further analyzed in the EIR.

e) Result in inadequate emergency access?

Reference: L.A. CEQA Thresholds Guide (Section L.5 and L.8).

Comment: A significant impact may occur if the proposed Project resulted in inadequate emergency access.

Less-than-Significant Impact. During the construction period, parking zone and lane closures could be required to accommodate work zones and the use of equipment. Both parking zone and lane closures could affect access to roadways that are used by emergency providers. Construction activities could result in the temporary disruption of existing roads. Disruption of traffic during the construction period has the potential to delay fire personnel, police, or other first responders and possibly to increase response times. All construction would require prior coordination with the LAFD to ensure that emergency access is maintained at all times. Therefore, there would be a less-than-significant impact, and this issue will be further analyzed in the EIR.

f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

Reference: L.A. CEQA Thresholds Guide (Section L).

Comment: A significant impact may occur if the proposed Project were to conflict with adopted policies, plans, or programs supporting alternative transportation.

Potentially Significant Impact. Construction activities would take place along roadways that are designated as bus corridors. Buses could be delayed if lanes are needed to provide space for work zones. Bus stops may be temporarily relocated in consideration of the locations of the work zones. Sidewalk closures and work zones would also temporarily preclude the use of sidewalks by pedestrians, and temporary detours would be provided until construction is complete. Following the construction period, the proposed Project would improve sidewalks for pedestrians and transit users, and no adverse effects would occur. Discussion of replacement of non-conforming (relative to Mobility 2035) facilities will be addressed in the EIR. The potential for the proposed Project construction activities to conflict with applicable plans, ordinances, or policies related to the circulation system will be further analyzed in the EIR.

XVII. Tribal Cultural Resources	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
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), or	☒	☐	☐	☐
b. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☒	☐	☐	☐

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)?

Comment: A significant impact may result if the proposed Project caused a substantial adverse change to the significance of a tribal cultural resource.

Potentially Significant Impact. It is likely that there are tribal cultural resources in the proposed Project area. Also, previously unknown tribal cultural resources may be discovered as a result of Native American consultation or during proposed Project-related ground disturbance. If resources are found, construction work would be stopped and an assessment of the resources would be required. This issue will be further analyzed in the EIR.

b) Cause a substantial adverse change in a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?

Comment: A significant impact may result if the proposed Project caused a substantial adverse change to the significance of a tribal cultural resource.

Potentially Significant Impact. See discussion for XVII.a above. This issue will be further analyzed in the EIR.

XVIII. Utilities and Service Systems	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☒	☐
b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
c. Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☒	☐	☐	☐
d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or would new or expanded entitlements be needed?	☒	☐	☐	☐
e. Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐
f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☒	☐	☐	☐
g. Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☒	☐

Would the project:

a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

Reference: L.A. CEQA Thresholds Guide (Section M.2)

Comment: A significant impact would occur if the proposed Project discharges wastewater that would exceed the regulatory limits established by the Los Angeles RWQCB.

Less-than-Significant Impact. The proposed Project would provide repairs and upgrades to sidewalks, pavement, curbs, and slopes that are non-compliant with the applicable accessibility requirements throughout the City. Required construction activities would include excavation of existing sidewalks, grading, construction of the repaired portions of sidewalks, and cleanup of construction sites. Construction activities related to excavation and grading are expected to produce negligible amounts of wastewater. Construction workers

would be expected to follow standard BMPs, which would reduce any construction-related wastewater impacts. Impacts would be less than significant, and this issue will be further analyzed in the EIR.

b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Reference: L.A. CEQA Thresholds Guide (Sections M.1 and M.2)

Comment: A significant impact may occur if the proposed Project resulted in the need for new construction or expansion of water or wastewater treatment facilities that could result in an adverse environmental effect that could not be mitigated.

Less-than-Significant Impact. See XVIII.a. The proposed Project would provide repair and upgrades to sidewalks, pavement, curbs, and non-compliant slopes throughout the City. Construction activities associated with the proposed Project would include street tree root pruning, street tree canopy pruning, street tree removal, street tree planting, sidewalk repaving, enlarging street tree wells, relocation of street signs and street lights, construction of walls (under 3 feet), and replacement of utility covers. These activities would occur over the life of the proposed Project (approximately 30 years), during which time watering of the site or wastewater may be discharged from the construction areas. Such wastewater discharges must be compliant with applicable regulations such as the City's MS4 Permit (Order No. R4-2012-0175) for areas under 1 acre, and, for any portion of the proposed Project replacing over 1 acre of sidewalk, the proposed Project would be required to comply with the CGP through the State Water Resources Control Board. The CGP and associated NPDES requirements include development and implementation of a SWPPP with associated monitoring and reporting. Stormwater BMPs are required to control erosion, minimize sedimentation, and control stormwater runoff water quality during construction activities. The EIR will discuss the proposed Project water and wastewater requirements. Furthermore, construction workers would be expected to follow BMPs, which would reduce any construction-related wastewater impacts. It is not anticipated that the proposed Project would require the construction of new water or wastewater treatment facilities or expansion of existing facilities. In addition, the proposed Project would include changing the permit process for street tree removal, which could include an ordinance and/or policy setting criteria for street tree replacement ratios or specifying species, size, or location of replacement street trees. This issue will be further analyzed in the EIR.

c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Reference: L.A. CEQA Thresholds Guide (Section M.2).

Comment: A significant impact may occur if the volume of stormwater runoff from the proposed Project increases to a level exceeding the capacity of the storm drain system serving a proposed Project site.

Potentially Significant Impact. The proposed Project would provide repairs to curbs and sidewalks to comply with the applicable accessibility requirements, and would remove and replace street trees and utilities throughout the City. These repairs could include curb and gutters, curb ramps, and utility relocation. In some cases, repairs and upgrades of existing sidewalks may require the partial reconfiguration of existing stormwater drainage facilities. Compliance with the minimum construction site BMP requirements in the MS4 Permit, or the CGP SWPPP that require construction

phase BMPs would ensure that construction activities would not degrade the surface water quality of receiving waters to levels below standards considered acceptable by the Los Angeles RWQCB or other regulatory agencies or impair the beneficial uses of receiving waters. The proposed Project would not require or result in the construction of new stormwater drainage facilities or expansion of existing facilities. As such, proposed Project activities would take place on previously disturbed, urban areas and would result in land that would restore or improve disturbed areas when compared to their original surface conditions. This issue will be further analyzed in the EIR.

d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

Reference: L.A. CEQA Thresholds Guide (Section M.1).

Comment: A significant impact may occur if the proposed Project's water demands would exceed the existing water supplies that serve the site.

Potentially Significant Impact. The proposed Project would provide repairs and upgrades to sidewalks, pavement, curbs, and slopes that are non-compliant with the applicable accessibility requirements throughout the City. Required construction activities would include excavation of existing sidewalks, grading, construction of the repaired portions of sidewalks, and cleanup of construction sites. Water would be used during concrete work, grading, dust suppression, and other construction activities. Water would also be required to establish new street trees during the first 3 years after planting. The City usually provides watering of the street trees from a water truck. The water uses described above could result in a substantial permanent increase in water consumption, and this issue will be discussed in the EIR. In addition, the proposed Project would include changing the permit process for street tree removal, which could include an ordinance and/or policy setting criteria for street tree replacement ratios or specifying species, size, or location of replacement street trees. This issue will be further analyzed in the EIR.

e) Result in a determination by the wastewater treatment provider that 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?

Reference: L.A. CEQA Thresholds Guide (Section M.2).

Comment: A significant impact may occur if the proposed Project results in a determination by the wastewater treatment provider that serves or may serve the proposed Project that it does not have adequate capacity to serve the proposed Project's projected demand in addition to the provider's existing commitments.

Less-than-Significant Impact. See XVIII.a. LA Sanitation (LASAN) is the wastewater treatment provider for the City. The proposed Project would produce negligible amounts of wastewater for each sidewalk project. Furthermore, construction workers would be expected to follow standard BMPs, which would reduce any construction-related wastewater impacts. Therefore, LASAN would have adequate capacity to serve the proposed Project's projected demand in addition to LASAN existing commitments. Impacts would be less than significant, and this issue will be further analyzed in the EIR.

f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

Reference: L.A. CEQA Thresholds Guide (Section M.3); California Department of Resources Recycling and Recovery (2010), Solid Waste Information System (http://www.calrecycle.ca.gov/SWFacilities/Directory/); City of Los Angeles Solid Waste Integrated Resources Plan (http://www.zerowaste.lacity.org) and LASAN (http://www.lacitysan.org/solid_resources/recycling); California Integrated Waste Management Act of 1989 (Assembly Bill 939).

Comment: The management of solid waste in the City involves public and private refuse collection services as well as public and private operation of solid waste transfer, resource recovery, and disposal facilities. A significant impact would occur if the proposed Project results in solid waste generation of 5 tons or more per week.

Potentially Significant Impact. The proposed Project would provide repairs and upgrades to sidewalks, pavement, curbs, and slopes that are non-compliant with the applicable accessibility requirements throughout the City. Excavation of existing sidewalks, curbs, and other public ROW improvements would result in solid waste that would need proper disposal and that could require disposal as hazardous waste. Proposed sidewalk repair would occur over a 30-year time period, and substantial amounts of reconstruction would be occurring simultaneously throughout the City as a result of the proposed Project. In addition, on March 5, 2010, Council approved Council File 09-3029 pertaining to a Citywide Construction and Demolition (C and D) Waste Recycling Ordinance that requires all mixed C and D waste generated within City limits be taken to City-certified C and D waste processors. LASAN is responsible for the C and D waste recycling policy. The Zero Waste Progress Report 2013 conducted by the UCLA Engineering Extension's Municipal Solid Waste Management Program reported that the City has achieved a recycling rate of 76.4 percent. An additional survey conducted by the UCLA Engineering Extension reported that the City has the highest recycling rate out of the 10 largest U.S. cities. All construction projects are subject to the City's requirements for construction waste recycling. The proposed Project would result in large amounts of sidewalk, curb, and gutter waste, some of which could be classified as hazardous waste. This issue will be further analyzed in the EIR.

g) Comply with federal, state, and local statutes and regulations related to solid waste?

Reference: L.A. CEQA Thresholds Guide (Section M.3)

Comment: A significant impact may occur if the proposed Project would generate solid waste that was in excess of or was not disposed of in accordance with applicable regulations.

Less-than-Significant Impact. The proposed Project would provide repairs and upgrades to sidewalks, pavement, curbs, and slopes that are non-compliant with the applicable accessibility requirements throughout the City. Disposal of all solid waste generated by the proposed Project would comply with federal, state, and local statues and regulations related to solid waste. Disposal of hazardous waste must be compliant with applicable regulations such as the Resource Conservation and Recovery Act (RCRA), DOT Hazardous Materials Regulations, and Los Angeles County General Plan goals and policies. The Citywide Construction and Demolition (C and D) Waste Recycling Ordinance requires all mixed C and D waste generated within City limits be taken to City-certified C and D waste processors. Construction waste would be disposed of in compliance with applicable regulations. Therefore, impacts would be less than significant in terms of the proposed Project's compliance with federal, state, and local statutes and regulations, and this issue will be further analyzed in the EIR.

XIX. Mandatory Findings of Significance	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	☒	☐	☐	☐
b. Does the project have impacts that are individually limited but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☒	☐	☐	☐
c. Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	☒	☐	☐	☐

Would the project:

a) Have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, 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?

Reference: Preceding analyses.

Comment: None.

Potentially Significant Impact. The proposed Project would entail sidewalk repairs and associated improvements throughout the City, including street root pruning, street tree removal and replacement, street tree planning, sidewalk-repaving, and enlarging street tree wells. The study area, which consists of the City and the surrounding area, are built out with various land uses, which could contain designated ESHAs and contain sensitive species and associated habitats. Similarly, proposed sidewalk repairs could occur within designated historic districts. The EIR will further analyze the proposed Project's potential to substantially affect or reduce the habitat of a fish or wildlife species, and/or cause a fish or wildlife population to drop below self-sustaining levels. The EIR will also analyze the proposed Project's potential to eliminate a plant or animal community, and reduce the number or restrict the range of rare or endangered plants or animals, and the potential to affect important examples of the major periods of California history or prehistory.

b) 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)?

Reference: Preceding analyses.

Comment: None.

Potentially Significant Impact. As stated earlier, the proposed Project would include construction associated with sidewalk repair and other associated improvements including street root pruning, street tree removal and replacement, street tree planning, sidewalk-repaving, and enlarging street tree wells for 30 years. Most of the impacts are anticipated to be localized and confined to the immediate study area; however, during the course of the proposed Project there could be significant impacts on several resource areas, including: aesthetics, air quality, biological resources, cultural resources, geology/soils, GHG emissions, hydrology/water quality, noise, transportation/traffic, and utilities/services. These impacts could contribute to cumulative impacts. These issues will be further analyzed in the EIR.

c) Have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?

Reference: Preceding analyses.

Comment: None.

Potentially Significant Impact. The proposed Project would include sidewalk repair including street root pruning, street tree removal and replacement, street tree planning, sidewalk-repaving, and enlarging street tree wells. Potentially significant impacts associated with aesthetics, air quality, biological resources, cultural resources, geology/soils, GHG emissions, hydrology/water quality, noise, transportation/traffic, and utilities/service systems could occur. Therefore, implementation of the proposed Project could result in significant adverse effects on human beings, either directly or indirectly. These issues will be further analyzed in the EIR.

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Chapter 4
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Chapter 5
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Chapter 6
Acronyms and Abbreviations

AB	Assembly Bill
AB 32	California Global Warming Solutions Act of 2006
ADA	Americans with Disabilities Act
APCs	Area Planning Commissions
Basin	South Coast Air Basin
BMPs	Best Management Practices
BSS	Bureau of Street Services
Caltrans	California Department of Transportation
CAO	City Administrative Officer
CAPCOA	California Air Pollution Control Officers Association
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CGP	Construction General Permits
City	City of Los Angeles
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO_2e	Carbon Dioxide Equivalent
Council	Los Angeles City Council
dBA	A-weighted Decibels
DOT	Department of Transportation
EIR	Environmental Impact Report
ESHA	Environmentally Sensitive Habitat Area
GHG	Greenhouse Gas
GIS	Geographic Information System
Greenbook	Standard Specification for Public Works Construction
HCPs	Habitat Conservation Plans
HPOZs	Historic Preservation Overlay Zones
IS	Initial Study
BOE	City of Los Angeles, Public Works Department, Bureau of Engineering
LADBS	Los Angeles Department of Building and Safety
LADPW	Los Angeles Department of Public Works
LAFD	Los Angeles Fire Department
LAPD	Los Angeles Police Department
LASAN	LA Sanitation
LAX	Los Angeles International Airport
LOS	Level of Service

MBTA	Migratory Bird Treaty Act
MMRP	Mitigation Monitoring and Reporting Program
MS4	Municipal Separate Storm Sewer System
MT	Metric Tons
NCCP	Natural Community Conservation Plan
NOA	Notice of Availability
NOD	Notice of Determination
NOP	Notice of Preparation
NPDES	National Pollutant Discharge Elimination System
OSHA	Occupational Safety and Health Administration
Policy	Board of Public Works Street Tree Removal Permit Process and Policy
Prioritization System	Prioritization Matrix and Scoring System
proposed Project	Sidewalk Repair Program
RCRA	Resource Conservation and Recovery Act
ROW	Right-of-Way
RWQCB	Los Angeles Regional Water Quality Control Board
SCAQMD	South Coast Air Quality Management District
Settlement	Willits v. City of Los Angeles Settlement Term Sheet
SR-	State Route
SWPPP	Stormwater Pollution Prevention Plan
TAC	Toxic Air Contaminant
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
V/C	Volume to Capacity
ZIMAS	Zone Information & Map Access System

Appendix A

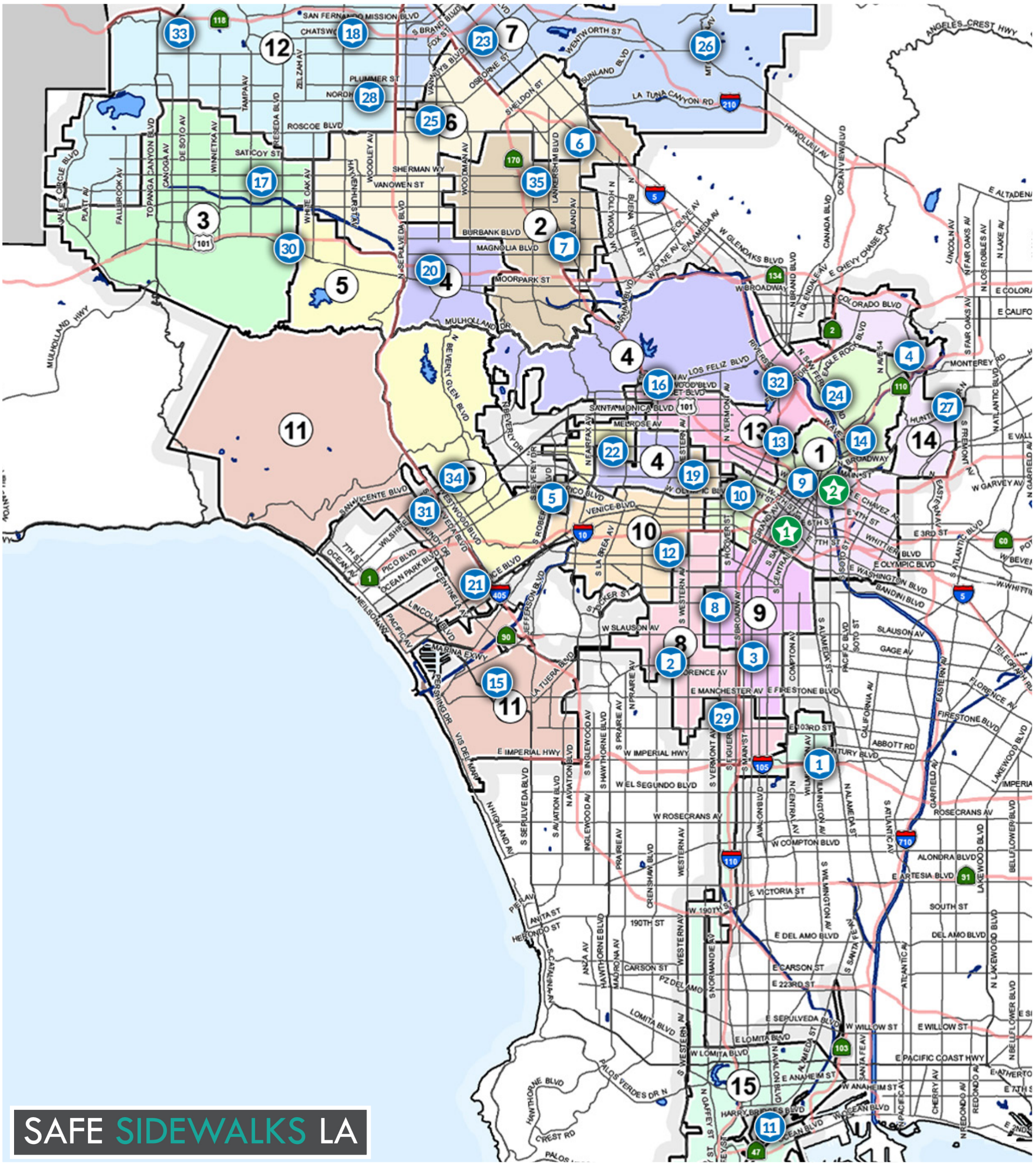
List of NOP/IS Availability Locations And Map

Copies of the NOP/IS are available for review at the following locations:

Council District	Organization	Address
CD 1	Lincoln Heights Branch Library	2530 Workman St, Los Angeles, CA 90031
	Cypress Park Branch Library	1150 Cypress Ave, Los Angeles, CA 90065
	Pico Union Branch Library	1030 S Alvarado St, Los Angeles, CA 90006
CD 2	North Hollywood Amelia Earhart Regional Library	5211 Tujunga Ave, North Hollywood, CA 91601
	Valley Plaza Library	12311 Vanowen St, North Hollywood, CA 91605
CD 3	West Valley Regional Branch Library	19036 Vanowen St, Reseda, CA 91335
	Encino-Tarzana Branch Library	18231 Ventura Blvd, Tarzana, CA 91356
CD 4	Sherman Oaks Library	14245 Moorpark St, Sherman Oaks, CA 91423
	Fairfax Branch Public Library	161 S Gardner St, Los Angeles, CA 90036
CD 5	Robertson Library	1719 Robertson Blvd, Los Angeles, CA 90035
	Westwood Branch Library	1246 Glendon Ave, Los Angeles, CA 90024
CD 6	Sun Valley Library	7935 Vineland Ave, Sun Valley, CA 91352
	Panorama City Branch Library	14345 Roscoe Blvd, Panorama City, CA 91402
CD 7	Sunland-Tujunga Branch Library	7771 Foothill Blvd, Tujunga, CA 91042
	Pacoima Branch Library	13605 Van Nuys Blvd, Pacoima, CA 91331
CD 8	Hyde Park Branch Library	2205 W Florence Ave, Los Angeles, CA 90043
	Mark Twain Library	9621 S. Figueroa Street, Los Angeles, CA 90003
CD 9	Ascot Branch Library	120 W Florence Ave, Los Angeles, CA 90003

Council District	Organization	Address
	Vermont Square Branch Library	1201 W 48th St, Los Angeles, CA 90037
CD 10	Jefferson Library	2211 W Jefferson Blvd, Los Angeles, CA 90018
	Pio Pico Library	694 S Oxford Ave, Los Angeles, CA 90005
CD 11	Westchester Loyola Village Library	7114 W Manchester Ave, Los Angeles, CA 90045
	Mar Vista Branch Library	12006 Venice Blvd, Los Angeles, CA 90066
	West Los Angeles Regional Library	11360 California Route 2, Los Angeles, CA 90025
CD 12	Granada Hills Library	10640 Petit Ave, Granada Hills, CA 91344
	Mid Valley Regional Library	16244 Nordhoff St, North Hills, CA 91343
	Chatsworth Branch Library	21052 Devonshire St, Chatsworth, CA 91311
CD 13	Edendale Branch Library	2011 Sunset Blvd, Los Angeles, CA 90026
	Frances Howard Goldwyn-Hollywood Regional Branch Library	1623 Ivar Ave, Los Angeles, CA 90028
	Silver Lake Branch Library	2411 Glendale Blvd, Los Angeles, CA 90039
CD 14	Arroyo Seco Library	6145 N Figueroa St, Los Angeles, CA 90042
	The Los Angeles Central Library	630 W 5th St, Los Angeles, CA 90071
	El Sereno Branch Library	5226 S. Huntington Drive, Los Angeles, CA 90032
CD 15	San Pedro Regional Library	931 S Gaffey St, San Pedro, CA 90731
	Willowbrook Library	11838 Wilmington Ave, Los Angeles, CA 90059

Organization	Address
City of Los Angeles Bureau of Engineering	1149 S. Broadway, Suite 600, Los Angeles, CA 90015
City of Los Angeles City Clerk	200 N. Spring Street, Room 360, Los Angeles, CA 90012



SRP PRIORITY COMMUNITIES

BRANCH LIBRARIES

1. Willowbrook Library
2. Hyde Park Branch Library
3. Ascot Branch Library
4. Arroyo Seco Library
5. Robertson Library
6. Sun Valley Library
7. North Hollywood Amelia Earhart Regional Library
8. Vermont Square Branch Library
9. The Los Angeles Central Library
10. Pico Union Branch Library
11. San Pedro Regional Library
12. Jefferson Library
13. Edendale Branch Library
14. Lincoln Heights Branch Library
15. Westchester Loyola Village Library
16. Frances Howard Goldwyn-Hollywood Regional Branch Library
17. West Valley Regional Branch Library
18. Granada Hills Library
19. Pio Pico Library
20. Sherman Oaks Library
21. Mar Vista Branch Library
22. Fairfax Branch Public Library
23. Pacoima Branch Library
24. Cypress Park Branch Library
25. Panorama City Branch Library
26. Sunland-Tujunga Branch Library
27. El Sereno Branch Library
28. Mid-Valley Regional Library
29. Mark Twain Library
30. Encino-Tarzana Branch Library
31. West Los Angeles Regional Library
32. Silver Lake Branch Library
33. Chatsworth Branch Library
34. Westwood Branch Library
35. Valley Plaza Library

OTHER LOCATIONS

1. City of Los Angeles Bureau of Engineering
2. City of Los Angeles City Clerk

COUNCIL DISTRICT

Public Comments on the Notice of Preparation/Initial Study

STATE OF CALIFORNIA
NATIVE AMERICAN HERITAGE COMMISSION
Environmental and Cultural Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Phone (916) 373-3710

August 1, 2017

Shilpa Gupta
City of Los Angeles
1149 S. Broadway, Suite 600
Los Angeles, CA 90015

Sent via e-mail: shilpa.gupta@lacity.org

RE: SCH# 2017071063; Sidewalk Repair Program, City of Los Angeles; Los Angeles County, California

Dear Mr. Gupta:

The Native American Heritage Commission has received the Notice of Preparation (NOP) for Draft Environmental Impact Report for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code § 21000 et seq.), specifically Public Resources Code section 21084.1, states that a project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, § 15064.5 (b) (CEQA Guidelines Section 15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an environmental impact report (EIR) shall be prepared. (Pub. Resources Code § 21080 (d); Cal. Code Regs., tit. 14, § 15064 subd. (a)(1) (CEQA Guidelines § 15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources with the area of project effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a **separate category of cultural resources**, "tribal cultural resources" (Pub. Resources Code § 21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment (Pub. Resources Code § 21084.2). Please reference California Natural Resources Agency (2016) "Final Text for tribal cultural resources update to Appendix G: Environmental Checklist Form," http://resources.ca.gov/ceqa/docs/ab52/Clean-final-AB-52-App-G-text-Submitted.pdf. Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code § 21084.3 (a)). **AB 52 applies to any project for which a notice of preparation or a notice of negative declaration or mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements**. If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. § 800 et seq.) may also apply.

The NAHC recommends **lead agencies consult with all California Native American tribes** that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments. **Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws**.

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a **lead agency** shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:
    a. A brief description of the project.
    b. The lead agency contact information.
    c. Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code § 21080.3.1 (d)).
    d. A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code § 21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A **lead agency** shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code § 21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or environmental impact report. (Pub. Resources Code § 21080.3.1(b)).
    a. For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code § 65352.4 (SB 18). (Pub. Resources Code § 21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:
    a. Alternatives to the project.
    b. Recommended mitigation measures.
    c. Significant effects. (Pub. Resources Code § 21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:
    a. Type of environmental review necessary.
    b. Significance of the tribal cultural resources.
    c. Significance of the project's impacts on tribal cultural resources.
    d. If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code § 21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code sections 6254 (r) and 6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code § 21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:
    a. Whether the proposed project has a significant impact on an identified tribal cultural resource.
    b. Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code section 21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code § 21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:
    a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or
    b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code § 21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code section 21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code section 21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code § 21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code section 21084.3 (b). (Pub. Resources Code § 21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:
    a. Avoidance and preservation of the resources in place, including, but not limited to:
        i. Planning and construction to avoid the resources and protect the cultural and natural context.
        ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
    b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
        i. Protecting the cultural character and integrity of the resource.
        ii. Protecting the traditional use of the resource.
        iii. Protecting the confidentiality of the resource.
    c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
    d. Protecting the resource. (Pub. Resource Code § 21084.3 (b)).
    e. Please note that a federally recognized California Native American tribe or a nonfederally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code § 815.3 (c)).
    f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code § 5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An environmental impact report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:
    a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code sections 21080.3.1 and 21080.3.2 and concluded pursuant to Public Resources Code section 21080.3.2.
    b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.
    c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code section 21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code § 21082.3 (d)).

    This process should be documented in the Cultural Resources section of your environmental document.

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires **local governments** to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code § 65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code § 65352.3 (a)(2)).
2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.
3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code section 65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code sections 5097.9 and 5097.993 that are within the city's or county's jurisdiction. (Gov. Code § 65352.3 (b)).
4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
    a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
    b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
    a. If part or all of the APE has been previously surveyed for cultural resources.
    b. If any known cultural resources have been already been recorded on or adjacent to the APE.
    c. If the probability is low, moderate, or high that cultural resources are located in the APE.
    d. If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
    a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. 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.

b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:
   a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.
   b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.
   a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, section 15064.5(f) (CEQA Guidelines section 15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
   b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.
   c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code section 7050.5, Public Resources Code section 5097.98, and Cal. Code Regs., tit. 14, section 15064.5, subdivisions (d) and (e) (CEQA Guidelines section 15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

Please contact me if you need any additional information at gayle.totton@nahc.ca.gov.

Sincerely,

Gayle Totton, M.A., PhD.
Associate Governmental Program Analyst

cc: State Clearinghouse

From:	Shilpa Gupta
To:	Tim Mullen
Cc:	Avila, Kim; Mir, Tamseel
Subject:	Fwd: SRP - Sidewalk Vegetation Overgrowth & Sidewalk Repair Program
Date:	Tuesday, August 15, 2017 9:27:04 AM
Attachments:	facebook-256.png instagram_new1600.png

This is email 2.

Thanks,
Shilpa Gupta, MPA
Environmental Management | Environmental Supervisor I
Bureau of Engineering, Department of Public Works
1149 S. Broadway, Suite 600
Los Angeles, CA 90015
O: (213) 485 - 4560

ENGINEERING
CITY OF LOS ANGELES

---------- Forwarded message ----------
From: **Alex Walter** <alexw@alexwalter.com>
Date: Sat, Aug 12, 2017 at 1:17 PM
Subject: SRP - Sidewalk Vegetation Overgrowth & Sidewalk Repair Program
To: shilpa.gupta@lacity.org
Cc: Gary Harris <gary.harris@lacity.org>, Karen Bowie <karen.bowie@lacity.org>

Shilpa Gupta . . .

Please include existing Sidewalk Vegetation Overgrowth in the Sidewalk Repair Program Environmental Review documents and meetings.

More rigid enforcement of SEC. 56.08. SIDEWALKS – STREETS – OBSTRUCTIONS should be happening now and in the future.

...Alex Walter
6440 Drexel Ave
Los Angeles CA 90048-4706
USA

Voice & Text Cell: 720-448-4008

email: alexw@alexwalter.com

From:	Shilpa Gupta
To:	Tim Mullen
Cc:	Avila, Kim; Mir, Tamseel
Subject:	Fwd: SRP for ADA compliance
Date:	Tuesday, August 15, 2017 9:30:02 AM
Attachments:	facebook-256.png instagram_new1600.png

This is email 3.

Thanks,
Shilpa Gupta, MPA
Environmental Management | Environmental Supervisor I
Bureau of Engineering, Department of Public Works
1149 S. Broadway, Suite 600
Los Angeles, CA 90015
O: (213) 485 - 4560

ENGINEERING
CITY OF LOS ANGELES

---------- Forwarded message ----------
From: **Nat Isaac** <nat.isaac@lacity.org>
Date: Mon, Jul 31, 2017 at 10:09 AM
Subject: SRP for ADA compliance
To: Shilpa Gupta <shilpa.gupta@lacity.org>

Hello Shilpa,

Please let me know if you would be able to tell me the status of an ADA compliance issue at a specific address in Councilman Wesson's district. The compliance issue involves two curb ramps located at the south-east and south-west corners of Sawyer and Shenandoah Streets (1900 Shenandoah Street). Curb ramps were installed at the north-east and north-west corners of the same intersection, but for some reason construction crews missed the south side of the intersection. Residents have been requesting ramps at this intersection for over two years, including via MyLA311, but no ramps have been constructed thus far. Please let me know if these two corners are scheduled for repair. Thank you for your assistance!

--
Nat Isaac
Environmental Engineering Associate I
Solid Resources Support Services Division
Bureau of Sanitation
City of Los Angeles
(213) 485-3593

From:	Shilpa Gupta
To:	Tim Mullen
Cc:	Avila, Kim; Mir, Tamseel
Subject:	Fwd: AB52: Sidewalk Repair Program
Date:	Tuesday, August 15, 2017 9:33:16 AM
Attachments:	image8274ef.PNG facebook-256.png instagram_new1600.png

---

This is email 5.

Thanks,
Shilpa Gupta, MPA
Environmental Management | Environmental Supervisor I
Bureau of Engineering, Department of Public Works
1149 S. Broadway, Suite 600
Los Angeles, CA 90015
O: (213) 485 - 4560

ENGINEERING
CITY OF LOS ANGELES

---------- Forwarded message ----------
From: **Jessica Mauck** <JMauck@sanmanuel-nsn.gov>
Date: Tue, Aug 1, 2017 at 11:11 AM
Subject: AB52: Sidewalk Repair Program
To: "shilpa.gupta@lacity.org" <shilpa.gupta@lacity.org>

Hello Shilpa,

Thank you for contacting the San Manuel Band of Mission Indians (SMBMI) regarding the above referenced project. SMBMI appreciates the opportunity to review the project documentation, which was received by our Cultural Resources Management Department on 1 August 2017. The proposed project area is located just outside of Serrano ancestral territory and, as such, SMBMI will not be requesting consulting party status with the lead agency or requesting to participate in the scoping, development, and/or review of documents created pursuant to these legal and regulatory mandates.

Regards,

Jessica Mauck
CULTURAL RESOURCES ANALYST
O: (909) 864-8933 x3249

M: (909) 725-9054
26569 Community Center Drive, Highland California 92346
SAN MANUEL
BAND OF MISSION INDIANS

From:	Shilpa Gupta
To:	Tim Mullen
Cc:	Avila, Kim; Mir, Tamseel
Subject:	Fwd: Metro Development Review - Sidewalk Repair Program, Los Angeles
Date:	Tuesday, August 15, 2017 9:26:29 AM
Attachments:	instagram_new1600.png facebook-256.png

Tim,

Thank you for inputting these comments. I will forward you the emails.

This is email 1.

Thanks,
Shilpa Gupta, MPA
Environmental Management | Environmental Supervisor I
Bureau of Engineering, Department of Public Works
1149 S. Broadway, Suite 600
Los Angeles, CA 90015
O: (213) 485 - 4560

ENGINEERING
CITY OF LOS ANGELES

---------- Forwarded message ----------
From: **Barrita, Michael** <BarritaM@metro.net>
Date: Thu, Aug 10, 2017 at 10:11 AM
Subject: Metro Development Review - Sidewalk Repair Program, Los Angeles
To: "shilpa.gupta@lacity.org" <shilpa.gupta@lacity.org>
Cc: "Hull, Derek" <HullD@metro.net>

Hello Ms. Gupta,

Our Development Review team is in receipt of the Notice of Preparation for the proposed Sidewalk Repair Program for the City of Los Angeles. In order to assess any potential impacts to Metro's services or facilities, we would like to please request a complete list of the proposed sidewalk repairs in the Sidewalk Repair Program. Should you have any questions regarding this request, please feel free to contact me via email or at the information below.

Thank you,

Michael Barrita

LA Metro
Transportation Associate, Countywide Planning & Development

Joint Development/Strategic Initiatives
213.922.3442
metro.net | facebook.com/losangelesmetro | @metrolosangeles
Metro provides excellence in service and support.

From:	Shilpa Gupta
To:	Tim Mullen
Cc:	Avila, Kim; Mir, Tamseel
Subject:	Fwd: SRP subject
Date:	Friday, August 18, 2017 11:23:10 AM
Attachments:	instagram_new1600.png facebook-256.png

Hello Tim,

Please insert into SmartComments.

Thank you,
Shilpa Gupta, MPA
Environmental Management | Environmental Supervisor I
Bureau of Engineering, Department of Public Works
1149 S. Broadway, Suite 600
Los Angeles, CA 90015
O: (213) 485 - 4560

ENGINEERING
CITY OF LOS ANGELES

---------- Forwarded message ----------
From: **Dianna Davidson** <dld829@gmail.com>
Date: Fri, Aug 18, 2017 at 11:08 AM
Subject: SRP subject
To: shilpa.gupta@lacity.org

Dear Sirs:

I would like to know WHO PAYS for SIDEWALK REPAIR?

DOES THE CITY PAY FOR TOTAL REPAIR ?

IS IT SPLIT BETWEEN CITY and HOMEOWNER?

Please respond, briefly, to my questions.

dld

From:	Shilpa Gupta
To:	Tim Mullen
Cc:	Mir, Tamseel; Avila, Kim
Subject:	Fwd: SRP Question
Date:	Friday, August 18, 2017 11:23:57 AM
Attachments:	instagram_new1600.png facebook-256.png

Hi Tim,

Please insert in SmartComments.

Thank you,
Shilpa Gupta, MPA
Environmental Management | Environmental Supervisor I
Bureau of Engineering, Department of Public Works
1149 S. Broadway, Suite 600
Los Angeles, CA 90015
O: (213) 485 - 4560

ENGINEERING
CITY OF LOS ANGELES

---------- Forwarded message ----------
From: **Issam Najm** <IssamNajm@prnc.org>
Date: Fri, Aug 18, 2017 at 7:31 AM
Subject: SRP Question
To: shilpa.Gupta@lacity.org

Dear Ms. Gupta:

My name is Issam Najm, and I am the president of the Porter Ranch Neighborhood Council (PRNC). I received the NOP for the SRP EIR and I am about to distribute it to the Board members and post it on our website. However, the map attached to the letter titled: "Figure 1, Project Location Map and NOP/IS Availability Map.", does not even include Porter Ranch. The map is cut off at the 118 FWY, and our community is north of the freeway. Our Library Branch is not listed on the list of Branch Libraries, and I don't know what that means. So in anticipation of getting the question from my Board members and our Stakeholders, can you please clarify it to me? Specifically:

1. Why is Porter Ranch not included in the map?
2. Does this mean that the SRP does not include Porter Ranch?
3. Why is our Library not included on the list?
4. Will Porter Ranch sidewalks be repaired as part of this SRP?

Thank you
Issam Najm

Issam Najm, Ph.D.

Board President
Porter Ranch Neighborhood Council
IssamNajm@prnc.org

State of California • Natural Resources Agency
Edmund G. Brown Jr., *Governor*
Department of Conservation
Division of Oil, Gas, and Geothermal Resources – District 1
5816 Corporate Avenue • Suite 100
Cypress, CA 90630
(714) 816-6847 • FAX (714) 816-6853

August 25, 2017

VIA EMAIL

Ms. Shilpa Gupta
City of Los Angeles
Bureau of Engineering, Environmental Management Group
1149 South Broadway, Suite 600
Los Angeles, CA 90015
Shilpa.Gupta@lacity.org

Dear Ms. Gupta:

NOP – NOTICE OF PREPARATION
SIDEWALK REPAIR PROGRAM
SCH: 2017071063

The Department of Conservation's Division of Oil, Gas, and Geothermal Resources (Division) has reviewed the above referenced project for impacts with Division jurisdictional authority. The Division supervises the drilling, maintenance, and plugging and abandonment of oil, gas, and geothermal wells in California. The Division offers the following comments for your consideration.

The project area is in Los Angeles County and is within the Beverly Hills, Cheviot Hills, El Segundo, Howard Townsite, Hyperion, Inglewood, Las Cienegas, Los Angeles City, Los Angeles Downtown, Rosecrans, San Vicente, Salt Lake, and Wilmington oil and gas field boundaries. Division records indicate that there is possibility that oil and gas pipelines are located near oil and gas production facilities within the project boundary as identified in the application. Some of these pipelines cross under existing sidewalks.

The scope and content of information that is germane to Division's responsibility are contained in Section 3000 et seq. of the Public Resources Code, and administrative regulations under Title 14, Division 2, Chapters 2, 3 and 4 of the California Code of Regulations.

If any wells, including any plugged, abandoned or unrecorded wells, are damaged or uncovered during excavation or grading, remedial plugging operations may be required. If such damage or discovery occurs, the Division's district office must be contacted to obtain information on the requirements and approval to perform remedial operations.

The possibility for future problems from oil and gas wells that have been plugged and abandoned, or reabandoned, to the Division's current specifications are remote. However, the Division recommends that a diligent effort be made to avoid building over any plugged and abandoned well.

Questions regarding the Division's Facilities and Pipeline Management Program or Construction Site Well Review Program can be addressed to the local Division office in Cypress by calling (714) 816-6847 or email DOGDIST1@conservation.ca.gov.

Sincerely,

Grace P. Brandt
Associate Oil and Gas Engineer

cc: The State Clearinghouse in the Office of Planning and Research
Tim Shular, DOC OGER
Crina Chan, DOC OGER
Jan Perez, DOGGR CEQA Unit
Chris McCullough, Facilities and Environmental Supervisor
Environmental CEQA File

DEPARTMENT OF TRANSPORTATION
DISTRICT 7- OFFICE OF REGIONAL PLANNING
100 S. MAIN STREET, SUITE 100
LOS ANGELES, CA 90012
PHONE (213) 897-6536
FAX (213) 897-1337
TTY 711
www.dot.ca.gov

Serious Drought.
Making Conservation
a California Way of Life.

August 21, 2017

Ms. Shilpa Gupta
City of Los Angeles
1149 S. Broadway, Suite 600
Los Angeles, Ca 90015

RE: Sidewalk Repair Program
SCH#201707106.
GTS#07-LA-2017-01043ME-NOP

Dear Ms. Gupta:

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the above referenced project. The proposed project would repair and upgrade sidewalks and curb ramps throughout the City of LA. Street tree removals and replacements, along with utility relocations may be needed.

Based on review, Caltrans does not expect project approval to result in a direct adverse impact to the existing State transportation facilities. However, if construction truck traffic is expected to cause delays on the State facility, please forward a truck/traffic construction management plan to Caltrans for review.

In the Spirit of mutual cooperation, Caltrans staff is available to work with your planners and traffic engineers for this project, if needed. If you have any questions regarding these comments, please contact project coordinator Ms. Miya Edmonson, at (213) 897-6536 and refer to GTS# LA-2017-01043ME

Sincerely,

DIANNA WATSON
IGR/CEQA Branch Chief

cc: Scott Morgan, State Clearinghouse

SAFE SIDEWALKS LA

ENGINEERING
CITY OF LOS ANGELES

Comment Sheet

Please use this form to provide feedback and comments to the City of Los Angeles Bureau of Engineering on the proposed project and the content of the Draft Environmental Impact Report..Your input will become part of the public record and will be included in the Draft EIR. Comments are due no later than 11:59 p.m. on September 15, 2017 (end of the public comment period). Please submit your comments via email to shilpa.gupta@lacity.org or mail them to Shilpa Gupta, Environmental Supervisor I Los Angeles Bureau of Engineering, Environmental Management Group, 1149 S. Broadway, Suite 600, Mail Stop 939 Los Angeles, CA 90015. Thank you for participating.

Name: King Raymond Joseph Carpenter Jr	Organization (if any):
Address: P O BOX 13251	
Phone Number: (206) 203-1545	Email Address: Princepersonalmail@gmail.com

Comments:

TO All interested Party - I King Raymond Joseph Carpenter Jr HAVE A problem understanding All the Fine Points. of (BOE) proposial, could the People receive more information of the finincial stakeholders, trustee Agencies, And responsible Agencies. We the people NEED finincal record so we CAN understand were the moneys Coming from. We NEED to see the Books. We WANT the NAME And record of ~~How~~ its being PAID for !!! if you Do not provide the information it A NO on the project !!

King Raymond Joseph Carpenter Jr

King

8 | 1 | 2017

*Continue on reverse side if needed

From:	Mir, Tamseel
To:	Herron, Will
Subject:	FW: SRP
Date:	Friday, September 01, 2017 4:53:01 PM
Attachments:	image002.png image003.png

One more…

From: Shilpa Gupta [mailto:shilpa.gupta@lacity.org]
Sent: Friday, September 01, 2017 4:46 PM
To: Tim Mullen <tim@smartcomment.com>; Avila, Kim <Kim.Avila@icf.com>; Mir, Tamseel <Tamseel.Mir@icf.com>
Subject: Fwd: SRP

Shilpa Gupta, MPA
Environmental Management | Environmental Supervisor I
Bureau of Engineering, Department of Public Works
1149 S. Broadway, Suite 600
Los Angeles, CA 90015
O: (213) 485 - 4560

---------- Forwarded message ----------
From: **Jennie Chamberlain** <jennie.chamberlain@gmail.com>
Date: Mon, Aug 21, 2017 at 1:29 PM
Subject: SRP
To: Shilpa.Gupta@lacity.org

I think the city council's idea to create a public private partnership to fix the sidewalks in front of privately owned buildings is absurd.

If the city disagrees with this, than may I suggest that the city do the same with the roadways, the sewer maintenance and the trash collection.

Sidewalk mobility is critical for a healthy, economically prosperous Los Angeles. It is not something that should be left up to private homeowners and business owners.

Thank You,
Jennie Chamberlain
2746 Angus St
Los Angeles, CA 90039

Los Angeles Unified School District

Office of Environmental Health and Safety

September 5, 2017

Shilpa Gupta *Submitted via electronic mail*
Environmental Supervisor I
City of Los Angeles Public Works, Bureau of Engineering
Environmental Management Group
1149 S. Broadway, Suite 600, Mail Stop 939
Los Angeles, CA 90015-2213

SUBJECT: PROJECT NAME: Sidewalk Repair Project
PROJECT LOCATION: Throughout the City of Los Angeles

Presented below are comments submitted on behalf of the Los Angeles Unified School District (LAUSD or District) regarding the proposed Sidewalk Repair Project.

The areas around District schools experience high volumes of young students and their families walking to and from school. The District wishes to work with the City's Sidewalk Repair Project to identify and prioritize repairs of damaged sidewalks and other pedestrian facilities around schools, particularly areas that are identified as pedestrian routes to schools. District Pedestrian Routes to School maps are available at: *https://achieve.lausd.net/Pedestrian-School-Routes.* I will follow up this comment letter with a phone call to discuss opportunities for coordination.

Thank you for your time. If you need additional information, please contact me at (213) 241-3432.

Regards,

Will Meade
Environmental Planning Specialist
LAUSD, Office of Environmental Health and Safety

From: Mir, Tamseel
To: Herron, Will
Subject: FW: Tree Canopy Preservation in Los Angeles in light of Sidewalk Repair Program: Recommendations for Sidewalk Repair EIR Scoping
Date: Thursday, September 07, 2017 9:08:40 AM
Attachments: image002.png
image003.png

Hi Will,
Here is 1 of 3 emails that contain comments. Please save and include in our list.
Thank you,
Tamseel

From: Shilpa Gupta [mailto:shilpa.gupta@lacity.org]
Sent: Thursday, September 07, 2017 9:03 AM
To: Tim Mullen <tim@smartcomment.com>; Avila, Kim <Kim.Avila@icf.com>; Mir, Tamseel <Tamseel.Mir@icf.com>
Subject: Fwd: Tree Canopy Preservation in Los Angeles in light of Sidewalk Repair Program: Recommendations for Sidewalk Repair EIR Scoping

Hi Tim,

This group included me in their internal conversation. Please include the last email as a comment letter from the last respondent.

Thank you,
Shilpa Gupta, MPA
Environmental Management | Environmental Supervisor I
Bureau of Engineering, Department of Public Works
1149 S. Broadway, Suite 600
Los Angeles, CA 90015
O: (213) 485 - 4560

ENGINEERING

---------- Forwarded message ----------
From: **ENC Shelley Billik** <encshelleybillik@gmail.com>
Date: Thu, Sep 7, 2017 at 7:56 AM
Subject: Re: Tree Canopy Preservation in Los Angeles in light of Sidewalk Repair Program: Recommendations for Sidewalk Repair EIR Scoping
To: Joanne DAntonio <montaggiojoanne@yahoo.com>
Cc: Gregory Wright <GregoryDavidWright@roadrunner.com>, "diana@ittakesagarden.com" <diana@ittakesagarden.com>, "maureen@easterntalent.net" <maureen@easterntalent.net>, "bg534@lafn.org" <bg534@lafn.org>, "jdantonio@greatervalleyglencouncil.org" <jdantonio@greatervalleyglencouncil.org>, "hmcky@yahoo.com" <hmcky@yahoo.com>, "sforsyth@greatervalleyglencouncil.org" <sforsyth@greatervalleyglencouncil.org>, "rhplatkin@gmail.com" <rhplatkin@gmail.com>, "lmlittrell@gmail.com" <lmlittrell@gmail.com>, Bailey Glenn <glennbaileyncs@gmail.com>, "shilpa.gupta@lacity.org" <shilpa.gupta@lacity.org>

I think it might be easier to do a google drive share… I will try it now.

Shelley Billik
Neighborhood Council Sustainability Alliance
Encino Neighborhood Council
310-925-6091 cell

On Sep 7, 2017, at 7:51 AM, Joanne DAntonio <montaggiojoanne@yahoo.com> wrote:

I like the "LA poised . . . " headline -- I will put it in this evening along with any other changes.

I wonder if there is a way for people to access this sheet electronically so they can cut and past what interests them to include. Is there time to put this sheet on the NCSA website before Saturday?

Joanne

From: ENC Shelley Billik <encshelleybillik@gmail.com>
To: Gregory Wright <GregoryDavidWright@roadrunner.com>
Cc: Joanne DAntonio <montaggiojoanne@yahoo.com>; diana@ittakesagarden.com; maureen@easterntalent.net; bg534@lafn.org; jdantonio@greatervalleyglencouncil.org; hmcky@yahoo.com; sforsyth@greatervalleyglencouncil.org; rhplatkin@gmail.com; lmlittrell@gmail.com; Bailey Glenn <glennbaileyncs@gmail.com>; shilpa.gupta@lacity.org
Sent: Thursday, September 7, 2017 7:30 AM
Subject: Re: Tree Canopy Preservation in Los Angeles in light of Sidewalk Repair Program: Recommendations for Sidewalk Repair EIR Scoping

Thanks Greg, and a major thank you to Joanne! I think the content is excellent, and yes, I can delay as long as Friday noon for major changes. I will print them Friday. My only comment is that we need a more attention grabbing title/headline. Those who are not familiar with the topic may not know the connection between sidewalk repair and trees. I know it seems obvious to us, but we are trying to reach the non-choir! My two cents.

This may be too much but I would like your feedback: E.g. Did you know we have lost thousands of trees due to poor sidewalk repair? or L.A. Poised for Continuing Loss of Urban Tree Canopy

Shelley

P.s. I plan to also have copies of the USC canopy loss study on hand.

Shelley Billik
Neighborhood Council Sustainability Alliance
Encino Neighborhood Council
310-925-6091 cell

On Sep 7, 2017, at 3:31 AM, Gregory Wright <GregoryDavidWright@roadrunner.com> wrote:

Excellent points all, raised in the ten-point sheet Joanne has synthesized. I'm good with this draft of the handout as it is.

Greg Wright

From: Joanne DAntonio [mailto:montaggiojoanne@yahoo.com]
Sent: Thursday, September 07, 2017 12:38 AM
To: diana@ittakesagarden.com; maureen@easterntalent.net; bg534@lafn.org; jdantonio@greatervalleyglencouncil.org; hmcky@yahoo.com; encshelleybillik@gmail.com; sforsyth@greatervalleyglencouncil.org; rhplatkin@gmail.com; lmlittrell@gmail.com; glennbaileyncs@gmail.com

Subject: Recommendations for Sidewalk Repair EIR Scoping

Dear Trees Committee,

Shelley just gave us the opportunity to have a handout at the NCSA table at the Congress of Neighborhood Councils to give people ideas for weighing in on the Sidewalk Repair EIR scoping before Sept. 15. (I recommend all of you send in your comments to Shilpa Gupta (see attached for email address) before the deadline).

I only found out tonight that this handout would be possible so I did not have time to have all of you weigh in. I took the liberty of writing up a sheet of what I think are the most important 10 points for this EIR. You will note that I did not get into specifics like numbers of replacement trees or container sizes -- I purposely avoided this sort of replacement game and focused on preserving tree canopy. As it is, most replacement trees planted so far have been species that don't really grow into canopy trees.

I have been to and spoken at a whole lot of meetings following this sidewalk repair law suit and subsequent motions, including City Council Town Halls, Public Works Committee meetings and the full City Council vote meeting. Plus I participated in a bunch of CFAC meetings where Urban Forestry spoke. All of this informed this sheet, plus science information from Diana, and even an idea or two from the Tree People blog on Sidewalk Repair EIR scoping.

Shelley needs to print this Thursday, and I am gone most of that day. This is just suggestions, and it will be stronger if it comes from our committee. If something truly bothers you, let me know asap. It is attached as a Word doc, so Shelley has it along with all of you. I can ask her to make a change if you really find a significant problem. Otherwise I hope you will let this fly, and forgive the short time frame.

Shelly, please let us know if there is any time for changes and when you need to get this printed. I am guessing by noonish Thursday. But I am leaving by 10 a.m. for meetings and won't have a computer until late afternoon. Hopefully we can live with this as it is.

Thanks so much.

Joanne D'Antonio
Chair, NCSA Trees Committee

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

SENT VIA USPS AND E-MAIL: September 7, 2017

Shilpa.Gupta@lacity.org
Shilpa Gupta, Environmental Supervisor I
City of Los Angeles Public Works, Bureau of Engineering
Environmental Management Group
1149 S. Broadway, Suite 600, Mail Stop 939
Los Angeles, CA 90015-2213

Notice of Preparation of a Draft Environmental Impact Report for the Proposed Sidewalk Repair Program

South Coast Air Quality Management District (SCAQMD) staff appreciates the opportunity to comment on the above-mentioned document. SCAQMD staff's comments are recommendations regarding the analysis of potential air quality impacts from the Proposed Project that should be included in the Draft Environmental Impact Report (EIR). Please send SCAQMD a copy of the Draft EIR upon its completion. Note that copies of the Draft EIR that are submitted to the State Clearinghouse are not forwarded to SCAQMD. Please forward a copy of the Draft EIR directly to SCAQMD at the address shown in the letterhead. **In addition, please send with the Draft EIR all appendices or technical documents related to the air quality, health risk, and greenhouse gas analyses and electronic versions of all air quality modeling and health risk assessment files[1]. These include emission calculation spreadsheets and modeling input and output files (not PDF files). Without all files and supporting documentation, SCAQMD staff will be unable to complete our review of the air quality analyses in a timely manner. Any delays in providing all supporting documentation will require additional time for review beyond the end of the comment period.**

Air Quality Analysis

SCAQMD adopted its California Environmental Quality Act (CEQA) Air Quality Handbook in 1993 to assist other public agencies with the preparation of air quality analyses. SCAQMD staff recommends that the Lead Agency use this Handbook as guidance when preparing its air quality analysis. Copies of the Handbook are available from SCAQMD's Subscription Services Department by calling (909) 396-3720. More recent guidance developed since this Handbook was published is also available on SCAQMD's website at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/ceqa-air-quality-handbook-(1993). SCAQMD staff also recommends that the Lead Agency use the CalEEMod land use emissions software. This software has recently been updated to incorporate up-to-date state and locally approved emission factors and methodologies for estimating pollutant emissions from typical land use development. CalEEMod is the only software model maintained by the California Air Pollution Control Officers Association (CAPCOA) and replaces the now outdated URBEMIS. This model is available free of charge at: www.caleemod.com.

SCAQMD has also developed both regional and localized significance thresholds. SCAQMD staff requests that the Lead Agency quantify criteria pollutant emissions and compare the results to

[1] Pursuant to the CEQA Guidelines Section 15174, the information contained in an EIR shall include summarized technical data, maps, plot plans, diagrams, and similar relevant information sufficient to permit full assessment of significant environmental impacts by reviewing agencies and members of the public. Placement of highly technical and specialized analysis and data in the body of an EIR should be avoided through inclusion of supporting information and analyses as appendices to the main body of the EIR. Appendices to the EIR may be prepared in volumes separate from the basic EIR document, but shall be readily available for public examination and shall be submitted to all clearinghouses which assist in public review.

SCAQMD's CEQA regional pollutant emissions significance thresholds to determine air quality impacts. SCAQMD's CEQA regional pollutant emissions significance thresholds can be found here: http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf. In addition to analyzing regional air quality impacts, SCAQMD staff recommends calculating localized air quality impacts and comparing the results to localized significance thresholds (LSTs). LSTs can be used in addition to the recommended regional significance thresholds as a second indication of air quality impacts when preparing a CEQA document. Therefore, when preparing the air quality analysis for the Proposed Project, it is recommended that the Lead Agency perform a localized analysis by either using the LSTs developed by SCAQMD staff or performing dispersion modeling as necessary. Guidance for performing a localized air quality analysis can be found at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/localized-significance-thresholds.

The Lead Agency should identify any potential adverse air quality impacts that could occur from all phases of the Proposed Project and all air pollutant sources related to the Proposed Project. Air quality impacts from both construction (including demolition, if any) and operations should be calculated. Construction-related air quality impacts typically include, but are not limited to, emissions from the use of heavy-duty equipment from grading, earth-loading/unloading, paving, architectural coatings, off-road mobile sources (e.g., heavy-duty construction equipment) and on-road mobile sources (e.g., construction worker vehicle trips, material transport trips). Operation-related air quality impacts may include, but are not limited to, emissions from stationary sources (e.g., boilers), area sources (e.g., solvents and coatings), and vehicular trips (e.g., on- and off-road tailpipe emissions and entrained dust).

In the event that the Proposed Project generates or attracts vehicular trips, air quality impacts from indirect sources should be included in the analysis. In the event that the Proposed Project generates or attracts heavy-duty diesel-fueled vehicles, it is recommended that the Lead Agency perform a mobile source health risk assessment. Guidance for performing a mobile source health risk assessment ("*Health Risk Assessment Guidance for Analyzing Cancer Risk from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis*") can be found at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/mobile-source-toxics-analysis. An analysis of all toxic air contaminant impacts due to the use of equipment potentially generating such air pollutants should also be included.

In addition, guidance on siting incompatible land uses (such as placing homes near freeways) can be found in the California Air Resources Board's *Air Quality and Land Use Handbook: A Community Health Perspective*, which can be found at: http://www.arb.ca.gov/ch/handbook.pdf. CARB's Land Use Handbook is a general reference guide for evaluating and reducing air pollution impacts associated with new projects that go through the land use decision-making process. Guidance[2] on strategies to reduce air pollution exposure near high-volume roadways can be found at: https://www.arb.ca.gov/ch/rd_technical_advisory_final.PDF.

Mitigation Measures

In the event that the Proposed Project generates significant adverse air quality impacts, CEQA requires that all feasible mitigation measures that go beyond what is required by law be utilized during project construction and operation to minimize these impacts. Pursuant to CEQA Guidelines Section 15126.4 (a)(1)(D), any impacts resulting from mitigation measures must also be discussed. Several resources are

[2] In April 2017, CARB published a technical advisory, *Strategies to Reduce Air Pollution Exposure Near High-Volume Roadways: Technical Advisory*, to supplement CARB's Air Quality and Land Use Handbook: A Community Health Perspective. This technical advisory is intended to provide information on strategies to reduce exposures to traffic emissions near high-volume roadways to assist land use planning and decision-making in order to protect public health and promote equity and environmental justice. The technical advisory is available at: https://www.arb.ca.gov/ch/landuse.htm.

available to assist the Lead Agency with identifying potential mitigation measures for the Proposed Project, including:

- Chapter 11 of SCAQMD's *CEQA Air Quality Handbook*
- SCAQMD's CEQA web pages available here: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/mitigation-measures-and-control-efficiencies
- SCAQMD's Rule 403 – Fugitive Dust, and the Implementation Handbook for controlling construction-related emissions and Rule 1403 – Asbestos Emissions from Demolition/Renovation Activities
- SCAQMD's Mitigation Monitoring and Reporting Plan (MMRP) for the 2016 Air Quality Management Plan (2016 AQMP) available here (starting on page 86): http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2017/2017-mar3-035.pdf?sfvrsn=5
- CAPCOA's *Quantifying Greenhouse Gas Mitigation Measures* available here: http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf

Alternatives

In the event that the Proposed Project generates significant adverse air quality impacts, CEQA requires the consideration and discussion of alternatives to the Proposed Project or its location which are capable of avoiding or substantially lessening any of the significant effects of the project. The discussion of a reasonable range of potentially feasible alternatives, including a "no project" alternative, is intended to foster informed decision-making and public participation. Pursuant to CEQA Guidelines Section 15126.6(d), the Draft EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the Proposed Project.

Permits

In the event that the Proposed Project requires a permit from SCAQMD, SCAQMD should be identified as a responsible agency for the Proposed Project. For more information on permits, please visit SCAQMD webpage at: http://www.aqmd.gov/home/permits. Questions on permits can be directed to SCAQMD's Engineering and Permitting staff at (909) 396-3385.

Data Sources

SCAQMD rules and relevant air quality reports and data are available by calling SCAQMD's Public Information Center at (909) 396-2039. Much of the information available through the Public Information Center is also available at SCAQMD's webpage (http://www.aqmd.gov).

SCAQMD staff is available to work with the Lead Agency to ensure that project air quality impacts are accurately evaluated and any significant impacts are mitigated where feasible. If you have any questions regarding this letter, please contact me at lsun@aqmd.gov or call me at (909) 396-3308.

Sincerely,

Lijin Sun

Lijin Sun, J.D.
Program Supervisor, CEQA IGR
Planning, Rule Development & Area Sources

LS
LAC170802-02
Control Number

IMPORTANT ACTION TO AFFECT YOUR QUALITY OF LIFE!!

Comment on the Sidewalk Repair EIR Scoping:

email at Shilpa.Gupta@lacity.org with SRP in the subject line
by September 15, 2017 (include a valid mailing address in the email)

Recommendations for Sidewalk Repair Scoping EIR from the NCSA Trees Committee:

1. Because the tree canopy provides significant cooling and air purification, both of which are critical for the health of the people in Los Angeles, the Sidewalk Repair EIR must assess the decrease of tree canopy that results from the large quantity of tall tree elimination currently anticipated by Urban Forestry for sidewalk repair. Potential effects on air quality, including diminished greenhouse gas reduction, and increase in heat island effect must be quantified. The environmental effects of increased air conditioning usage must also be calculated. Human health risks must be addressed.

2. Before any trees are removed for sidewalk repair, a full tree inventory of street trees must be done by an independent professional entity and a tree master plan created. An actual field calculation must be done of how many canopy trees Urban Forestry expects will be removed for sidewalk repair, as well as how many new places exist for planting trees that are capable of reaching a height that contributes to tree canopy.

3. A master tree plan must be developed that does not remove trees too rapidly such that it creates a decline in air quality and an increase in the heat island effect. There should be no net loss to canopy during the sidewalk repair process. In view of the length of time it takes for a tree to grow tall, an aggressive planting schedule which includes new tree wells and green spaces may need to begin even before trees are removed.

4. The aggressive non-aesthetic pruning of tall trees, currently the practice of Urban Forestry (which pays subcontractors $180 a tree versus San Francisco that budgets $1,000 for a large tree), must be factored in the assessment of decline of tree canopy. “Before” photos of recently-pruned trees are available on Google maps and Google Earth.

5. Any tree replacements should be done strategically. Tree species that will grow tall enough to create canopy need to be identified as capable of thriving in this climate, and a plan to water and cultivate those trees into full maturity needs to be determined and adopted.

6. The environmental impact of wildlife habitats must be calculated and any tree removal scheduled so as not to disrupt spring/summer nesting.

7. Given the potential negative effects on canopy when trees are removed for sidewalk repair, a new ordinance to restrict property owners from removing any healthy trees on their property for non-sidewalk related reasons needs to be considered.

8. Identify a plan to fully implement sustainable tree-saving sidewalk designs including meandering sidewalks, bridging over existing roots, curb bump-outs and larger tree-wells. These were listed as options in the sidewalk repair motion of Nov. 30, 2016 (tree removal as a last resort), but none except tree removal have been put into practice as options. Results of any tests of alternative sidewalk approaches need to be recorded in the EIR and then publicized so that homeowners have these options to tree removal. Also, our urban forest could significantly increase water supplies for LA if the City and

property owners integrated permeable sidewalks designs, and these need to be promoted.

9. A thorough investigation into root pruning as an alternative to tree removal must be done. Urban Forestry proposed this approach to City Council as viable and reliable; and though it may not be widely known, the new administration at Urban Forestry says they do not want to use this method.

10. Every proposed tree removal must be fully publicized in advance with adequate time for due process and stakeholder participation to find alternate solutions to tree removal before any tree is removed.

From:	Mir, Tamseel
To:	Herron, Will
Subject:	FW: SRP
Date:	Monday, September 11, 2017 9:06:10 AM
Attachments:	image002.png image003.png

An email comment…
Please also save.

Thank you,
Tamseel

From: Shilpa Gupta [mailto:shilpa.gupta@lacity.org]
Sent: Monday, September 11, 2017 7:49 AM
To: Avila, Kim <Kim.Avila@icf.com>; Mir, Tamseel <Tamseel.Mir@icf.com>; Tim Mullen <tim@smartcomment.com>
Subject: Fwd: SRP

---------- Forwarded message ----------
From: **Joan Temple** <joanie.tee@gmail.com>
Date: Sunday, September 10, 2017
Subject: SRP
To: with SRP <Shilpa.Gupta@lacity.org>

Please vote for money to research which trees on Centinela in Mar Vista etc. can be saved.
In the long run, it saves money with beauty, cooler streets….
Thank you.
Joan Temple
Joanie.tee@gmail.com

--
Shilpa Gupta, MPA
Environmental Management | Environmental Supervisor I
Bureau of Engineering, Department of Public Works
1149 S. Broadway, Suite 600
Los Angeles, CA 90015
O: (213) 485 - 4560

From:	Mir, Tamseel
To:	Herron, Will
Subject:	FW: SRP
Date:	Tuesday, September 12, 2017 8:48:40 AM
Attachments:	image002.png image003.png

Hi Will,

Please add this to our comments excel spreadsheet and save the email in the folder.

Thank you,

Tamseel

From: Shilpa Gupta [mailto:shilpa.gupta@lacity.org]

Sent: Tuesday, September 12, 2017 8:39 AM

To: Avila, Kim <Kim.Avila@icf.com>; Mir, Tamseel <Tamseel.Mir@icf.com>; Tim Mullen <tim@smartcomment.com>; Sidewalks City of Los Angeles <sidewalks@lacity.org>

Subject: Fwd: SRP

Shilpa Gupta, MPA
Environmental Management | Environmental Supervisor I
Bureau of Engineering, Department of Public Works
1149 S. Broadway, Suite 600
Los Angeles, CA 90015
O: (213) 485 - 4560

---------- Forwarded message ----------

From: **raphaele cohen-bacry** <rcohenbacry@gmail.com>

Date: Tue, Sep 12, 2017 at 7:17 AM

Subject: SRP

To: Shilpa.Gupta@lacity.org

Dear Shilpa,

I am a resident at Hancock Park Terrace and a year or so ago our Board was told that we should remove the city ficus trees and repair the badly damaged sidewalk in front of our complex on Melrose Ave. We had tried to get financing from the city but could not get anywhere and I think the Board was concerned that some passerby might get hurt. So we organized and paid for the whole project (9 huge beautiful trees were removed), including the replacement trees. That was a very expensive job for our small community, and on top of it this impacted the view of Melrose greatly. I believe this is not fair to us that we had to finance this job with no help since the trees are the city's property and this is a public the sidewalk that people use to wait for the bus and go to the public library. It put our community in an uncomfortable financial situation (special assessment, increase of HOA). Would you be kind enough to let me know if there is something you can do to help us recover some of the expenses?

Thank you,

Raphaele Cohen-Bacry
(323)960-0115
641 Wilcox Ave #3E
Los Angeles, CA 90004
rcohenbacry@gmail.com

From:	Mir, Tamseel
To:	Herron, Will
Subject:	FW: SRP
Date:	Wednesday, September 13, 2017 9:33:03 AM
Attachments:	image002.png image003.png

Please add this comment to the excel spreadsheet and save as a pdf.
Thank you!

From: Shilpa Gupta [mailto:shilpa.gupta@lacity.org]
Sent: Wednesday, September 13, 2017 9:30 AM
To: Avila, Kim <Kim.Avila@icf.com>; Mir, Tamseel <Tamseel.Mir@icf.com>; Tim Mullen <tim@smartcomment.com>
Subject: Fwd: SRP

Shilpa Gupta, MPA
Environmental Management | Environmental Supervisor I
Bureau of Engineering, Department of Public Works
1149 S. Broadway, Suite 600
Los Angeles, CA 90015
O: (213) 485 - 4560

---------- Forwarded message ----------
From: **September Forsyth** <gvgcforsyth@gmail.com>
Date: Wed, Sep 13, 2017 at 9:25 AM
Subject: SRP
To: Shilpa.Gupta@lacity.org

Shilpa,

Thank you for taking the time to read my email.

I am a board member of the Greater Valley Glen Council and I'm writing to you today to make my voice heard as a proponent of the Alliance (NCSA) Trees Committee.

It is a travesty that our city continues to lose thousands of trees due to building, sidewalk repair and of course the drought, however, it's a much more dire situation that they are not being replaced. As you must know, a lack of tree canopy greatly affects the quality of air, creates a heat island, and affects both the visual beauty and livability of this great city of all of its citizens and natural wildlife.

When does this destruction stop? When is enough, enough?

Where I was born and raised up in Portland, Oregon, there are trees every two feet. Sure, you'll argue, the Pacific Northwest has a different climate and rain total. Yes,

that is true, but beyond this, there are dedicated residents and city officials that take to heart the livability of their city and the responsibility of the offices they hold to ensure that the community remains livable. Trees don't offer themselves! Churches and schools do fundraisers every year, to buy young trees and the community comes out in droves to help with the planting wherever they are needed. The tree program in Portland is ranked #1 in the country. It's more than climate; it's because people care and take pride in the community!

I have lived here for over 30 years and as each year goes by it just deteriorates on many levels. I can apreciate that the sidewalks are being repaired, but to not replace a tree with another is slapping paint on a wall without fixing the hole. Not all tree cause sidewalks to buckle and crack! Sadly, whoever made the choice to plant the wrong trees in the first place on our parking strips was not educated to make that decision.

Our decision-makers MUST consider immediately that they simply cannot look the other way any longer. Time is of the essence. The situation is not going to right itself. By not bringing life back to our community via trees these entities are lending their support and participation to the serious negative impact a lack of foliage/tree canopy brings to all citizens' quality of life. The current lack of canopy negatively impacts our air quality, diminishes greenhouse gas reduction, and increases the heat island effects which all directly impact the quality of life on numerous levels for everyone living in our city! And further, the environmental effects of increased air conditioning usage must also be calculated and human health risks must be addressed.

The Los Angeles City Council, The Sidewalk Repair Program and The Department of Urban Forestry Services cannot continue to blindly 'punch a clock' every day. They have a responsibility to each and every citizen of the City of Los Angeles to address this issue head on with a plan to turn it around. At some point, this reversal will be impossible. The time to act is today. It saddens me that they consider this their legacy.

With that, I close with the following:

1. A Master Tree Plan must be developed that does not remove trees too rapidly such that it creates a decline in air quality and an increase in the heat island effect. There should be no net loss to canopy during the sidewalk repair process. In view of the length of time it takes for a tree to grow tall, an aggressive planting schedule which includes new tree wells and green spaces may need to begin even before trees are removed.

2. To the greatest extent possible, sidewalk repair sites that do not necessitate tree removal must be prioritized and scheduled ahead of sites that are judged to require tree removal, in order to allow the City, citizens, environmentalists, and all others who are working to protect Los Angeles' trees and urban forest canopy to implement the measures, mitigations, and protections outlined above.

3. The aggressive non-aesthetic pruning of tall trees, or "topping" -- currently

the practice of Urban Forestry (which pays subcontractors $180 a tree versus San Francisco that budgets $1,000 for a large tree) -- must be factored into the assessment of decline of tree canopy. "Before" photos of recently-pruned trees are available on Google Maps and Google Earth. In addition to this uneven existing resource, however, the City needs to require the capture and publicly accessible online posting of good-quality "before" photos of topped trees, paired with same-POV "after" photos, by Urban Forestry.

4. Any tree replacements should be done strategically. Tree species that will grow tall enough to create canopy need to be identified as capable of thriving in this climate, and a plan to water and cultivate those trees into full maturity needs to be determined and adopted. As with topped trees, the City needs to require the capture and publicly accessible online posting of good-quality "before-removal" photos of trees, paired with same-POV "after-removal" photos, by Urban Forestry.

5. Before any trees are removed for sidewalk repair, a full tree inventory of street trees must be done by an independent professional entity and a tree master plan created. An actual field calculation must be done of how many canopy trees Urban Forestry expects will be removed for sidewalk repair, as well as how many new places exist for planting trees that are capable of reaching a height that contributes to tree canopy.

6. The environmental impact on wildlife habitats must be calculated and any tree removal scheduled so as not to disrupt spring/summer nesting.

7. Given the negative effects on canopy when trees are removed for sidewalk repair, a new ordinance to restrict property owners from removing any healthy trees on their property for non-sidewalk related reasons needs to be considered.

8. Identify a plan to fully implement sustainable tree-saving sidewalk designs including meandering sidewalks, bridging over existing roots, curb bump-outs and larger tree-wells. These were listed as options in the sidewalk repair motion of Nov. 30, 2016 (tree removal as a last resort), but none except tree removal has been put into practice as options. Results of any tests of alternative sidewalk approaches need to be recorded in the EIR and then publicized so that homeowners have these options to tree removal. Also, our urban forest could significantly increase water supplies and decrease stormwater pollution for L.A. if the City and property owners will integrate permeable sidewalks designs, and these alternatives need to be robustly promoted.

9. A thorough investigation into root pruning as an alternative to tree removal

must be done. Urban Forestry proposed this approach to City Council as viable and reliable; and though it may not be widely known, the new administration at Urban Forestry says they do not want to use this method.

10. Every proposed tree removal must be fully publicized in advance, with adequate time for due process and stakeholder participation to find alternative solutions to tree removal before any tree is removed.

11. To the greatest extent possible, sidewalk repair sites that do not necessitate tree removal must be prioritized and scheduled ahead of sites that are judged to require tree removal, in order to allow the City, citizens, environmentalists, and all others who are working to protect Los Angeles' trees and urban forest canopy to implement the measures, mitigations, and protections outlined above.

Thanks again for your time.

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September 11, 2017

VIA EMAIL ONLY

Shilpa Gupta
Environmental Supervisor I
Bureau of Engineering, Environmental Management Group
City of Los Angeles, Department of Public Works
Shilpa.Gupta@lacity.org

RE: Community Forest Advisory Committee Comments on Sidewalk Repair Program Initial Study

Dear Ms. Gupta:

This letter serves as the City of Los Angeles Community Forest Advisory Committee (CFAC) comments on the Sidewalk Repair Program's (Program) Initial Study. Although some of the comments in this letter identify issues that should be addressed in the Program's Environmental Impact Report (EIR), others represent general comments on the Program that CFAC recommends be implemented by the City.

I. About CFAC

CFAC is an appointed committee that works with the City of Los Angeles (City) to promote and improve the City's urban forest. Members of CFAC are community representatives from each City Council District nominated by City Council members and appointed by the Mayor, and one member representing the Mayor's Office. CFAC's mission is to achieve "[a] healthy, safe, and enduring Los Angeles community forest ecosystem for the enjoyment and well-being of all."

II. Program's Impacts on Street Trees and Associated Environmental Impacts

The Program poses a number of implications for Los Angeles' natural ecosystem. The implications are primarily for the City's street trees, which are an important component of the City's infrastructure. Los Angeles' urban forest is a great asset to the City and its residents, but is sadly dwindling due to a number of factors, including the recent drought, pest impacts, and development. Los Angeles' urban forest and its canopy offer a number of significant benefits to

residents, including improving the health of residents, combating the effects of climate change, reducing the effects of air pollution, and reducing reliance on energy for cooling. Some of the most polluted and canopy-deficient areas in Los Angeles are in disadvantaged communities and there is a significant social equity component to this issue that should not be overlooked. It is imperative that the City of Los Angeles implement measures to preserve, sustain, and grow its urban forest. To that end, this objective should be an inherent component of the Program and specifically contemplated in the EIR.

III. CFAC's Comments to the Program's Initial Study

Given the impact the Program has on Los Angeles' urban forest, CFAC submits the following ten recommendations, not prioritized in any order, as comments to the Program's Initial Study:

(1) Increase Funding for the Urban Forestry Division (UFD).

The UFD assesses all street trees prior to removal for the Program. Therefore, the UFD plays a critical role in the Program's overall process. However, the budget for the UFD has not been significantly increased as a result of the Program. The Program is using an existing resource and straining its ability to sufficiently meet the needs of Program and its essential function to the City. Consequently, the UFD is unable to adequately address other issues and needs of Angelenos outside the Program. We recommend that the City increase the budget for the UFD to enable the UFD to support the Program.

(2) Create a Tree Inventory Database for the City of Los Angeles.

The Program's impact on our urban forest and overall ecosystem cannot fully be assessed until the number of tree removals is quantified. In order for the number of tree removals to be quantified, we first need an inventory of all street trees in the City. We recommend that a tree inventory database be created before any additional trees are removed. This goal is consistent with a goal set forth in the City's Sustainable pLAn 2015-2016 Report. Until such an inventory is created and we can quantify the number of street trees removed and replaced, there is no baseline analysis and the EIR will be incomplete. To that end, the City should pause implementation of the Program until the inventory is complete.

(3) Cease Removing Healthy Street Trees Until Completion of the EIR.

One of the purposes of CEQA is to: "[d]isclose to the public the significant environmental effects of a proposed discretionary project." The Program, on the other hand, is retroactively performing an EIR; i.e., performing an EIR after the Program has already begun implementation. Another purpose of CEQA is to: "[p]revent or minimize damage to the environment through development of project alternatives, mitigation

measures, and mitigation monitoring." Given that the EIR is not anticipated to be completed until December 2018 --- almost 2 years after the Program was initiated and the first trees removed (with approximately 225 removals to date) --- we are concerned that the Program's hasty implementation will create environmental impacts that could have been avoided and may not be readily mitigated. CFAC recommends that the environmental impacts of the Program be first fully assessed and the EIR completed before removing any additional healthy trees.

(4) Increase Tree Replacement Ratio.

We believe that the Program's 2:1 replacement ratio is insufficient and recommend a 4:1 replacement ratio. The 4:1 replacement ratio will offer a more adequate canopy replacement and would be a more appropriate mitigation measure to the removal of mature trees. Further, the 4:1 replacement ratio will more likely result in no net loss of the City's canopy. Last, CFAC recommends that the Program implement a notification process regarding the replacement trees where the City will notify the property owner, when feasible, and/or resident that a replacement tree will be planted in the parkway also City agrees to maintain the tree as part of its infrastructure indefinitely.

(5) Implement Best Management Practices.

CFAC recommends the implementation of the following best management practices for the Program: (i) The Program should not utilize the installation of root barriers; (ii) the Program should use 15-gallon trees instead of 24-inch box trees for replacement trees in residential neighborhoods; and (iii) there must be increased species diversity in trees used as replacement trees under the Program. With respect to the latter, we further recommend updating UFD's approved tree list to remove medium to high water use trees and including low water use trees appropriate for the warming Los Angeles climate.

(6) Improve and Increase Transparency.

The BOE should make available to the public all data on the location of replacement trees. Improving and increasing transparency with respect to the Program will help bolster public support for the Program.

(7) Address Effects on Wildlife and their Habitats.

Although the Initial Study identifies that a substantial impact may occur on our City's wildlife and their habitats, to our knowledge, no appropriate mitigation measures have been implemented to prevent or minimize this impact. We believe that the EIR must

assess in detail the Program's potential impacts on wildlife and their habitat, and recommend mitigation measures be implemented to minimize or prevent such impacts.

(8) Devise and Implement an Outreach and Educational Program.

The BOE is implementing an outreach program on the Program and its associated rebate program to encourage property owners to repair their sidewalks. However, BOE's outreach presentation does not address the effect the Program will have on street trees and its associated environmental impacts. The potential impact of the removal of street trees for the Program must be included in the BOE's presentation.

CFAC recommends that the BOE devise and implement a stronger outreach and educational program to educate Angelenos on the Program's impact on our ecosystem. The outreach and educational program should also include information on the benefits of street trees, including, but not limited to the benefits of preserving street trees and ensuring the health and survival of replacement trees.

(9) Perform Periodic Assessment of the Program's Environmental Impacts Following completion of EIR.

The list of environmental issues may expand as scientific knowledge regarding environmental issues develops. To that end, we recommend that periodic assessments of the environmental impacts of the Program be performed following the completion of the Program's EIR and until completion of the Program.

(10) Implement a Mechanism to Monitor and Ensure Survival of the Program's Replacement Trees.

Although the City is committing to watering Program replacement trees for the first 3 years after their initial planting, there is no system in place to ensure that property owners will water the trees and ensure their survival beyond this period. This is especially concerning given that best management practices consider the establishment period for a tree to be 5 years. In addition, the Program does not address restoring our canopy if the replacement trees do not survive.

CFAC believes that the City needs a long-term sustainability plan to address the monitoring and assurance of the survival of the Program's replacement trees. If the trees do not survive, the environmental impacts of the Program will be even greater than anticipated. We need a monitoring mechanism and the baseline data it will provide to ensure that the appropriate mitigation measures are implemented. Therefore, we believe it is imperative for the City to devise a long-term sustainability plan for our replacement trees, which should also include an enforcement plan.

IV. Concluding Remarks

CFAC supports the Program and its objective to create safe sidewalks for all Angelenos. We acknowledge the need to repair our distressed sidewalks and share in the noble goal of creating access for all persons. Our City faces many environmental issues that may impact the health and well-being of its citizens. The Program has the potential impact to exacerbate these issues if it does not implement a fully developed plan. CFAC believes that a long-tern sustainability plan for the Program and our street trees should first be devised. This Program has the potential to transform Los Angeles for generations to come, and it should be done properly with a well-considered and fully developed process.

Thank you for considering CFAC's comments and allowing us the opportunity to engage in the dialogue on this important project.

Sincerely,

Ryan Allen
Chair, Community Forest Advisory Committee

CC: Fernando Campos, Executive Officer, City of Los Angeles Board of Public Works

Jennifer Pope McDowell, Infrastructure Policy Analysis, Office of Los Angeles Mayor Eric Garcetti

September 14, 2017

Shilpa Gupta
Environmental Supervisor I
Bureau of Engineering, Environmental Management Group
City of Los Angeles, Department of Public Works
Shilpa.Gupta@lacity.org

RE: Comments on Sidewalk Repair Program

Dear Ms. Gupta:

On behalf of Los Angeles' urban forestry, sustainable landscaping, and green building communities, we are writing to comment on the Initial Study for the Sidewalk Repair Program.

Thank you for the work the Bureau of Engineering has done to provide a transparent process for resident commentary. The 30-year $1.4 billion Willits settlement represents an unprecedented opportunity for the City of Los Angeles to make necessary changes to our current urban forest management practices as we increase sidewalk accessibility and safety.

We understand trees will often be removed to make necessary sidewalk repairs. This affords the City an opportunity to increase the tree canopy and resilience of our urban forest. Done right, this necessary investment can produce worthy returns on investment, such as:

1. Cool the city
2. Support our resilience in climate change
3. Protect our urban forest from infestation and disease
4. Support human health and wellness as well as biodiversity
5. Protect and/or increase property values and retail foot traffic

For this reason, we recommend the Environmental Impact Report address the following to ensure a healthy urban forest for all Los Angeles residents:

1. **No net loss of tree canopy:**

    a. The tree replacement policy — at a minimum — needs to be 2:1 when trees have a canopy under 30 feet and should increase to 4:1 for trees over 30 feet. There should be a no-net-loss in canopy from sidewalk replacements and this ratio helps get the City there.

2. **Updating best management practices:**

    a. **Removal of root barriers from planting detail:** The standard planting detail S-456-2 should be updated to completely remove the installation of root barriers.

Root barriers create a less stable root system for street trees increasing the potential for tree failure. They are expensive to install, and provide no assurance that it will prevent tree roots from growing under a sidewalk.

b. **15 gallon size trees for residential plantings:** 15 gallon size trees provide a healthier root system when planted which decreases the time needed for the tree to establish its roots and lowers the time needed for supplemental watering. They are also roughly half the cost to plant and install than a 24' box tree, and will be equal in size two to three years after planting.

c. **Increase species diversity:** The current list of Los Angeles City approved street trees should be updated to remove trees that require a moderate amount of water. It should introduce native species that are well adapted to our current climate cycle. These trees are better positioned to adapt to climate change, resist disease and infestation. They also support biodiversity and, therefore, the health of our adjacent wild spaces.

3. **Tree inventory:**

    a. In order to properly manage our urban forest we should first know the current state of our urban forest. It has been roughly 20 years since Los Angeles has completed a tree inventory. It is imperative that this be included into the Sidewalk Repair Program so the full impact of the program can be understood and properly mitigated.

4. **Transparency to the public:**

    a. Publicly available map of all removals and replacement locations: As trees are removed and replaced, residents should be able to track where this work is being completed. Having a publicly accessible online platform will provide the transparency needed for residents to be confident the City is meeting the mitigation requirements established by the EIR.

5. **Tree Management:** In order to properly manage our urban forest we should first know the current state of our urban forest. It has been roughly 20 years since Los Angeles has completed a tree inventory. It is imperative that this be included into the Sidewalk Repair Program so the full impact of the program can be understood and properly mitigated

6. **Sustainable sidewalk designs:**

    a. Our urban forest could significantly increase water supplies for LA if the City integrated sustainable sidewalk designs and materials such as bioswales to capture stormwater, permeable paving options, and other green infrastructure opportunities. Other sustainable designs include meandering sidewalks, bridging over existing roots, curb bump-outs and larger tree-wells.

As the leaders of urban forestry in Los Angeles we strongly encourage the City of Los Angeles to study these issues in the EIR process, and make these changes to our current urban forest management. We look forward to continuing to work together on creating a healthy urban forest for the future of Los Angeles.

Sincerely,

Cassy Aoyagi

President

FormLA Landscaping, Inc

Executive Director

Theodore Payne Foundation for Wildflowers and Native Plants

Dominique Hargreaves

Executive Director-USGBC-LA

TREEPEOPLE

September 14, 2017

Shilpa Gupta, Environmental Supervisor I
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SENT VIA EMAIL ONLY

RE: TreePeople Comments on City of LA Initial Study for the Sidewalk Repair Program (SRP)

Dear Ms. Gupta:

TreePeople welcomes the opportunity to submit comments on the Sidewalk Repair Program's (SRP) Initial Study. Given the SRP's potential impact to public health from losses in the City's street tree population, addressing urban forestry issues related to sidewalk repairs brings opportunities for deeper evaluation and updating of Citywide urban forestry practices. Therefore, while many of our comments relate specifically to the SRP, many also focus on the holistic view of how to improve the City's urban forest.

About TreePeople

Since 1973, TreePeople has been a visionary leader in developing solutions to pressing problems that impact the people, communities, economy, and ecosystems that support or are affected by Los Angeles. TreePeople's overarching goal is to play a pivotal role in helping create a critical mass tipping point amongst the local population, catalyzing a paradigm shift in our region's response to climate change and providing a global model for healthy, climate resilient cities. TreePeople catalyzes climate action throughout the region through its policy, research, community greening, and education work.

General Comments on Initial Study

TreePeople makes the following general recommendations on what the Environmental Impact Report should address together with the more specific recommendations that follow:

- Improve the current tree replacement ratio: The policy — at a minimum — needs to be 2:1 when trees have a canopy under 30 feet and should increase to 4:1 for trees over 30 feet. TreePeople believes there should be a no-net-loss in canopy from sidewalk replacements and this ratio helps get the City there. Additionally, TreePeople will continue to work with the City and other partners on a net increase in tree canopy outside of this particular sidewalk replacement program.

- Tree replacements should be done strategically: If trees have to be removed, the City needs to be strategic in what they are replace with. This is an opportunity to choose the appropriate replacement species to maximize the many benefits of trees, including fighting the urban heat island effect and impending extreme heat effects from climate change.

- Greenhouse gas and urban heat island impacts need more attention: The loss of our urban trees leads to a) increased heat b) more emissions due to loss of shade and an increased use of air conditioning. TreePeople believes these impacts need to be properly documented, accounted for and mitigated against.

- Public process and permitting: Blanket permits to remove trees do not work. Each tree needs to be evaluated on-site by an ISA certified arborist/municipal specialist who also holds a Tree Risk Assessment Qualification (TRAQ) at a minimum. These specialists should also follow American National Standards Institute (ANSI) standards for any tree management or maintenance. Additionally, the transparency from public hearings is critical for the public to have their say.

- Sustainable sidewalk designs: The City's urban forest could significantly increase water supplies for LA if the City integrated sustainable sidewalks designs such as bioswales to capture stormwater and other green infrastructure opportunities. Other sustainable designs including meandering sidewalks, bridging over existing roots, curb bump-outs and larger tree-wells are also critical pieces to protect the urban forest.

Additional Recommendations for Initial Study: Citywide Urban Forestry Management Priorities

TreePeople respectfully shares the following recommendations for the City of LA to consider as they develop the Environmental Impact Report on the SRP, but also as it reviews its urban forestry priorities moving forward.

Priority 1: Stop the Decline of the Urban Forest by Upholding Best Management Practices

Mature Tree Maintenance, Health and Risk Avoidance

a. **Proper Pruning Enforcement.** The City code directs that City employees and/or contractors pruning trees will adhere to International Society of Arboriculture (ISA) tree pruning guidelines and American National Standards Institute (ANSI) standards. If these guidelines and standards are adequately followed, they promote optimal and long-term tree health. However, it has been observed that these standards are frequently not followed for a variety of reasons, primarily related to staffing and lack of enforcement. Therefore, TreePeople recommends that UFD prioritize adequate levels of staffing that ensures rigorous upholding of and accountability to ISA and ANSI standards.

b. **Qualified Contractors and On-Site Arborist.** While current policy directs the City to contract with the lowest qualified bidder, there have been issues with the quality of work done by contractors. Part of this can be addressed by the aforementioned recommendation regarding staff oversight and enforcement around tree pruning standards. We recommend additionally that all contractors shall have a Certified Arborist on site when pruning is being done. We also recommend that the tree workers performing cuts must be ISA Certified Tree Workers as a minimum certification. When poor pruning is reported by the public, a review of the contractor's work with the City should be conducted and their status reviewed, in addition to levying of appropriate penalties for damage to City infrastructure.

c. Proactive Management Plans for Pests and Diseases. Part of urban forest management is addressing pests and diseases that damage and kill trees, which can lead to public hazards in terms of tree failure and subsequent private property damage and lost canopy. TreePeople recommends that the City have a comprehensive plan for dealing with the treatment, removal and proper disposal of diseased trees in the interest of public safety. City staff should also be regularly participating in regional (and, as appropriate, national) dialogues surrounding emerging pests and diseases and creating proactive recommendations for the treatment of these issues to share with Council and the Mayor's office. The City should be prepared to respond to these with the funding needed to protect the City's investment in these trees.

d. **Enforcement and penalties for tree work performed by non-city contractors.** The damage and/or removal of healthy, mature trees always results in a loss of the benefits these trees provide to the community. The loss is exacerbated when the benefits trees provide over their lifetimes is taken into account. TreePeople recommends that when trees are damaged and/or removed inappropriately, there should be penalties that adequately compensate for the loss of those benefits to communities (see: Tree Replacement Ratio). Bureau of Street Services has improved the current practice by insisting replaced trees be bonded through the establishment period. However, additional financial compensation should be determined by the City for the damage caused to a piece of infrastructure (the tree) that the City has already invested in over time. These penalties should also be strict enough to provide a deterrent to repeat and excessive offenders, such as developers and billboard companies, who frequently absorb fines into the cost of doing business.

e. **Deep Watering.** Past City decisions to suspend irrigation of public property trees in times of drought threaten tree health and put residents at risk from limb and/or tree failure. The practice of infrequent deep watering ensures trees receive adequate water for developing deeper, more drought-resilient root systems. TreePeople recommends that the City adopt a consistent practice of infrequent deep watering to ensure optimal tree health and public safety, regardless of drought conditions. Furthermore, the challenge of maintaining watering needs of urban trees provides an excellent opportunity for the City to continue expanding the use of recycled water, whether it be through

irrigation in areas that already have purple pipe or by using water tanks to water heritage, significant or large-stature trees that the City wants to preserve.

f. **Staff Development.** The City must invest in the ongoing education of its staff to ensure practices are constantly refined according to best practices aligned with the urban forestry community. As a City with an unparalleled urban forest, in terms of size and number of trees, the City of Los Angeles has a responsibility to be a leader in the use of current best practices. Regular and active participation in the urban forestry community of practice through seminars, conferences, etc, prepares City staff to address new issues, as well as maintain a high level of service for all City trees and communities. Challenges to street tree health posed by sidewalk-tree root conflicts, as highlighted by the City's sidewalk repair program, serve as a prime example of a scenario in which City staff must be prepared to innovate and utilize best practices. TreePeople recommends that there is an adequate UFD annual budget allocation for staff development, as well as support of staff time for program modification, to ensure the City stays on the cutting edge of industry best practices.

Tree Removal and Replacement Issues

a. **Updating the City's tree replacement ratio.** According to the 2008 *Los Angeles 1 Million Tree Canopy Cover Assessment*, Los Angeles already suffers from less-than-ideal 21% tree canopy coverage, especially considering the unequal distribution of canopy that leaves low-income and more industrialized City Council districts with coverage as low as 7-9% and subsequently less access to benefits from trees.[1] As such, tree planting strategies should be designed to achieve optimal public health and environmental benefits for communities. Therefore, as noted above, the tree replacement policy — at a minimum — needs to be 2:1 when trees have a canopy under 30 feet and should increase to 4:1 for trees over 30 feet. TreePeople believes there should be a no-net-loss in canopy from sidewalk replacements and this ratio helps get the City there. Additionally, TreePeople will continue to work with the City and other partners on a net increase in tree canopy outside of this particular sidewalk replacement program.

b. **Community notification and engagement around tree removals.** As tree removals represent an irreversible, long-term impact on community health and aesthetics, there should be clear and early communication with residents with opportunities for them to provide input and have concerns addressed. One of the most frequent complaints heard by TreePeople staff is that trees are removed from the neighborhood landscape without public notification or opportunities for communities to provide input on the value and importance of preserving trees. We recommend that public engagement be significantly increased by the City, whether through additional trainings and increased collaboration

[1] E. Gregory McPherson, James R. Simpson, Qingfu Xiao, Chunxia Wu. *Los Angeles 1 Million Tree Canopy Cover Assessment (2008)*. United States Department of Agriculture, Forest Service, Pacific Southwest Research Station.

between Council office field staff, or through Urban Forestry staff that can more directly address this ongoing issue. Organized entities, such as Neighborhood Councils, serve as important community vehicles for distributing information related to tree removals and should be consulted as part of this process.

c. **California Environmental Quality Act (CEQA) exemptions.** To date, many trees are removed under CEQA exemptions that do not require the City to study site-specific alternatives to tree removals or site specific mitigation measures. The City should reconsider their current policy on CEQA exemptions and address the ways that removing trees impacts the health of communities and the environment. TreePeople supports the recommendations submitted in January 2016 by CFAC to the Board of Public Works re: Draft CEQA Procedure for Street Removals (Draft Procedure). These recommendations urge the City to adopt standards that require consideration of the following prior to designating street tree removals as CEQA exempt: 1) whether or not trees are being removed in low canopy areas of the City, and; 2) redefining the term "stand" as used in the Draft Procedure to consider lack of other nearby tree canopy and number of trees/cumulative canopy being removed.

d. **Limiting tree removals and improving decision-making support.** As each urban tree represents a large investment by the City in environmental, economic, and health benefits, each removal should be considered carefully and no healthy tree should be removed unnecessarily. Given the complex nature of decisions to remove trees, TreePeople recommends more City staff be Tree Risk Assessor Qualified (TRAQ) certified, per International Society of Arboriculture (ISA) standards. TRAQ certification would ensure that any UFD staff responsible for assessing trees for removal are well trained in a standardized and systematic framework for assessing tree risks and benefits to communities that will support decisions to remove trees.

e. **Protecting against removal of healthy trees on private property.** Both legal and illegal development on private property frequently leads to removal of healthy trees, which often are not adequately replaced. As the public right-of-way typically offers limited growing space for trees, trees on private property play a substantial role in nurturing canopy growth that provides significant protective health benefits. LADWP's investment in the planting of trees on private property through City Plants enrollment and adoption programs, as well as the 2008 canopy analysis done by Dr. Greg MacPherson of the USDA Forest Service, reinforces the importance of this planting space.[2] The City should look to other municipalities like Pasadena that have effective policies in place that support the protection of canopy on private property. The City should also evaluate how trees are pruned or removed on private property as a result of utility conflicts and ensure this work adheres to industry best practices.

[2] *Los Angeles 1 Million Tree Canopy Cover Assessment (2008)*.

Priority 2: Creating a 21st Century Urban Forestry Management Vision for Los Angeles

While the strict implementation of best management practices is critical for stopping the decline of our urban forest's health, LA must go further by planning today for the urban forest we will need to protect residents from the impacts of climate change. City leaders have an opportunity to maximize public investments by developing a comprehensive vision for urban forestry that links Citywide goals and funding streams to the range of social and environmental benefits that a healthy, equitably-distributed tree canopy provides. The following recommendations detail what TreePeople believes are fundamental elements and strategies for City leaders to include in a visionary urban forestry management plan.

Updating the City of LA Tree Inventory to Create Canopy Goals

Tree inventories are an essential tool in urban forest management to monitor trends in tree health, track removals, identify new planting sites, schedule proper pruning cycles, strategically plan for canopy increases, and much more. Inventories older than ten years are considered outdated, and yet the City's current street tree inventory is 20 years old (produced in 1996). TreePeople urges the City to update its inventory to ensure that City departments are adequately resourced for urban forestry management planning. We are pleased that this is a stated goal for the City, and are eager to support this effort to update this critical resource.

A hallmark of visionary urban forestry planning is the identification of a tree canopy coverage (TCC) goal to drive planting priorities based on need and opportunities to maximize benefits. In 2008 the City had a study assessing the status and potential for increased TCC done for the Million Trees LA initiative. New technologies such as LIDAR data and other tools could provide additional insights into current canopy and planting potential. Assessing the current level of TCC and mapping all potential sites for accommodating increased TCC citywide equips the City with critical data necessary for engaging in a strategic planning process that identifies areas in highest need of increased TCC. Furthermore, this data would empower the City to maximize investments in expansion of TCC by quantifying the City's capacity to reduce urban heat, mitigate poor air quality, and manage flooding.

Create Pathways for a Robust Urban Forest

a. **Creating an equity-driven planting prioritization framework. T**he 2008 TCC assessment for the Million Trees LA initiative revealed patterns of unequitable canopy distributions across the City of LA: Los Angeles City Council Districts 9, 8 and 15 possessed the lowest percentages of canopy cover throughout the entire city (7-11%), while Council Districts 2, 4 and 5 had the highest percentages of canopy cover (27-37%).[3] These districts with lowest percentages of canopy represent lower median household incomes (with Council Districts 8 and 9 as the two lowest in the city) whereas those with the highest percentage of canopy represent some of the highest median

[3] "Los Angeles 1 Million Tree Canopy Cover Assessment." https://www.fs.fed.us/psw/publications/documents/psw_gtr207/psw_gtr207.pdf

household incomes per district.[4] This ultimately translates to lower income neighborhoods, which are frequently comprised of majority communities of color, receiving substantially less of the benefits that trees provide than neighborhoods of greater economic means.

Canopy distribution is at its core an environmental justice issue, and it is the City of LA's obligation to ensure that all of its residents have equal access to trees that can clean their air and protect them from health- and life-threatening heat exposure. As such, TreePeople recommends that the City prioritize with urgency the development of an equity-driven framework that will drive the strategic prioritization of tree planting for communities that suffer disproportionately from lack of TCC. Layering updated TCC data with data on heat and health vulnerability should be a critical component of this effort to ensure that the City of LA is protecting its most vulnerable residents from associated health impacts.

b. **Updating urban planning practices to accommodate tree planting.** Both the 2008 analysis and current planting plans and protocol have not addressed the need for City planning to practices to better accommodate urban forestry. Urban forestry professionals agree that the trees that provide the highest value and return on investment are large-stature trees. The City should look for opportunities to strategically increase the size of planting locations, particularly in heavily urbanized parts of the City that lack TCC. The City already makes tremendous investments in tree planting: tree stock, site preparation, permitting and inspection, establishment care, and long term maintenance of the tree. By focusing on finding planting locations for fewer but larger stature trees, the City could deliver substantially more benefits to communities for a potentially smaller inventory to be managed.

   This type of strategy would require that the City prioritize its tree infrastructure in new development. This prioritization is becoming increasingly important as the City moves forward with the sidewalk repair program which, in its current iteration, will be removing many trees that are too large for their locations and replacing them with small trees at a 2:1 ratio. Planning for larger tree wells and planting sites allows the City to avoid future root/sidewalk conflicts while increasing canopy. While we are aware that the City has already increased the minimum tree well size from 4'x4' to 4'x6', TreePeople is recommending that the City should prioritize identifying locations where trees that need 8'x8', 10'x10' or even larger minimum specifications could be accommodated. While this constitutes a departure from business as usual, given the public health threats that face the City we believe this is imperative. Achieving greater TCC via planting larger trees is also aligned with Great and/or Complete Streets and other sustainability goals and will require collaboration across City departments.

[4] "2016 Los Angeles City Council Districts Economic Report." Los Angeles Area Chamber of Commerce. http://events.lachamber.com/sbaweb/events/evite/16_BeaconReport-FINAL.pdf

Planting the Next Generation of LA's Urban Forest

a. **Tree species selection.** While Los Angeles' climate zone can accommodate the growth of many different kinds of trees, the careful selection of tree species is crucial to avoiding infrastructure conflicts and ensuring trees provide long term benefits to communities. Planting sites should be carefully evaluated to determine the most appropriate species (i.e. right tree, right place), and consider a range of factors including but not limited to: selecting the largest appropriate species for an available planting space; climate zone; water use; parkway size; spacing; growth patterns; biogenic emissions; root damage potential; habitat value; soil type and compaction of the planting location; and utility constraints. Tree selection lists should be regularly reviewed and updated to reflect current research, best practices and urban canopy priorities.

b. **Tree stock.** The City's current specifications for "standard trees" allow for compromised branch structure, and thus represent a lower quality stock that prevents newly planted urban trees from either surviving their establishment periods or growing to their full potential to achieve maximum benefits. The healthiest stock possible should be used, with good branch structure, to ensure the healthiest trees possible from the establishment period through maturity. Whenever possible, the smallest tree stock appropriate should be planted, which is typically 15 gallon. Nursery stock selected for planting within the City should follow the nursery specification guidelines laid out in the "Guideline Specifications for Selecting, Planting and Early Care of Young Trees," put out by Brian Kempf and Ed Gilman supported by Cal ReLeaf, CalFire, WISA, and the Urban Tree Foundation.[5] The trunk diameter per pot size should follow the specifications in "Guideline Specifications for Nursery Tree Quality."[6]

c. **Nursery relationships/contracts.** The City can facilitate optimal tree stock by developing relationships with nurseries and seeking opportunities to fund contract growing. Contract growing allows the City to proactively plan for and have access to optimal species, rather than be limited by species available at the time of planting. This is particularly important as the urban forestry community of California learns more about appropriate species for our changing climate. Contract growing also allows greater control of quality of nursery stock.

d. **Species diversity.** Diversity of species enhances urban forest resiliency in the face of pests, diseases and other environmental factors. Any planting plans should include a consideration of species diversity based on industry standards. Right now, that industry standard dictates that no more than 10% of any species, no more than 20% of any genus, and no more than 30% of any family should be planted. However, it's important to follow changes in standards as they continue to evolve. Los Angeles already is one of the most diverse urban forests and should continue to be so. The State of the Street

[5] http://www.fire.ca.gov/resource_mgt/downloads/CALFIRE_Nursery_Standards_and_Specs11_12.pdf
[6] http://ufei.calpoly.edu/files/pubs/NurseryTreeSpecs10_13.pdf

Tree Report also addresses the industry BMP around species diversity. A proactive planting plan would help the City incorporate this BMP.

e. **Age diversity.** The State of the Street Trees Report gives the City a “D” grade on Age Diversity. One of the recommendations of the Report is to increase tree planting, which TreePeople fully supports. Healthy and resilient urban forests contain trees of all ages, and as such we recommend consistent annual plantings to promote age diversity. The City’s management plan should include funding and support for ongoing planting citywide to ensure the presence of trees across all phases of the life cycle.

f. **Establishment care.** The infrequent rain in the region makes establishing new trees challenging, yet the investment in consistent care helps combat this challenge. Trees should be watered, weeded, mulched and have stakes and ties adjusted on a routine basis, and there should be investments in early structural pruning to avoid future hazards and reduce pruning costs down the line. The standards detailed by the “in-lieu fee” are exemplary and should be expanded to include other new trees planted in the City.

g. Concrete and/or metal tree well covers. Overall, well covers compromise the health of our trees and can create hazards and losses of this City urban forest investments. They prevent water infiltration, hinder carbon dioxide and oxygen exchange that is critical to root health, and heavily compact the soil. Both metal and concrete well covers typically damage the trunk of a tree as it grows by limiting trunk expansion. Tree well covers are infrequently monitored and maintained for maximum trunk growth and lead to the regular girdling of trees. Instead of using concrete and/or metal tree well covers, we recommend the City consider the following:

- Whenever possible, use mulch to fill tree wells. This requires semi-annual maintenance but enhances the health of planting locations. Putting several inches of mulch in tree wells increases the water holding capacity of the well and adds nutrients to the soil over time. This practice better promotes the health of trees and additionally can contribute to higher rates of transpiration and associated cooling benefits they provide.

- When it is not feasible to use mulch, TreePeople reluctantly recommends the use of decomposed granite (DG) to backfill tree wells. DG forms a near impervious layer over the soil around the tree and adds no nutrient value to the soil, which is why mulch should be the preferred choice of the City, but DG is preferable to the grates and concrete covers.

h. Root barriers. Root barriers may prevent future damage to sidewalks, but they compromise a tree’s stability. The City should reconsider the use of root barriers and, ideally, eliminate their use. If the City is using root barriers predominantly to increase public confidence that due diligence is being done to avoid future root/sidewalk conflicts,

we urge the City to educate residents on the needs of trees and the ways that root barriers potentially compromise their benefits.

Ensure comprehensive planning and implementation

a. **Creating more holistic urban forestry management.** Currently, urban forestry management does not fall under the purview of any one City of LA entity, and as such a variety of City entities (Recreation and Parks, LADWP, Urban Forestry Division, Department of Planning, and more) oversee different aspects of tree planting and maintenance. To enhance coordination around urban forestry issues throughout the City, TreePeople recommends a robust analysis of the many City departments that oversee realms of urban forestry to clarify the roles, authorities, and resources that each department possesses. Identified City entities should then be convened to develop a process for identifying shared planning and funding coordination goals around comprehensive urban forestry management.

b. **Multi-benefit planning and funding coordination.** Given the many social and environmental benefits a healthy urban forest provides, coordinated governance around urban forestry should also engage City and County entities that are not directly responsible for overseeing trees, but derive benefits from them. This could include but is not limited to agencies that oversee: public health, water quality, water supply, flood management, and transportation. This level of coordination not only provides pathways for co-planning and funding projects, but could also facilitate sharing of best practices and technical knowledge that can create efficiencies in problem-solving.

c. **Linking City goals to urban forestry.** There are a variety of existing local and regional plans that identify important overarching sustainability, mobility, and public health goals which include or are complementary to urban forestry goals -- such as the Sustainability pLAn, Enhanced Watershed Management plans, Mobility Plan 2035, the Resilience Strategy, and many more. TreePeople recommends that City staff engage in an effort to identify the specific ways that these different plans can be coordinated to address the nexus of urban forestry with a range of issues, and also map associated existing and potential funding sources.

Priority 3: Enhancing Stakeholder Engagement and Public Education

a. **Clear pathways for stakeholder input.** Stakeholders, such as the Community Forestry Advisory Committee (CFAC) and tree planting organizations like TreePeople, have the knowledge and practical experience to advise on urban forestry best management practices (BMPs) and policy. However, there is not always clarity around appropriate processes or forums for how stakeholders can engage and provide recommendations on specific items. Improving clarity around opportunities for input and pathways to UFD staff

will allow stakeholders to be more supportive and a greater resource in providing expertise, and advocating for the urban forest. UFD attendance to CFAC meetings is highly important, as well as regular quarterly engagement with other groups, like the local tree nonprofits and Neighborhood Councils.

b. **Improving public education with the urban forest.** Investing in community education around the importance of trees and strategies for maintaining them is an important component for promoting comprehensive citywide urban forestry health. For over 40 years, TreePeople has demonstrated that when communities self-identify as valuing trees, they are more likely to support public investments in the urban forest and engage in behaviors that support tree health. Unfortunately, years of inadequate City investment in educating the public on the value of trees has exacerbated existing challenges faced in maintaining trees while undermining the public's role as a valuable resource. This has resulted in a lack of public support for new tree plantings and a resentment of existing large trees in some neighborhoods.

   For the City's investments in the urban forest to be realized, we recommend the development of a robust public education[7] effort that boosts communities' understandings of the roles that trees play in terms of public health, social cohesion, energy savings and environmental benefits. We recommend that the City look at using tools like the Community-Based Social Marketing (CBSM) methodology to develop a public education campaign around trees' roles in our community and basic tree care needs. It will be critical that any public education campaign address the public's perceived barriers and benefits to having trees in our communities, as well as include resources to support community contributions to a healthy urban forest. Furthermore, we urge that any public engagement and education efforts prioritize support for low-resource communities that suffer from lower TCC -- as these communities already receive disproportionately less benefits from trees, they should receive highest priority for support in growing their urban forest.

In closing, we hope that the above recommendations are considered helpful as the City not only develops the EIR for the Sidewalk Repair Program but also for its future urban forestry goals. We look forward to discussing the recommendations in further detail, and are eager to support any and all efforts to conduct this important work for the health of our urban forest.

Sincerely,

Deborah Weinstein Bloome
Senior Director of Policy and Research
TreePeople
12601 Mulholland Drive, Beverly Hills, CA 90210
818-623-4887; dbloome@treepeople.org

[7] While there are many examples of urban forestry public education models to reference, one that TreePeople recommends studying is "Kentucky Has Roots": http://www.kyroots.org/

Bel Air / Beverly Crest
NEIGHBORHOOD COUNCIL

Building A Better Community
Bel Air-Beverly Crest Neighborhood Council
PO Box 252007 Los Angeles, CA 90025
Office 310-479-6247
www.babcnc.org

September 14, 2017

Shilpa Gupta, Environmental Supervisor I
City of Los Angeles Public Works, Bureau of Engineering
Environmental Management Group
1149 S. Broadway, Suite 600, Mail Stop 939
Los Angeles, CA 90015-2213
Shilpa.Gupta@lacity.org

Re: Comments on Sidewalk Repair Program EIR Initial Study

Dear Ms. Gupta,

Thank you for the opportunity to comment on the Initial Study for the Sidewalk Repair Program's (Program) Environmental Impact Report.

The Bel Air-Beverly Crest Neighborhood Council represents the City of Los Angeles hillside communities stretching from Sunset Blvd. to Mulholland Drive, and from the I-405 to Laurel Canyon.

While supporting the importance of safe and accessible sidewalks for all City residents, there is increasing community concern at the environmental impacts of mass tree removals across the City as a part of the Program at a time when Los Angeles is facing ongoing challenges to its urban forest through drought, invasive pests, development, and lack of maintenance through reduced funding for the Urban Forestry Division. Further damage to our already insufficient and threatened urban forest canopy will have inevitable effects on the public health of all Angelenos, wherever they live, and send the City in the wrong direction in its efforts to address the effects of climate change and implement sustainability solutions.

We submit the following comments and recommendations:

1. Halt tree removals until EIR completed: The City should stop removing healthy street trees in its implementation of the Program until the SRP EIR is completed and alternative methods and materials to maximize tree retentions citywide have been fully considered and analyzed.

2. **If removals continue, preserve existing trees wherever possible:** If the Program continues with tree removals while the EIR is in process, then, whenever possible, viable existing trees should be preserved, and their growing spaces and conditions improved, if feasible, through the introduction of sustainability features. Tree removal should be viewed as a last resort. Mass removals of entire street blocks or rows of trees for project convenience or cost savings are short-sighted and will result in long-term costs for residents and the City as a whole. Each tree should be evaluated individually, on-site, by an ISA-certified arborist/municipal specialist who also at minimum holds a Tree Risk Assessment Qualification (TRAQ).

3. **Increase tree replacement ratio:** There should be no net loss of canopy as a result of the Program. Trees should be replaced at a minimum ratio of 2:1. When a tree's canopy exceeds 30 feet, the replacement ratio should be 4:1.

4. **Update best management practices:**
a) **Remove use of root barriers from Standard Plan S-456-2:** Use of root barriers results in decreased root system stability. Root barriers are costly to install, raise the risk of tree failure, and do not reliably prevent growth of tree roots under sidewalks.
b) **Use 15-gallon trees for residential plantings:** 15-gallon trees are significantly less expensive than 24"-box-size trees, result in a healthier tree with lower establishment watering needs, and will match the size of a planted 24"-inch box tree within a few years.
c) **Update City's list of approved trees/increase species diversity:** The City's list of approved tree species for planting should be reviewed. New species that are low-water-use and will be more adaptive to warming conditions due to climate change should be added to the approved list, and higher-water-use trees should be removed.

5. **Complete a Tree Inventory:** The City should complete a tree inventory, which is a basic urban forest management tool the City currently lacks, and without which there is no known baseline from which to assess the Program's impacts on the urban forest. The last inventory was completed in 1991.

6. **Create an Urban Forest Master Plan:** The City should create an Urban Forest Master Plan, another essential urban forest management tool the City currently lacks.

7. **Give timely public notice of proposed tree removals:** All proposed tree removals should be notified well in advance to local residents, council district offices, and neighborhood councils, as well as to the general public via a City web page. The timeline should be sufficient to allow public participation, such as the consideration and discussion of alternatives to tree removal.

8. **Disclose tree replacement locations:** A frequently updated publicly accessible online tracking system and map should be available to provide data on tree replacements, specifying the locations of replacement trees, to give the public confidence that the City is meeting mitigation requirements.

9. **Install sustainable features:** Green infrastructure features such as curb cuts, bioswales, and larger tree wells should be integrated into reengineered sections of the City's sidewalks, to increase the overall benefits to the City of its expenditure on the Sidewalk Repair Program.

10. **Increase funding to the Urban Forestry Division:** The budget of UFD should be increased so that the Division's ability to continue to perform its existing work is not compromised and diminished through the use of its resources in serving aspects of the Sidewalk Repair Program.

11. **Address effects on wildlife habitats and wildlife:** Effects on wildlife and their habitats need to be quantified by appropriately qualified specialists, and mitigation measures identified to prevent or minimize negative impacts. For example, tree removals should not occur during nesting season.

12. **Revise the Bureau of Engineering's outreach presentation:** The BoE's current public outreach presentation on the SRP (and the rebate program for property owners) insufficiently addresses the extent and manner in which street trees and the City's urban forest as a whole will be impacted by the SRP. Revised public outreach materials should explain the many ways in which the City's urban forest is important, the environmental and public health impacts of tree losses, and the benefits of retaining existing street trees and ensuring the survival of newly planted replacement

trees. Alternative methods and materials that will allow the preservation of existing trees should be well-publicized to residents and business owners. Information about the availability of green infrastructure components should likewise be well-publicized.

13. **Periodically assess environmental impacts until program completion:** Given the length of the Program, periodic reassessments of environmental impacts should take place, along with consideration of incorporation of newly available mitigation measures, and advances in alternative sidewalk repair methods and materials.

14. **Monitor and ensure the survival of the replacement trees:** The establishment period of a tree is generally accepted to be five years. The City has committed to a compromise 3-year watering period for SRP replacement trees. Watering after that time by property owners is not guaranteed. Survival of the replacement trees is essential to restoration of the City's tree canopy and mitigation of ecosystem impacts. Their health and survival should be monitored and ensured.

15. **Quantify health effects of tree losses**: The EIR should quantify the health effects on the City's residents of loss of trees and tree canopy as a result of the SRP if it continues on its present course.

16. **Study alternative methods and materials for sidewalk repair:** Professional specialists in sidewalk repair practices should be consulted for expert opinions and analysis of viable alternatives to tree removals, as well as advice on the implementation of added-benefit green infrastructure during sidewalk repairs and replacements. The sidewalk repair methods and materials used in environmentally progressive cities such as Portland and Seattle, which have addressed the same issues in recent years, should be reviewed to identify smart solutions and best practices. Sustainable design alternatives include such methods as meandering sidewalks, bridging over existing roots, curb bump-outs, larger tree-wells, and permeable sidewalk designs.

In conclusion: The Willits settlement provides an important opportunity for Los Angeles not only to create accessible and safe sidewalks for its residents, but to support the City's much vaunted sustainability goals by undertaking the Program in a careful, informed, and well-considered way in order to maximize its benefits and minimize its harms.

Sincerely,

Robin Greenberg

Submitted by Robin Greenberg, President
Bel Air-Beverly Crest Neighborhood Council
rgreenberg@babcnc.org
310-968-0605

cc:
Councilmember Paul Koretz, Council District 5 paul.koretz@lacity.org
Councilmember David Ryu, Council District 4 david.ryu@lacity.org
Mayor Eric Garcetti mayor.garcetti@lacity.org
City Attorney Mike Feuer mike.n.feuer@lacity.org
Kevin James, President, Board of Public Works kevin.james@lacity.org
board@babcnc.org

From:	Mir, Tamseel
To:	Herron, Will
Subject:	FW: SRP
Date:	Friday, September 15, 2017 5:20:44 PM
Attachments:	image002.png image003.png

FYI. Another comment.

Thank you,
Tamseel

From: Shilpa Gupta [mailto:shilpa.gupta@lacity.org]
Sent: Friday, September 15, 2017 5:19 PM
To: Tim Mullen <tim@smartcomment.com>; Avila, Kim <Kim.Avila@icf.com>; Mir, Tamseel <Tamseel.Mir@icf.com>
Subject: Fwd: SRP

Shilpa Gupta, MPA
Environmental Management | Environmental Supervisor I
Bureau of Engineering, Department of Public Works
1149 S. Broadway, Suite 600
Los Angeles, CA 90015
O: (213) 485 - 4560

---------- Forwarded message ----------
From: **Eddy Spralja** <Edspralja@cox.net>
Date: Fri, Sep 15, 2017 at 4:48 PM
Subject: SRP
To: shilpa.gupta@lacity.org

Hi Shilpa,

Sidewalk/curb repair in San Pedro that is very badly needed.

The curbs on the 300 block of West 11th Street, between Mesa and Center are very torn up by the City's construction of the sewer lines in the streets.

Corner handicap curb, on the NW corer of Cabrillo Ave and 17th St.

The Alley way next to Dana middle-school.

The sidewalk in front of my house (1739 Vallecito Dr, San Pedro, CA) is raised up by the city's trees.

Thanks

Eddy Spralja

From:	Mir, Tamseel
To:	Herron, Will
Subject:	FW: Attorney Client Privilege. SRP-Native Amertican Comment
Date:	Friday, September 15, 2017 5:26:18 PM
Attachments:	image002.png image003.png

Another one.

From: Shilpa Gupta [mailto:shilpa.gupta@lacity.org]
Sent: Friday, September 15, 2017 5:23 PM
To: Mary Decker <mary.decker@lacity.org>
Cc: Avila, Kim <Kim.Avila@icf.com>; Mir, Tamseel <Tamseel.Mir@icf.com>; Tim Mullen <tim@smartcomment.com>
Subject: Attorney Client Privilege. SRP-Native Amertican Comment

Hi Mary,

Please review the comment from the Gabrielino Tongva Nation and advise.

See you next week!
Have a nice weekend.
Shilpa Gupta, MPA
Environmental Management | Environmental Supervisor I
Bureau of Engineering, Department of Public Works
1149 S. Broadway, Suite 600
Los Angeles, CA 90015
O: (213) 485 - 4560

---------- Forwarded message ----------
From: **sam dunlap** <samdunlap@earthlink.net>
Date: Fri, Sep 15, 2017 at 3:25 PM
Subject: SIDEWALK REPAIR PROGRAM - ENVIRONMENTAL REVIEW COMMENTS
To: shilpa.gupta@lacity.org

Shilpa Gupta, Environmental Supervisor 1
Los Angeles Bureau of Engineering
Environmental management Group
1149 S. Broadway, Suite 600, Mail Stop 939
Los Angeles, CA 90015

Dear Mr Gupta,

This submission of comments centers on the Cultural Resources (V) & Tribal Cultural Resources (XVII) sections as described in the Initial Study Environmental Checklist document for the proposed Sidewalk Repair Program.

After review of the document it is apparent that a potentially significant impact may occur to the cultural

resources of the Gabrielino Tongva Nation. It is the request and recommendation of the Gabrielino Tongva Nation that adequate mitigation measures be implemented during subsurface construction activity associated with the proposed project that would protect and preserve the archaeological and cultural items that may be uncovered during ground disturbing construction activity.

Since the Gabrielino Tongva Nation has cultural affiliation to ALL areas that are outlined in the proposed project area maps, the Gabrielino Tongva Nation requests that tribal monitors selected by our tribe be on site to monitor all construction activity associated with the project. The tribal monitors of the Gabrielino Tongva Nation will have cultural affiliation with the project area.

I request to be contacted to facilitate a Native American monitoring component for this proposed project.

Sincerely,

Sam Dunlap
Cultural Resource Director
Gabrielino Tongva Nation
(909) 262-9351 cell

From:	Mir, Tamseel
To:	Herron, Will
Subject:	FW: SRP
Date:	Friday, September 15, 2017 5:33:58 PM
Attachments:	image002.png image003.png

One more…

From: Shilpa Gupta [mailto:shilpa.gupta@lacity.org]
Sent: Friday, September 15, 2017 5:20 PM
To: Tim Mullen <tim@smartcomment.com>; Avila, Kim <Kim.Avila@icf.com>; Mir, Tamseel <Tamseel.Mir@icf.com>
Subject: Fwd: SRP

Shilpa Gupta, MPA
Environmental Management | Environmental Supervisor I
Bureau of Engineering, Department of Public Works
1149 S. Broadway, Suite 600
Los Angeles, CA 90015
O: (213) 485 - 4560

---------- Forwarded message ----------
From: **Craig Plestis** <craig.plestis@gmail.com>
Date: Fri, Sep 15, 2017 at 4:23 PM
Subject: SRP
To: Shilpa.Gupta@lacity.org

This for the street Laurel Hills Road. Our street is a disaster and has no area to walk to our local school. All the side walk type area are covered in holes.
Please put us on your repair list.
Best
Craig
818-400-9688

From:	Mir, Tamseel
To:	Herron, Will
Subject:	FW: Comments BOE IS SRP Safe Sidewalk Repair Program due 9.15.2017
Date:	Friday, September 15, 2017 5:34:33 PM
Attachments:	image002.png image003.png

Sorry. I'm forwarding as I receive them.

From: Shilpa Gupta [mailto:shilpa.gupta@lacity.org]
Sent: Friday, September 15, 2017 5:20 PM
To: Avila, Kim <Kim.Avila@icf.com>; Tim Mullen <tim@smartcomment.com>; Mir, Tamseel <Tamseel.Mir@icf.com>
Subject: Fwd: Comments BOE IS SRP Safe Sidewalk Repair Program due 9.15.2017

Shilpa Gupta, MPA
Environmental Management | Environmental Supervisor I
Bureau of Engineering, Department of Public Works
1149 S. Broadway, Suite 600
Los Angeles, CA 90015
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---------- Forwarded message ----------
From: **Joyce Dillard** <dillardjoyce@yahoo.com>
Date: Fri, Sep 15, 2017 at 4:20 PM
Subject: Comments BOE IS SRP Safe Sidewalk Repair Program due 9.15.2017
To: "Shilpa.Gupta@lacity.org" <Shilpa.Gupta@lacity.org>

You state:

> *Because the proposed Project is considered a maintenance project that is replacing existing sidewalk with new sidewalk (original purpose of facility), MS4 Permit redevelopment requirements do not apply. a result, no post-construction BMPs or hydromodification requirements are anticipated.*

Bureau of Sanitation is responsible for the LA Regional Water Board's MS4 permit. That permit requires several Enhanced Watershed Management Programs (by watershed) which include sidewalk improvements and stormwater infiltration.

If stormwater collected is stored under the streets, how will this affect the sidewalks.

Where are the Sediment Management studies?

Joyce Dillard

P.O. Box 31377
Los Angeles, CA 90031

Appendix A3

Scoping Outreach Summary

Commenter	Comment	Date and Time of Comment Entered in Database	Section of EIR Where Issue Will Be Addressed
Aannee Bussayabuntoon	The city side walk and the driveway of 2009 N.Commonwealth ave.were broken and so dangerous to the children who walk to school of Franklin Avenue School and the seniors.Please repair them as soon as possible I myself cannot drive for my whole life there for the broken is the drivers who had the turned their cars on my drive way and big tree at the city side walk.	9/15/2017 11:17	Please visit https://sidewalks.lacity.org/
Adam Greenfield	The sidewalk on the Clinton Ave. side of my house (corner of Clinton and Lillian Way) is buckling and is greatly impeding pedestrian traffic including a neighbor who has MS and is unable to get by the damaged area. Also, several people have injured themselves walking there. Thank you, Adam Greenfield	9/15/17 11:24 AM PT	Please visit https://sidewalks.lacity.org/
Alex Walter	THE ISSUE: Not only are many miles of Los Angeles sidewalks in poor condition they are also overgrown with considerable vegetation and/or other obstructions. See the attached example photos - 6 photos on 2-sheets. REQUESTED IMMEDIATE ACTION: An immediate prerequisite to the Sidewalk Repair Program should be rigorous, zero tolerance, enforcement of Los Angeles Municipal Code SEC. 56.08 and SEC. 56.12 etc. In the past there has been little enforcement; therefore, the current overgrowth condition will make performing the Sidewalk Repair Program more difficult and expensive that it would be with rigorous enforcement of Los Angeles Municipal Code SEC. 56.08 and SEC. 56.12 etc. Before the Sidewalk Repair Program even begins the City should enforce existing Municipal Code & Ordinances including SEC.56.08 SIDEWALKS - STREET - OBSTRUCTIONS (See Attached with example photographs). Vegetation growth over public sidewalks has become a significant impediment to enjoyable and safe pedestrian traffic. The City should impose a zero tolerance stance against sidewalk overgrowth and obstructions. Shilpa Gupta . . . Please include existing Sidewalk Vegetation Overgrowth in the Sidewalk Repair Program Environmental Review documents and meetings. More rigid enforcement of SEC. 56.08. SIDEWALKS - STREETS - OBSTRUCTIONS should be happening now and in the future. ...Alex Walter 6440 Drexel Ave Los Angeles CA 90048-4706 USA Voice & Text Cell: 720-448-4008 email: alexw@alexwalter.com Sent with Mailtrack	9/13/2017 0:00	Chapter 2.0 Project Description
alexandra beattie	The sidewalk on the east side of the 900 block of South Ridgely drive is impossible to navigate with a wheelchair or stroller. The specific area is in front of 908 South Ridgeley Drive. There is also a patch along 5601 West 9th street which is also impossible to navigate for wheelchairs or strollers. Thank you!	7/31/2017 12:23	Please visit https://sidewalks.lacity.org/
Alison Kalinski	The Southeast corner on Beachwood and Beverly is not compliant with the Americans w Disabilities Act. There is no ramp or cut away on the curb which makes it impossible for those in wheelchairs to cross the street there and difficult for strollers and children on scooters and bicycles too. as a result people have to cross at the 1st driveway but cars turn the corner fast and may not see pedestrians there. i have requested this repaired several times over the past few years. Thank you.	9/12/2017 16:39	Please visit https://sidewalks.lacity.org/
Alison Kendall	I am a professional planner and AICP member and I cannot imagine the reason for which a Sidewalk Repair Program aimed at bringing LA sidewalks into compliance with the Americans with Disability Act and other basic laws and standards for essential access and pedestrian safety could possibly be subject to a full EIR under CEQA. This seems like the kind of fundamental responsibility of government which should be exempt from CEQA. This is particularly true in a city like LA where sustainable, environmentally benign modes of travel like walking and bicycling are not given nearly the same priority as vehicular traffic flow and convenience. I urge you to expedite the review and to get on with these long delayed repairs to provide legally required ADA accessibility and safety from traffic injury to our most vulnerable roadway and sidewalk users.	9/08/17 5:25 PM PT	
Amanda Weinstock	Please consider repairing the very dangerous sidewalk/road area on front of my house. Very dangerous with potential for slipping and also West Nile. I have been trying to get this addressed by the city for TEN YEARS but no one will help me. Thanks.	9/9/2017 13:07	Please visit https://sidewalks.lacity.org/
Amy Lackow	I applied for the sidewalk repair program when it was first introduced - and was given an ok. I contacted Kirkorian's office and they were helpful. However, the list of approved contractors was ridiculous, I called several with no answer the websites were not working. It is a good program but the city needs to help more with vetting the contractors on the list. I gave up, I was willing to front the money myself and get the rebate from the city. Also, from the website it seems like most sidewalks will be minor repair when mine came through it was over $12,000.00 from the pictures I thought it would be around $2,000. You need to make the program a lot simpler not everyone is a contractor or knows one.	9/15/17 4:24 PM PT	Please visit https://sidewalks.lacity.org/
Ana Santacruz	Any tree removal necessary to accomplish the task must follow with an increase in tree canopy density and ratio most appropriate for the space. Include TreePeople as key advisors in the implementation of this plan.	9/13/17 1:16 PM PT	Chapter 2.0 Project Description, Chapter 3.3 Biological Resources
annpaul Paul	I reported a sidewalk badly in need of repair (the west side of Western Blvd between Los Feliz and Franklin) and got a notice that it was taken care of. However the work was shoddy and didn't cover some of the biggest holes. I was very disappointed and wondered if any one checks on the work done.	9/11/17 3:57 PM PT	Please visit https://sidewalks.lacity.org/
Ashley Ranshaw	The sidewalk on Greenleaf in front of Sherman Oaks Elementary is badly in need of repairs and dangerous to parents and students.	9/11/17 5:32 PM PT	Please visit https://sidewalks.lacity.org/
Baharak Shahidi	Portions of Los Feliz sidewalks have been uprooted by more than 12 inches! These include Hillhurst and Vermont Ave. with the great amount of foot traffic entering Griffith park and the Greek, we find it very dangerous to walk. I have fallen several times spraining my wrist The city has paid out a tremendous amount of money for accidents pertaining to these specific sidewalks. Please address this issue.	9/11/17 7:34 PM PT	Please visit https://sidewalks.lacity.org/
Barbara Cheen	I am hoping the sidewalk repair is not limited to "side walks" but streets that are part of hillside neighborhoods. We live in the hills of Sherman Oaks and the street at the bottom of Weslin is perpetually filled with standing water, debris,and trash, all of which is a danger to health. What can we do to clean up the standing water and debris? I have lived in this neighborhood for more than 20 years and have never seen the area cleaned up. The cross streets are Oak Canyon and Weslin Avenue. Thank you for the opportunity of stating this claim.	9/11/17 4:30 PM PT	Please see Chapter 2.0 Project Description, Please visit https://streetsla.lacity.org/
Barbara Hayden	Sidewalk needs to be leveled in one place.	9/11/17 4:20 PM PT	Please see Chapter 2.0 Project Description
Barbara Ross	It appears that trees are producing the most damage to the sidewalks. Before billions of dollars are spent in repairing these sidewalks, maybe a plan should be outlined to replace/remove the trees first. Trees are not necessary for a sidewalk to be implemented. The trees could be removed and replanted in a property instead to provide shade. The trees are also creating a large amount of debris from dead and fallen branches/leaves. I have noticed in the city of Sherman Oaks, this debris is left and makes the city look unclean.	9/11/17 4:10 PM PT	Chapter 2.0 Project Description, Chapter 3.3 Biological Resources

Barbara Volk	Our family has lived here on Del Valle Drive almost 40 years. It would be wonderful to be able to walk on the sidewalk in front of our house without worrying about tripping on the huge slab of concrete that has been lifted up about 3" or more because of the root of one of our street trees. I'm 70 years old and taking a fall would not be good. The entire length of the southern side of Del Valle is in desperate need of repair! And the curbs of our really old neighborhood of Carthay Circle are not any better either. The neighborhood is a designated Historical Preservation Overlay Zone but our sidewalks and curbs give it a shabby look. We all hope the city can get repairs done in our lifetime.	9/10/17 3:56 PM PT	Comment noted. Please visit https://sidewalks.lacity.org/
Barri Clark	It's not always the grossly distorted chunks of pavement that cause danger. I have often tripped on one inch irregularities. And fallen on my knees and palms as I did just two weeks ago on Willoughby.	9/13/17 7:36 PM PT	Comment noted. Please visit https://sidewalks.lacity.org/
Barry Johnson	HI. BARRY JOHNSON. AND I'M WITH THE STUDIO CITY NEIGHBORHOOD COUNCIL TRANSPORTATION COMMITTEE. AND OUR PRESIDENT KNOWS I'M HERE TONIGHT, BUT I'M REALLY SPEAKING FROM SOME OF MY OWN PERSONAL OBSERVATIONS. LAST WEEK, TWO OF MY NEIGHBORS, EACH WITH 50 FOOT FRONTAGE, REPLACED THEIR SIDEWALK. THEY LIVE NEXT DOOR TO EACH OTHER; SO IT WAS A HUNDRED FEET OF SIDEWALK. IT WAS IN THE PROGRAM WHERE THEY PAY PART OF IT AND THE CITY PAYS PART. ONE OF THE NEIGHBORS HAD TWO HUGE MAGNOLIA TREES THAT NEVER SHOULD HAVE BEEN PLANTED IN THE PARKWAY, AND THE OTHER PERSON HAS A SYCAMORE TREE. BOE TAGGED ALL THREE OF THEM FOR BEING TAKEN OUT. THE SYCAMORE TREE REALLY DIDN'T HAVE MUCH OF A PROBLEM IN TERMS OF SIDEWALK. AND I SAID TO MY NEIGHBOR, WHO'S OUR NEIGHBORHOOD COUNCILMAN? I SAID, "JOHN, YOU -- YOU SHOULD APPEAL THIS. THERE'S NO REASON YOUR SYCAMORE NEEDS TO COME OUT. YES, THE OTHER TWO NEED TO COME OUT, BUT NOT THIS ONE." WE APPEALED, AND THEY RELENTED. THE POINT I'M TRYING TO MAKE IS, I FEEL BOE COULD TAKE A LESSON FROM THE CITY OF BURBANK, WHERE THEY'RE DOING SIDEWALK REPAIR ALL THE TIME OVER THE LAST DECADES WHEN WE HAVE NOT, AND YOU RARELY SEE A TREE TAKEN OUT. THEY DO ROOT PRUNING ALL THE TIME, SUCCESSFULLY. AND IT'S LIKE WHEN I DRIVE THROUGH THERE, I NEVER SEE A TREE THAT'S STARTING TO FALTER, THEY ARE UP BECAUSE THERE'S A NEW SIDEWALK THERE BECAUSE OF ROOT PRUNING. SO I WOULD REALLY LIKE TO REEVALUATE HOW YOU DETERMINE HOW YOU'RE GOING TO TAKE OUT A TREE OR NOT. AND THE SECOND THING I JUST WANTED TO BRIEFLY SAY FROM MY EXPERIENCE ON NEW SIDEWALKS IS THAT, FROM THE STANDARD SPECIFICATIONS PERMIT MANUAL FROM BOE, IT SAYS, AND I QUOTE, "WHEN NEW SIDEWALK IS CONSTRUCTED ADJACENT TO EXISTING SIDEWALK, SCORING LINES SHALL CORRESPOND TO THE EXISTING SCORING." AND I'VE BEEN THROUGH THIS TWICE NOW IN MY NEIGHBORHOOD. AND THESE ARE THE SCORING MARKS THAT CREATE THE SQUARES IN YOUR SIDEWALK. AND NOBODY SEEMS TO KNOW WHAT I'M TALKING ABOUT. BUT I POINTED OUT TO BRETT MCREYNOLDS, WHO'S IN CHARGE OF SIDEWALKS IN THE VALLEY, WHO WROTE ME BACK SAYING, "YES. YOU'RE RIGHT. I'M GOING TO TELL ALL MY INSPECTORS THIS." BUT THEY'RE NOT DOING IT UNLESS SOMEONE LIKE ME HAPPENS TO SEE WHAT THEY'RE DOING AND SAY, "YOU BETTER PUT THOSE SCORING MARKS BACK IN AND MATCH UP WITH THE SIDEWALK ON EITHER SIDE." SO I REALLY HOPE YOU WILL PURSUE THAT. AND IT IS AN ORDINANCE THAT NO ONE IS PAYING ANY ATTENTION TO.	8/14/17 12:00 AM PT	Comment noted. Please see Chapter 2.0 Project Description.
Barry Levine	Stop removing healthy, mature trees to repair sidewalks. Use a flexible, semi-permeable, recycled plastic, computer-designed segments 3-D printed to work around roots of old growth trees. Let engineering determine slopes to meet ADA compliance. Stop replacing concrete with more concrete. If the goal of the city is to increase tree canopy, stop removing healthy trees. IF LA IS REALLY INTERESTED IN PRESERVING THE TREE CANOPY, I WOULD SUGGEST VERY STRONGLY THAT THEY STOP CUTTING DOWN MATURE TREES TO REPLACE CONCRETE SIDEWALKS WITH MORE CONCRETE.\u0183 THE CONCRETE IS NOT FLEXIBLE, IT CRACKS AS YOU CAN SEE IN ALL THESE PICTURES.\u0183 WE'VE BEEN USING CONCRETE FOR THE WHOLE HISTORY OF THE CITY, AND I THINK IT'S TIME FOR THE CITY OF LOS ANGELES TO LOOK AT ALTERNATIVES TO CONCRETE SIDEWALKS. MY SUGGESTION WOULD BE TO COME INTO THE 21ST CENTURY WITH 3D PRINTED, SEMIPERMEABLE, FLEXIBLE PLASTIC SIDEWALKS THAT CAN BE INSERTED IN SEGMENTS AND REPLACED IN SEGMENTS IF NECESSARY, BE SOMEWHAT FLEXIBLE SO THAT THEY CAN WORK AROUND THE ROOTS OF THE TREES THAT ARE HERE MATURE. I LIVE IN THE SOUTH ROBERTSON COUNCIL, AND ON CADILLAC BOULEVARD LAST OCTOBER THREE TIPUANA TIPU TREES WERE REMOVED THAT WERE 80 FEET TALL AND HEALTHY BECAUSE THERE WAS AN ADA COMPLAINT AND THE SIDEWALK COULDN'T BE REPAIRED WITHOUT REMOVING THE TREES. I WENT TO THE BOARD OF PUBLIC WORKS AND SAID, THIS IS THE BEGINNING OF A SLIPPERY SLOPE.\u0183 EVERY SIDEWALK ON CADILLAC IS DAMAGED, AND THAT MEANS YOU'RE GOING TO TAKE OUT ALL THE TREES. AND KEVIN JAMES LOOKED AT ME AND SAID, OH, NO, IT DOESN'T MEAN THAT ALL. WELL, LAST MONTH THERE WAS A SIGN ON 18 MORE OF THOSE TREES THAT THEY ARE GOING TO BE REMOVED AND THAT STILL LEAVES TWO MORE BLOCKS AND ANOTHER 18 TREES THAT THE CITY IS PROUDLY GOING TO WANT TO REMOVE. THESE ARE 80 FEET TALL, THEY'RE 70 YEARS OLD, THEY'RE HEALTHY, AND THEY SHOULDN'T BE REMOVED JUST SO WE CAN REPLACE SIDEWALKS THAT NOBODY WALKS ON ANYHOW. I WOULD SUGGEST WE FIND AN ALTERNATIVE THAT FITS ADA COMPLIANCE AND I'M SURE WITH THIS HUGE STAFF THAT'S EVIDENT HERE, LIKE THREE TIMES THE NUMBER OF PARTICIPANTS, THAT THE STAFF CAN COME UP WITH AN ADA COMPLIANT SIDEWALK THAT IS NOT MADE OUT OF CONCRETE,THAT WOULD FLEX AND WOULD SAVE SOME OF THESE MILLIONS OF TREES THAT WE'RE LOSING IN THE CITY OF LOS ANGELES. THANK YOU FOR LISTENING.	8/09/17 12:00 AM PT	Comment noted. Alternative construction materials are discussed in Chapter 3.9, Land Use. See Chapter 2.0, Project Description.

Bel Air-Beverly Crest Neighborhood Council	1. Halt tree removals until EIR completed: The City should stop removing healthy street trees in its implementation of the Program until the SRP EIR is completed and alternative methods and materials to maximize tree retentions citywide have been fully considered and analyzed. 2. If removals continue, preserve existing trees wherever possible: If the Program continues with tree removals while the EIR is in process, then, whenever possible, viable existing trees should be preserved, and their growing spaces and conditions improved, if feasible, through the introduction of sustainability features. Tree removal should be viewed as a last resort. Mass removals of entire street blocks or rows of trees for project convenience or cost savings are short-sighted and will result in long-term costs for residents and the City as a whole. Each tree should be evaluated individually, on-site, by an ISA-certified arborist/municipal specialist who also at minimum holds a Tree Risk Assessment Qualification (TRAQ). 3. Increase tree replacement ratio: There should be no net loss of canopy as a result of the Program. Trees should be replaced at a minimum ratio of 2: 1. When a tree's canopy exceeds 30 feet, the replacement ratio should be 4: 1. 5. Complete a Tree Inventory: The City should complete a tree inventory, which is a basic urban forest management tool the City currently lacks, and without which there is no known baseline from which to assess the Program's impacts on the mban forest. The last inventory was completed in 1991. 6. Create an Urban Forest Master Plan: The City should create an Urban Forest Master Plan, another essential urban forest management tool the City cmTently lacks. 7. Give timely public notice of proposed tree removals: All proposed tree removals should be notified well in advance to local residents, council district offices, and neighborhood councils, as well as to the general public via a City web page. The timeline should be sufficient to allow public participation, such as the consideration and discussion of alternatives to tree removal. 8. Disclose tree replacement locations: A frequently updated publicly accessible online tracking system and map should be available to provide data on tree replacements, specifying the locations of replacement trees, to give the public confidence that the City is meeting mitigation requirements. 9. Install sustainable features: Green infrastructure features such as curb cuts, bioswales, and larger tree wells should be integrated into reengineered sections of the City's sidewalks, to increase the overall benefits to the City of its expenditure on the Sidewalk Repair Program. 10. Increase funding to the Urban Forestry Division: The budget of UFD should be increased so that the Division's ability to continue to perform its existing work is not compromised and diminished through the use of its resources in serving aspects of the Sidewalk Repair Program. 11. Address effects on wildlife habitats and wildlife: Effects on wildlife and their habitats need to be quantified by appropriately qualified specialists, and mitigation measures identified to prevent or minimize negative impacts. For example, tree removals should not occur during nesting season. 13. Periodically assess environmental impacts until program completion: Given the length ofthe Program, periodic reassessments of environmental impacts should take place, along with consideration of incorporation of newly available mitigation measures, and advances in alternative sidewalk repair methods and materials. 14. Monitor and ensure the survival of the replacement trees: The establishment period of a tree is generally accepted to be five years. The City has committed to a compromise 3-year watering period for SRP replacement trees. Watering after that time by property owners is not guaranteed. Survival of the replacement trees is essential to restoration of the City's tree canopy and mitigation of ecosystem impacts. Their health and survival should be monitored and ensured. 15. Quantify health effects of tree losses: The EIR should quantify the health effects on the City's residents of loss of trees and tree canopy as a result of the SRP if it continues on its present course. Revise the Bureau of Engineering's outreach presentation: The BoE's cmTent public outreach presentation on the SRP (and the rebate program for property owners) insufficiently addresses the extent and manner in which street trees and the City's urban forest as a whole will be impacted by the SRP. Revised public outreach materials should explain the many ways in which the City's urban forest is important, the environmental and public health impacts of tree losses, and the benefits of retaining existing street trees and ensuring the survival of newly planted replacement trees. Alternative methods and materials that will allow the preservation of existing trees should be well-publicized to residents and business owners. Information about the availability of green infrastructure components should likewise be well-publicized.Study alternative methods and materials for sidewalk repair: Professional specialists in sidewalk repai1\u0183 practices should be consulted for expert opinions and analysis of viable alternatives to tree removals, as well as advice on the implementation of added-benefit green infrastrncture during sidewalk repairs and replacements. The sidewalk repair methods and materials used in environmentally progressive cities such as Portland and Seattle, which have addressed the same issues in recent years, should be reviewed to identify smart solutions and best practices. Sustainable design alternatives include such methods as meandering sidewalks, bridging over existing roots, curb bump-outs, larger tree-wells, and permeable sidewalk designs. Update best management practices:: a) Remove use of root barriers from	9/14/17 12:00 AM PT	Comment noted. Please see Chapter 2.0 Project Description, Chapter 3.8 Hydrology and Water Quality, Chapter 3.3 Biological Resources, Chapter 3.6 Greenhouse Gas Emissions. Alternative construction materials is disussed in Chapter 3.9 Land Use and Planning.
Berel Wilhelm	This is great !	8/01/17 8:29 AM PT	Comment noted.
Bernadette Sale	Side walks in this neighborhood are in need of repair, or cleanup from illegal dumping of garbage, oil and grease. Tree roots have obstructed walkways. Cement chunks are missing.	9/11/2017 17:11	Comment noted. Please visit https://sidewalks.lacity.org/
Bernice Colman	I am very much in favor of this project. I am aware that it might cause irreparable harm to some selected trees. This project will not damage ALL the trees on any one street only some. However the possible serious injury to pedestrians both able bodied and disabled could be life threatening. Trees can be replanted. The over grown tree roots also impact the sewer lines and personal property such as fences, gates buildings. I recently had to repair a gate that had been impacted by the tree roots next door. Luckily I was able to do that easily, this time. In the future it might not be so easy and could require replacing all the fencing, which would be very costly.	8/30/17 5:24 PM PT	Comment noted. Please see cahpter 2.0 Project Description.
Betty Jung	Severely raised and uneven sidewalks are obvious to pedestrians, so they are inclined to be very careful walking in those areas, However, when the unevenness is less obvious, e.g. 1-inch, it can be a greater trip & fall hazard because because it is less obvious and it is very easy for unsuspecting pedestrians to trip -- Therefore smaller lifts in sidewalk are a danger to pedestrians and should not be ignored and should be repaired as quickly as possible.	9/13/2017 12:22	Comment noted. Please see Chapter 2.0, Project Description
Blake Clausen	I live on Mayview Drive. The cross street is De Longpre. We don't have sidewalks on our street but the street is in dire need of repair. It's dangerous for people walking and for cars trying to drive up the incline. You have repaved the streets in my parents neighborhood twice but never touched our neighborhood. Please come take a look!	9/11/17 4:18 PM PT	Please see Chapter 2.0 Project Description, Please visit https://streetsla.lacity.org/
Brant Gordon	I see that the sidewalks along Centinela are being repaired. It seems like this street has been almost continually under some kind of construction for almost 4 years, and I'm wondering if all of this work is being done with regards to any kind of sustainable vision for Los Angeles. At a massive expense the metro was built with a stop on Bundy, and yet the only way to get there if you live any distance away is by car or bus. Why, with all of this construction, is a bike lane not being installed and Centinella and Bundy? This seems like a major opportunity to start taking this city to the next level in providing transportation options and making the metro more accessible to people who are likely to use it.	9/15/17 10:07 PM PT	Comment noted. Please see Chapter 2.0, Project Description
Brooke Eaton	Jefferson Blvd east of Lincoln. Sidewalks are crumbling thanks to the tree roots.	9/15/17 1:10 PM PT	Comment noted. Please visit https://sidewalks.lacity.org/

Bureau of Sanitation	Hello Shilpa, Please let me know if you would be able to tell me the status of an ADA compliance issue at a specific address in Councilman Wesson's district. The compliance issue involves two curb ramps located at the south-east and south-west corners of Sawyer and Shenandoah Streets (1900 Shenandoah Street). Curb ramps were installed at the north-east and north-west corners of the same intersection, but for some reason construction crews missed the south side of the intersection. Residents have been requesting ramps at this intersection for over two years, including via MyLA311, but no ramps have been constructed thus far. Please let me know if these two corners are scheduled for repair. Thank you for your assistance! -- Nat Isaac Environmental Engineering Associate I Solid Resources Support Services Division Bureau of Sanitation City of Los Angeles (213) 485-3593	7/31/17 12:00 AM PT	Comment noted. Please visit https://sidewalks.lacity.org/
C Lee	Please repair sidewalk on the east side of ingelwood between Washington and culver. Also add a pedestrian cross midway on ingelwood.	9/14/17 1:48 PM PT	Comment noted. Please visit https://sidewalks.lacity.org/
Caltrans - Office of Regional Planning	Thank you for including the California Depaltment of Transportation (Caltrans) in the environmental review process for the above referenced project. The proposed project would repair and upgrade sidewalks and curb ramps throughout the City Of LA. Street tree removals and replacements, along with utility relocations may be needed. Based on review, Caltrans does not expect project approval to result in a direct adverse impact to the existing State transportation facilities. However, if construction truck traffic is expected to cause delays on the State facility, Please forward a truck/traffic construction management plan to Caltrans for review. In the Spirit Of mutual cooperation, Caltrans staff is available to work with your planners and traffic engineers for this project, if needed. If you have any questions regarding these comments, Please contact project coordinator Ms. Miya Edmonson, at (213) 897-6536 and refer to GTS# LA- 2017-01043ME	8/21/17 12:00 AM PT	Comment noted. Please see Chapter 3.12 Transportation/Traffic
Cara Adams	My husband and I are senior citizens and we both have have knee replacements. Our 2 dogs need to be walked 2 times a day, and having safe sidewalks are a must. Fixing the sidewalks would prevent unnecessary law suits.	9/11/17 4:07 PM PT	Comment noted. Please visit https://sidewalks.lacity.org/
Carol Harrison	Our sidewalk has been in disrepair since before 2000. I frequently use a wheelchair and cannot traverse my street. I contacted the city numerous times before giving up. I spoke to an arborist who said trimming the roots too close to our magnificent magnolia would kill the tree, which would be a tremendous and unacceptable loss. contacted the city to get a waiver to create a ramp over the roots or a curve into our front lawn. We were told an inspector would be out to talk to us. No one ever came out. Paul Koretz' office was not helpful. I'm at a loss on how to proceed. I would be happy to forward my correspondece with Paul Koretz' office and with the arborist if you can provide an email address.	9/10/17 3:15 PM PT	Comment noted. Please visit https://sidewalks.lacity.org/
Carrie Hayward	I too feel that the City needs to consider that the overzealous removal of mature trees in the name of sidewalk repair may have even more adverse consequences, including raising the temperature of all the dwellings on the street and blighting the landscape. I too feel that the City needs to consider that the overzealous removal of mature trees in the name of sidewalk repair may have even more adverse consequences, including raising the temperature of all the dwellings on the street and blighting the landscape. For example, the City has proposed removing 2 mature ficus trees on our street that have barely caused the sidewalk to rise an inch. Yet they cool this portion of the street by 10-20 degrees and hide the bare, reflective concrete facade of a giant apartment building that occupies half the block. Removing these trees will have a far more negative impact than the 1-inch incline they currently cause in the sidewalk.	9/12/17 3:41 PM PT	Comment noted. Please see Chapter 2.0, Project Description and Chapter 3.6 Greenhouse Gas Emissions, and Chapter 3.15 Energy
Cassy Aoyagi	1. No net loss of tree canopy: a. The tree replacement policy -- at a minimum -- needs to be 2:1 when trees have a canopy under 30 feet and should increase to 4:1 for trees over 30 feet. There should be a no-net-loss in canopy from sidewalk replacements and this ratio helps get the City there. 2. Updating best management practices: a. Removal of root barriers from planting detail: The standard planting detail S- 456-2 should be updated to completely remove the installation of root barriers. 2 Root barriers create a less stable root system for street trees increasing the potential for tree failure. They are expensive to install, and provide no assurance that it will prevent tree roots from growing under a sidewalk. b. 15 gallon size trees for residential plantings: 15 gallon size trees provide a healthier root system when planted which decreases the time needed for the tree to establish its roots and lowers the time needed for supplemental watering. They are also roughly half the cost to plant and install than a 24' box tree, and will be equal in size two to three years after planting. c. Increase species diversity: The current list of Los Angeles City approved street trees should be updated to remove trees that require a moderate amount of water. It should introduce native species t 3. Tree inventory: a. In order to properly manage our urban forest we should first know the current state of our urban forest. It has been roughly 20 years since Los Angeles has completed a tree inventory. It is imperative that this be included into the Sidewalk Repair Program so the full impact of the program can be understood and properly mitigated. 4. Transparency to the public: a. Publicly available map of all removals and replacement locations: As trees are removed and replaced, residents should be able to track where this work is being completed. Having a publicly accessible online platform will provide the transparency needed for residents to be confident the City is meeting the mitigation requirements established by the EIR. 5. Tree Management: In order to properly manage our urban forest we should first know the current state of our urban forest. It has been roughly 20 years since Los Angeles has completed a tree inventory. It is imperative that this be included into the Sidewalk Repair Program so the full impact of the program can be understood and properly mitigated 6. Sustainable sidewalk designs: a. Our urban forest could significantly increase water supplies for LA if the City integrated sustainable sidewalk designs and materials such as bioswales to capture stormwater, permeable paving options, and other green infrastructure opportunities. Other sustainable designs include meandering sidewalks, bridging over existing roots, curb bump-outs and larger tree-wells. 3 As the leaders of urban forestry in Los Angeles we strongly encourage the City of Los Angeles to study these issues in the EIR process, and make these changes to our current urban forest management. We look forward to continuing to work together on creating a healthy urban forest for the future of Los Angeles.hat are well adapted to our current climate cycle. These trees are better positioned to adapt to climate change, resist disease and infestation. They also support biodiversity and, therefore, the health of our adjacent wild spaces.	9/14/17 12:00 AM PT	Comment noted. Please see Chapter 2.0 Project Description, Chapter 3.3 Biological Resources, Chapter 3.14 Utilities, Chapter 3.9 Land Use and Planning.
Cheryl Minor	Van Noord Ave between Cumpston St. and Killian Ave. is in desperate need of sidewalk repair. The asphalt 'patches' that were done a few years ago will keep people from tripping on the cracked sidewalk, but as you look north on Van Noord Ave from the corner of Cumpston St. you can see the peaks in the cracked sidewalk that make navigation on this portion of sidewalk extremely difficult. It has become increasingly bad in the 21 years that I have lived here and, currently, the best analogy I can provide is that it reminds me of a black diamond ski slope!	9/13/17 8:07 AM PT	Comment noted. Please visit https://sidewalks.lacity.org/
Christine Louise Mills	While I understand the need for sidewalk repair, loss of shade trees is especially devastating for lower income neighborhoods who do not enjoy the luxurious greenspaces and generous plantings of wealthier neighborhoods. In Elysian Valley people are already mourning the loos of trees that provided shade for our otherwise sun-baked Rec Center. It is essential that effective shade and beautification be implemented in a timely fashion especially in low income communities.	9/14/17 10:54 AM PT	Comment noted. Please see Chapter 3.3 Biological Resources
Christopher McKinnon	Please change out invasive trees like Ficus in a slow manner and replace 2 to 1 with California native species.	8/14/17 2:16 PM PT	Chapter 3.X *Traffic and Transportation* and Traffic Appendix X

Cleo Ray	GOOD EVENING. I'M CLEO RAY. AND I'M HERE AS A MEMBER OF THE WILLITS CLASS ACTION LAWSUIT FOR THE SIDEWALK REPAIR. I SUBMITTED SIDEWALK REPAIR INFORMATION, AND IT WAS REJECTED. IT WAS SUBMITTED THROUGH ATTORNEY JENNY KIM (PHONETIC) FROM LEGAL AID AT WORK IN SAN FRANCISCO, CALIFORNIA. AND I READ IN THE JUNE NEWSLETTER OF COUNCIL DISTRICT , THAT SOMEONE HAD A SIDEWALK REPAIRED IN WESTCHESTER. AND I WANTED TO FIND OUT HOW THAT PERSON WAS ABLE TO GET HER SIDEWALK REPAIRED, AND AS A CLASS ACTION MEMBER, I WASN'T ABLE TO GET CENTINELLA, RIGHT OFF THE GREAT STREET OF VENICE, REPAIRED. AND THAT'S WHY I'M HERE THIS EVENING.	8/24/2017 0:00	Comment noted. Please visit https://sidewalks.lacity.org/
Community Forest Advisory Committee	II. Program's Impacts on Street Trees and Associated Environmental Impacts The Program poses a number of implications for Los Angeles' natural ecosystem. The implications are primarily for the City's street trees, which are an important component of the City's infrastructure. Los Angeles' urban forest is a great asset to the City and its residents, but is sadly dwindling due to a number of factors, including the recent drought, pest impacts, and development. Los Angeles' urban forest and its canopy offer a number of significant benefits to 2 residents, including improving the health of residents, combating the effects of climate change, reducing the effects of air pollution, and reducing reliance on energy for cooling. Some of the most polluted and canopy-deficient areas in Los Angeles are in disadvantaged communities and there is a significant social equity component to this issue that should not be overlooked. It is imperative that the City of Los Angeles implement measures to preserve, sustain, and grow its urban forest. To that end, this objective should be an inherent component of the Program and specifically contemplated in the EIR.) Increase Funding for the Urban Forestry Division (UFD). The UFD assesses all street trees prior to removal for the Program. Therefore, the UFD plays a critical role in the Program's overall process. However, the budget for the UFD has not been significantly increased as a result of the Program. The Program is using an existing resource and straining its ability to sufficiently meet the needs of Program and its essential function to the City. Consequently, the UFD is unable to adequately address other issues and needs of Angelenos outside the Program. We recommend that the City increase the budget for the UFD to enable the UFD to support the Program. (2) Create a Tree Inventory Database for the City of Los Angeles. The Program's impact on our urban forest and overall ecosystem cannot fully be assessed until the number of tree removals is quantified. In order for the number of tree removals to be quantified, we first need an inventory of all street trees in the City. We recommend that a tree inventory database be created before any additional trees are removed. This goal is consistent with a goal set forth in the City's Sustainable pLAn 2015-2016 Report. Until such an inventory is created and we can quantify the number of street trees removed and replaced, there is no baseline analysis and the EIR will be incomplete. To that end, the City should pause implementation of the Program until the inventory is complete. (3) Cease Removing Healthy Street Trees Until Completion of the EIR. One of the purposes of CEQA is to: "[d]isclose to the public the significant environmental effects of a proposed discretionary project." The Program, on the other hand, is retroactively performing an EIR; i.e., performing an EIR after the Program has already begun implementation. Another purpose of CEQA is to: "[p]revent or minimize damage to the environment through development of project alternatives, mitigation 3 measures, and mitigation monitoring." Given that the EIR is not anticipated to be completed until December 2018 --- almost 2 years after the Program was initiated and the first trees removed (with approximately 225 removals to date) --- we are concerned that the Program's hasty implementation will create environmental impacts that could have been avoided and may not be readily mitigated. CFAC recommends that the environmental impacts of the Program be first fully assessed and the EIR completed before removing any additional healthy trees. (4) Increase Tree Replacement Ratio. We believe that the Program's 2:1 replacement ratio is insufficient and recommend a 4:1 replacement ratio. The 4:1 replacement ratio will offer a more adequate canopy replacement and would be a more appropriate mitigation measure to the removal of mature trees. Further, the 4:1 replacement ratio will more likely result in no net loss of the City's canopy. Last, CFAC recommends that the Program implement a notification process regarding the replacement trees where the City will notify the property owner, when feasible, and/or resident that a replacement tree will be planted in the parkway also City agrees to maintain the tree as part of its infrastructure indefinitely.	9/11/17 12:00 AM PT	Thank you for your comment. Please see Chapter 2.0 Project Decription, Chapter 3.2 Air Quality, Chapter 3.3 Biological Resources, Chapter 3.6 Greenhouse Gas Emissions, Chapter 3.7 Hazards and Hazardous Materials, Chapter 3.9 Land Use and Planning, Chapter 4 Comparasion of Alternatives
	(5) Implement Best Management Practices. CFAC recommends the implementation of the following best management practices for the Program: (i) The Program should not utilize the installation of root barriers; (ii) the Program should use 15-gallon trees instead of 24-inch box trees for replacement trees in residential neighborhoods; and (iii) there must be increased species diversity in trees used as replacement trees under the Program. With respect to the latter, we further recommend updating UFD's approved tree list to remove medium to high water use trees and including low water use trees appropriate for the warming Los Angeles climate. (6) Improve and Increase Transparency. The BOE should make available to the public all data on the location of replacement trees. Improving and increasing transparency with respect to the Program will help bolster public support for the Program.(7) Address Effects on Wildlife and their Habitats. Although the Initial Study identifies that a substantial impact may occur on our City's wildlife and their habitats, to our knowledge, no appropriate mitigation measures have been implemented to prevent or minimize this impact. We believe that the EIR must 4 assess in detail the Program's potential impacts on wildlife and their habitat, and recommend mitigation measures be implemented to minimize or prevent such impacts. (8) Devise and Implement an Outreach and Educational Program. The BOE is implementing an outreach program on the Program and its associated rebate program to encourage property owners to repair their sidewalks. However, BOE's outreach presentation does not address the effect the Program will have on street trees and its associated environmental impacts. The potential impact of the removal of street trees for the Program must be included in the BOE's presentation. CFAC recommends that the BOE devise and implement a stronger outreach and educational program to educate Angelenos on the Program's impact on our ecosystem. The outreach and educational program should also include information on the benefits of street trees, including, but not limited to the benefits of preserving street trees and ensuring the health and survival of replacement trees. (9) Perform Periodic Assessment of the Program's Environmental Impacts Following completion of EIR. The list of environmental issues may expand as scientific knowledge regarding environmental issues develops. To that end, we recommend that periodic assessments of the environmental impacts of the Program be performed following the completion of the Program's EIR and until completion of the Program. (10) Implement a Mechanism to Monitor and Ensure Survival of the Program's Replacement Trees. Although the City is committing to watering Program replacement trees for the first 3 years after their initial planting, there is no system in place to ensure that property owners will water the trees and ensure their survival beyond this period. This is especially concerning given that best management practices consider the establishment period for a tree to be 5 years. In addition, the Program does not address restoring our canopy if the replacement trees do not survive. CFAC believes that the City needs a long-term sustainability plan to address the monitoring and assurance of the survival of the Program's replacement trees. If the trees do not survive, the environmental impacts of the Program will be even greater than anticipated. We need a monitoring mechanism and the baseline data it will provide to ensure that the appropriate mitigation measures are implemented. Therefore, we believe it is imperative for the City to devise a long-term sustainability plan for our replacement trees, which should also include an enforcement plan. 5 IV. Concluding Remarks CFAC supports the Program and its objective to create safe sidewalks for all Angelenos. We acknowledge the need to repair our distressed sidewalks and share in the noble goal of creating access for all persons. Our City faces many environmental issues that may impact the health and well-being of its citizens. The Program has the potential impact to exacerbate these issues if it does not implement a fully developed plan. CFAC believes that a long-tern sustainability plan for the Program and our street trees should first be devised. This Program has the potential to transform Los Angeles for generations to come, and it should be done properly with a well-considered and fully developed process.		
Craig Plestis	Our whole small street of laurel hills road in studio city is unsafe for us to walk because of the many large holes. Please help repair!!!!!! This for the street Laurel Hills Road. Our street is a disaster and has no area to walk to our local school. All the side walk type area are covered in holes. Please put us on your repair list. Best Craig	9/15/17 4:28 PM PT	Comment noted. Please visit https://sidewalks.lacity.org/
Crystal Rios	It is extremely important to have well maintained sidewalks for the safety of citizens especially students. On the block next from mine there is no sidewalk for about 20 feet . People take advantage and use it as parking and dump their trash. We have 3 great schools on our street and children are forced to walk on the street and dodge cars because of this.	9/12/17 4:30 PM PT	Comment noted. Please visit https://sidewalks.lacity.org/

Dan Haskell	I wanted to reach out to you. We are the company that implemented the direct to door delivery of LED's last year for LADWP. I thought we could help with getting the clear message out to residents about your program. Door hangers are a clear and concise way to message residents about the program and can be done cost effectively. I was thinking that in neighborhoods that have been determined to have the most need for repair, we could target those specific areas. We can also target only single family homes, or even the entire footprint, like we did with the LED program. Since we already have a very good idea of the footprint for LADWP, I thought we could help get residents to participate in your program. I'd like to have a conversation, at your convenience, and discuss more. Call or email anytime.	9/14/17 12:00 AM PT	Comment noted.
Dan Seaver	Because permits are not issued until contractors are approved, and because job specs are determined after the permits are issued, the scope of work will always change after a bid is awarded. That means every homeowner will always be stuck with a single bid and little to no leverage to keep the project costs under control. I have been awarded a permit twice and both times, the city has changed the scope of work enough so that my contractor has had to re-bid, but this time in a single bid situation, and that has always undermined the project.	9/15/17 3:45 PM PT	Comment noted. Please see Chapter 2.0 Project Description and https://sidewalks.lacity.org/
Dana Sherman	Please save our mature trees, they are so beautiful! Especially tree on 12821 Rubens ave. It gives shade to near by houses and habitat to many birds	8/10/17 1:51 PM PT	Comment noted. Please see Chapter 2.0 Project Description and Chapter 3.3 Biological Resources
Daniel Carson	Not sure what power my words have but here goes. My Block of Van Ness between Foothill and Franklin is a living nightmare. Not only have the tree roots pushed up most of the street and the sidewalk is impassable at places, but I have also injured myself numerous times trying to navigate the public sidewalk. Not sure why the city decided that the next block over on Taft was considered a nuscience and had to be repaired but that my street was not. If you can explain that to me I'm all ears. Otherwise, Please fix this problem with all of the money I have happily paid in property taxes. Thanks for listening. If I get a response I will be very surprised.	9/11/17 4:20 PM PT	Comment noted. Please visit https://sidewalks.lacity.org/
Daniel Garcia	Pervious concrete pavement. It would be a great opportunity during this process to evaluate the use of technologies such as pervious concrete pavement (http://www.perviouspavement.org) for some areas. The review process would allow for a closer look at a variety of ground and soil types. Adding an option like previous concrete may be an innovative solution for appropriate areas. It may help to solve environmental concerns. The technology goes by many names, including some branded product blends with added fibers. The installation process may also require altered steps for prep or inspection, which would be a great thing to use this review opportunity to further understand. Below are some links to videos. Some are brand name product demonstrations, but the intent of providing is to include an example of what pervious pavement can be useful for. https://youtu.be/UEF0DeOq100 https://youtu.be/8rbNznCBKI8 https://youtu.be/3uNfzEMgqRk https://youtu.be/9UMTFOuGMFc	9/15/17 7:57 PM PT	Comment noted. Alternative construction materials are discussed in Chapter 3.9, Land Use. See Chapter 2.0, Project Description.
Daniel Victor	Attached are excerpts from the letter we emailed to Councilman Ryu on August 1, 2017, and received no response. We sent a certified, return receipt requested letter on September 1. We received verification that the letter had been received, but as yet have received no reply from Councilman Ryu. It's important to note that the sidewalk damage was caused by city-owned trees. "Dear Councilman Ryu, We have just learned that the amount available for a sidewalk repair rebate has increased to $10,000. However, those of us who were responsible enough to sign up for the program when it first started will not be eligible for the increased amount. We have lived in this house for 35 years, and the sidewalk has been in ill-repair virtually the entire time. We periodically reported the problems to the city but nothing was ever done. So when the rebate program was offered, we decided that we would sign up for it. We spent many months getting the permits, researching which of the city-approved contractors would be the best fit for our needs, and working with the local HPOZ to be sure that everything was done according to the city's sometimes difficult requirements. The city even required that we replace part of the city-owned driveway to the city-owned alley adjacent to our sidewalk. ...[I]t seems that we will not be eligible for the additional rebate since our work was completed in April 2017. We feel that we are being punished for our prompt action. Presumably the reason the rebate amount was increased was because so few homeowners had signed up for the program under the old amount. The city has ignored the sidewalk problem for decades, and when they asked for help from homeowners we responded. If the city wants that kind of response again, the city needs to show good faith and match the rebate amount that is now offered.	9/12/17 5:07 PM PT	Comment noted. Please visit https://sidewalks.lacity.org/
Danielle Gatto	The entirety of Canyon Dr and Bronson sidewalks need to be repaired. It is impossible to push a stroller, ride a bike, or walk without extreme caution on the sidewalks. This is particularly concerning given the increase in numbers of people parking closer to Franklin to then walk up to the park. It is a fall hazard AND forces people who cannot navigate the lifted pavement to then walk in the street, where we have uncontrolled traffic speeds and many distracted drivers trying to take pictures of the Hollywood sign. It's only a matter of time before we have a pedestrian death in the street due to someone trying to avoid the poor condition of the sidewalks. My family was nearly hit 2 weekends ago at the Bronson/Canyon intersection as we crossed sides, because my baby stroller can't navigate the jagged mountain of pavement at the corner on the west side of Canyon. And we were almost hit by a driver not paying attention after rolling the stop sign.	9/13/17 10:58 AM PT	Comment noted. Please visit https://sidewalks.lacity.org/
Darryl Johnson	I have prepared a letter below in the attachments, but I must state that these City Sidewalks are horrible. Due to the poor upkeep by the City my insurance has dropped me. This which is not my fault and I have made many complaints	9/15/17 10:32 AM PT	Comment noted. Please see Chapter 2.0 Project Description. Please visit https://sidewalks.lacity.org/
Darryl Johnson	The sidewalk in front of my residence is a safety hazard and is beyond simple repair. I was notified by Allstate Insurance company that my homeowners insurance policy would be cancelled if the sidewalk is not repaired. I do not own the city's sidewalk and should not be penalized for its deterioration or suffer the loss of my insurance. The City of LA planted Carob trees in the early 1960's which grew to capacity, raising the concrete/sidewalk and asphalt in the street. This tree planted in front of my home was uprooted and fell on to my property in January 2006 causing irreparable damage to the sidewalk and 2 neighbors driveways. For nearly 15 years I have petitioned the city to correct this problem before someone is badly injured. The cold patch that was previously applied is breaking up and is constantly rising as a result of the roots underground, which has also resulted in costly plumbing repairs at my expense. It is unsafe to direct my grandmothers wheelchair over the raised concrete and cracks. Other residents face the same problem with baby strollers and walkers. There have been 6 or more trees that have fallen and caused extensive damages on West 57th Street (90037) over the past three years and no one is working on behalf of the community where we have senior citizens, disabled residents and children requiring access to the sidewalks. The residents are forced to use the streets to push carts, baskets and wheelchairs, therefore causing another safety hazard. I am hopeful that immediate action will be taken before injury or loss of life happens. Sincerely, Darryl R. Johnson (213-248-9226) Note: Please disregard the previous copy I used the incorrect email address.	9/15/17 2:29 PM PT	Comment noted. Please see Chapter 2.0 Project Description. Please visit https://sidewalks.lacity.org/
Debra Martin	Streets and sidewalks in West Toluca Lake are in need of repair. Cracks and damage from tree roots make our street, Blix, and Camarillo very dangerous terrain for all of us walkers. It's constant vigilance to avoid hazards and not trip or fall.	9/12/17 9:42 AM PT	Comment noted. Please visit https://sidewalks.lacity.org/
Denice Flowers	Hi, what about washing the sidewalks? Yesterday I was sitting at the bus stop on Venice and Sepulveda and it is so filthy. I wish I had taken a picture because it's hard to explain just how filthy it really is. Most of the sidewalks are especially at the bus stops around our city. I can't imagine what kind of diseases are living there. Please check it out and see what I mean. Thank you.	9/14/17 11:10 AM PT	Commnet noted. Please call 3-1-1 and visit https://www.lacity.org/

Department of Conservation	If any wells, including any plugged, abandoned or unrecorded wells, are damaged or uncovered during excavation or grading, remedial plugging operations may be required. If such damage or discovery occurs, the Division's district office must be contacted to obtain information on the requirements and approval to perform remedial operations. The possibility for future problems from oil and gas wells that have been plugged and abandoned, or reabandoned, to the Division's current specifications are remote. However, the Division recommends that a diligent effort be made to avoid building over any plugged and abandoned well. Questions regarding the Division's Facilities and Pipeline Management Program or Construction Site Well Review Program can be addressed to the local Division office in Cypress by calling (714) 816-6847 or email DOGDIST1@conservation.ca.gov.	8/25/17 12:00 AM PT	Commnet noted. Please see Executive Summary for mandatory project design features.
Devon Brooks	Please add sidewalks to Marmont Lane, Marmont, Avenue, Monteel Ave, and Hollywood Boulevard aboce Chateau Marmont. Also, Please add speed bumbs on Marmont Lane and Hollywood Boulevard sbove Chateau Marmont. Cars speed through the neighborhood. Because we do not have sidewalks, people (including children) are forced to walk in the streets. It is extremely dangerous. Thank you.	9/15/17 12:59 PM PT	Commnet noted. Please see Chapter 2.0 Project Description, no new sidewalks will be constructed as part of this project.
Devony Ferraro	I am concerned that the sidewalks will be fixed and the trees that are causing the issues will be left to cause further, expensive, problems for homeowners. There is also the issue of trees in a neighbors parking strip damaging my property. What if the neighbor doesn't deal with the tree - I don't want to be responsible for costly repairs that are not from my tree. Wood love to see tree removal/replacement part of this program. Thank you	9/11/17 8:57 AM PT	Comment noted. Please see Chapter 2.0 Project Description.
Dianna Davidson	I would like to know WHO PAYS for SIDEWALK REPAIR? DOES THE CITY PAY FOR TOTAL REPAIR ? IS IT SPLIT BETWEEN CITY and HOMEOWNER? Please respond, briefly, to my questions.	8/18/17 12:00 AM PT	Comment noted. Please see Chapter 2.0 Project Description.
Dimas Lopez	My family and i have lived at this address for over 20 years. 2 years ago, we started noticing a hole in the street in front of our driveway. It was about 4 inches wide back then. It was patched a year ago and now the hole is about 3-4 ft wide and 4-5 inches deep. Every time a car goes over it, more pieces break off and fly all over. My dads car was parked outside and one piece from the hole flew and hit the drivers door causing a small dent and scratch. Please come out and FIX it. DANGEROUS.	9/13/17 1:30 PM PT	Comment noted. Please visit https://sidewalks.lacity.org/
Donna Getz	Sidewalks on Hillhurst Ave are in deplorable condition from Los Feliz Blvd. north to the Greek Theater. Many pedestrians use this access to the park, theater, and Observatory. It is hazardous.	9/12/2017 19:03	Comment noted. Please visit https://sidewalks.lacity.org/
Ed Hunt	1. Recommend you consider using normal steel reinforcing in any new sidewalk work. It adds only minor costs and makes the concrete 6-7 times stronger in terms of bending and shear. This is a requirement in most cities large and small. We have tried for years to get an intelligent answer why LA refuses to use this common sense construction technology. The closest we have come is the worker that installed one of our corner handicap ramps. He said it was a "Union thing" and guaranteed plenty of future repair work when the sidewalks fail. Note that his work lasted only a few months before it was full of cracks and now it has a 1" tall tripper across the sidewalk. 2. Because of the intentionally weak concrete, poor tree selections (like various Ficus species) and other factors, many sidewalks have been lifted by tree roots. Extreme care should be taken to properly root prune the trees and there should be a sand or other appropriate cushion between the remaining roots and the new sidewalk. Sincerely, THE MELROSE HILL NEIGHBORHOOD ASSOCIATION Edward Villareal Hunt, AIA, ASLA 2017 President, 323-646-6287 Sidewalk Repair Program	8/30/17 5:13 PM PT	Comment noted. Alternative construction materials are discussed in Chapter 3.9, Land Use. See Chapter 2.0, Project Description.
Eddy Spralja	Sidewalk/curb repair in San Pedro that is very badly needed. The curbs on the 300 block of West 11th Street, between Mesa and Center are very torn up by the City's construction of the sewer lines in the streets. Corner handicap curb, on the NW corer of Cabrillo Ave and 17th St. The Alley way next to Dana middle-school. The sidewalk in front of my house (1739 Vallecito Dr, San Pedro, CA) is raised up by the city's trees. First two photos 1739 Vallecito Dr., San Pedro 90732 3rd photo curb NW corner of Cabrillo and 17th near school Photos 4 and 5 11th st between Mesa and Center	9/15/2017 0:00	Comment noted. Please visit https://sidewalks.lacity.org/
Elaine Byrnes	There are 2 sidewalk eruptions on Gorham Avenue in 90049 that are continuing to worsen. With a lot of elderly folks as well as children in the neighborhood, it's becoming a concern. I've come close to falling, as well. Another issue may be the trees with roots that are buckling the sidewalk - they're getting top-heavy and perhaps could use a trim or root cutting. Thank you.	9/14/17 12:20 PM PT	Comment noted. Please visit https://sidewalks.lacity.org/
Elizabeth Pollock	On Centinela Avenue between Marshall St. and Milton St. in Del Rey, there are gaps in the sidewalk at several places on both sides of the street. Where there is paved sidewalk, it is not always ADA-compliant. This section of Centinela is used by seniors and families walking to the Venice Honwanji Buddhist Temple, the Venice Japanese Community Center and the Venice Japanese Methodist Church. Playa Vista was required to pay for crosswalk improvements where Alla Road crosses Centinela because of the children who walk to/from Marina del Rey Middle School/Goethe International Charter School, Braddock Elementary School, the Marina Early Education Center (4908 Westlawn)and the Westside Children's Center (12120 Wagner Street). We need to have some money allocated to filling in the sidewalk gaps in this part of Centinela Avenue.	9/14/17 11:36 PM PT	Comment noted. Please visit https://sidewalks.lacity.org/
Emily Petito	I lived in my house for 40 years. The trees have not been trimmed. The trash collector broke a branch and it fell on my son. This happened when he was 5, he is now 40. We used to put our name on a list that I'm sure is now long gone. My sidewalk is buckled from the tree and needs to be fixed. If you remove a tree there's not room for two new trees. I have a streetlight on my property. Anytime the street is fixed it only gets hot mapped.	8/14/17 12:00 AM PT	Comment noted. Please visit https://sidewalks.lacity.org/
Erich Bollmann	It's devastating to learn that the sidewalk "improvement" plan will result in the "removal of large quantities of mature street trees." Our urban tree canopy is an immensely valuable resource to citizens - helping to clean our toxic air, providing invaluable shade during the scorching summer months, and offering a greater sense of well being than concrete. It literally takes decades for saplings to reach maturity, and local governments have already identified concrete alternatives (http://articles.latimes.com/2001/jul/14/local/me-22271) that shift with tree growth. I strongly urge you to Please re-consider your plan to increase our urban heat effect and the toxicity of our air, and to look at alternatives to the removal of mature trees. Once they are cut down it will take many, many years for their replacements to even begin to offer the same benefits. As you likely know, many parts of Los Angeles are park and tree deprived, and to remove what little greenery we do have would be a huge disservice to those of us that live here. Thank you for your consideration of my comments.	9/14/17 8:58 AM PT	Comment noted. Please see Chapter 2.0 Project Description, Chapter 3.3 Biological Resources, Chapter 3.6 Greenhouse Gas Emissions
Evan White	Please look into the sidewalks along Coeur d Alene Ave 90291, from Abbot Kinney to Lincoln along the schoolyard fences. This is a treacherous segment of sidewalks, and very dangerous. Something needs to be done to address this safety concern.	9/15/17 11:34 AM PT	Comment noted. Please visit https://sidewalks.lacity.org/
Fidel Vasquez	HI. MY NAME IS FIDEL VASQUEZ. 1 LIVE FOR 20 YEARS IN SYLMAR. I AM WORKING FOR PACOIMA BEAUTIFUL. I LIVE IN NEVER FIXED MY STREET. A FIX ON THE RAMPS ON A - 1 SEE THE PEOPLE STREET. LAST YEAR IN A RAMP. I'M GOING THE SYLMAR FOR 20 YEARS. NEVER NEVER FIXING THE SIDEWALK. 1 NEED THE CORNERS FOR WHEELCHAIRS . 1 GOT FIXING THE STREET THE NEXT PAST TWO YEARS, AND LAST YEAR, TO FIX IT AND TAKE A PICTURE. PUT BUT I'M LOOKING FOR TWO TIMES THE SECOND STREET. FIX IT. AGAIN. EVERY YEAR. FIX AGAIN. THE SAME STREET. YOU KNOW, EITHER MINE CR THE OTHER STREETS THANK YOU.	8/14/17 12:00 AM PT	Comment noted. Please visit https://sidewalks.lacity.org/

Gabrielino Tongva Nation	This submission of comments centers on the Cultural Resources (V) & Tribal Cultural Resources (XVII) sections as described in the Initial Study Environmental Checklist document for the proposed Sidewalk Repair Program. After review of the document it is apparent that a potentially significant impact may occur to the cultural resources of the Gabrielino Tongva Nation. It is the request and recommendation of the Gabrielino Tongva Nation that adequate mitigation measures be implemented during subsurface construction activity associated with the proposed project that would protect and preserve the archaeological and cultural items that may be uncovered during ground disturbing construction activity. Since the Gabrielino Tongva Nation has cultural affiliation to ALL areas that are outlined in the proposed project area maps, the Gabrielino Tongva Nation requests that tribal monitors selected by our tribe be on site to monitor all construction activity associated with the project. The tribal monitors of the Gabrielino Tongva Nation will have cultural affiliation with the project area. I request to be contacted to facilitate a Native American monitoring component for this proposed project.	9/15/17 12:00 AM PT	Thank you for your comment. AB 52 consultation is discussd in Chapter 3.13. Please see Chapter 3.4 for Cultural Resources discussion.
Gary Fordyce	MY CONCERN HAS BEEN THE CORNER RAMPS. I HAVE OBSERVED MULTIPLE CORNERS WITH RAMPS THAT HAVE HAD MULTIPLE ACCIDENTS. AND THESE RAMPS BECOME LAUNCHING PADS WHERE CARS ENTER THEIR YARDS. AND IN SOME CASES, HAVE ENTERED THEIR LIVING ROOMS. IT PLAGUES ME THAT NO ONE HAS CONSIDERED PLACING SOME TYPE OF STEEL POST SIGNIFICANTLY WIDE ENOUGH FOR A WHEELCHAIR TO ENTER WITH THE PROPER ANGLE OF RAMP, BUT THEY ARE -- BUT THEY DON'T NEED TO BE SO WIDE AND THEY DON'T NEED TO BE SO INVITING TO CREATE LAUNCHING RAMPS. THESE BECOME NOT ONLY A QUALITY OF LIFE ISSUE FOR THE COMMUNITY, BUT AN ENDANGERMENT TO WHOLE FAMILIES AND PASSERSBY, WHERE THERE COULD BE A BARRICADE, WHILE AT THE SAME TIME, PROVIDING THE NECESSARY SUPPORT AND ACCESS FOR THE DISABLED. BELIEVE IT OR NOT, STANDING HERE, I HAVE BEEN IN A WHEELCHAIR, I'VE BEEN IN A WALKER, AND I HAVE USED A CANE. I HAVE SURVIVED IT ALL, BUT I'VE EXPERIENCED IT, AND I TRULY HAVE EMPATHY FOR EACH AND EVERY ONE WHO NEEDS THAT ACCESS. SO YOU MAY NOT BE ABLE TO GO BACK AND RETRIEVE MANY OF THE RAMPS THAT EXIST, UNLESS THEY'RE HIGH ACCIDENT LOCATIONS, BUT CERTAINLY THE NEW ONES SHOULD BE A CONSIDERATION.	8/14/17 12:00 AM PT	Comment noted. Please see Chapter 2.0 Project Description.
Gennaro Pupa	Rather than use new cement/mortor, wouldnt it be possible to remove the old concrete, WASH IT ONSITE, GRIND IT UP and then add whatever, (hopefully small amount of new mortor or gravel) to reconstitute the mix and pour it right back into the forms. This would save money, and a great deal of time. I have experienced many city walks, and from what I see, unless this is done in less time than quoted, the "new sidewalks" may very well be in need of repair once the currently proposed timetable is completed.A separate facility to grind the old concrete could be established on empty lots, in and around the neighborhoods being worked on.	8/17/17 5:00 PM PT	Comment noted. Alternative construction materials are discussed in Chapter 3.9, Land Use. See Chapter 2.0, Project Description.
Gerardo Hernandez	In my neighborhood and on my block there are many old trees that their roots have affected our sidewalks, pipes, and other parts of our house. We have notified the city in regards this problem but haven't received a decent respond. We hope that with this comment we can make ourselves be heard and that our tax money can be seen in affect.	9/06/17 6:38 PM PT	Comment noted. Please visit https://sidewalks.lacity.org/
Gillian Doyle	All sidewalk repairs should be made promptly to ensure safety using taxpayer money. That's why we pay property tax. Public streets are the responsibility of the City or County not the individual property owner.	9/13/17 2:41 PM PT	Comment noted. Please see Chapter 2.0 Project Description.
Gillian Singletary	As a long-term Angeleno who has lived in Downtown LA without a car for the past 5 years, I believe sidewalk repair will be a critical aspect of continuing to build a Los Angeles that is safe and accessible for people of every ability. The downtown community has representatives of every economic strata and physical ability -- from elite athletes that use our sidewalks for training to the disadvantaged and often forgotten homeless population that use the sidewalks as their entire home, our neighborhood needs safe sidewalks with space for everyone (and their dogs). Walking is how we can be a part of the community. The easier it is to walk safely and comfortably, the more people will feel empowered to give up their vehicles (or use them less) and the healthier and more beautiful all our communities can be.	9/14/17 8:24 AM PT	Comment noted.
Glen Bailey	SO JUST A FEW THOUGHTS, SOME OF WHICH MAY BE APPLICABLE TO THE SCOPING PROCESS OR NOT. NUMBER 1, IN YOUR PRESENTATION, YOU DID NOT MENTION THE COST, WHICH I UNDERSTAND IS OVER $3 BILLION FOR THIS PROJECT.\u0183 BUT I THINK AT LEAST IN YOUR NEXT PRESENTATION, YOU SHOULD INCLUDE THE COST ANNUALLY AS WELL AS THE TOTAL COST. ALSO, I THINK YOU SHOULD HAVE BEFORE AND AFTER PHOTOS. AND I MENTION THAT BECAUSE ONE AREA THAT I TRAVEL FREQUENTLY IS LINDLEY AVENUE IN RESEDA. AND FOR ABOUT ALMOST A HALF MILE, IT WAS A TREE-LINED STREET WITH LIQUID AMBER TREES. NOT MY FAVORITE TREE, BUT THEY'VE VIRTUALLY ALL BEEN REMOVED FOR SIDEWALK -- NEW SIDEWALK. IT LOOKS LIKE A WAR ZONE NOW, COMPARED TO THE WAY IT USED TO LOOK. SO I THINK HAVING BEFORE AND AFTER PHOTOS SO PEOPLE CAN REALLY SEE THE FACT THAT THIS PROGRAM IS DOING WHAT IT SAYS IT'S DOING. PERMEABLE MATERIALS FOR SIDEWALKS SO YOU AREACTUALLY GETTING ENVIRONMENTAL BENEFIT BY GROUNDWATER RECHARGE. YOU SHOULD ALSO BE CONSIDERING NATIVE TREES SUCH AS CALIFORNIA LIVE OAK TREES AND OTHER -- OTHER SIMILAR TREES THAT DON'T REQUIRE WATER OR OR CAN SURVIVE DROUGHT. PERSONALLY, I PLANTED THE FOUR - I HAVE A SMALL LOT, BUT I HAVE FOUR. THE CITY PLANTED A LIQUID AMBER TREE, WHICH IS, AGAIN, NOT MY FAVORITE TREE ALSO, THERE'S A LOT OF NEIGHBORHOODS THAT DON'T HAVE SIDEWALKS, AND THEY'RE VERY HAPPY TO HAVE PEOPLE WALK IN THE STREETS. I'M TALKING ABOUT RESIDENTIAL NEIGHBORHOODS. ONE OF YOUR OPTIONS CAN BE CONSIDERING POLLING THE NEIGHBORHOOD -- WOULD YOU LIKE TO KEEP THE TREES OR REMOVE THE SIDEWALKS? REMOVING THE SIDEWALKS SHOULD BE AN OPTION IF THEY WANT TO KEEP THEIR TREES AND NOT HAVE WHAT HAPPENED IN THE RESEDA -- LINDLEY AVENUE. OUR TREMENDOUS TREE REPLACEMENT DOESN'T TAKE INTO ACCOUNT THAT THESE ARE 60-, 70-, 80-YEAR-OLD TREES, AND THE AMOUNT OF IMPACT THAT THEY HAVE ON COOLING AND EVERYTHING -- YOU SHOULD BE LOOKING AT REPLACEMENT BASED ON WHAT WOULD BE THE EQUIVALENT IMPACT -- ENVIRONMENTAL IMPACT. AND IF THAT MEANS GOING OFF-SITE TO OTHER AREAS, THEN YOU SHOULD DO AN INVENTORY OF AREAS THAT CAN TAKE ADDITIONAL TREES BEING PLANTED SO THE ENTIRE AREA OF THE CITY WOULD NOT BE NEGATIVELY IMPACTED BY THE TREE REMOVALS. I THINK THAT'S IT. THANK YOU.	8/14/17 12:00 AM PT	Comment noted. Please see Chapter 2.0 Project Description. See Chapter 3.3 Biological Resources.

Greater Valley Glen Council	1. Because the tree canopy provides significant cooling and air purification, both of which are critical for the health of the people in Los Angeles, the Sidewalk Repair EIR must assess the decrease of tree canopy that results from the large quantity of tall tree elimination currently anticipated by Urban Forestry for sidewalk repair. Negative impacts on air quality, diminished greenhouse gas reduction, and an increase in heat island effect must all be quantified. The environmental effects of increased air conditioning usage must also be calculated. Human health risks must be addressed. 2. Before any trees are removed for sidewalk repair, a full tree inventory of street trees must be done by an independent professional entity and a tree master plan created. An actual field calculation must be done of how many canopy trees Urban Forestry expects will be removed for sidewalk repair, as well as how many new places exist for planting trees that are capable of reaching a height that contribute to tree canopy. 3. A Master Tree Plan must be developed that does not remove trees too rapidly such that it creates a decline in air quality and an increase in the heat island effect. There should be no net loss to canopy during the sidewalk repair process. In view of the length of time it takes for a tree to grow tall, an aggressive planting schedule which includes new tree wells and green spaces may need to begin even before trees are removed. 4. The aggressive non-aesthetic pruning of tall trees, or "topping", currently the practice of Urban Forestry (which pays subcontractors $180 a tree versus San Francisco that budgets $1,000 for a large tree), must be factored in the assessment of decline of tree canopy. "Before" photos of recently-pruned trees are available on Google Maps and Google Earth. 6. The environmental impact of wildlife habitats must be calculated and any tree removal scheduled so as not to disrupt spring/summer nesting. Given the negative effects on canopy when trees are removed for sidewalk repair, a new ordinance to restrict property owners from removing any healthy trees on their property for non-sidewalk related reasons needs to be considered. 8. Identify a plan to fully implement sustainable tree-saving sidewalk designs including meandering sidewalks, bridging over existing roots, curb bump-outs and larger tree-wells. These were listed as options in the sidewalk repair motion of Nov. 30, 2016 (tree removal as a last resort), but none except tree removal have been put into practice as options. Results of any tests of alternative sidewalk approaches need to be recorded in the EIR and then publicized so that homeowners have these options to tree removal. Also, our urban forest could significantly increase water supplies and decrease stormwater pollution for LA if the City and property owners integrated permeable sidewalks designs, and these alternatives need to be promoted. A thorough investigation into root pruning as an alternative to tree removal must be done. Urban Forestry proposed this approach to City Council as viable and reliable; and though it may not be widely known, the new administration at Urban Forestry says they do not want to use this method. 10. Every proposed tree removal must be fully publicized in advance with adequate time for due process and stakeholder participation to find alternate solutions to tree removal before any tree is removed.	9/12/17 12:00 AM PT	Comment noted. Please see Chapter 2.0 Project Description, Cahpter 3.3 Bioloigcal Resources, Cahpter 3.6 Greenhouse Gas emissions.
Greater Wilshire Neighborhood Council	At a duly called meeting, in accordance with the Brown Act, on Wednesday, September 13, the Greater Wilshire Neighborhood Council Board of Directors unanimously voted to support the Community Forest Advisory Committee's (CFAC) September 11, 2017 letter entitled: "Community Forest Advisory Committee Comments on Sidewalk Repair Program Initial Study." CFAC's letter is attached for your convenience. The Greater Wilshire Neighborhood Council will also be filing a Community Impact Statement on Council File No. 14-0163-S10, Sidewalk Repair and Maintenance / Sidewalk Repair Ordinance / Municipal Code Amendment. Please accept this email and incorporate CFAC's September 11, 2017 letter as our comments on the Bureau of Engineering's Sidewalk Repair Program Initial Study. Sincerely, Joe Hoffman, Secretary Greater Wilshire Neighborhood Council	9/15/17 12:00 AM PT	
Greg Lockett	About a year and a half ago I submitted a proposal to Councilman Huizar, about upgrading Broadway's sidewalks with newly designed "puzzle" pieces, constructed out of used tires, which could simply be inserted when damaged. Cities across the U.S. are using them in public access areas and parkways with great success in Philadelphia and New York. They are ascetic visually and more comfortable to walk on. I provided the Councilman with addresses of firms producing them as well. He assured me he would forward to Public Works. I maintain this would be more economical than standard cement walks and increase productivity a great deal due to ease of installation.	9/13/17 5:31 PM PT	Comment noted. Alternative construction materials are discussed in Chapter 3.9, Land Use. See Chapter 2.0, Project Description.
Hanne Mintz	I am handicapped, and in order to walk north on Muirfield Rd. when I leave my house, I must walk out into the street to avoid the perilous, uneven sidewalk in front of my house. It is completely deformed by the roots of a large, rotted tree that the City removed over a year ago. Not only is the sidewalk unsafe and impassable for those who are movement impaired, or those in wheelchairs or those pushing strollers, the street itself is also deformed from the roots of the tree. It has now been well over a year, and the sidewalk and the street remain a hazard, and my parkway has yet to be leveled and replanted, making it an attractive nuisance for those tossing trash, including poop bags, cigarettes, cans, etc. I spend quite some time cleaning it up every week. It is time to do your job, CITY OF LA. I am paying taxes - what are you doing with my money?	9/11/17 5:18 PM PT	Comment noted. Please visit https://sidewalks.lacity.org/
Harold Hartman	Urgent attention is needed on S. Bentley Avenue in its two-block stretch between Queensland Av. at the south and Clover Ave. to the north.	8/11/17 5:51 PM PT	Comment noted. Please visit https://sidewalks.lacity.org/
Holly Walker	Thank you for the opportunity to comment. As a member of the neighborhood, it is disheartening to watch (just today) mature trees being removed on Centinela Blvd. when the EIR has not even been completed yet. This is especially true when you consider that the proposed replacement trees, in terms of size, are woefully inadequate to serve as a present, viable alternative to what is being lost. This haphazard and excessive action before the EIR is completed undermines the very effectiveness of the program. The EIR has not provided any analysis of the impact of these tree removals in terms of carbon sequestration, heat island impacts, air pollution, quality of life (for people such as me in the neighborhood) and the effects of their removal on the community, the habitat in general and in terms of storm water effects. I am frankly surprised that our City has taken such a drastic approach by removing the trees when there are other alternatives for healthy trees, such as bulb outs, sidewalk replacement with epoxy coated asphalt to ramp over tree roots, phasing out removal overtime by trimming the roots or planting replacement trees in between and allow them to grow before removing the mature trees. The mature trees provide so many benefits that the inferior replacements cannot provide for years to come such as ample shade to reduce air temperature and cut air-conditioning costs and sweeping the air of pollution. Trees perform three major climate functions: they absorb carbon, their leaves absorb light and they draw water from the soil which evaporates into the atmosphere, creating low clouds that reflect the sun's rays. It is most unfortunate that we continue to allow the removal of these mature trees, without waiting for the completion of the alternative materials pilot program. Thank you for the opportunity to comment. Sincerely, Holly Walker	9/15/17 7:28 PM PT	Commnet noted. Please see Chapter 2.0 Project Description, Cahpter 3.3 Biological Resources, Chapter 3.6 Greenhouse Gas Emissions, Chapter 3.8 Hydrology and Water Quality.
Hov Arabyan	Sidewalks on my street and in the neighborhood as a whole are in such poor condition that its extremely dangerous and sometimes impossible to use a wheelchair, push a stroller, use a walker, ride a bicycle, and sometimes even WALK on! So we all opt to use the streets which puts us in danger of being struck by vehicles. The biggest culprit: tree roots. If the trees were maintained/pruned in a timely manner, the roots would not grow and cause the sidewalk to crack and rise. So now the problem is two-fold: the trees are overgrown and heavy branches tend to come down with strong winds, and the sidewalks are ruined.	9/11/17 4:22 PM PT	Comment noted. Please visit https://sidewalks.lacity.org/
Howard Baizer	I have had an outstanding request for years to have the sidewalk repaired in front of my house. It's very dangerous, and it would be great to have it fixed before someone gets hurt.	9/14/17 4:28 PM PT	Comment noted. Please visit https://sidewalks.lacity.org/

Hugh Kenny	I am against any removal of trees. They are already devastated by neglect, development, drought and disease, underfunded city agencies, infrastructure projects, McMansions, Small lot development,, home owner neglect and ignorance etc. I spoke up at one the early meetings you held. People in wheelchairs and old people hobbling over sidewalks need trees and shade too so that is not an excuse. Planting new trees won't get it. Even the two and three for one replacements invariably proposed. We need large trees now. Look around. Feel the heat. This is a great opportunity to not do something stupid. Thanks for asking, Hugh Kenny....	9/11/17 4:49 PM PT	Comment noted. Please see Chapter 3.3 Biological Resources, Chapter 3.6 Greenhouse Gas Emission.
Investing in Place	How will safety and access be addressed? How will it be ensured that when a sidewalk/crosswalk is closed for construction that people walking/rolling have adequate accommodation and they are not rerouted - out of their way. Typically people walking - if the sidewalk closed - many will just keep walking in the direction the need to go - if no adequate alternative provided - ppl frequently just walk in the street. Will the City of Los Angeles adopt a policy that addresses what happens when we close sidewalks for reconstruction? A policy that addresses when the City is doing the construction and policy when the property owner is? How is the safety people walking and rolling looked at during this project? Will it prioritize areas that have high crash rates? How will it ensure safety for all traveling during the reconstruction and as the program rolls out?	9/15/17 2:52 PM PT	Comment noted. Please see Chapter 3.12 Transportation/Traffic and Chapter 2.0 Project Description.
Isabelle Duvivier	1. No trees should be removed till the EIR is complete. Since November, I have seen 135 tree removal requests in CD11, of which roughly half are for the Sidewalk Repair Program. This number doesn't include the hundreds of dead trees removed due to disease and drought or trees that are removed when considered a public safety emergency. (trees likely to fall). The trees that are being removed, as part of the Sidewalk Repair Program, are typically big mature healthy trees that are large carbon filters and provide enormous cooling effects. The number of requests grows every month as more people learn about the program and especially now that the reimbursement amounts have increased. The biggest environmental impacts of the Sidewalk Repair Program will be reduction of: carbon filtration, species habitat, ambient cooling, and storm water reduction/filtration due to tree removals. It is not sensible to proceed with tree removals before the EIR is complete. In July CFAC passed a motion to cease all tree removals until the EIR has been completed. I would add that tree removals need to be stopped until the results of the alternative materials pilot program has been completed. 2. Existing Conditions - The City needs to quantify the number of trees to be removed and the number to be preserved to develop a clear view of canopy coverage and get a realistic cost benefit analysis over 30 years. (the length of the program). 3. The City needs to Increase Replacement Value - the existing 2:1 replacement value essentially means that it will nearly always be economically preferable to remove an existing tree rather than work around it. 4. The Initial Study doesn't meaningfully address increased storm water as a result of tree removals, IX. e page 3-31. 5. The Initial Study doesn't meaningfully address the heat island effect as a result of tree removals. 6. The Initial Study must address loss of Natural Resources and habitat as a result of tree removals. Is this to be dealt with in section II. Agriculture and Foresty Resources or elsewhere? 7. The Initial Study doesn't address increased demand for Public Parks as a result of canopy loss on City Streets. XV. a. page .3-49. 8. Where catch basins and drain recontruction is to occur, City needs to coordinate with Watershed Management to create new opportunities for multi-benefit solutions to stormwater reduction, water infiltration, and habitat creation.	9/15/17 2:33 PM PT	Comment noted. Please see Cahpter 2.0 Project Description, Chpater 3.3 Biological Resources, chapter 3.8 Hydrology and water Quality, Chapter 3.14 Utilites and Service Systems.
Issam Najm	My name is Issam Najm, and I am the president of the Porter Ranch Neighborhood Council (PRNC). I received the NOP for the SRP EIR and I am about to distribute it to the Board members and post it on our website. However, the map attached to the letter titled: "Figure 1, Project Location Map and NOP/IS Availability Map.", does not even include Porter Ranch. The map is cut off at the 118 FWY, and our community is north of the freeway. Our Library Branch is not listed on the list of Branch Libraries, and I don't know what that means. So in anticipation of getting the question from my Board members and our Stakeholders, can you Please clarify it to me? Specifically: 1. Why is Porter Ranch not included in the map? 2. Does this mean that the SRP does not include Porter Ranch? 3. Why is our Library not included on the list? 4. Will Porter Ranch sidewalks be repaired as part of this SRP?	8/18/17 12:00 AM PT	Comment noted. See Chapter 2.0 Project Description.
Jacqueline Surber	I'm really troubled by the repeated reference to the Sidewalk Repair Progam as being referred to as a "proposed project." This is misleading, isn't the work underway with over 200 trees already removed? One could argue it is unethical to continue work on a project without the know Environmental consequences. I highly recommend that only sidewalks that do not involve tree removals take place until the EIR is completed. There is a huge opportunity during this sidewalk repair program to use new materials and techniques that will help to infiltrate more stormwater, such as curb cuts, infiltration pits, bioswales, widening parkways, etc. P-152 P-152-1 P-152-2 P-152-3 P-152-4 P-152-5 P-152-6 widening parkways, etc. 7. For example permeable paving is less expensive to repair in the future and less material intensive as well. At the same time allow water to permeate into the ground table recharging our desperately low aquifers. In the event that trees are removed while sidewalk repair continues, that detailed documentation of these tree be recorded, such a species, canopy size, height, trunk diameter, health etc, so that these trees removed during the process are accounted for. So that the effects of their removal can be calculated, such as loss of water filtration, capture and carbon sequestration losses. It reads On page 44 "The City's Urban Forestry Division maintains a list of Significant Street Trees. The street trees may be of importance due to their size, species, appearance, growth habits, flowers, or a combination of these characteristics. The proposed Project could conflict with protections afforded to Significant Street Trees. " When was this list of Significant Street Trees last updated? How comprehensive is this list? 2. A website should be created and made aware to the general public, where information is clearly displayed with the location of trees already removes, proposed removals, and replacement plantings. Ideally displayed on a searchable (by zip code) map and list so that the public can hold the city accountable. 3. Insufficient replacement planting ratio to replace canopy coverage of large trees at 2:1, this should be analyzed and a formula created to propose a better replacement ratio. 4. There is No mention of replacing the trees with Native species. Where space allows CA Nativetrees should be required as the #1 choice of species to plant	9/15/2017 16:04	Comment noted. Please see Cahpter 2.0 Project Description, Chpater 3.3 Biological Resources, chapter 3.8 Hydrology and water Quality, Chapter 3.14 Utilites and Service Systems.

Jacqueline Surber	Updating the LA City approved street tree species list is long over due. Many of the trees on it are moderate water users, requiring supplemental water into their maturity. In our city trees with moderate water needs will struggle to survive on rain fall alone. The list should be updated immediately, removing all moderate water use species, only adding species that are low or very low water users. LA can look for successful new species in other Mediterranean climates and arid lands such as Arizona, Australia, Chile, South Africa, etc. Yet on page 61 it's says "Aside from the minor amounts of water used for landscaping for the street trees, the proposed Project would not pump groundwater from the aquifer. " Who can say based on calculations that it will be a "minor amounts of water"? This statement could be very inaccurate. The EIR should be required to calculate the amount of water each new tree planted will require (at least the first 5 years as per TreePeople tree care recommendation) and factor in the potentially inappropriate planting of moderate water use trees and the associated amount of water used for the establishment and ongoing maintenance. It also goes onto to say that the project is not taking place in areas used for recharge purposes. When in fact all trees channel water into the soil and there for the ground table, so yes it will have an affect on ground water. This should be further addressed in the EIR There is a huge opportunity during this sidewalk repair program to use new materials and techniques that will help to infiltrate more stormwater, such as curb cuts, infiltration pits, bioswales, widening parkways, etc. P-152 P-152-1 P-152-2 P-152-3 P-152-4 P-152-5 P-152-6 widening parkways, etc. 7. For example permeable paving is less expensive to repair in the future and less material intensive as well. At the same time allow water to permeate into the ground table recharging our desperately low aquifers Timing of tree removal should take place during the audobon societies Recommended time of October - February. Outside of this window the removals would inadvertently remove nesting birds and their young, having a devastating affect on our bird populations. 9. Recycling and repurposing of trees? It would be an environmental crime to haul these trees to a landfill or burn them. The fallen wood should be used within the city, for example, locally milled to make lumber, furniture or cultivated to grow mushrooms. The logs and branches could be buried to create carbon sequestering and water retentive gardens known as Hugelkulture mounds. This is a regenerative landscaping technique that is well documented and displayed at the LS Arboretum. There is plenty of space to install these in parks, schools and even landscaping on large site such as the various DWP and DMV locations.	9/15/17 4:04 PM PT	Comment noted. Please see Cahpter 2.0 Project Description, Chpater 3.3 Biological Resources, chapter 3.8 Hydrology and water Quality, Chapter 3.14 Utilites and Service Systems.
Jana Helms	Attached is a photo that shows an improved corner sidewalk pedestrian flow that takes into account the movement from crosswalk to sidewalk for wheelchairs, strollers, bikes etc. The main problem is that pedestrians tend to gather in the middle (on yellow pad) which makes it difficult for wheelchairs or strollers to get through the group of pedestrians. An improved design would be to have an enter and an exit on each side instead of forcing wheelchairs up the middle. The current design with the yellow pad in the middle needs have access on both sides so someone in a wheelchair doesn't have to push through people who tend to gather in the middle of the ramp. The best way to do this is on each side of the yellow pad there needs to be more flat space so wheelchairs can get through.	8/09/17 6:57 PM PT	Comment noted. Please visit https://eng.lacity.org/
Jane Sobo	1. East side Lucile Ave. between Landa St. and Micheltorena has several areas where hillside dirt (from either vacant or occupied) properties has eroded from the hillside, downwards past the curb, onto the street--preventing efficient water runoff egress. As a result, during the rainy season areas where sidewalks normally would be, are filled with debris, and this includes: A. East side of Lucile Ave. just North of Landa St. (just North of the base of the Landa Stairs) B. East side of Lucile Ave. about 1/2 way up from Landa to Micheltorena C. above storm-drains on Landa St., just East of Griffith Park Blvd. ...where it is incessantly clogged with piles of leaves from trees that either go unswept by street-sweepers, or not cleaned up by residents, and which get carried downstream inevitably clogging said stormdrain. 2. That stretch of Landa Street--between Griffith Park Blvd. and Lucile Ave., has a non-contiguous sidewalk, making it extremely difficult to navigate walking--not to mention dangerous, with regard to its steepness and blind spots where a pedestrian (forced to walk in the street) can't see or hear if a car is approaching. The solution to this problem is, the Landa St. sidewalk should be repaired to be one contiguous stretch between Griffith Park Blvd. and Lucile Ave, so that pedestrian traffic can walk in confidence rather than fear of an oncoming vehicle as they're forced to walk in the street of this blind, steep block. 3. Further, there is no sidewalk to speak of on my street, Lucile Ave., from at least my block--which is bordered by Micheltorena on the North and Landa St. on the South. But there should be. When one walks this block, they're in harm's way because cars come careening down the hill. Because this is about sidewalk repair, not construction, and Lucile Ave. has no sidewalks, then I propose that sidewalk-repair funds be allocated to other solutions for our safety. The street is in a horrible state of disrepair, with cracks throughout, and has NEVER been resurfaced (whereas all other neighborhood streets have been) and it desperately needs speed bumps or slow-speed limit signs--to stanch the flow of careening cars. Therefore this is to request for my street, Lucile Ave, between Effie St. on the South and Micheltorena on the North, and Landa St. between Lucile Ave and Griffith Park Blvd: A. Sidewalk continuity B. Street re-paving C. Speed bumps or Slow-Speed Limit signs posted throughout D. Hillside Erosion clean-up E. Possible dam-ing of affected/eroding hillsides above curb, so dirt doesn't continue to erode onto street, creating wide pooling during rains F. Storm drain-grate clearance Thank you.	9/09/17 9:58 AM PT	Comment noted. Please visit https://sidewalks.lacity.org/
Jasmine Zamora	Hello my Godfather Jesus Carrasco asked Mr Huizar to Please fix our sidewalk by personally handing him a letter at a campaign party in Zamora Bros with pictures demonstrating him the bad sidewalk and so we are so happy to hear about this program. There is a rise in the cement, a rise of about 12 inches that slopes up like a mountain because Of the roots Of The trees and the cement is lifted. Countless and I mean countless of kids have fallen there and opened there lip or stitched their foreheads bleeding falling there. Now I'm worried about my Godparents walking there as they just turned 80 are diabetic with weak feat already taking steps carefully and also partially blind due to the disease and inevitably every day they have to pass by this sidewalk in front of their house To get to their car I hope you can help it's at 403 Echandia St LA CA 90033 The phone number is 323 263 5575 My number is 3104624095 God bless you thank you Jasmine Zamora	9/17/17 12:00 AM PT	Comment noted. Please visit https://sidewalks.lacity.org/
Jeff Mee	Please consider the sidewalks on McLaughlin between Venice and Palms.	9/14/17 8:47 AM PT	Comment noted. Please visit https://sidewalks.lacity.org/
Jennie Chamberlain	I think the city council's idea to create a public private partnership to fix the sidewalks in front of privately owned buildings is absurd. If the city disagrees with this, than may I suggest that the city do the same with the roadways, the sewer maintenance and the trash collection. Sidewalk mobility is critical for a healthy, economically prosperous Los Angeles. It is not something that should be left up to private homeowners and business owners.	8/21/17 12:00 AM PT	Comment noted. See Chapter 2.0 Project Description.
Jill Bergstrom	The problem that no one wants to discuss : city-owned parkway trees. L.A.City trees are responsible for most, if not all, sidewalk problems. Why should homeowners pay to fix their sidewalks when the city trees caused the damage? The city will not remove the trees, so even if a sidewalk is fixed, within 5 or 10 years, the city trees will once again lift/deform the sidewalk.	9/11/17 7:46 PM PT	Comment noted. See Chapter 2.0 Project Description.
Joan Temple	Please vote for money to research which trees on Centinela in Mar Vista etc. can be saved. In the long run, it saves money with beauty, cooler streets.... Thank you. Joan Temple	9/10/17 12:00 AM PT	Comment noted. Please visit https://sidewalks.lacity.org/
Joana Cruz	I am a resident of Mar Vista and although I appreciate the benefits of smooth sidewalks, the impact on the environment, especially in consideration of LA's dependence on water and the effects of global warming we are already experiencing directly (with the years long drought) cutting down trees before we have fully understood the potential impact makes absolutely no sense. We MUST consider long term effects of our actions. I URGE you to stop cutting down trees until the full Environmental Impact Report is complete and we can move forward with repairs in an informed manner. With concern, Joana Cruz	9/15/17 4:14 PM PT	Comment noted. See Chapter 2.0 Project Description.

Joanne D'Antonio	Shelley just gave us the opportunity to have a handout at the NCSA table at the Congress of Neighborhood Councils to give people ideas for weighing in on the Sidewalk Repair EIR scoping before Sept. 15. (I recommend all of you send in your comments to Shilpa Gupta (see attached for email address) before the deadline). I only found out tonight that this handout would be possible so I did not have time to have all of you weigh in. I took the liberty of writing up a sheet of what I think are the most important 10 points for this EIR. You will note that I did not get into specifics like numbers of replacement trees or container sizes -- I purposely avoided this sort of replacement game and focused on preserving tree canopy. As it is, most replacement trees planted so far have been species that don't really grow into canopy trees. I have been to and spoken at a whole lot of meetings following this sidewalk repair law suit and subsequent motions, including City Council Town Halls, Public Works Committee meetings and the full City Council vote meeting. Plus I participated in a bunch of CFAC meetings where Urban Forestry spoke. All of this informed this sheet, plus science information from Diana, and even an idea or two from the Tree People blog on Sidewalk Repair EIR scoping. Shelley needs to print this Thursday, and I am gone most of that day. This is just suggestions, and it will be stronger if it comes from our committee. If something truly bothers you, let me know asap. It is attached as a Word doc, so Shelley has it along with all of you. I can ask her to make a change if you really find a significant problem. Otherwise I hope you will let this fly, and forgive the short time frame. Shelly, Please let us know if there is any time for changes and when you need to get this printed. I am guessing by noonish Thursday. But I am leaving by 10 a.m. for meetings and won't have a computer until late afternoon. Hopefully we can live with this as it is. Thanks so much.	9/07/17 12:00 AM PT	
Joanne D'Antonio	1. Because the tree canopy provides significant cooling and air purification, both of which are critical for the health of the people in Los Angeles, the Sidewalk Repair EIR must assess the decrease of tree canopy that results from the large quantity of tall tree elimination currently anticipated by Urban Forestry for sidewalk repair. Negative impacts on air quality, diminished greenhouse gas reduction, and an increase in heat island effect must all be quantified. The environmental effects of increased air conditioning usage must also be calculated. Human health risks must be addressed. 2. Before any trees are removed for sidewalk repair, a full tree inventory of street trees must be done by an independent professional entity and a tree master plan created. An actual field calculation must be done of how many canopy trees Urban Forestry expects will be removed for sidewalk repair, as well as how many new places exist for planting trees that are capable of reaching a height that contribute to tree canopy. 3. A Master Tree Plan must be developed that does not remove trees too rapidly such that it creates a decline in air quality and an increase in the heat island effect. There should be no net loss to canopy during the sidewalk repair process. In view of the length of time it takes for a tree to grow tall, an aggressive planting schedule which includes new tree wells and green spaces may need to begin even before trees are removed. 4. The aggressive non-aesthetic pruning of tall trees, or "topping", currently the practice of Urban Forestry (which pays subcontractors $180 a tree versus San Francisco that budgets $1,000 for a large tree), must be factored in the assessment of decline of tree canopy. "Before" photos of recently-pruned trees are available on Google Maps and Google Earth. 5. Any tree replacements should be done strategically. Tree species that will grow tall enough to create canopy need to be identified as capable of thriving in this climate, and a plan to water and cultivate those trees into full maturity needs to be determined and adopted. 6. The environmental impact of wildlife habitats must be calculated and any tree removal scheduled so as not to disrupt spring/summer nesting. 7. Given the negative effects on canopy when trees are removed for sidewalk repair, a new ordinance to restrict property owners from removing any healthy trees on their property for non-sidewalk related reasons needs to be considered. 8. Identify a plan to fully implement sustainable tree-saving sidewalk designs including meandering sidewalks, bridging over existing roots, curb bump-outs and larger tree-wells. These were listed as options in the sidewalk repair motion of Nov. 30, 2016 (tree removal as a last resort), but none except tree removal have been put into practice as options. Results of any tests of alternative sidewalk approaches need to be recorded in the EIR and then publicized so that homeowners have these options to tree removal. Also, our urban forest could significantly increase water supplies and decrease stormwater pollution for LA if the City and property owners integrated permeable sidewalks designs, and these alternatives need to be promoted. 9. A thorough investigation into root pruning as an alternative to tree removal must be done. Urban Forestry proposed this approach to City Council as viable and reliable; and though it may not be widely known, the new administration at Urban Forestry says they do not want to use this method. 10.Every proposed tree removal must be fully publicized in advance with adequate time for due process and stakeholder participation to find alternate solutions to tree removal before any tree is removed.	9/14/17 12:00 AM PT	
Joanne D'Antonio	I WANT TO SAY THIS ABOUT THE VERY TALL LIQUID AMBER TREES.\u0183 EVEN FORESTRY HATES THEM, AND THEY DO LIKE CREPE MYRTLE TREES. TWO CREPE MYRTLE TREES DO NOT EQUAL ONE LIQUID AMBER TREE. THEY FALL DOWN, BUT THEY ADD TREMENDOUS BEAUTY TO THE CITY. AND THE SMALL TREES WILL NOT EQUAL THE SAME AIR QUALITY MANAGEMENT THAT THESE LARGE \u0183 TREES -- AND WE ARE PROCEEDING RIGHT NOW WITHOUT ANY EIR. WE'RE REMOVING TREES. TO GO WITHOUT AN EIR AND NOT CHECK WITH THE SCIENTIFIC STUDY -- THE DECLINE OF AIR QUALITY, AND THE IMPACT AND THE HEALTH AND DEATH OF LOS ANGELES CITIZENS WHEN MATURE TREES ARE REMOVED IN GREAT QUANTITY AND REPLACED WITH -- WITH SMALL TREES THAT DO NOT DO THE SAME JOB, EVEN WHEN THEY MATURE, BECAUSE THEY'RE ONLY TWO STORIES HIGH, THERE'S NOT MUCH IN THE WAY OF VERY LARGE TREES GOING IN UNDER THE SIDEWALK REPAIR PROGRAM. THIS NEEDS TO BE TO LED BY SCIENTISTS. AND ALSO NO ALTERNATIVE SIDEWALKS HAVE BEEN APPROVED. THERE ARE \u0183 PEOPLE THAT SEEM TO THINKING THAT ROLLING SIDEWALKS OR RUBBER SIDEWALKS MAY HAPPEN, BUT THE PEOPLE I'VE TALKED TO AT URBAN FORESTRY ROLL THEIR EYES AND SAY THEY HAVEN'T APPROVED ANYTHING, AND WE KNOW THEY DON'T WORK. SO BE HONEST WITH THE CITIZENS. We need a scientific study of the decline of air quality and the impact on the health and death of Los Angeles citizens when mature trees are removed. Small trees do not do the same job so this has to be honestly assessed and made public. Urban Forestry has said they will not root prune -- it is a policy of previous head of Urban Forestry - so this to be taken into consideration. No alternative sidewalks have been approved for use that can save a tree. We should do EIR before removing any trees.	8/14/17 12:00 AM PT	Comment noted. Please see the Executive Summary, Chapter 2.0 Project Description, Chapter 3.1 Aesthetics, Chapter 3.2 Air Quality, Chpater 3.3 Biological Resources, chapter 3.8 Hydrology and water Quality, Chapter 3.9 Land Use and Planning, Chapter 3.14 Utilites and Service Systems.
Joey Shimoda	We need an improvement with communication between public, agency and designers in regard to sidewalk design. The important stage is the planning stage and getting proper feedback from the public who can talk to all the agencies involve is the best way to solve this. The coordination between street lights, trees and any utility seem unconnected. And if it's a situation where you take the trees away we have to know where they new ones are getting placed. Basically a better job between placement of these items is what is needed. If designers are trying to make more beautiful streets we need to have a forum where we can help. Right now there is no real way to provide our (designers) input.	8/09/17 6:28 PM PT	Comment noted. Please see Chapter 2.0 Project Description, Chapter 3.3 Biological Resources
John LeGrand	Overall this sidewalk project was a tremendous improvement...however, the contractor didn't complete the sprinkler repair in the area in front of our building (842-848 Lucerne Blvd)...we have three sprinkler head's broken...who do we contact to get them repaired. Thanks you, John LeGrand	9/13/17 3:37 PM PT	Comment noted. Please visit https://sidewalks.lacity.org/
Jonathan Carlos	The sidewalks on Canyon Dr. between Franklin Ave and the Griffith Park entrance are in need of dire repair. The majority of intersections do not comply with handicap access, and disallow handicapped individuals to access the public areas of the park safely. Additionally, they pose serious safety risks for the hundreds of people on foot who traverse on them each day en route to the park as they are unavoidable trip hazards. Being the father of a newborn, I struggle each day that I try to walk thru the neighborhood navigating our stroller up and over the sidewalks. Often times, we feel forced into the street as the sidewalks are immobilizing for us. We would love to see them repaired and normalized for both our fellow neighbors, tourists, and handicapped individuals.	9/11/17 4:03 PM PT	Comment noted. Please visit https://sidewalks.lacity.org/ and See Cahpter 2.0 Project Description.
Josef Siroky	I live in mid city, an area that anecdotally is low income based on appearance. My neighborhood does not face the issue of have cracked sidewalks as much as other issues, the issue in my opinion in the uprooting created by trees that have shifted sidewalks in my neighborhood at least a foot up. The trees in my neighborhood don't get trimmed, but that's another issue, the sidewalks are uprooted and have forced disabled persons and children to cross the street where my neighbor's sidewalk has moved upward.	9/08/17 5:25 PM PT	Comment noted. Please visit https://sidewalks.lacity.org/ and See Cahpter 2.0 Project Description.

Joseph Barmettler	I am very concerned about the tree removal associated with Safe Sidewalks and statistics strongly suggest that the San Fernando Valley Tree belt will suffer damage that may not be replaceable in order to divert advanced living conditions to the public. I request a thorough investigation of and for mitigating trimming and/or destroying living trees and those trees on endangered species list, especially large mature trees.	8/14/17 12:00 AM PT	Comment noted. Please see Chapter 2.0 Project Description, and Chapter 3.3 Biological Resources
Joseph Salac	To whom it may concern, I would like to bring to someone's attention that our thirteen year old side walk on our front yard has been lifting little by little every year due to overly grown roots from the tree that is possibly half a century years old that also needed at least trimming due to falling leaves even on summer time. I had witness individuals who tripped during their walks and almost falling to the ground, specially during sundown where they could not see the lifted sidewalks. I have to rake leaves during Tuesdays and leave the leaves on the street hoping for the street sweeper truck will pick most of it up the next following morning, if they come by. I am not even sure if it is legal and appropriate to do, yet if we do not do so our green bin for tree trimmings will not be sufficient to fit all of the fallen leaves for a week where there were occasions that I had to borrow our neighbors green bins when it is time to mow the grass. We had considered desert style front lawn to conserve on watering, yet having gravel and with the many leaves falling onto it will not be viable for it will be more task and work doing the cleaning. Moreover, having solar panels on the roof is not an option to have for a huge tree blocking the roof will not be helpful. I had attached photos and hoping that this concern will be at least looked at. Thank you in advance, Joseph	9/14/17 6:17 PM PT	Comment noted. Please visit https://sidewalks.lacity.org/
Joyce Dillard	You state: Because the proposed Project is considered a maintenance project that is replacing existing sidewalk with new sidewalk (original purpose of facility), MS4 Permit redevelopment requirements do not apply. a result, no post---construction BMPs or hydromodification requirements are anticipated. Bureau of Sanitation is responsible for the LA Regional Water Board's MS4 permit. That permit requires several Enhanced Watershed Management Programs (by watershed) which include sidewalk improvements and stormwater infiltration. If stormwater collected is stored under the streets, how will this affect the sidewalks. Where are the Sediment Management studies?	9/15/17 12:00 AM PT	Comment noted. Please see Chapter 2.0 Project Description, Chpater 3.3 Biological Resources, Chapter 3.8 Hydrology and water Quality, Chapter 3.14 Utilites and Service Systems.
Judith Avery	I think the sidewalk repair project is much needed and sounds great. I look forward to it being implemented. Keep me posted.	9/13/17 7:54 PM PT	Comment noted.
Julianna Lassleben	Every child in Los Angeles should have access to a safe route to school. There is an urgent need to improve the sidewalks near Alta Loma Elementary School in the Los Angeles Mid City Neighborhood (1745 Vineyard Ave, Los Angeles, CA 90019). The School was listed by Vision Zero as one of 50 schools most impacted by traffic related injuries, in part due to the poor quality of the sidewalks. Families are trying to navigate narrow, uneven sidewalks with strollers and multiple young children on foot. The sidewalks needing leveling, replacement or repair are: Vinyard between Venice Blvd and Washington Blvd, on Rimpau Blvd between Venice Blvd and Washington Blvd and on both Saturn St between Vineyard Ave and Rimpau Blvd. Saint Elmo Dr between Vineyard Ave and Rimpau Blvd.	9/13/17 4:28 PM PT	Comment noted. Please visit https://sidewalks.lacity.org/ and Please see Chapter 2.0 Project Description.
Julianna Lassleben	More trees Please. Shade trees make walking more comfortable in hot summer months. Your department should be able to evaluate which species maximize shade and oxygen production while minimizing damage to sidewalks and sewer lines.	9/14/17 12:17 PM PT	Comment noted. Please see Chapter 3.3 Biological Resources.
julie gibert	When I saw the new "scramble" crosswalk at Sylvan Street and Sylmar Avenue in Van Nuys featured in the news, all I could do was question where the city's priorities are. How can we be spending money on a project like that while there are residential streets that have broken or incomplete sidewalks? Hopefully I will be shown that they are in place once the EIR is completed. I live on De Celis place between Vanowen and Sherman Way in Lake Balboa. Unfortunately, there is a portion of my street where the sidewalk just stops and you have no other option then to walk on a street. To add to the hazardous situation, that portion of the block is also completely lacking lighting leaving anyone walking there in total darkness and unable to see what is in front of them. So, should you be unlucky enough to have to walk at night you are taking a gamble that either you will trip and fall or possibly get hit by a car driving down the street.	9/12/17 3:37 PM PT	Comment noted. Please see Chapter 2.0 Project Description, no new sidewalk will be install as part of the Project.
Kamyar Moshfegh	This street is forgotten, broken sidewalks and bad asphalt all along this short block. We pay taxes like every other neighborhood, why our street looks so terrible I don't understand	9/14/17 7:58 PM PT	Comment noted. Please visit https://sidewalks.lacity.org/
Kathy Darrah	Sidewalk on southeast side of street between fountain Ave and De Longpre is unwalkable due to tree roots destroying the concrete.	9/11/17 4:32 PM PT	Comment noted. Please visit https://sidewalks.lacity.org/
Katie Trevino	Hi! The trees planted in the parkway have destroyed the sidewalks & driveway in front of my property. I worry all the time about someone getting hurt in front of my house, not to mention the fact the sidewalks would be very difficult for anyone with accessibility issues to navigate. I received a $2k rebate mos. ago, but the scope of work cost over $7k. I was told that if I didn't complete the entire scope of work -- I would have to forfeit the rebate, so I didn't accept the initial offer. When I saw that Ryu's office upped the rebate amount to $10k, I reapplied, but have yet to hear anything. I am like a lot of homeowners in that I can't afford the out of pocket cost to fix the tree root/sidewalk issue. It's something that needs to be taken care of for the safety of anyone walking past my home (which is a lot of people given my close proximity to Larchmont Boulevard) so I really really hope the city will offer a rebate that covers the total cost of the project.	9/11/17 4:36 PM PT	Comment noted. Please visit https://sidewalks.lacity.org/
keith johnson	Will the sidewalks ever be repaired along Larchmont Blvd, especially in the main village shopping area. I've personally caught 1 lady who tripped & fell. Or I'll volunteer to paint warning stripes around the most dangerous parts of the uneven walkways.	9/11/17 4:41 PM PT	Comment noted. Please visit https://sidewalks.lacity.org/
Kim Estrada	Hello, is there a way we can repair the sidewalks on Tunney between Devonshire and Tampa? Also the sidewalks on Devonshire between Tampa and Mason are in pretty bad shape.	9/12/17 8:03 PM PT	Comment noted. Please visit https://sidewalks.lacity.org/
Kim Nguyen	Does the city fix sidewalks that are being uprooted by trees?	9/12/17 6:37 AM PT	Comment noted. Please see Chapter 2.0, Project Description.
King Raymond Joseph Carpenter Jr.	To All Interested Party-I King Raymond Joseph Carpenter Jr. have a problem understanding all the fine points of (BOE) proposail, could the people receive more information of the financial stakeholders, trustee agencies, and responsible agencies. We the people NEED financial record so we can understand were the money's coming from. We NEED to see teh Books. We want the NAME and record of How its being PAID for !!! if you Do Not provide the information if a no on the project !!	8/31/17 5:53 PM PT	Comment noted. Please see Chapter 2.0, Project Description.
Kristin DiCenso	It would be great to get the sidewalk repaired at 12124 Goshen Ave, 90049 as a tree has lifted the sidewalk approx 8 inches. This makes it unsafe for the elderly who travel this sidewalk to get to Ralph's grocery store. I see elderly people with their walking aids use this sidewalk every day. I am concerned that one day someone will fall and injure themselves, while no one is paying attention to help. It would be great to get this sidewalk repaired. Thanks.	9/14/17 7:52 PM PT	Comment noted. Please visit https://sidewalks.lacity.org/

Kyle Winston	The sidewalk repair program should consider using poured in place rubber (aka playground surfacing) to pave all side walks. Its impact absorbent and ADA accessible. Furthermore, being a flexible material should help with tree roots growing under the sidewalks.	9/13/17 11:37 AM PT	Comment noted. Alternative construction materials are discussed in Chapter 3.9, Land Use. See Chapter 2.0, Project Description.
Laura Eckert	I would like to express my support for Continuing, Amending and Expanding Safe Sidewalks LA. Being a mother who frequently pushes a stroller, I have experienced challenges navigating sidewalks that have made me much more aware and sympathetic to accessibility issues. This program is necessary to resolve the lack of ramps, sidewalks in need of repair, and pathways that are too narrow for a wheelchair or stroller, which are extremely common throughout the City. Thank you	9/14/17 1:28 PM PT	Comment noted. Please see Chapter 2.0 Project Description.
Lauren Tess	Please do not remove any healthy trees until the EIR is completed. Also, Please require that native trees be chosen over non-natives whenever possible, and drought-tolerant or low water trees over others. Let's move forward instead of stagnating in the uninformed practices that pay little heed to long-term environmental impact! Let's live up to LA's claim of being a leader in sustainability and the environmental awareness. Thank you!	8/09/17 1:04 AM PT	Comment noted. Please see Chapter 2.0, Project Description, and Chapter 3.3 Biological Resources.
LAUSD	Presented below are comments submitted on behalf of the Los Angeles Unified School District (LWSD or District) regarding the proposed Sidewalk Repair Project. The areas around District schools experience high volumes of young students and their families walking to and from school. I-he District wishes to work with the City's Sidewalk Repair Project to identify and prioritize repairs of damaged sidewalks and other pedestrian facilities around schools, panicularly areas that are identified as pedestrian routes to schools. District Pedestlian Routes to School maps are available at: https: I will follow up this comment letter with a phone call to discuss opportunities for coordination. Thank you for your time. If you need additional information, Please contact me at (213) 241-3432.	9/05/17 12:00 AM PT	Comment noted. Please see Chapter 2.0 Project Description.
Leimert Park Historic District (MLK to Vernon; Crenshaw to 4th Ave)	The city's sidewalks are in great need of help. The City's goal of requiring property owners with the responsibility of paying for the repair and maintenance of public walkways is unacceptable. Public funds should be used to pay for public walkways and streets. Additionally, there needs to be better coordination between BOE and Urban Forestry. In most cases the sidewalks are damaged by the roots of trees that have been planted in the parkways by the City.	9/14/17 10:24 AM PT	Comment noted. Please see Chapter 2.0 Project Description.
Linda Erdmann	I think this program is very important for safe LA communities. I live in Beachwood Canyon where tourist traffic is a constant due to the Hollywood Sign. Many of the sidewalks are in disrepair along Beachwood Drive and do not accommodate people walking along the busy street. The narrow roads above Beachwood do not have sidewalks so people have to walk on the side of the street causing pedestrian and vehicle danger.	9/11/17 4:00 PM PT	Comment noted. Please see Chapter 2.0 Project Decription, not new sidewalks will be built as part of the Project.
Lisa Rezner	I am not certain if this is the appropriate time or place to comment on the impact of the Safe Sidewalks program, but I wanted to express that I think this is an extremely important and potentially life saving project. I often jog in the Hancock Park neighborhood and recently experienced the hardest fall of my life due to a dangerous sidewalk that had not been repaired. It has taken me over a month to heal and I am 33 in relatively good shape! If I were any less agile, any older, or more frail, this fall could have sent me to the hospital. I want to live in a community where I am safe to walk or jog on the sidewalk. Not everyone seeks out a gym for these activities...let's keep our sidewalks safe and repaired at all times! As someone who cares about the environment, I recognize the overall impact this project may have. I know that my incident was caused by a tree's roots running underneath the sidewalk and forcing it to become raised and cracked. I would hope there is a solution that does not involve removing trees entirely, but to successfully execute a safe sidewalk, I think what needs to be done should be done. Perhaps for every tree removed, a tree can be planted in a nearby park or safe location? Thank you for your time. Warm Regards, Lisa Rezner	9/11/17 4:38 PM PT	Comment noted. Please visit https://sidewalks.lacity.org/ Please see Chapter 2.0 Project Description and Chapter 3.3 Biological Resources.
Lorena Bernal	Schools and other public facilities should given priority.	9/15/17 10:33 AM PT	Comment noted. Please see Chapter 2.0 Project Description.
Los Angeles Metro	Metro Comments Based upon our conference call on September 12, 2017, Metro understands that the City Los Angeles has not prepared-a constructfon phase for the Sidewalk Repair Program. As such, coordination between the City of Los Angeles and Metro will be essential for Metro Operations (Bus;, Rail, Facilities Acce5,s, Service Operations, etc.)to be notified of any proposed sidewalk repair construction in advance of construction. Metro is respectfully requesting advanced notice of any constructi1on activity so that we may coordinate with our departments or, possible impacts to our facilities and services. Listed below are specific comments from our Bus Operations departments. Bus Operations Metro bus lines operate throughout the City of Los Angeles. Although the project is not expected to result in any long-term impacts on transit, the developer should be aware of the bus services that are present. Please contact Metro Bus Operations Control Special Events Coordinator at 213-922-4632 and Metro's Stops and Zones Department at 213-922-5190 at least 30 days in advance of initiating construction activities. Other municipal bus operators may also be impacted and should be included in construction outreach efforts. The following comments relate to bus operations and bus stops: 1. Do not construct curb extensions (bulb-outs or bump-outs) at bus stop zones. Understanding they are designed for pedestrian safety, they negatively impact transit bus operations. Bump-outs are not transit bus friendly. 2. Minimize landscaping design that constitutes as an obstruction to the boarding and alighting of passengers along the bus stop zone. Some landscaping design especially if it is not level with the pavement may pose a trip hazard. It also becomes a hurdle at times when it comes to ADA compliance. Transit passengers should be able to safely board and alight anywhere along the bus zone in an ideal situation. A bus may stop short or stop forward depending on the circumstances, which then dictate where passengers will board and alight. Construction agencies need to be informed they need to consider bus patrons alighting from the 2nd or 3rt1 doors in most instances and not just the front door. 3 Grass parkways in the bus zone are a slip hazard when it comes to inclement weather or if there is a sprinkler system that is turned on. 4. Sidewalk width should be a minimum of 8' for ADA Compliance and to accommodate street furniture especially if a bus shelter or benches are to be incorporated at a later time. 5- Tree selection should be ones that do not have an invasive root system. Most of the problems with sidewalks are those that are being lifted by tree roots. Also trees selected should branch-out not lower than 14' to clear high profile vehicles. Metro buses experience daily impacts with offending branches, damaging exterior side cameras. 6. Repairs made within 2' of a grass parkway. The grass parkway should be removed and replaced with a standard S' X 8' passenger loading zone. 7. During construction, the stop must be maintained or relocated consistent with the needs of Metro Bus Operations. Please contact Metro Bus Operations Control Special Events Coordinator at 213-922-4632 regarding construction activities that may impact Metro bus lines at least 30 days in advance of initiating construction activities. For closures that last more than six months, Metro's Stops and Zones Department will also need to be notified at 213-922- 5190, 30 days in advance of initiating construction activities. Other municipal buses may also be impacted and should be included in construction outreach efforts.	9/15/17 12:00 AM PT	Comment noted. Please see Chapter 3.12 Trasnportation/ Traffic
Los Angeles Metro	Hello Ms. Gupta, Our Development Review team is in receipt of the Notice of Preparation for the proposed Sidewalk Repair Program for the City of Los Angeles. In order to assess any potential impacts to Metro's services or facilities, we would like to Please request a complete list of the proposed sidewalk repairs in the Sidewalk Repair Program. Should you have any questions regarding this request, Please feel free to contact me via email or at the information below. Thank you, Michael Barrita	8/10/17 12:00 AM PT	

Los Angeles Walks	Tree replacement transparency: When a tree is removed in order to complete sidewalks repairs, BOE will replace each tree 2:1 and will try to replace trees in the same general area as the one removed. We are concerned about the loss of Los Angeles' already limited urban tree canopy, but we are also concerned about transparency. How will BOE report real time information so the public knows where trees are being removed and replaced? Difficult projects: BOE prioritizes access requests on a first come, first served basis. How does the department handle projects that are complicated and are delayed because of their complexity? How does Sidewalk Repair Program Draft EIR comments Page 2 BOE communicate with members of the class in this situation (if a repair is delayed for whatever reason). We also question what constitutes a complication in the first place. Construction zones: We are concerned about maintaining safe walking paths during construction. Based on personal experience, this is often overlooked. 5. Agency coordination: Recent meetings with staff from BOE Safe Sidewalks LA, BOE Vision Zero, and Metro demonstrated that there's not a lot of coordination of efforts when it comes to sidewalks. Might just be that I'm not talking to the right people, but they each seem hyper focused on their projects and not coordinating data collection and implementation, though they're all working on sidewalks and access.	9/15/17 10:38 PM PT	Comment noted. Please see Chapter 2.0 Project Description, Chapter 3.3. Biological Resources, Chapter 3.12 Trasportation/Traffic.
Lucas Dickey	It is my hope that for every tree that is removed a comparable (or greater) number of trees would be planted such that the carbon sink impact is identical. Replacing old growth large trees with large, dense foliage with something much smaller and light foliage is not sufficient. I want great, walkable sidewalks, but I also want breathable air and fewer heat islands.	9/11/17 9:42 PM PT	Comment noted. Please see Chapter 2.0 Project Description, and Chapter 3.3 Biological Resources
Lutheran Church of The Master	I am writing on behalf of the church at this location. The broken sidewalks and missing curb ramps at the alley make it difficult for our members to get to church. We have some older members that do use crutches, walkers, and canes and it would help if the sidewalk was fixed for them. It would also help if the alley had curb ramps in order to cross the alley. The sidewalk at this location is also located next to a blue handicap parking space located on the curb.	9/14/17 10:43 AM PT	Comment noted. Please visit https://sidewalks.lacity.org/
Lydia Hart	I have lived at 3023 4th Ave since 1972. When I moved here I called about the curb was told there was a list. Continued to call off & on by this time the sidewalk was cracking told they would only pay a percentage. My last call I was told they have no money I could do it myself & they will issue me a permit at no cost.	9/14/17 10:43 AM PT	Comment noted. Please visit https://sidewalks.lacity.org/
Marco A. Sanchez	I think that sidewalks should be reinforced with re-bars and perhaps make them thicker.	8/31/17 2:40 PM PT	Comment noted. Please see Chapter 2.0 Project Description and Chapter 3.9 Land Uses and Planning.
Mari Machi	The several blocks around me are missing sidewalks. It makes it dangerous to walk my dogs, especially at night. Some of my neighbors have even blocked the space where the sidewalk should be with shrubs and plants forcing me to walk on the street.	9/13/17 4:55 PM PT	Comment noted. Please see Chapter 2.0 Project Decription, not new sidewalks will be built as part of the Project.
Maria Bains	Need new sidewalks on Manchester Blvd between Lincoln and Sepulveda.	9/15/17 10:23 AM PT	Comment noted. Please see Chapter 2.0 Project Decription, not new sidewalks will be built as part of the Project.
Maria Elena Uribe	Please fix the sidewalk in our block. The seniors from the convalescent hospital often go for a walk and the sidewalks are a mess and they often have to walk along the street among the traffic.	9/11/17 4:01 PM PT	Comment noted. Please visit https://sidewalks.lacity.org/
Maria Saavedra	It's a very good project that they want above all for the disabled people and our community needs a lot of work because the sidewalks are already very bad and our kids needs safe in the streets and happy as a result of this great project. Congratulations.	8/14/17 12:00 AM PT	Comment noted. Please visit https://sidewalks.lacity.org/
Maria Toval	MY NAME IS MARIA TOVAL AN I COME FROM PACOIMA BEAUTIFUL. I LIKE THIS PROJECT TO MAKE THE CITY LOOK BEAUTIFUL. BUT MY QUESTION IS, WHERE ARE WE GOING TO START? WHERE THERE'S NO SIDEWALK IS? OR ARE WE GOING TO REPAIR THE EXISTING SIDEWALKS? WHEN WE GOING TO START? AND BECAUSE I SEE A LOT OF STREETS WITH NO SIDEWALKS, AND KIDS FROM THE SCHOOL, THEY WALKING THOSE SPOTS EVERY DAY. AND IT'S VERY BAD FOR THE KIDS. SO I LIKE IF WE CAN DO THIS ONE AS SOON AS POSSIBLE SO WE CAN HAVE A BETTER WAY FOR THE KIDS TO WALK.	8/14/17 12:00 AM PT	Comment noted. Please see Chapter 2.0 Project Decription, not new sidewalks will be built as part of the Project.
Maria Zatarain	Hi. I would like to request that the sidewalks around our neighborhood elementary school be fixed. My children attend 28th Street elementary. I live on 27th Street between San Pedro and Central Ave. we walk our children to school on the street. Our sidewalks are either broken, got holes, or the roots have lifted great parts of the sidewalks. My daughters have tripped on the sidewalk and strange as it sounds, it's safer to walk on the street. People that have strollers or wheelchairs have no way of going through our sidewalks. They are definitely a danger.	9/13/17 11:58 AM PT	Comment noted. Please see Chapter 2.0 Project Description. Please visit https://sidewalks.lacity.org/
Marie Vaziri	Although we desperately need this program, I believe the generous amount of up to $10,000 per household is EXTREMELY EXCESSIVE. Please be mindful with the way you use our tax dollars.	9/11/17 9:55 PM PT	Comment noted. Please see Chapter 2.0 Project Description. Please visit https://sidewalks.lacity.org/
Marilyn Fuentes	Hello, I'm very happy that this program is going on in an effort to better our community. I would like the sidewalk that is in front of both my family's houses be repaired. They would be 139 and 133 N Wilton Pl. Many people walk and jog on this side and it would be very unfortunate to have an accident due to the broken and "lifted" pieces of cement/sidewalk. I truly hope this can be fixed. Sincerely, Marilyn Fuentes	9/11/17 5:02 PM PT	Comment noted. Please see Chapter 2.0 Project Description. Please visit https://sidewalks.lacity.org/
Marilyn Marks	Many Angelenos greatly enjoy walking on city sidewalks especially in their residential neighborhoods. However it often a hazard as cracked sidewalks and uplifted broken sidewalks due to plant and tree roots cause tripping and sometimes falling. The problem of trees uplifting sidewalks must be addressed. We need and value neighborhood and city trees, but roots must be cut or sidewalk "overpasses" must be installed to prevent walkers' injuries. The city should be the first to do repairs and then advise (and expect) homeowners that they need to maintain the sidewalks in front of their property for their own safety as well as that of others.	9/14/17 6:40 PM PT	Comment noted. Please see Chapter 2.0 Project Description. Please visit https://sidewalks.lacity.org/
Mark Chung	The sidewalk in front of my house has two squares that are lifting from a previously removed tree root, and it is a bit dangerous for anyone walking on it. Also, on Laurel Canyon Blvd just north of Sunset on the East side of street, the huge ficus trees have absolutely torn up all of the sidewalk on that block and it is really treacherous for pedestrians.	9/13/2017 11:55	Comment noted. Please see Chapter 2.0 Project Description and Chapter 3.3 Biological Resources. Please visit https://sidewalks.lacity.org/
Martin Rosales	MY NAME IS MARTIN ROSALES. AND I WANT TO TELL YOU THAT I REALLY DO LIKE THIS PROGRAM. I'VE NOTICED THAT, WITHIN OUR COMMUNITY, THERE'S A LOT OF WORK TO BE DONE. THERE'S MANY PEOPLE -- MANY PEOPLE LIKE MYSELF THAT WE ARE DISABLED. THE SIDEWALKS ARE TERRIBLE, YOU KNOW, AND THEY REALLY DO NEED TO GET FIXED. ONE OTHER THING I WOULD LIKE TO KNOW, WHAT IS GOING TO BE THE ENTIRE COST ABOUT THIS PROJECT? I BELONG TO AN ORGANIZATION, PACOIMA BEAUTIFUL. AND WITHIN THOSE, WHAT WE TRY TO DO IS PROTECT THE ENVIRONMENT -- THE BEAUTIFUL ENVIRONMENT. I ALSO LOVE THE TREES. AND WHAT I LIKE ABOUT THIS IS YOU'RE TALKING ABOUT REMOVING ONE TREE, AND WHEN YOU REMOVE ONE TREE, YOU'RE GOING TO PUT TWO IN THAT PLACE. BUT I BELIEVE THAT ONCE YOU TAKE ONE OUT AND THEN YOU PUT TWO IN THEIR PLACE, THESE TREES ARE GOING TO REQUIRE A LOT OF CARE. YOU KNOW? SOMETIMES PEOPLE -- SOMETIMES WE DON'T TAKE CARE OF THEM. AND IN ORDER TO TAKE CARE OF THEM, THEY HAVE TO BE PROTECTED. ALSO, THE SIZE - THE SIZE THAT YOU GUYS ARE GOING TO PUT IS GOING TO BE VERY IMPORTANT. I REALLY WANT TO CONGRATULATE ALL OF US THAT ARE WORKING TOGETHER ON THIS PROJECT. AND HOPEFULLY SOON WE CAN START DOING THIS PROJECT.	8/14/17 12:00 AM PT	Comment noted. Please see Chapter 2.0 Project Description. Please visit https://sidewalks.lacity.org/

Matthew Quezada	Maybe you could use an epoxy resin ?	9/05/17 2:36 AM PT	Comment noted. Alternative construction materials are discussed in Chapter 3.9, Land Use. See Chapter 2.0
Mayra Soto	Trees need to be replaced by California native trees and agreement needs to come from homeowners to care for the trees. I don't think 2:1 ratio is enough if young trees are being planted the canopy we once had will take a long while to come back.	8/14/17 12:00 AM PT	Comment noted. Please see Chapter 2.0 Project Description, and Chapter 3.3 Biological Resources
Michelle Valencia	We have a raised section of sidewalk concrete in front of our home. A large tree has uprooted the area. We have called the city about this, but never head from the city. Other than filing the complain, what more can we do? Several people have tripped and fell due to this section. The tree is healthy and the city will not remove the tree. Therefore the section continue to be lifted.	9/13/17 6:11 PM PT	Comment noted. Please see Chapter 2.0 Project Description. Please visit https://sidewalks.lacity.org/
Natasha Keefer	The SideWalk Repair Program (SRP) should require PROMPT (within 30 days) replanting of COMPARABLE shade trees to those that are removed as part of the SRP. While the community understands the need to repair sidewalks, tree removal can be devastating to neighborhoods. Many trees were planted many decades ago. These mature, healthy shade trees bring a huge benefit to the community (very important for air quality, heat mitigation, and neighborhood beautification) and are difficult to replace. The removal of the trees is a big loss to the community, particularly in areas near freeways. Replacing mature trees with tiny seedlings, that will not provide any benefits for 5 years, is not an adequate solution.	9/13/17 6:10 PM PT	Comment noted. Please see Chapter 2.0 Project Description, and Chapter 3.3 Biological Resources
Native American Heritage Commission	To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions: 1. Contact the appropriate regional California Historical Research Information System {CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine: a. If part or all of the APE has been previously surveyed for cultural resources. b. If any known cultural resources have been already been recorded on or adjacent to the APE. c. If the probability is low, moderate, or high that cultural resources are located in the APE. d. If a survey is required to determine whether previously unrecorded cultural resources are present. 2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey. a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. 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. b.The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center. 3. Contact the NAHC for: a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE. b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures. 4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence. a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs .. tit. 14, section 15064.S(f) (CEQA Guidelines section 15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities. b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans. c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code section 7050.5, Public Resources Code section 5097.98, and Cal. Code Regs., tit. 14, section 15064.5, subdivisions (d) and (e) (CEQA Guidelines section 15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.	8/01/17 12:00 AM PT	Thank you for your comment. AB 52 consultation is discussd in Chapter 3.13. Please see Chapter 3.4 for Cultural Resources discussion.
NCSA Trees Committee	1. Because the tree canopy provides significant cooling and air purification, both of which are critical for the health of the people in Los Angeles, the Sidewalk Repair EIR must assess the decrease of tree canopy that results from the large quantity of tall tree elimination currently anticipated by Urban Forestry for sidewalk repair. Potential effects on air quality, including diminished greenhouse gas reduction, and increase in heat island effect must be quantified. The environmental effects of increased air conditioning usage must also be calculated. Human health risks must be addressed. 2. Before any trees are removed for sidewalk repair, a full tree inventory of street trees must be done by an independent professional entity and a tree master plan created. An actual field calculation must be done of how many canopy trees Urban Forestry expects will be removed for sidewalk repair, as well as how many new places exist for planting trees that are capable of reaching a height that contributes to tree canopy. 3. A Master Tree Plan must be developed that does not remove trees too rapidly such that it creates a decline in air quality and an increase in the heat island effect. There should be no net loss to canopy during the sidewalk repair process. In view of the length of time it takes for a tree to grow tall, an aggressive planting schedule which includes new tree wells and green spaces may need to begin even before trees are removed. 4. The aggressive non-aesthetic pruning of tall trees, currently the practice of Urban Forestry (which pays subcontractors $180 a tree versus San Francisco that budgets $1,000 for a large tree), must be factored in the assessment of decline of tree canopy. "Before" photos of recently-pruned trees are available on Google maps and Google Earth. 5. Any tree replacements should be done strategically. Tree species that will grow tall enough to create canopy need to be identified as capable of thriving in this climate, and a plan to water and cultivate those trees into full maturity needs to be determined and adopted. 6. The environmental impact of wildlife habitats must be calculated and any tree removal scheduled so as not to disrupt spring/summer nesting. 7. Given the potential negative effects on canopy when trees are removed for sidewalk repair, a new ordinance to restrict property owners from removing any healthy trees on their property for non-sidewalk related reasons needs to be considered. 8. Identify a plan to fully implement sustainable tree-saving sidewalk designs including meandering sidewalks, bridging over existing roots, curb bump-outs and larger tree-wells. These were listed as options in the sidewalk repair motion of Nov. 30, 2016 (tree removal as a last resort), but none except tree removal have been put into practice as options. Results of any tests of alternative sidewalk approaches need to be recorded in the EIR and then publicized so that homeowners have these options to tree removal. Also, our urban forest could significantly increase water supplies for LA if the City and property owners integrated permeable sidewalks designs, and these need to be promoted. 9. A thorough investigation into root pruning as an alternative to tree removal must be done. Urban Forestry proposed this approach to City Council as viable and reliable; and though it may not be widely known, the new administration at Urban Forestry says they do not want to use this method. 10. Every proposed tree removal must be fully publicized in advance with adequate time for due process and stakeholder participation to find alternate solutions to tree removal before any tree is removed.	9/10/17 12:00 AM PT	Comment noted. Please see Chapter 2.0 Project Description, and Chapter 3.3 Biological Resources
Nicholas Aguilar	To Whom It May Concern / Person in Charge: I am the manager of an apartment building. I would like if you Please send someone to fix the sidewalk. It is all broken and it looks like it wants to sink. Before that happens, Please, we ask you to take us into account and you send someone to fix it. As you see in the photo it is separated and can sink at any time. Your friend, Manager of Southland Apartments Nicholas Aguilar M. This is the address: 2124 S. Main St. Los Angeles, CA 90007	9/05/17 12:00 AM PT	Comment noted. Please see Chapter 2.0 Project Description. Please visit https://sidewalks.lacity.org/

Nicole Siskind	Please take all the suggestions from the Tree People to green our City. I have copied them below: improve the current tree replacement ratio: The policy -- at a minimum -- needs to be 2:1 when trees have a canopy under 30 feet and should increase to 4:1 for trees over 30 feet. TreePeople believes there should be a no-net-loss in canopy from sidewalk replacements and this ratio helps get the City there. Additionally, TreePeople will continue to work with the City and other partners on a net increase in tree canopy outside of this particular sidewalk replacement program. Tree replacements should be done strategically: If trees have to be removed, let's be strategic in what we replace them with. This is an opportunity to choose the appropriate replacement species to maximize the many benefits of trees, including fighting the urban heat island effect and impending extreme heat effects from climate change. Greenhouse gas and urban heat island impacts need more attention: The loss of our urban trees leads to a) increased heat b) more emissions due to loss of shade and an increased use of air conditioning. TreePeople believes these impacts need to be properly documented, accounted for and mitigated against. Public process and permitting: Blanket permits to remove trees do not work. Each tree needs to be evaluated on-site by an ISA certified arborist/municipal specialist who also holds a Tree Risk Assessment Qualification (TRAQ) at a minimum. These specialists should also follow American National Standards Institute (ANSI) standards for any tree management or maintenance. Additionally, the transparency from public hearings is critical for the public to have their say. Sustainable sidewalk designs: Our urban forest could significantly increase water supplies for LA if the City integrated sustainable sidewalks designs such as bioswales to capture stormwater and other green infrastructure opportunities. Other sustainable designs including meandering sidewalks, bridging over existing roots, curb bump-outs and larger tree-wells are also critical pieces to protect the urban forest.	8/28/17 1:01 PM PT	Comment noted. Please see Chapter 2.0 Project Description, and Chapter 3.3 Biological Resources
Ophelia Daniel	We need in LA county safe sidewalks as well as attractive and properly functional sidewalks. Thank you.	9/10/17 5:39 PM PT	Comment noted. Please see Chapter 2.0 Project Description.
Pamela Daukayev	The sidewalk and curb in front of 262 S Van Ness Avenue, LA 90004-3621 is badly damaged. We would be so grateful if you would put this site on your list of repair locations! Thank you very much.	9/11/17 4:30 PM PT	Comment noted. Please see Chapter 2.0 Project Description. Please visit https://sidewalks.lacity.org/
Patrick Johnson	The City needs to consider that the overzealous removal of mature trees in the name of sidewalk repair may have even more adverse consequences, including raising the temperature of all the dwellings on the street and blighting the landscape. The City needs to consider that the overzealous removal of mature trees in the name of sidewalk repair may have even more adverse consequences, including raising the temperature of all the dwellings on the street and blighting the landscape. For example, the City has proposed removing 2 mature ficus trees on our street that have barely caused the sidewalk to rise an inch. Yet they cool this portion of the street by 10-20 degrees and hide the bare, reflective concrete facade of a giant apartment building that occupies half the block. Removing these trees will have a far more negative impact than the 1-inch incline they currently cause in the sidewalk.	9/12/17 3:40 PM PT	Comment noted. Please see Chapter 2.0 Project Description, and Chapter 3.3 Biological Resources
Paula Jeppson	I'm a big walker in my neighborhood and the sidewalks and curbs and streets are in such poor condition, from tree roots to poor repairs, to sloppy careless maintenance. Awful and dangerous Also I recently went walking on Ventura Blvd between haseltine and woodman with a young friend from Portland and she seriously asked me if this was a slummy part of LA because the sidewalks and storefronts were so dirty and shabby and the sidewalks and curbs were all broken up. It was embarrassing. I know the valley gets everything last even though we pay for the whole city. Its crummy. I went walking in Santa Monica recently and the sidewalks and streets were in good repair and clean and perfect so it can be done Don't even get me started on our 1919 van nuys high school building full of great kids and enthusiastic teachers but the building is a nightmare ! Shameful! Pj	9/11/17 5:16 PM PT	Comment noted. Please see Chapter 2.0 Project Description. Please visit https://sidewalks.lacity.org/
Peter White	I support the program to repair sidewalks and offer rebates to homeowners and businesss owners. It is disgraceful that the city avoids infrastructure improvement. Often housing developers installed the first sidewalk as they did in Wilshire Park where I live. 97 years later the original sidelwaks are still being used. Repairs are needed and the rebates help but the program needs to have more publicity and must be part of a larger program of city street improvements. As for the environmental impact, improved storm drains, curbs and sidewalks will help with storm runoff and encourage people to improve planting trees and improve landscape. Los Angeles is a world class city but it's streets and sidewalks look like a 3rd world slum.	9/11/17 4:06 PM PT	Comment noted. Please see Chapter 2.0 Project Description, Chapter 3.14 Utilities and Public System
Raphaele Cohen-Bacry	Dear Shilpa, I am a resident at Hancock Park Terrace and a year or so ago our Board was told that we should remove the city ficus trees and repair the badly damaged sidewalk in front of our complex on Melrose Ave. We had tried to get financing from the city but could not get anywhere and I think the Board was concerned that some passerby might get hurt. So we organized and paid for the whole project (9 huge beautiful trees were removed), including the replacement trees. That was a very expensive job for our small community, and on top of it this impacted the view of Melrose greatly. I believe this is not fair to us that we had to finance this job with no help since the trees are the city's property and this is a public the sidewalk that people use to wait for the bus and go to the public library. It put our community in an uncomfortable financial situation (special assessment, increase of HOA). Would you be kind enough to let me know if there is something you can do to help us recover some of the expenses? Thank you	9/12/17 12:00 AM PT	Comment noted. Please see Chapter 2.0 Project Description. Please visit https://sidewalks.lacity.org/
RIchard Brossman	So....let's see. Let's assume YOU are walking your 94 year old mother north on Orlando from Burnside towards west third street on the east side of Orlando, to have a nice dinner out...to shake some of her confusion/dementia after you just commented that she is really enjoying her life in spite of an arthritic knee and needs to walk with a cane. You are helping her avoid and maneuver through the mine field of a broken sidewalk with half-assessed tar attempts to cover up the HUGE cracks---ONE AFTER THE OTHER and then: BOOM! Your 94 year old mother falls on the cracked sidewalk, and the rest of her life is up in smoke. Why? Because she is taken to the hospital to find out she broke her hip and at 4 AM is finally put to bed to prepare for emergency surgery the next day. Then your mother has surgery spends three days in the hospital in agony from the surgery and cannot move in bed. Then your 94 year old mother is then transported AGAIN to a rehab facility for weeks and weeks of painful physical therapy perhaps, not able to walk again. In the meantime, her dementia is worsening because she is moved from one unfamiliar setting to another and as you leave her at the rehab facility and you say good bye until the next day she closes her eyes in defeat saying she has lost all control to all the professionals and is resigned to her uncertain future. This is the story of my mother..as I left her tonight at the rehab facility I was thinking of how can I get across to you that this city is a danger zone..WAITING for one disaster and another. But it does not matter to you because I know I will receive a default: "Thank you for your e-mail"...and since it is not YOUR 94 year mother, basically ending her life as she knows it, this e-mail will go into the dustbin of your bureaucratic city mess! Why do I end my story this way? Because, again, this did not happen to YOUR 94 year old mother!! Richard Brossman	9/12/17 7:04 PM PT	Comment noted. Please see Chapter 2.0 Project Description. Please visit https://sidewalks.lacity.org/
Richard McLellan	I ride my bicycle (always giving pedestrians the right of way) on the west sidewalk along Glendale Blvd. along the Echo Park Lake early in the morning on my way to swim at the Echo Park pool. since the street itself is a death trap for a bicyclist with cars parked at the curb and speeding cars, trucks and semi's coming off of the 2 Fwy and headed into town. There is a street coming into Glendale Blvd from the west that has no wheel chair ramps on either side. As a result I need to stop my bicycle and lift it off the curb. I am sure that this is a low priority and I am not in a wheelchair or disabled but it would be a problem for anyone who was. There is no signal light controlling that T intersection. i believe the street name is St. Inez that connects with Glendale Blvd. at that spot.	9/11/17 4:56 PM PT	Comment noted. Please see Chapter 2.0 Project Description. Please visit https://sidewalks.lacity.org/
Richard Stanley	State law requires the property owner to maintain curbs, sidewalks and parkways. Why is the city of L.A. bucking the state law? Just survey the condition; send a notice to owner to repair with a permit; certify after 90 days and have a city contractor do the work if the property owner ignores the notice. In such case, the city should put a lien on the property that would show up on the "9A" report at the time of sale. This is what most cities do.	9/12/17 4:41 PM PT	Comment noted. Please see Chapter 2.0 Project Description. Please visit https://sidewalks.lacity.org/

Ridgewood-Wilton	Is the amount of money allowed per foot for the replacement enough to cover the costs of replacing the sidewalk. At $7 a sq. foot it seems low and will not cover the full cost.	9/12/17 8:29 AM PT	Comment noted. Please see Chapter 2.0 Project Description.
Robbie Solomon	I am happy with the repair in front of my property.....the sidewalk is smoothe....the tree that distroyed the sidewalk has been removed. I can safely walk on my sidewalk and so can others who had to walk out into the street so that they would not trip and fall. Keep up the good work. You need more money to the city and county so that more people can be trained and hired to beautify our city and county. Expand the program...the city and county need to work together.	9/13/17 7:50 PM PT	Comment noted.
Robert Emery	HAVE FORMED A -- A COMPANY, SIDEWALKS LA. AND RIGHT AFTER THAT CAME SAFE SIDEWALKS LA. AND THUS, GLAD TO HAVE HAD A LITTLE BIT OF INSPIRATION WITH THAT. I HAVE SOME CONCERNS AT LEAST -- SINCE I'M LIMITED TO THREE MINUTES, OUR GOALS WOULD BE TO MAKE SURE THAT THE RESPONSIBILITIES ON PART OF THE CITY ARE CLEARLY DEFINED, AND THE PROPERTY OWNERS ESPONSIBILITIES ARE CLEARLY DEFINED. THE EDUCATION HAS REALLY BEEN SORELY NEEDED. I HAVE CONTACTED THE STATE INSURANCE COMMISSIONER BECAUSE WHAT'S REALLY CAUSED ME TO GET INVOLVED IS I TOOK A FALL. I TOOK A FALL WHEN I WAS WALKING A LITTLE OLD LADY HOME FROM A PARTY ON A POORLY LIT STREET. AND I DID NOT SEE THE -- ABOUT AN INCH TRIPPER. AND I COULD HAVE BROKE A SKULL, BUT I BROKE THE FALL SAFELY. ABOUT OR FEET AWAY FROM THAT SPOT WAS A THREE-INCH TRIP. SO IF I WOULD HAVE MADE THE ONE-AND-A-HALF-INCH TRIP, I MAY HAVE FELL ON THE THREE-INCH. THE STATE INSURANCE COMMISSIONER STATED CLEARLY THAT CONCRETE THAT'S ATTACHED TO THE PROPERTY IS COVERED. SIDEWALKS ARE NOT COVERED. IF YOU HAVE AN INJURY, YOU CAN BE SUED. AND THAT SCARED ME TO DEATH. SO IF YOU'RE TRYING TO EDUCATE CHILDREN, SEND THEM TO COLLEGE, GUESS WHERE THAT MONEY GOES? IT GOES TO CIVIL LAWSUIT, NOT EDUCATING YOUR CHILDREN. TREES -- I'VE DETERMINED -- I'VE FOUND THAT THOSE TREES WERE PLANTED BY THE CITY. YES, THEY HAVE SOME RESPONSIBILITY. BUT THOSE TREES THAT ARE PLANTED BY DEVELOPERS, THAT'S THE PROPERTY OWNER'S RESPONSIBILITY. HOW THAT'S GOING TO BE HANDLED WAS NOT REALLY DISCUSSED. RESPONSIBILITIES, AS FAR AS THOSE SIDEWALKS ARE IN DISREPAIR, BOTH COMMERCIALLY AND PROPERTY OWNERS NEEDS TO BE REALLY DEFINED. THERE'S LOTS OF COMMERCIAL PROPERTIES WHERE THEY'VE BEEN LEFT IN DISREPAIR. AND THERE'S BEEN ADEQUATE FUNDS ON THE PART OF THOSE BUSINESS TO REPAIR THEIR OWN SIDEWALKS. HOW THE CITIZENS OF LOS ANGELES CAN BE BROUGHT IN, THEIR MONEY TO REPLACE AND REPAIR COMMERCIAL SIDEWALKS IS OUTRAGEOUS. SO THAT NEEDS TO BE TAKEN CARE OF. SO ANYWAY, YOU'LL BE ABLE TO FIND THE SIDEWALKS LA WEB SITE. AND SO WE'LL BE PARTICIPATING. I WILL NOT MAKE THE -YEARS, GUARANTEED. WELL, I COULD. I KNOW SOMEONE YEARS OLD. I JUST PASSED MY RD; SO I WILL -- I HAVE A VESTED INTEREST IN LA. I WANT TO SEE SOME GOOD THINGS HAPPEN. I WANT TO SEE THE LAWS CLEARLY IMPLEMENTED. COUNCIL MEMBERS. YOU'VE GOT SEVEN DISTRICTS. WE'VE GOT MORE THAN SEVEN COUNCIL MEMBERS. I'M APPALLED THAT THIS IS A POLITICAL THING. COUNCIL MEMBERS NEED TO BE INFORMING THE CITIZENRY. THEY NEED TO BE. THEY NEED TO BE ACTIVELY INVOLVED IN INFORMING ALL PROPERTY OWNERS WHAT THEIR RESPONSIBILITIES ARE AND WHAT THEIR RIGHTS ARE. Please GET BUSY AND EDUCATE. THANK YOU. I am concerned about 1. Clear laws of responsibility. 2. City responsibility at large -1. Citizens of LA -- Ponds + Trees -2. Utility vaults in park ways 3. Sidewalks outside public ways 4. Notices of trees -Should have been leveled against property owners 5. council members need levels encoding property owners of their responsibility	8/24/2017 0:00	Comment noted. Please see Chapter 2.0 Project Description, Chapter 3.3 Biological Resources, Chapter 3.9 Land Use and Planning.
Robert Emery	Hello Shilpa, I am looking for the printed comments for the recent meetings. Please direct me to where I may obtain them. We of SidewalksLA, will continue to help mediate the enormous problems we are all faced with in keeping our residents safe In their use of the sidewalks in LA. Respectfully, Robert B. Emery President SidewalksLA 1.City to educate residents on the existing laws. 2.Make history of all lawsuits in Los Angeles for personal injuries sustained for trip and fall. 3.Prioritize repairs by risk of trip and fall. Mandate insurance companies include sidewalks in coverage's. 4.Mandate that all Real estate Brokers include all property owners of risk and their responsibilities to maintain sidewalks and parkways to city standards. 5.Mandate all city council members to list all repairs done in their council districts along with APN's for properties where repairs have been made in their council districts 6.Many repairs are required for disturbances where trees inside the sidewalks have disturbed walk ways. 7.Clarify where developments for those in the San Fernando Valley along with similar area throughout the city where Masonry perimeter run around these developments and the sidewalks run the entire perimeter of these parcels and outside these walls. 8. Trees that are not the responsibility of the city for sidewalk damage but that of property owners 9. All sidewalks to be corrected where they have settled to city standards 10. All asphalt to be removed from sidewalk areas and temporary repairs done with materials similar to that of self-leveling Cementous materials 11. Stop all temporary asphalt repairs. 12. Report on cost of all asphalt repairs and their locations with council districts. 13. As in Fire districts the Fire Departments do the clearing and fine the property owner. The city should condemn sidewalks in disrepair and make repairs necessary and lien the property	9/14/17 12:00 AM PT	Comment noted. Please see Chapter 2.0 Project Description, Chapter 3.3 Biological Resources, Chapter 3.9 Land Use and Planning.
Rodrick Borders	I have not been able to find anyone to do the work. I revived an award of 2100 but the lowest quote I have received is 3500.	9/11/17 6:46 PM PT	Comment noted. Please see Chapter 2.0 Project Description. Please visit https://sidewalks.lacity.org/
Ruth Gallardo	I think it's necessary to do sidewalk repairs on our street especially at our corner where its hard for the elderly to go over it and can be a trip hazard. I also think of anyone who may be in a wheelchair or mothers with strollers going over that hump.	9/13/17 6:33 PM PT	Comment noted. Please see Chapter 2.0 Project Description. Please visit https://sidewalks.lacity.org/
San Manuel Band of Mission Indians	Thank you for contacting the San Manuel Band of Mission Indians (SMBMI) regarding the above referenced project. SMBMI appreciates the opportunity to review the project documentation, which was received by our Cultural Resources Management Department on 1 August 2017. The proposed project area is located just outside of Serrano ancestral territory and, as such, SMBMI will not be requesting consulting party status with the lead agency or requesting to participate in the scoping, development, and/or review of documents created pursuant to these legal and regulatory mandates.	8/01/17 12:00 AM PT	Thank you for your comment. AB 52 consultation is discussd in Chapter 3.13. Please see Chapter 3.4 for Cultural Resources discussion.
Sara Nichols	Rather than tear mature trees down in a city starving for MORE trees, why not remove the trees' surrounding buckling sidewalks (that--by the way--are impermeable and do not allow for adequate water absorption) and build wheelchair-accessible ramps over the roots? It is a travesty that this City allows any trees to be cut--especially to accommodate mansionization (the primary cause of tree canopy loss). Trees are so essential to our well-being, cutting a tree should be a felony. Does the person in charge of trees in this City now anything about trees? All the newly planted trees I see are surrounded by impermeable surfaces and are rarely indigenous. That's a prescription for failure. Imagine if every school in LA County had a Tree Ranger Corps that cared for neighborhood trees. Make tree husbandry a course for which students could get credit! THINK OUTSIDE THE CONCRETE!!!	9/15/17 3:59 PM PT	Comment noted. Please see Chapter 2.0 Project Description, Chapter 3.3 Biological Resources, Chapter 3.9 Land Use and Planning.
Saran Kirschbaum	Where possible, use permeable concrete for sidewalks so that the water can go into the ground and keep trees and plants healthier.	9/11/17 10:40 PM PT	Please see Chapter 3.9 Land Use and Planning for dicussion of alternative

September Forsyth	I am a board member of the Greater Valley Glen Council and I'm writing to you today to make my voice heard as a proponent of the Alliance (NCSA) Trees Committee. It is a travesty that our city continues to lose thousands of trees due to building, sidewalk repair and of course the drought, however, it's a much more dire situation that they are not being replaced. As you must know, a lack of tree canopy greatly affects the quality of air, creates a heat island, and affects both the visual beauty and livability of this great city of all of its citizens and natural wildlife. When does this destruction stop? When is enough, enough? Where I was born and raised up in Portland, Oregon, there are trees every two feet. Sure, you'll argue, the Pacific Northwest has a different climate and rain total. Yes, that is true, but beyond this, there are dedicated residents and city officials that take to heart the livability of their city and the responsibility of the offices they hold to ensure that the community remains livable. Trees don't offer themselves! Churches and schools do fundraisers every year, to buy young trees and the community comes out in droves to help with the planting wherever they are needed. The tree program in Portland is ranked #1 in the country. It's more than climate; it's because people care and take pride in the community! I have lived here for over 30 years and as each year goes by it just deteriorates on many levels. I can apreciate that the sidewalks are being repaired, but to not replace a tree with another is slapping paint on a wall without fixing the hole. Not all tree cause sidewalks to buckle and crack! Sadly, whoever made the choice to plant the wrong trees in the first place on our parking strips was not educated to make that decision. Our decision-makers MUST consider immediately that they simply cannot look the other way any longer. Time is of the essence. The situation is not going to right itself. By not bringing life back to our community via trees these entities are lending their support and participation to the serious negative impact a lack of foliage/tree canopy brings to all citizens' quality of life. The current lack of canopy negatively impacts our air quality, diminishes greenhouse gas reduction, and increases the heat island effects which all directly impact the quality of life on numerous levels for everyone living in our city! And further, the environmental effects of increased air conditioning usage must also be calculated and human health risks must be addressed. The Los Angeles City Council, The Sidewalk Repair Program and The Department of Urban Forestry Services cannot continue to blindly 'punch a clock' every day. They have a responsibility to each and every citizen of the City of Los Angeles to address this issue head on with a plan to turn it around. At some point, this reversal will be impossible. The time to act is today. It saddens me that they consider this their legacy. With that, I close with the following: 1. A Master Tree Plan must be developed that does not remove trees too rapidly such that it creates a decline in air quality and an increase in the heat island effect. There should be no net loss to canopy during the sidewalk repair process. In view of the length of time it takes for a tree to grow tall, an aggressive planting schedule which includes new tree wells and green spaces may need to begin even before trees are removed. 2.To the greatest extent possible, sidewalk repair sites that do not necessitate tree removal must be prioritized and scheduled ahead of sites that are judged to require tree removal, in order to allow the City, citizens, environmentalists, and all others who are working to protect Los Angeles' trees and urban forest canopy to implement the measures, mitigations, and protections outlined above. 3. The aggressive non-aesthetic pruning of tall trees, or "topping" -- currently the practice of Urban Forestry (which pays subcontractors $180 a tree versus San Francisco that budgets $1,000 for a large tree) -- must be factored into the assessment of decline of tree canopy. "Before" photos of recently-pruned trees are available on Google Maps and Google Earth. In addition to this uneven existing resource, however, the City needs to require the capture and publicly accessible online posting of good-quality "before" photos of topped trees, paired with same-POV "after" photos, by Urban Forestry. Any tree replacements should be done strategically. Tree species that will grow tall enough to create canopy need to be identified as capable of thriving in this climate, and a plan to water and cultivate those trees into full maturity needs to be determined and adopted. As with topped trees, the City needs to require the capture and publicly accessible online posting of good-quality "before-removal" photos of trees, paired with same-POV "after-removal" photos, by Urban Forestry.	9/13/17 12:00 AM PT	Comment noted. Please see Chapter 2.0 Project Description, Chapter 3.3 Biological Resources, Chapter 3.9 Land Use and Planning.
	5. Before any trees are removed for sidewalk repair, a full tree inventory of street trees must be done by an independent professional entity and a tree master plan created. An actual field calculation must be done of how many canopy trees Urban Forestry expects will be removed for sidewalk repair, as well as how many new places exist for planting trees that are capable of reaching a height that contributes to tree canopy. 6. The environmental impact on wildlife habitats must be calculated and any tree removal scheduled so as not to disrupt spring/summer nesting. 7. Given the negative effects on canopy when trees are removed for sidewalk repair, a new ordinance to restrict property owners from removing any healthy trees on their property for non-sidewalk related reasons needs to be considered. 8. Identify a plan to fully implement sustainable tree-saving sidewalk designs including meandering sidewalks, bridging over existing roots, curb bump-outs and larger tree-wells. These were listed as options in the sidewalk repair motion of Nov. 30, 2016 (tree removal as a last resort), but none except tree removal has been put into practice as options. Results of any tests of alternative sidewalk approaches need to be recorded in the EIR and then publicized so that homeowners have these options to tree removal. Also, our urban forest could significantly increase water supplies and decrease stormwater pollution for L.A. if the City and property owners will integrate permeable sidewalks designs, and these alternatives need to be robustly promoted. 9. A thorough investigation into root pruning as an alternative to tree removal must be done. Urban Forestry proposed this approach to City Council as viable and reliable; and though it may not be widely known, the new administration at Urban Forestry says they do not want to use this method. 10.Every proposed tree removal must be fully publicized in advance, with adequate time for due process and stakeholder participation to find alternative solutions to tree removal before any tree is removed. 11.To the greatest extent possible, sidewalk repair sites that do not necessitate tree removal must be prioritized and scheduled ahead of sites that are judged to require tree removal, in order to allow the City, citizens, environmentalists, and all others who are working to protect Los Angeles' trees and urban forest canopy to implement the measures, mitigations, and protections outlined above.		
Sheila Brossman	On Friday, September 8, 2017, my husband, Rick Brossman was escorting his 94 year old mother, Sylvia Brossman, to meet me at the COD restaurant on 3rd and Orlando. He was holding her firmly by one arm as she was using her cane with her right arm. They would stop and rest dodging the sidewalks cracks. In front on the hotel on the SE corner of Orlando and 3rd her foot caught a crack and twisted, sending her to the ground. The ambulance took her to Cedars whereupon she has now had surgery for a fractured femur which hopefully was repaired but will leave her impaired and immobilized for a fruitless amount of time. What a deplorable experience to endure at this stage of her life, only due to the neglect of the city in it's road repairs. This is the 2nd incident I am aware of recently and I am appalled that the city we live in hasn't taken action to protect it's citizens.	9/10/17 11:45 AM PT	Comment noted. Please see Chapter 2.0 Project Description. Please visit https://sidewalks.lacity.org/

Shelley Billik	Given the potential negative effects on canopy when trees are removed for sidewalk repair, a new ordinance to restrict property owners from removing any healthy trees on their property for non-sidewalk related reasons needs to be considered. 8. Identify a plan to fully implement sustainable tree-saving sidewalk designs including meandering sidewalks, bridging over existing roots, curb bump-outs and larger tree-wells. These were listed as options in the sidewalk repair motion of Nov. 30, 2016 (tree removal as a last resort), but none except tree removal have been put into practice as options. Results of any tests of alternative sidewalk approaches need to be recorded in the EIR and then publicized so that homeowners have these options to tree removal. Also, our urban forest could significantly increase water supplies for LA if the City and property owners integrated permeable sidewalks designs, and these need to be promoted. 9. A thorough investigation into root pruning as an alternative to tree removal must be done. Urban Forestry proposed this approach to City Council as viable and reliable; and though it may not be widely known, the new administration at Urban Forestry says they do not want to use this method. 10. Every proposed tree removal must be fully publicized in advance with adequate time for due process and stakeholder participation to find alternate solutions to tree removal before any tree is removed. Because the tree canopy provides significant cooling and air purification, both of which are critical for the health of the people in Los Angeles, the Sidewalk Repair EIR must assess the decrease of tree canopy that results from the large quantity of tall tree elimination currently anticipated by Urban Forestry for sidewalk repair. Potential effects on air quality, including diminished greenhouse gas reduction, and increase in heat island effect must be quantified. The environmental effects of increased air conditioning usage must also be calculated. Human health risks must be addressed. Before any trees are removed for sidewalk repair, a full tree inventory of street trees must be done by an independent professional entity and a tree master plan created. An actual field calculation must be done of how many canopy trees Urban Forestry expects will be removed for sidewalk repair, as well as how many new places exist for planting trees that are capable of reaching a height that contributes to tree canopy. A master tree plan must be developed that does not remove trees too rapidly such that it creates a decline in air quality and an increase in the heat island effect. There should be no net loss to canopy during the sidewalk repair process. In view of the length of time it takes for a tree to grow tall, an aggressive planting schedule which includes new tree wells and green spaces may need to begin even before trees are removed. The aggressive non-aesthetic pruning of tall trees, currently the practice of Urban Forestry (which pays subcontractors $180 a tree versus San Francisco that budgets $1,000 for a large tree), must be factored in the assessment of decline of tree canopy. "Before" photos of recently-pruned trees are available on Google maps and Google Earth. Any tree replacements should be done strategically. Tree species that will grow tall enough to create canopy need to be identified as capable of thriving in this climate, and a plan to water and cultivate those trees into full maturity needs to be determined and adopted. The environmental impact of wildlife habitats must be calculated and any tree removal scheduled so as not to disrupt spring/summer nesting.	9/07/17 12:00 AM PT	Comment noted. Please see Chapter 2.0 Project Description, Chapter 3.3 Biological Resources, Chapter 3.2 Air Quality, Chapter 3.6 Greenhouse Gas Emissions,
Sofia Maldonado	There are many sidewalks that are lifted . Flex and beautiful ground, there is a lot of ground and no sidewalks. El Dorado to the pretty ground there is no sidewalk for the wheelchairs or sidewalk. Van Nuys also has no sidewalks.	8/14/17 12:00 AM PT	Comment noted. Please see Chapter 2.0 Project Decription, not new sidewalks will be built as part of the Project.
Soraya Dosaj	While I commend your work to upgrade existing sidewalks, I hope you will consider setting funding aside to install sidewalks in heavy traffic areas near public facilities. One example is the east side of Fulton Avenue north of Oxnard Street. This is near a busy intersection at the northwestern corner of Los Angeles Valley College.	7/31/17 8:27 AM PT	Comment noted. Please see Chapter 2.0 Project Decription, not new sidewalks will be built as part of the Project.
South Coast Air Quality Management District	The Lead Agency should identify any potential adverse air quality impacts that could occur from all phases of the Proposed Project and all air pollutant sources related to the Proposed Project. Air quality impacts from both construction (including demolition, if any) and operations should be calculated. Construction-related air quality impacts typically include, but are not limited to, emissions from the use of heavy-duty equipment from grading, earth-loading/unloading, paving, architectural coatings, off-road mobile sources (e.g., heavy-duty construction equipment) and on-road mobile sources (e.g., construction worker vehicle trips, material transport trips). Operation-related air quality impacts may include, but are not limited to, emissions from stationary sources (e.g., boilers), area sources (e.g., solvents and coatings), and vehicular trips (e.g., on- and off-road tailpipe emissions and entrained dust). In the event that the Proposed Project generates or attracts vehicular trips, air quality impacts from indirect sources should be included in the analysis. In the event that the Proposed Project generates or attracts heavy-duty diesel-fueled vehicles, it is recommended that the Lead Agency perform a mobile source health risk assessment. Guidance for performing a mobile source health risk assessment ("Health Risk Assessment Guidance for Analyzing Cancer Risk from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis") can be found at: http://www.aqmd.gov/home/regulations/ceqa/air-qualityanalysis-handbook/mobile-source-toxics-analysis. An analysis of all toxic air contaminant impacts due to the use of equipment potentially generating such air pollutants should also be included. In addition, guidance on siting incompatible land uses (such as placing homes near freeways) can be found in the California Air Resources Board's Air Quality and Land Use Handbook: A Community Health Perspective, which can be found at: http://www.arb.ca.gov/ch/handbook.pdf. CARB's Land Use Handbook is a general reference guide for evaluating and reducing air pollution impacts associated with new projects that go through the land use decision-making process. Guidance2 on strategies to reduce air pollution exposure near high-volume roadways can be found at: https://www.arb.ca.gov/ch/rd_technical_advisory_final.PDF. Mitigation Measures In the event that the Proposed Project generates significant adverse air quality impacts, CEQA requires that all feasible mitigation measures that go beyond what is required by law be utilized during project construction and operation to minimize these impacts. Pursuant to CEQA Guidelines Section 15126.4 (a)(1)(D), any impacts resulting from mitigation measures must also be discussed. Several resources are available to assist the Lead Agency with identifying potential mitigation measures for the Proposed Project, including: ? Chapter 11 of SCAQMD's CEQA Air Quality Handbook ? SCAQMD's CEQA web pages available here: http://www.aqmd.gov/home/regulations/ceqa/airquality-analysis-handbook/mitigation-measures-and-control-efficiencies ? SCAQMD's Rule 403 - Fugitive Dust, and the Implementation Handbook for controlling construction-related emissions and Rule 1403 - Asbestos Emissions from Demolition/Renovation Activities ? SCAQMD's Mitigation Monitoring and Reporting Plan (MMRP) for the 2016 Air Quality Management Plan (2016 AQMP) available here (starting on page 86): http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2017/2017-mar3- 035.pdf?sfvrsn=5 ? CAPCOA's Quantifying Greenhouse Gas Mitigation Measures available here: http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14- Final.pdf Alternatives In the event that the Proposed Project generates significant adverse air quality impacts, CEQA requires the consideration and discussion of alternatives to the Proposed Project or its location which are capable of avoiding or substantially lessening any of the significant effects of the project. The discussion of a reasonable range of potentially feasible alternatives, including a "no project" alternative, is intended to foster informed decision-making and public participation.	9/07/17 12:00 AM PT	thank you for your comment. Please see Chapter 3.2 Air Quality, Chapter 3.6 Greenhouse Gas Emissions, Chapter 3.7 Hazards and Hazardous Materials, Chapter 4 Comparison of Alternatives

	Pursuant to CEQA Guidelines Section 15126.6(d), the Draft EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the Proposed Project. Permits In the event that the Proposed Project requires a permit from SCAQMD, SCAQMD should be identified as a responsible agency for the Proposed Project. For more information on permits, Please visit SCAQMD webpage at: http://www.aqmd.gov/home/permits. Questions on permits can be directed to SCAQMD's Engineering and Permitting staff at (909) 396-3385. Data Sources SCAQMD rules and relevant air quality reports and data are available by calling SCAQMD's Public Information Center at (909) 396-2039. Much of the information available through the Public Information Center is also available at SCAQMD's webpage (http://www.aqmd.gov). SCAQMD staff is available to work with the Lead Agency to ensure that project air quality impacts are accurately evaluated and any significant impacts are mitigated where feasible. If you have any questions regarding this letter, Please contact me at lsun@aqmd.gov or call me at (909) 396-3308.		
stan oishi	I'm not so concerned about the environmental impacts (or lack thereof), but the un-usability of the sidewalks that exist! They need to be repaired so that all people can use them! Right now it is so bad in my neighborhood that it is a health hazard to attempt to walk on the sidewalks - which is very necessary as the streets are VERY narrow and winding road!	9/12/17 11:13 AM PT	Comment noted. Please see Chapter 2.0 Project Description. Please visit https://sidewalks.lacity.org/
Stephanie McMillian	That would be really awesome. The street where I am living needs repairs desperately. A lot of children walking the street and moms with strollers. Plus it would provide more jobs. Thank you for all you're doing. Stephanie McMillian	9/13/17 4:16 PM PT	Comment noted. Please see Chapter 2.0 Project Description. Please visit https://sidewalks.lacity.org/
Stephanie Rothman	I live on Davana Terrace where the sidewalks were laid at least seventy years ago. Next to my house is a median with very mature trees whose roots have pushed up sidewalk sections creating radially different heights between each section. I have lived here for twenty years and this problem has always existed. The city has made short-term efforts to solve this by filling in the gaps between squares with asphalt. It doesn't work. I have seen people trip and fall because the sidewalk is so uneven. I have done it myself. There are two things that need to be done. 1. Cut back the tree roots and block them from further growth toward the sidewalk with a barrier between the trees and the sidewalk, or cut down the trees and replace them with much smaller ones that have room to grow. 2. Repair the sidewalk. This cannot wait! I see many people walk or run in the street to avoid this hazard. That includes people pushing baby carriages. This really is a problem that needs to be addressed quickly. It's not something that can wait for some distant plan to be implemented. It could have been done a few years ago when the city was putting in ramps for handicapped people at the corner next to this hazard. The city actually did it at the other end of the block and put down a flat asphalt covering, which was later replaced with a nice new sidewalk, but I was told by the workers who did it that there was no similar plan for the other end of the block that I have described above. I hope some attention will be paid now. But I am pretty pessimistic. Please, Please, Please prove me wrong.	9/11/17 4:48 PM PT	Comment noted. Please see Chapter 2.0 Project Description. Please visit https://sidewalks.lacity.org/
Stephen Krawford	Sidewalk safety in Hollywood is area's primary concern. Homeless camps have made primary artieties impassable and are adversely impacting businesses. Parents at local schools are NOT allowed to allow children to walk unaccompanied on Gower. This is a much more important issue than cracks in the sidewalk. The city should focus on safety of sidewalks then worry about repair and maintenance.	9/11/17 6:54 PM PT	Comment noted. Please see Chapter 2.0 Project Description. Please visit https://sidewalks.lacity.org/
Stuart Drexler	The sidewalks are cracked in front of my house and the curb is also broken and lifted since the big earthquake.This is a hazard to people who walk on the sidewalk and hard for people to open the car door when they park at the curb.	9/11/17 6:13 PM PT	Comment noted. Please see Chapter 2.0 Project Description. Please visit https://sidewalks.lacity.org/
Susan Lustig	My husband (Bob Dahl) and I put in a sidewalk repair request for the sidewalk between my neighbor's residence (9959 Milburn Drive) and ours. They did come out to "repair" it, but just added two dollops of asphalt to try to even it out from where it had raised up as a tripping hazard. This is not a "fix," it is a stop gap measure, and I hope they come back and truly repair it. The asphalt crumbles and is not a permanent fix. I hope this "fix" was not to push the problem to when we the citizens have to be responsible for our own sidewalk maintenance and therefore, cost. It is also pretty darn ugly. Thank you. Susan Lustig	9/15/17 1:10 PM PT	Comment noted. Please see Chapter 2.0 Project Description. Please visit https://sidewalks.lacity.org/
Suzanne Dahlin	We have a very large uneven sidewalk and I fear someone will trip on it and hurt themselves. Will you be able to grind it down for safety of our neighborhoodthank you Suzanne	9/11/17 3:59 PM PT	Comment noted. Please see Chapter 2.0 Project Description. Please visit https://sidewalks.lacity.org/
Suzanne Lewis	The Sidewalks in Greater Los Angeles are in much need of repairs. Not only for Safety isses and ADA Compliance but for a Better Quality of Life. The Sidewalk Issues has been kicked down the Road for Decades. Now is the time to Act instead of reacting.	9/14/17 6:10 PM PT	Comment noted. Please see Chapter 2.0 Project Description. Please visit https://sidewalks.lacity.org/

Sylvia Sandoval	I would like to know why my husband and I were told repairing the public sidewalk on my corner where I live was our responsibility??? It was very costly for us and other neighbors in Los Angeles or Venice, California is where we live, and someone is getting their sidewalk repairs by the city and I doubt very much they had or have to pay for it???? I had to pay for a tree to get cut also and I was told I was to plant 2 trees as well which we didn't mind doing. Please reply thank you Sylvia Sandoval	9/14/17 2:01 PM PT	Comment noted. Please see Chapter 2.0 Project Description. Please visit https://sidewalks.lacity.org/
The Nature Conservancy	As an organization dedicated to protecting biodiversity in Los Angeles, The Nature Conservancy supports a sidewalk repair program that achieves multiple benefits in addition to improved mobility, including increased stormwater infiltration, improved water quality, and enhanced natural habitats. We also encourage the City to protect and add to its urban forest, which will benefit public health through improved air quality and reduced urban heat island effect. Finally, Please tie the sidewalk repair program into other ongoing efforts to green the City, such as the efforts to create a Los Angeles biodiversity index. Thank you.	8/28/17 3:56 PM PT	Project Description, Chapter 3.3 Biological Resources, Chapter 3.6 Greenhous Gas Emissions, Chapter 3.8
Theresa Valencia	Right in front of my home the sidewalk is lifted quite a bit. I have fallen on my face and cut and bruised my face . I have seen neighbors fall. It seriously needs to be addressed. Thank you Theresa Valencia	9/14/17 9:44 AM PT	Comment noted. Please see Chapter 2.0 Project Description. Please visit https://sidewalks.lacity.org/
Thomas Gregory	Sidewalk repair? Let's simply start by re-claiming our sidewalks from the tents, trash, and filth of the "homeless" people squatting on public sidewalks. I have never seen a city (expect maybe Mumbai, India) going so quickly down a rat-hole of degradation. Fix the sidewalks after you get the trash off them!	9/11/17 7:18 PM PT	Comment noted. Please see Chapter 2.0 Project Description.
Timothy Brennan	Make all sidewalks with cement that is more of a white colour so they do not absorb as much heat during the day.	9/11/17 10:55 PM PT	Comment noted. Please see Cahpter2.0 Project Description and Chapter 3.9 Land Use and Planning.
TreePeople	Priority 1: Stop the Decline of the Urban Forest by Upholding Best Management Practices Mature Tree Maintenance, Health and Risk Avoidance a. Proper Pruning Enforcement. The City code directs that City employees and/or contractors pruning trees will adhere to International Society of Arboriculture (ISA) tree pruning guidelines and American National Standards Institute (ANSI) standards. If these guidelines and standards are adequately followed, they promote optimal and long-term tree health. However, it has been observed that these standards are frequently not followed for a variety of reasons, primarily related to staffing and lack of enforcement. Therefore, TreePeople recommends that UFD prioritize adequate levels of staffing that ensures rigorous upholding of and accountability to ISA and ANSI standards. 3 b. Qualified Contractors and On-Site Arborist. While current policy directs the City to contract with the lowest qualified bidder, there have been issues with the quality of work done by contractors. Part of this can be addressed by the aforementioned recommendation regarding staff oversight and enforcement around tree pruning standards. We recommend additionally that all contractors shall have a Certified Arborist on site when pruning is being done. We also recommend that the tree workers performing cuts must be ISA Certified Tree Workers as a minimum certification. When poor pruning is reported by the public, a review of the contractor's work with the City should be conducted and their status reviewed, in addition to levying of appropriate penalties for damage to City infrastructure. c. Proactive Management Plans for Pests and Diseases. Part of urban forest management is addressing pests and diseases that damage and kill trees, which can lead to public hazards in terms of tree failure and subsequent private property damage and lost canopy. TreePeople recommends that the City have a comprehensive plan for dealing with the treatment, removal and proper disposal of diseased trees in the interest of public safety. City staff should also be regularly participating in regional (and, as appropriate, national) dialogues surrounding emerging pests and diseases and creating proactive recommendations for the treatment of these issues to share with Council and the Mayor's office. The City should be prepared to respond to these with the funding needed to protect the City's investment in these trees. d. Enforcement and penalties for tree work performed by non-city contractors. The damage and/or removal of healthy, mature trees always results in a loss of the benefits these trees provide to the community. The loss is exacerbated when the benefits trees provide over their lifetimes is taken into account. TreePeople recommends that when trees are damaged and/or removed inappropriately, there should be penalties that adequately compensate for the loss of those benefits to communities (see: Tree Replacement Ratio). Bureau of Street Services has improved the current practice by insisting replaced trees be bonded through the establishment period. However, additional financial compensation should be determined by the City for the damage caused to a piece of infrastructure (the tree) that the City has already invested in over time. These penalties should also be strict enough to provide a deterrent to repeat and excessive offenders, such as developers and billboard companies, who frequently absorb fines into the cost of doing business. e. Deep Watering. Past City decisions to suspend irrigation of public property trees in times of drought threaten tree health and put residents at risk from limb and/or tree failure. The practice of infrequent deep watering ensures trees receive adequate water for developing deeper, more drought-resilient root systems. TreePeople recommends that the City adopt a consistent practice of infrequent deep watering to ensure optimal tree health and public safety, regardless of drought conditions. Furthermore, the challenge of maintaining watering needs of urban trees provides an excellent opportunity for the City to continue expanding the use of recycled water, whether it be through 4 irrigation in areas that already have purple pipe or by using water tanks to water heritage, significant or large-stature trees that the City wants to preserve. f. Staff Development. The City must invest in the ongoing education of its staff to ensure practices are constantly refined according to best practices aligned with the urban forestry community. As a City with an unparalleled urban forest, in terms of size and number of trees, the City of Los Angeles has a responsibility to be a leader in the use of current best practices. Regular and active participation in the urban forestry community of practice through seminars, conferences, etc, prepares City staff to address new issues, as well as maintain a high level of service for all City trees and communities. Challenges to street tree health posed by sidewalk-tree root conflicts, as highlighted by the City's sidewalk repair program, serve as a prime example of a scenario in which City staff must be prepared to innovate and utilize best practices. TreePeople recommends that there is an adequate UFD annual budget allocation for staff development, as well as support of staff time for program modification, to ensure the City stays on the cutting edge of industry best practices. Priority 2: Creating a 21st Century Urban Forestry Management Vision for Los Angeles While the strict implementation of best management practices is critical for stopping the decline of our urban forest's health, LA must go further by planning today for the urban forest we will need to protect residents from the impacts of climate change. City leaders have an opportunity to maximize public investments by developing a comprehensive vision for	9/14/2017 0:00	Thank you for your comment. Please see Chapter 2.0 Project Decription, Chapter 3.2 Air Quality, chapter 3.3 Biological Resources, Chapter 3.6 Greenhouse Gas Emissions, Chapter 3.7 Hazards and Hazardous Materials, Chapter 3.9 Land Use and Planning, Chapter 3.12 Trasnportation/Traffic and Chapter 4 Comparison of Alternatives

TreePeople	Tree Removal and Replacement Issues a. Updating the City's tree replacement ratio. According to the 2008 Los Angeles 1 Million Tree Canopy Cover Assessment, Los Angeles already suffers from less-thanideal 21% tree canopy coverage, especially considering the unequal distribution of canopy that leaves low-income and more industrialized City Council districts with coverage as low as 7-9% and subsequently less access to benefits from trees.1 As such, tree planting strategies should be designed to achieve optimal public health and environmental benefits for communities. Therefore, as noted above, the tree replacement policy -- at a minimum -- needs to be 2:1 when trees have a canopy under 30 feet and should increase to 4:1 for trees over 30 feet. TreePeople believes there should be a no-net-loss in canopy from sidewalk replacements and this ratio helps get the City there. Additionally, TreePeople will continue to work with the City and other partners on a net increase in tree canopy outside of this particular sidewalk replacement program. b. Community notification and engagement around tree removals. As tree removals represent an irreversible, long-term impact on community health and aesthetics, there should be clear and early communication with residents with opportunities for them to provide input and have concerns addressed. One of the most frequent complaints heard by TreePeople staff is that trees are removed from the neighborhood landscape without public notification or opportunities for communities to provide input on the value and importance of preserving trees. We recommend that public engagement be significantly increased by the City, whether through additional trainings and increased collaboration 1 E. Gregory McPherson, James R. Simpson, Qingfu Xiao, Chunxia Wu. Los Angeles 1 Million Tree Canopy Cover Assessment (2008). United States Department of Agriculture, Forest Service, Pacific Southwest Research Station. 5 between Council office field staff, or through Urban Forestry staff that can more directly address this ongoing issue. Organized entities, such as Neighborhood Councils, serve as important community vehicles for distributing information related to tree removals and should be consulted as part of this process. c. California Environmental Quality Act (CEQA) exemptions. To date, many trees are removed under CEQA exemptions that do not require the City to study site-specific alternatives to tree removals or site specific mitigation measures. The City should reconsider their current policy on CEQA exemptions and address the ways that removing trees impacts the health of communities and the environment. TreePeople supports the recommendations submitted in January 2016 by CFAC to the Board of Public Works re: Draft CEQA Procedure for Street Removals (Draft Procedure). These recommendations urge the City to adopt standards that require consideration of the following prior to designating street tree removals as CEQA exempt: 1) whether or not trees are being removed in low canopy areas of the City, and; 2) redefining the term "stand" as used in the Draft Procedure to consider lack of other nearby tree canopy and number of trees/cumulative canopy being removed. d. Limiting tree removals and improving decision-making support. As each urban tree represents a large investment by the City in environmental, economic, and health benefits, each removal should be considered carefully and no healthy tree should be removed unnecessarily. Given the complex nature of decisions to remove trees, TreePeople recommends more City staff be Tree Risk Assessor Qualified (TRAQ) certified, per International Society of Arboriculture (ISA) standards. TRAQ certification would ensure that any UFD staff responsible for assessing trees for removal are well trained in a standardized and systematic framework for assessing tree risks and benefits to communities that will support decisions to remove trees. e. Protecting against removal of healthy trees on private property. Both legal and illegal development on private property frequently leads to removal of healthy trees, which often are not adequately replaced. As the public right-of-way typically offers limited growing space for trees, trees on private property play a substantial role in nurturing canopy growth that provides significant protective health benefits. LADWP's investment in the planting of trees on private property through City Plants enrollment and adoption programs, as well as the 2008 canopy analysis done by Dr. Greg MacPherson of the USDA Forest Service, reinforces the importance of this planting space.2 The City should look to other municipalities like Pasadena that have effective policies in place that support the protection of canopy on private property. The City should also evaluate how trees are pruned or removed on private property as a result of utility conflicts and ensure this work adheres to industry best practices.	9/14/17 12:00 AM PT	
TreePeople	Create Pathways for a Robust Urban Forest a. Creating an equity-driven planting prioritization framework. The 2008 TCC assessment for the Million Trees LA initiative revealed patterns of unequitable canopy distributions across the City of LA: Los Angeles City Council Districts 9, 8 and 15 possessed the lowest percentages of canopy cover throughout the entire city (7-11%), while Council Districts 2, 4 and 5 had the highest percentages of canopy cover (27- 37%).3 These districts with lowest percentages of canopy represent lower median household incomes (with Council Districts 8 and 9 as the two lowest in the city) whereas those with the highest percentage of canopy represent some of the highest median 3 "Los Angeles 1 Million Tree Canopy Cover Assessment." https://www.fs.fed.us/psw/publications/documents/psw_gtr207/psw_gtr207.pdf 7 household incomes per district.4 This ultimately translates to lower income neighborhoods, which are frequently comprised of majority communities of color, receiving substantially less of the benefits that trees provide than neighborhoods of greater economic means. Canopy distribution is at its core an environmental justice issue, and it is the City of LA's obligation to ensure that all of its residents have equal access to trees that can clean their air and protect them from health- and life-threatening heat exposure. As such, TreePeople recommends that the City prioritize with urgency the development of an equity-driven framework that will drive the strategic prioritization of tree planting for communities that suffer disproportionately from lack of TCC. Layering updated TCC data with data on heat and health vulnerability should be a critical component of this effort to ensure that the City of LA is protecting its most vulnerable residents from associated health impacts. b. Updating urban planning practices to accommodate tree planting. Both the 2008 analysis and current planting plans and protocol have not addressed the need for City planning to practices to better accommodate urban forestry. Urban forestry professionals agree that the trees that provide the highest value and return on investment are largestature trees. The City should look for opportunities to strategically increase the size of planting locations, particularly in heavily urbanized parts of the City that lack TCC. The City already makes tremendous investments in tree planting: tree stock, site preparation, permitting and inspection, establishment care, and long term maintenance of the tree. By focusing on finding planting locations for fewer but larger stature trees, the City could deliver substantially more benefits to communities for a potentially smaller inventory to be managed. This type of strategy would require that the City prioritize its tree infrastructure in new development. This prioritization is becoming increasingly important as the City moves forward with the sidewalk repair program which, in its current iteration, will be removing many trees that are too large for their locations and replacing them with small trees at a 2:1 ratio. Planning for larger tree wells and planting sites allows the City to avoid future root/sidewalk conflicts while increasing canopy. While we are aware that the City has already increased the minimum tree well size from 4'x4' to 4'x6', TreePeople is recommending that the City should prioritize identifying locations where trees that need 8'x8', 10'x10' or even larger minimum specifications could be accommodated. While this constitutes a departure from business as usual, given the public health threats that face the City we believe this is imperative. Achieving greater TCC via planting larger trees is also aligned with Great and/or Complete Streets and other sustainability goals and will require collaboration across City departments.	9/14/17 12:00 AM PT	

TreePeople	Planting the Next Generation of LA's Urban Forest a. Tree species selection. While Los Angeles' climate zone can accommodate the growth of many different kinds of trees, the careful selection of tree species is crucial to avoiding infrastructure conflicts and ensuring trees provide long term benefits to communities. Planting sites should be carefully evaluated to determine the most appropriate species (i.e. right tree, right place), and consider a range of factors including but not limited to: selecting the largest appropriate species for an available planting space; climate zone; water use; parkway size; spacing; growth patterns; biogenic emissions; root damage potential; habitat value; soil type and compaction of the planting location; and utility constraints. Tree selection lists should be regularly reviewed and updated to reflect current research, best practices and urban canopy priorities. b. Tree stock. The City's current specifications for "standard trees" allow for compromised branch structure, and thus represent a lower quality stock that prevents newly planted urban trees from either surviving their establishment periods or growing to their full potential to achieve maximum benefits. The healthiest stock possible should be used, with good branch structure, to ensure the healthiest trees possible from the establishment period through maturity. Whenever possible, the smallest tree stock appropriate should be planted, which is typically 15 gallon. Nursery stock selected for planting within the City should follow the nursery specification guidelines laid out in the "Guideline Specifications for Selecting, Planting and Early Care of Young Trees," put out by Brian Kempf and Ed Gilman supported by Cal ReLeaf, CalFire, WISA, and the Urban Tree Foundation.5 The trunk diameter per pot size should follow the specifications in "Guideline Specifications for Nursery Tree Quality."6 c. Nursery relationships/contracts. The City can facilitate optimal tree stock by developing relationships with nurseries and seeking opportunities to fund contract growing. Contract growing allows the City to proactively plan for and have access to optimal species, rather than be limited by species available at the time of planting. This is particularly important as the urban forestry community of California learns more about appropriate species for our changing climate. Contract growing also allows greater control of quality of nursery stock. d. Species diversity. Diversity of species enhances urban forest resiliency in the face of pests, diseases and other environmental factors. Any planting plans should include a consideration of species diversity based on industry standards. Right now, that industry standard dictates that no more than 10% of any species, no more than 20% of any genus, and no more than 30% of any family should be planted. However, it's important to follow changes in standards as they continue to evolve. Los Angeles already is one of the most diverse urban forests and should continue to be so. The State of the Street 5 http://www.fire.ca.gov/resource_mgt/downloads/CALFIRE_Nursery_Standards_and_Specs11_ 12.pdf 6 http://ufei.calpoly.edu/files/pubs/NurseryTreeSpecs10_13.pdf 9 Tree Report also addresses the industry BMP around species diversity. A proactive planting plan would help the City incorporate this BMP. e. Age diversity. The State of the Street Trees Report gives the City a "D" grade on Age Diversity. One of the recommendations of the Report is to increase tree planting, which TreePeople fully supports. Healthy and resilient urban forests contain trees of all ages, and as such we recommend consistent annual plantings to promote age diversity. The City's management plan should include funding and support for ongoing planting citywide to ensure the presence of trees across all phases of the life cycle. f. Establishment care. The infrequent rain in the region makes establishing new trees challenging, yet the investment in consistent care helps combat this challenge. Trees should be watered, weeded, mulched and have stakes and ties adjusted on a routine basis, and there should be investments in early structural pruning to avoid future hazards and reduce pruning costs down the line. The standards detailed by the "in-lieu fee" are exemplary and should be expanded to include other new trees planted in the City. g. Concrete and/or metal tree well covers. Overall, well covers compromise the health of our trees and can create hazards and losses of this City urban forest investments. They prevent water infiltration, hinder carbon dioxide and oxygen exchange that is critical to root health, and heavily compact the soil. Both metal and concrete well covers typically damage the trunk of a tree as it grows by limiting trunk expansion. Tree well covers are infrequently monitored and maintained for maximum trunk growth and lead to the regular girdling of trees. Instead of using concrete and/or metal tree well covers, we recommend the City consider the following: ? Whenever possible, use mulch to fill tree wells. This requires semi-annual maintenance but enhances the health of planting locations. Putting several inches of mulch in tree wells increases the water holding capacity of the well and adds nutrients to the soil over time. This practice better promotes the health of trees and additionally can contribute to higher rates of transpiration and associated cooling benefits they provide. ? When it is not feasible to use mulch, TreePeople reluctantly recommends the use of decomposed granite (DG) to backfill tree wells. DG forms a near impervious layer over the soil around the tree and adds no nutrient value to the soil, which is why mulch should be the preferred choice of the City, but DG is preferable to the grates and concrete covers. h. Root barriers. Root barriers may prevent future damage to	9/14/17 12:00 AM PT	
TreePeople	Ensure comprehensive planning and implementation a. Creating more holistic urban forestry management. Currently, urban forestry management does not fall under the purview of any one City of LA entity, and as such a variety of City entities (Recreation and Parks, LADWP, Urban Forestry Division, Department of Planning, and more) oversee different aspects of tree planting and maintenance. To enhance coordination around urban forestry issues throughout the City, TreePeople recommends a robust analysis of the many City departments that oversee realms of urban forestry to clarify the roles, authorities, and resources that each department possesses. Identified City entities should then be convened to develop a process for identifying shared planning and funding coordination goals around comprehensive urban forestry management. b. Multi-benefit planning and funding coordination. Given the many social and environmental benefits a healthy urban forest provides, coordinated governance around urban forestry should also engage City and County entities that are not directly responsible for overseeing trees, but derive benefits from them. This could include but is not limited to agencies that oversee: public health, water quality, water supply, flood management, and transportation. This level of coordination not only provides pathways for co-planning and funding projects, but could also facilitate sharing of best practices and technical knowledge that can create efficiencies in problem-solving. c. Linking City goals to urban forestry. There are a variety of existing local and regional plans that identify important overarching sustainability, mobility, and public health goals which include or are complementary to urban forestry goals -- such as the Sustainability pLAn, Enhanced Watershed Management plans, Mobility Plan 2035, the Resilience Strategy, and many more. TreePeople recommends that City staff engage in an effort to identify the specific ways that these different plans can be coordinated to address the nexus of urban forestry with a range of issues, and also map associated existing and potential funding sources.	9/14/17 12:00 AM PT	
TreePeople	Priority 3: Enhancing Stakeholder Engagement and Public Education a. Clear pathways for stakeholder input. Stakeholders, such as the Community Forestry Advisory Committee (CFAC) and tree planting organizations like TreePeople, have the knowledge and practical experience to advise on urban forestry best management practices (BMPs) and policy. However, there is not always clarity around appropriate processes or forums for how stakeholders can engage and provide recommendations on specific items. Improving clarity around opportunities for input and pathways to UFD staff 11 will allow stakeholders to be more supportive and a greater resource in providing expertise, and advocating for the urban forest. UFD attendance to CFAC meetings is highly important, as well as regular quarterly engagement with other groups, like the local tree nonprofits and Neighborhood Councils. b. Improving public education with the urban forest. Investing in community education around the importance of trees and strategies for maintaining them is an important component for promoting comprehensive citywide urban forestry health. For over 40 years, TreePeople has demonstrated that when communities self-identify as valuing trees, they are more likely to support public investments in the urban forest and engage in behaviors that support tree health. Unfortunately, years of inadequate City investment in educating the public on the value of trees has exacerbated existing challenges faced in maintaining trees while undermining the public's role as a valuable resource. This has resulted in a lack of public support for new tree plantings and a resentment of existing large trees in some neighborhoods. For the City's investments in the urban forest to be realized, we recommend the development of a robust public education7 effort that boosts communities' understandings of the roles that trees play in terms of public health, social cohesion, energy savings and environmental benefits. We recommend that the City look at using tools like the Community-Based Social Marketing (CBSM) methodology to develop a public education campaign around trees' roles in our community and basic tree care needs. It will be critical that any public education campaign address the public's perceived barriers and benefits to having trees in our communities, as well as include resources to support community contributions to a healthy urban forest. Furthermore, we urge that any public engagement and education efforts prioritize support for lowresource communities that suffer from lower TCC -- as these communities already receive disproportionately less benefits from trees, they should receive highest priority for support in growing their urban forest.	9/14/17 12:00 AM PT	
TreePeople	In closing, we hope that the above recommendations are considered helpful as the City not only develops the EIR for the Sidewalk Repair Program but also for its future urban forestry goals. We look forward to discussing the recommendations in further detail, and are eager to support any and all efforts to conduct this important work for the health of our urban forest.	9/14/17 12:00 AM PT	

Urban Forestry Partners	1. No net loss of tree canopy: a. The tree replacement policy -- at a minimum -- needs to be 2:1 when trees have a canopy under 30 feet and should increase to 4:1 for trees over 30 feet. There should be a no-net-loss in canopy from sidewalk replacements and this ratio helps get the City there. 2. Updating best management practices: a. Removal of root barriers from planting detail: The standard planting detail S- 456-2 should be updated to completely remove the installation of root barriers. 2 Root barriers create a less stable root system for street trees increasing the potential for tree failure. They are expensive to install, and provide no assurance that it will prevent tree roots from growing under a sidewalk. b. 15 gallon size trees for residential plantings: 15 gallon size trees provide a healthier root system when planted which decreases the time needed for the tree to establish its roots and lowers the time needed for supplemental watering. They are also roughly half the cost to plant and install than a 24' box tree, and will be equal in size two to three years after planting. c. Increase species diversity: The current list of Los Angeles City approved street trees should be updated to remove trees that require a moderate amount of water. It should introduce native species that are well adapted to our current climate cycle. These trees are better positioned to adapt to climate change, resist disease and infestation. They also support biodiversity and, therefore, the health of our adjacent wild spaces. 3. Tree inventory: a. In order to properly manage our urban forest we should first know the current state of our urban forest. It has been roughly 20 years since Los Angeles has completed a tree inventory. It is imperative that this be included into the Sidewalk Repair Program so the full impact of the program can be understood and properly mitigated. 4. Transparency to the public: a. Publicly available map of all removals and replacement locations: As trees are removed and replaced, residents should be able to track where this work is being completed. Having a publicly accessible online platform will provide the transparency needed for residents to be confident the City is meeting the mitigation requirements established by the EIR. 5. Tree Management: In order to properly manage our urban forest we should first know the current state of our urban forest. It has been roughly 20 years since Los Angeles has completed a tree inventory. It is imperative that this be included into the Sidewalk Repair Program so the full impact of the program can be understood and properly mitigated 6. Sustainable sidewalk designs: a. Our urban forest could significantly increase water supplies for LA if the City integrated sustainable sidewalk designs and materials such as bioswales to capture stormwater, permeable paving options, and other green infrastructure opportunities. Other sustainable designs include meandering sidewalks, bridging over existing roots, curb bump-outs and larger tree-wells. 3 As the leaders of urban forestry in Los Angeles we strongly encourage the City of Los Angeles to study these issues in the EIR process, and make these changes to our current urban forest management. We look forward to continuing to work together on creating a healthy urban forest for the future of Los Angeles.	9/14/17 12:00 AM PT	Comment noted. Please see Chapter 2.0, Project Description and Chapter 3.3 Biological Resources.
Uriel Tovav	This project is very good because there are so many sidewalks that need repair and many others that there need to be put in new sidewalks in the streets that are near schools and the kids walk. Every day to go to school we need those sidewalks already. How great that they are going to plant trees to improve the air and make the city prettier. We hope that this project passes because we truly need these sidewalks repaired so that people in wheelchairs. And they should mark where cars shouldn't stop like corners and places for where you walk.	8/14/17 12:00 AM PT	Comment noted. Please see Chapter 2.0 Project Description. Please visit https://sidewalks.lacity.org/
Valerie Davidson	We living here in Mar Vista have asked the city for many years to repair the sidewalk. It is buckled and dangerous, it also traps water runoff coming down the hill which creates a dangerous and slippery area. This area is a highly used sidewalk, with daily use by many pedistraian's, dog walkers, families, runners, kids going to Penmar Park. We need the sidewalk re done. The slope done professional to allow for water runoff. We hope you can come fix our sidewalk once and for all. We would love for you to come look at it, and observe the frequency of use.We are a prime location and need help.Thanks Val Davidson. Many people as well as our family have tripped on the buckled sidewalk. The city has just added black asphalt as a "bad patching" job. This is not working and needs to be fixed properly	8/19/17 10:36 AM PT	Comment noted. Please see Chapter 2.0 Project Description, and Chapter 3.8 hydrology and Water Quality.
Valerie Peterson-Brandt	Leimert Park in general has many cracked, falling apart, and unsafe sidewalks. The entirety of my block, between Rodeo and 39th, needs multiple repairs. All along Rodeo there are corners where it is impossible for a wheelchair to gain access to the street in order to cross.	9/10/17 3:03 PM PT	Comment noted. Please see Chapter 2.0 Project Description. Please visit https://sidewalks.lacity.org/
Vedanta society of So Calif	Add to your list of repairs for the Hollywood Dell: The 2000 block of N. Ivar on the east side. The sidewalk is totally broken up by the ficus tree roots. C6Q3	9/13/17 4:43 PM PT	Comment noted. Please see Chapter 2.0 Project Description. Please visit https://sidewalks.lacity.org/
Vera Del pozo	Please remove the large trees with the trunks breaking up the side walks. Please clean sidewalks.	9/15/17 6:44 AM PT	Comment noted. Please see Chapter 2.0 Project Description. Please visit https://sidewalks.lacity.org/
Vida Montgomery	The side walks in my neighborhood are in terrible shape. I have fallen several times due to unevenness of the asphalt. I realize that the unevenness is due to the tree roots. However, a new paving needs to be done. Occasionally, there is time, effort and resources wasted by City in adding tar to the cracks on the side walk instead of re-pavement. These patches get broken up and cause more fall hazards. My pets are also not immune to the unevenness of the side walks: my older Labrador continuously falls when we go for our walk. Please help!	9/12/17 9:00 AM PT	Comment noted. Please see Chapter 2.0 Project Description. Please visit https://sidewalks.lacity.org/
Wansun Song	I support sidewalk repair. I live in West LA and there are certain areas where the sidewalks are in disrepair. For example, those in wheelchairs wouldn't be able to use the sidewalk on the southside of Olympic Blvd. between Westwood Blvd and Midvale Ave. it's been like this for over a decade. Please work on this.	8/01/17 3:17 PM PT	Comment noted. Please see Chapter 2.0 Project Description. Please visit https://sidewalks.lacity.org/
Watts Neighborhood Council	My name is a Ashley and I am here on the Watts Neighborhood Council as the Environmental Representative. I am here at the meeting. Someone just shared the sidewalk repair program environmental study. I wanted to share a report we drafted this year. More than 200 residents of Watts contributed. Rocio Andrade, cc'ed here, is the point of contact. I want again to reiterate the importance of empowering residents by implementing local job training and hiring. The added investment in the community can help uplift the community and the people who live in it. Thank you once again for all your work. Please let me know you got this message.	9/12/2017 0:00	Comment noted. Please see Chapter 2.0 Project Description.

Scoping Outreach Summary

Public Outreach Efforts
Notice of Preparation

A Notice of Preparation (NOP) and Initial Study were circulated from July 27, 2017 to September 15, 2017. During this extended 45-day review period, the lead agency requested comments on the scope and content of the environmental information to be included in the Draft EIR.

Copies of the NOP/IS were made available for review at 35 library locations and mailed to more than 500 governmental and agency stakeholders. There were six digital announcements sent to approximately 567 email addresses constituting of community residents, stakeholders, and interested constituents from NOP/IS process, public agencies, non-profit groups, etc. were sent during the extended 45-day public review period. Electronic advertisements on the public meetings and the Project were in Facebook, EmpowerLA, Los Angeles Sentinel, La Opinion (digital), and LA Times (digital). Public notices were printed in Los Angeles Times, Daily Breeze, and La Opinion newspapers. Staff attended 11 neighborhood council meetings prior to the end of the scoping period to invite stakeholders to comment on the NOP and attend the scoping meetings. All 15 City of Los Angeles Council Offices were contacted to post announcements about the environmental review process via their communications channels, and 9 council offices posted announcements.

Three public scoping meetings were held to obtain input on the NOP/IS and the scope and contents of the EIR:

- August 9, 2017, 6 p.m.–8 p.m., Ronald F. Deaton Civic Auditorium, 100 W 1st St (Main), Los Angeles, CA 90012
- August 14, 2017, 6 p.m.–8 p.m., Mid-Valley Senior Citizen Center, 8825 Kester Ave, Panorama City, CA 91402
- August 24, 2017, 6 p.m.–8 p.m., Westchester Senior Citizen Center, 8740 Lincoln Boulevard, Los Angeles, CA 90045

There were over 300 written comments received. The comments primarily discussed alternative designs and materials for sidewalk repair; dual function like sidewalk and stormwater capture; a higher street tree ratio; public participation, aesthetics of City tree canopy; funding questions, etc. Commenters included Los Angeles Metro, Native American Heritage Commission, South Coast Air Quality District, neighborhood councils, environmental groups, and non-profit organizations, etc. Comments on the NOP/IS were considered by BOE during preparation of the Draft EIR, and are provided in Appendix A along with the comments on the NOP/IS.

Scoping Outreach Summary

Prepared by: Consensus
October 13, 2017

Table of Contents

I. Communications Infrastructure

A. Stakeholder Database

Utilized the community organizing system NationBuilder to host our significant stakeholder database and track project interest sign-ups. The stakeholder database included individuals and groups represented in the *Willits* case, elected officials and their staff, community-based organizations, individual sign-ups, and other interested parties.

- Total of 848 stakeholders

A copy of the stakeholder database can be found in **Appendix A**.

II. Community Outreach

A. Notice of Preparation / Initial Study Announcement

Literature Drop

On July 27-28, 2017, our outreach team conducted a project literature drop at thirty-five (35) Los Angeles public libraries. The project literature was made available for public consumption and review during the scoping period (July 27 – September 15, 2017). Included literature documents, created by Consensus and the project team:

- ***Notice of Preparation (NOP) and Initial Study (IS) [ICF + LABOE]***
  - ***NOP/IS Availability Map (Consensus)*** – A map of the Los Angeles City Council districts was overlaid with the location of all project literature availability locations.
  - ***NOP/IS Availability List (Consensus)*** – A table listing of all project literature availability locations.
- ***Library Cover Letter (Consensus)*** – A cover letter with instructions for each library detailing the significance of the project literature and how they should make each document available to the public.
- ***Brochure (Consensus)*** – Contained an overview of the project, the environmental review process, and the scoping period. Was available in English and Spanish.

When the literature was dropped at each public library location, the outreach staffer collected a signature from the head librarian, or other available library staffer, confirming receipt of the documents.

Copies of the availability map, availability list, library cover letter, and library confirmation of receipt can be found in **Appendix B**.

Safe Sidewalks LA Environmental Review Process Webpage

The webpage text, an "EIR Process Overview" document, and a "Ways to Participate" document were re-purposed from documents provided by LABOE's Sixth Street Viaduct Replacement Project.

Copies of the webpage text, EIR Process Overview, and Ways to Participate documents can be found in **Appendix C**.

Mailing

Mailing addresses were extracted, if available, from the existing stakeholder database for the NOP/IS announcement. The English and Spanish versions of the NOP were included in the mailing.

A total of 519 mailers were sent out.

A copy of the stakeholder database utilized for the mailer can be found in **Appendix A**.

B. News Advertisements

Placed English and Spanish-language advertisements in community news publications. The advertisements informed the public about the release of the Notice of Preparation (NOP) and Initial Study (IS). They also directed interested parties to learn more about the environmental review by going online or attending a public scoping meeting, and then submitting comments.

***Los Angeles Sentinel* – Digital**

- Published Thursday, July 27, 2017 – Thursday, August 3, 2017
- Specifications:
  - Color
  - 300 x 250-pixel banner
- Digital Analytics
  - 33,626 impressions
  - 24 clicks
- Circulation:
  - 30,723 weekly

***La Opinión* – Spanish Digital**

- Published Thursday, July 27, 2017 – Sunday, July 30, 2017
- Specifications:
  - Color
  - 300 x 250-pixel
- Digital Analytics

    - 50,002 impressions
    - 147 clicks
- Readership:
    - 787,500 weekly

***La Opinión* – Spanish Print**

- Published Thursday, July 27, 2017
- Specifications:
    - Color
    - ½ page horizontal – 9.81” x 5.41”
- Readership:
    - 787,500 weekly

***Los Angeles Times* – Targeted Email Blast**

- Sent Friday, July 28, 2017
- Sent to 50,001 homeowners in the City of Los Angeles
- Maintained the same design and content as the email blast sent to the Consensus stakeholder list
- Analytics
    - 1,072 clicks
    - 9,912 opens
    - 19.82% open rate
    - 2.14% click through rate

***Los Angeles Times* – Print**

- Published Sunday, July 30, 2017
- Specifications:
    - Color
    - Main News Section
    - Page A12
    - 3” x 5.25”
- Sunday Circulation:
    - 389,320

EmpowerLA – Weekly Email Newsletter

- Sent Friday, July 28, 2017 and Friday, September 8, 2017
- Goes out to all board members of the City’s neighborhood councils

Facebook Advertising Campaign

The outreach team created a Facebook advertising campaign via the City of Los

Angeles Bureau of Engineering Facebook page. Two areas were targeted: South LA (70%) and West LA (30%). The ad campaign resulted in the following page analytics:

- **Reach:** 60,936 people
- **Link Clicks:** 1,306
- **Impressions:** 105,041
- **Page Likes:** 17
- **Post Comments:** 12
- **People Taking Action:** 1,269
- **Post Reactions:** 35

Copies of the newspaper advertisements, EmpowerLA newsletters, and Facebook advertisement campaign can be found in **Appendix B**.

C. Stakeholder Email Campaign

Starting Friday, July 28, 2017, the outreach team sent six announcements via email to the stakeholder database. One was sent as an announcement of the start of the scoping period. Three were sent as reminders for the Deaton Auditorium, Mid-Valley, and Westchester scoping meetings. The other two were sent as final reminders to submit comments prior to the end of the comment period.

The distribution lists included the initial stakeholder database and contacts sent over by LABOE and the project team, and those added via Neighborhood Council announcements. The emails were sent on July 28, August 8, August 14, August 21, September 8, and September 14.

Metrics on how the campaigns performed below:

Database List:

- **Open Rate Average**: 42.79%
- **Click Rate Average:** 3.15%

Copies of the stakeholder email campaigns can be found in **Appendix B** and **Appendix D**.

D. Neighborhood Council Announcements

The outreach team attended the following Neighborhood Council meetings scheduled prior to the end of the scoping period (September 15, 2017). Sign-ups were also collected from interested attendees. The Neighborhood Councils presented to were:

- Zapata-King
- Eagle Rock
- United Neighborhoods
- Mid-City
- Sun Valley Area
- Watts
- Pico
- Harbor Gateway South
- Atwater Village

A total of **78** stakeholders signed up for the project interest list from the Neighborhood Council meetings visited. All individuals were added to the email list and sent project emails. Copies of the English and Spanish brochures were also provided.

Our outreach team showed up to the following Neighborhood Council meetings, but they were cancelled without prior advertised notice:

- Voices of 90037
- Park Mesa Heights

Copies of the neighborhood council announcement sign-up sheets can be found in **Appendix D**.

Copies of advertising by neighborhood councils on their communications channels can be found in **Appendix B.**

E. Assisted Living Centers

Per LABOE's request, brochures were mailed to the following assisted living centers for them to display for any interested individuals:

- Westside Center for Independent Living
- Independent Living Center
- Southern California Resource Center
- Resource Center for Independent Living
- Independence Center
- Disabled Resources Center

F. City Council Offices

The outreach team contacted the 15 council offices to request posting announcements about the environmental review process via their communications channels. Below you will find which council offices were reached and agreed to post information.

Councilmember	Facebook	Twitter	Other
Paul Krekorian (CD-2)	Yes	Yes	Forwarded to Studio City and Valley Village Neighborhood Councils
David E. Ryu (CD-4)	Yes	Yes	Nextdoor
Paul Koretz (CD-5)	No	Yes	Newsletter
Nury Martinez (CD-6)	Yes	No	

Marqueece Harris-Dawson (CD-8)	Yes	No	
Herb J. Wesson, Jr. (CD-10)	Yes	Yes	
Mike Bonin (CD-11)	Yes	No	
Mitchell Englander (CD-12)	Yes	Yes	
Jose Huizar (CD-14)	Yes	Yes	

Copies of advertising by Los Angeles City Councilmembers on their communications channels can be found in **Appendix D**.

III. Public Scoping Meetings

A total of three (3) meetings were held to engage the public and encourage them to learn more about the proposed Project and submit their comments. The three scoping meetings were held at Ronald F. Deaton Civic Auditorium, Mid-Valley Senior Citizen Center, and Westchester Senior Citizen Center.

A. Format

The public scoping meetings were consistently held from 6:00 p.m. – 8:00 p.m. The purpose of the meetings was to provide information on the proposed Project, review the Notice of Preparation (NOP) / Initial Study (IS), and to gather relevant public comments. Each meeting was conducted in the same open house format and set-up in the same manner.

Attendees were invited to visit five (5) different stations for information and offered an opportunity to speak with the project staff one-on-one. The stations consisted of:

- Start Here – Welcome / Sign-In (Consensus)
- Proposed Project (LABOE)
- Environmental Review Process + Potential Environmental Impacts (ICF)
- Potential Impacts to Street Trees (LABOE)
- Comments (Consensus + SmartComment)

Project display boards, the NOP (in English and Spanish), and IS were available for attendees to view while interacting with the project staff.

The meetings began with attendees signing in and walking through the open house. Immediately following, there was a formal presentation with a public comment period. To comment during the public comment portion of the presentation, attendees were

encouraged to fill out a speaker card at any time and to hand it to a project staffer. The open house continued through the remainder of the meeting time.

At any time, attendees were welcome to visit the comment station, where they had the opportunity to write their comments either on paper comment sheets (available in English and Spanish) or electronically on the provided laptops via the comment software SmartComment.

Date	Meeting Location	No. of Attendees	No. of Comments Received
Wednesday, August 9, 2017	**Ronald F. Deaton Civic Auditorium** 100 W 1st St Los Angeles, CA 90012	9	Written Comment: 1 Speaker: 1
Monday, August 14, 2017	**Mid-Valley Senior Citizen Center** 8825 Kester Ave Panorama City, CA 91402	20	Written Comments: 7 Speakers: 7
Thursday, August 24, 2017	**Westchester Senior Citizen Center** 8740 Lincoln Blvd Los Angeles, CA 90045	8	Written Comment: 1 Speakers: 3

B. Informational Materials – Handouts

The public informational materials given to attendees when they signed in included:

- ***Station Guide*** – Provided an overview of the open house and how to submit comments.
- ***Brochure*** – Contained an overview of the project, the environmental review process, and the scoping period. Was available in English and Spanish.
- ***Speaker Card*** – Filled out by attendees who wished to speak during the public comment portion of the formal presentation.
- ***Written Comment Sheet*** – Filled out by attendees who wanted to submit a written comment.

Copies of the station guide, English and Spanish brochures, speaker card, and written comment sheet can be found in **Appendix E**.

C. Informational Materials – Project Display Boards

Project Display Boards

Project display boards were created and utilized during the open house portion of the public scoping meeting. They were:

- ***Start Here / Registrarse Aquí*** – Placed at the sign-in station to indicate the main venue entrance and sign-in area.
- ***Proposed Project*** – Placed as its own station as an overview of the continued, amended, and expanded Safe Sidewalks LA program.
- ***Potential Impacts to Street Trees*** – Placed as its own station to show the potential environmental impacts associated with the tree removal and replacement policy.
- ***Environmental Review Process*** – Placed as a station with the "Potential Environmental Impacts" board to provide a visual representation of the environmental review process timeline.
- ***Potential Environmental Impacts*** – Placed as a station with the "Environmental Review Process" board to provide an overview and visual representation of the environmental factors to be studied in the environmental study.
- ***Comments / Comentarios*** – Placed at the comment station to provide an overview of the ways to provide input and submit comments.

A copy of the project display boards can be found in **Appendix E**.

D. Informational Materials – Project Presentation

Project Presentation

A PowerPoint Presentation was delivered by Consensus and LABOE. The presentation included information on the following:

- Proposed Project
- Existing Conditions of Sidewalk Damage and Access Barriers
- Construction Activities
- Environmental Review Process Overview
- Project Objectives
- Location and Project Zone Communities
- Environmental Resource Areas Potentially Impacted by Proposed Project
- Potential Environmental Impacts Associated with Street Tree Removal and Replacement
- Scoping Phase
- Availability of the Notice of Preparation / Initial Study
- Ways to Provide Input

A copy of the project presentation can be found in **Appendix E**.

Appendix A: Stakeholder Database

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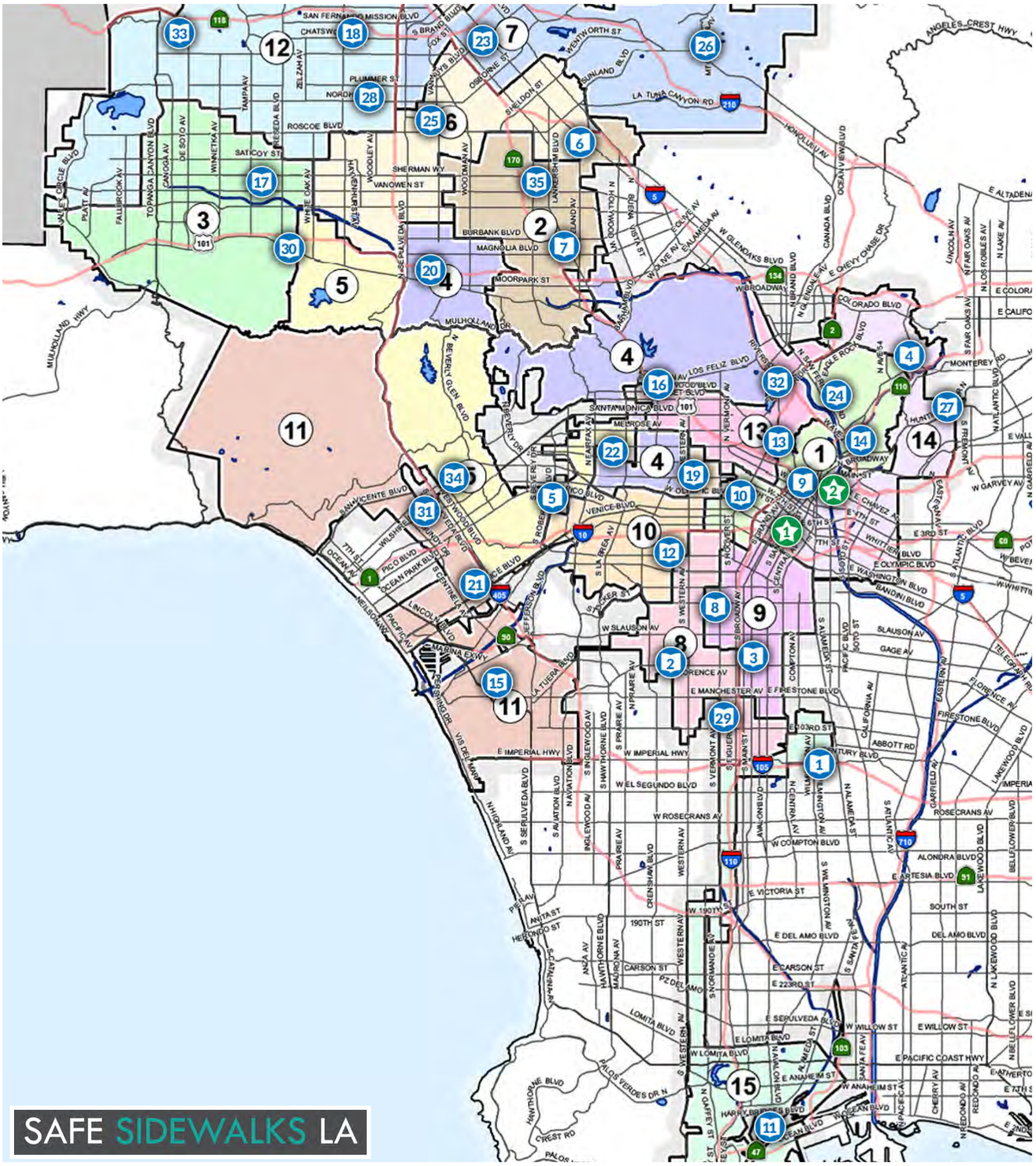
Appendix B: Notice of Preparation / Initial Study Announcement

1. **Literature Drop**
    - **a.** NOP/IS Availability Map
    - **b.** NOP/IS Availability List
    - **c.** Library Cover Letter
    - **d.** Library Confirmation of Receipt
2. **News Advertisements**
    - a. Los Angeles Sentinel – Digital
    - b. La Opinión – Spanish Digital
    - c. La Opinión – Spanish Print
    - d. Los Angeles Times – Targeted Email Blast
    - e. Los Angeles Times – Print
    - f. EmpowerLA – Weekly Email Newsletter
    - g. Facebook Advertising Campaign
    - h. Other Advertising
3. **Stakeholder Email Campaign**
    - a. Email Campaign



SRP PRIORITY COMMUNITIES

BRANCH LIBRARIES

1. Willowbrook Library
2. Hyde Park Branch Library
3. Ascot Branch Library
4. Arroyo Seco Library
5. Robertson Library
6. Sun Valley Library
7. North Hollywood Amelia Earhart Regional Library
8. Vermont Square Branch Library
9. The Los Angeles Central Library
10. Pico Union Branch Library
11. San Pedro Regional Library
12. Jefferson Library
13. Edendale Branch Library
14. Lincoln Heights Branch Library
15. Westchester Loyola Village Library
16. Frances Howard Goldwyn-Hollywood Regional Branch Library
17. West Valley Regional Branch Library
18. Granada Hills Library
19. Pio Pico Library
20. Sherman Oaks Library
21. Mar Vista Branch Library
22. Fairfax Branch Public Library
23. Pacoima Branch Library
24. Cypress Park Branch Library
25. Panorama City Branch Library
26. Sunland-Tujunga Branch Library
27. El Sereno Branch Library
28. Mid-Valley Regional Library
29. Mark Twain Library
30. Encino-Tarzana Branch Library
31. West Los Angeles Regional Library
32. Silver Lake Branch Library
33. Chatsworth Branch Library
34. Westwood Branch Library
35. Valley Plaza Library

OTHER LOCATIONS

1. City of Los Angeles Bureau of Engineering
2. City of Los Angeles City Clerk

COUNCIL DISTRICT

Appendix A

List of NOP/IS Availability Locations And Map

Copies of the NOP/IS are available for review at the following locations:

Council District	Organization	Address
CD 1	Lincoln Heights Branch Library	2530 Workman St, Los Angeles, CA 90031
	Cypress Park Branch Library	1150 Cypress Ave, Los Angeles, CA 90065
	Pico Union Branch Library	1030 S Alvarado St, Los Angeles, CA 90006
CD 2	North Hollywood Amelia Earhart Regional Library	5211 Tujunga Ave, North Hollywood, CA 91601
	Valley Plaza Library	12311 Vanowen St, North Hollywood, CA 91605
CD 3	West Valley Regional Branch Library	19036 Vanowen St, Reseda, CA 91335
	Encino-Tarzana Branch Library	18231 Ventura Blvd, Tarzana, CA 91356
CD 4	Sherman Oaks Library	14245 Moorpark St, Sherman Oaks, CA 91423
	Fairfax Branch Public Library	161 S Gardner St, Los Angeles, CA 90036
CD 5	Robertson Library	1719 Robertson Blvd, Los Angeles, CA 90035
	Westwood Branch Library	1246 Glendon Ave, Los Angeles, CA 90024
CD 6	Sun Valley Library	7935 Vineland Ave, Sun Valley, CA 91352
	Panorama City Branch Library	14345 Roscoe Blvd, Panorama City, CA 91402
CD 7	Sunland-Tujunga Branch Library	7771 Foothill Blvd, Tujunga, CA 91042
	Pacoima Branch Library	13605 Van Nuys Blvd, Pacoima, CA 91331
CD 8	Hyde Park Branch Library	2205 W Florence Ave, Los Angeles, CA 90043
	Mark Twain Library	9621 S. Figueroa Street, Los Angeles, CA 90003
CD 9	Ascot Branch Library	120 W Florence Ave, Los Angeles, CA 90003

Council District	Organization	Address
	Vermont Square Branch Library	1201 W 48th St, Los Angeles, CA 90037
CD 10	Jefferson Library	2211 W Jefferson Blvd, Los Angeles, CA 90018
	Pio Pico Library	694 S Oxford Ave, Los Angeles, CA 90005
CD 11	Westchester Loyola Village Library	7114 W Manchester Ave, Los Angeles, CA 90045
	Mar Vista Branch Library	12006 Venice Blvd, Los Angeles, CA 90066
	West Los Angeles Regional Library	11360 California Route 2, Los Angeles, CA 90025
CD 12	Granada Hills Library	10640 Petit Ave, Granada Hills, CA 91344
	Mid Valley Regional Library	16244 Nordhoff St, North Hills, CA 91343
	Chatsworth Branch Library	21052 Devonshire St, Chatsworth, CA 91311
CD 13	Edendale Branch Library	2011 Sunset Blvd, Los Angeles, CA 90026
	Frances Howard Goldwyn-Hollywood Regional Branch Library	1623 Ivar Ave, Los Angeles, CA 90028
	Silver Lake Branch Library	2411 Glendale Blvd, Los Angeles, CA 90039
CD 14	Arroyo Seco Library	6145 N Figueroa St, Los Angeles, CA 90042
	The Los Angeles Central Library	630 W 5th St, Los Angeles, CA 90071
	El Sereno Branch Library	5226 S. Huntington Drive, Los Angeles, CA 90032
CD 15	San Pedro Regional Library	931 S Gaffey St, San Pedro, CA 90731
	Willowbrook Library	11838 Wilmington Ave, Los Angeles, CA 90059

Organization	Address
City of Los Angeles Bureau of Engineering	1149 S. Broadway, Suite 600, Los Angeles, CA 90015
City of Los Angeles City Clerk	200 N. Spring Street, Room 360, Los Angeles, CA 90012

CITY OF LOS ANGELES

CALIFORNIA

ERIC GARCETTI
MAYOR

DEPARTMENT OF PUBLIC WORKS

BUREAU OF ENGINEERING

GARY LEE MOORE, PE, ENV SP
CITY ENGINEER

1149 S. BROADWAY, SUITE 700
LOS ANGELES, CA 90015-2213

http://eng.lacity.org

July 27, 2017

[Library Name]
[Address 1]
[Address 2]

RE: SIDEWALK REPAIR PROGRAM – NOTICE OF PREPARATION AND INITIAL STUDY FOR AN ENVIRONMENTAL IMPACT REPORT

Dear Librarian:

The City of Los Angeles, Department of Public Works, Bureau of Engineering has prepared the enclosed Notice of Preparation (NOP) and Initial study (IS) and will be preparing an Environmental Impact Report for the Sidewalk Repair Program in the City of Los Angeles. Please assist us in the public review process by keeping the draft environmental document on file for public review in your library.

Copies of the NOP (including Spanish NOP) and IS are also available online at:
http://www.sidewalks.lacity.org/environmental-review-process

Additional copies will be available for review at the Bureau of Engineering's Environmental Management Group, 1149 S. Broadway, 6th Floor, Los Angeles, CA 90015-2213.

The documents should be made available from July 27, 2017 through September 15, 2017.

Thank you for your assistance in this matter. If you have any questions, please email me at Shilpa.Gupta@lacity.org or call me at (213) 485-4560.

Very truly yours,

Shilpa Gupta

Shilpa Gupta
Environmental Supervisor I

SAFE SIDEWALKS LA

ENGINEERING
CITY OF LOS ANGELES

Los Angeles Public Library
Verification Literature Drops

Library	Address	Date	Print Name	Signature
Mar Vista Branch Library	12006 Venice Blvd, Los Angeles 90066	7/28	Bennett Rankin	
Westchester Loyola Village Library	7114 W Manchester Ave, Los Angeles 90045	7/28	Judy Moorhead	
San Pedro Regional Library	931 S Gaffey St, San Pedro 90731	~~7/28~~	John Carroll	
North Hollywood Amelia Earhart Regional Library	5211 Tujunga Ave, North Hollywood 91601	7/27	Marissa Thompson	
Valley Plaza Library	12311 Vanowen St, North Hollywood 91605	7/27/17	Patricia Rastomian	
Sun Valley Library	7935 Vineland Ave, Sun Valley 91352	7/27/17	G Canales	Guadalupe Canales
Sunland-Tujunga Branch Library	7771 Foothill Blvd, Tujunga 91042	7/27/17	ARDEM TAJERIAN	

SAFE SIDEWALKS LA

ENGINEERING
CITY OF LOS ANGELES

Pacoima Branch Library	13605 Van Nuys Blvd, Pacoima	7/27/17		Laura Cortin
Panorama City Branch Library	14345 Roscoe Blvd, Panorama City 91402	7/27/17		Teri Markam
Mid-Valley Regional Library	16244 Nordhoff St, North Hills 91343	7/27/17		Maryam Cappa
Granada Hills Library	10640 Petit Ave, Granada Hills 91344	7/27/17		PAMELA RHODES
Chatsworth Branch Library	21052 Devonshire St, Chatsworth 91311	7/27/17		
West Valley Regional Branch Library	19036 Vanowen St, Reseda 91335	7/27/17		DOLORES GONZÁLEZ
Encino-Tarzana Branch Library	18231 Ventura Blvd, Tarzana 91356	7/27/17		Matthew Rodriguez
Sherman Oaks Library	14245 Moorpark St, Sherman Oaks 91423	7/27/17		Christina Kimsey
West Los Angeles Regional Library	11360 California Route 2, Los Angeles 90025	7/27/17		Celia Avila
Westwood Branch Library	1246 Glendon Ave, Los Angeles 90024	7/27/17		Chrissy Carr
Robertson Library	1719 Robertson Blvd, Los Angeles 90035	7/28/17		Laura Barnes

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Library	Address	Date	Print Name	Signature
Arroyo Seco Library	6145 N Figueroa St, Los Angeles 90042	7-27-17	Dora Suarez	
Cypress Park Branch Library	1150 Cypress Ave, Los Angeles 90065	7/27/17	Kenneth Nolasco	
Silver Lake Branch Library	2411 Glendale Blvd, Los Angeles 90039	7/27/17	Alana Johnson	
Edendale Branch Library	2011 Sunset Blvd, Los Angeles 90026	7/27/17	Mari Jack	
Frances Howard Goldwyn-Hollywood Regional Branch Library	1623 Ivar Ave, Los Angeles 90028	7/27/17	LAWRENCE NASH	Lawrence Nash for Barbara Metzenbaum
Fairfax Branch Public Library	161 S Gardner St, Los Angeles 90036	07/27/17	Jennifer Hamm	
Pio Pico Library	694 S Oxford Ave, Los Angeles 90005	7/27/17	Ben Fenley	

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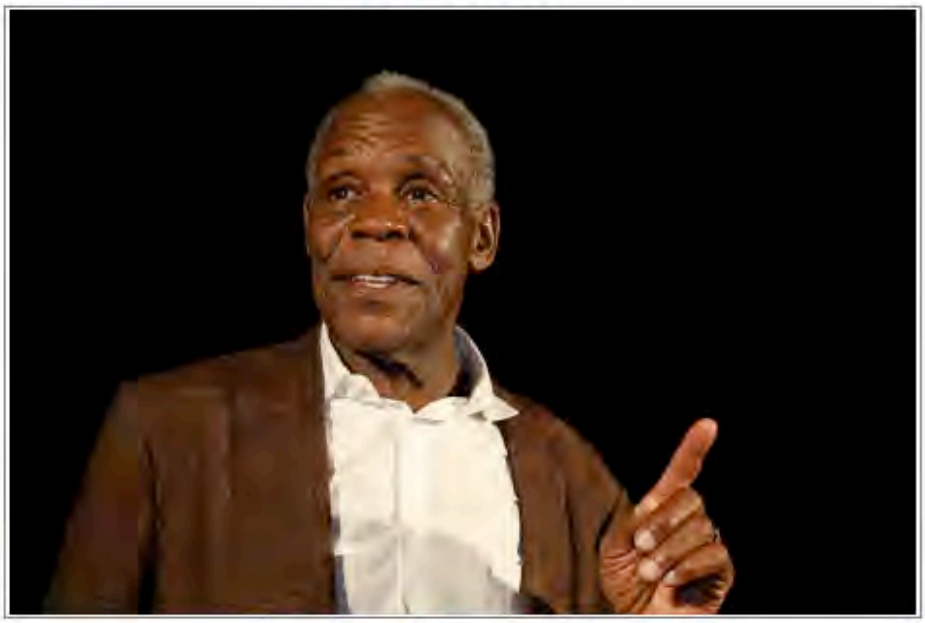
Jefferson Library	2211 W Jefferson Blvd, Los Angeles 90018	7/27/17	Liz Goralka	liz goralka
Vermont Square Branch Library	1201 W 48th St, Los Angeles 90037	7/27/17	Catherine Sturgeon	
Hyde Park Branch Library	2205 W Florence Ave, Los Angeles 90043	7/27/17		JUSTIN SUGIYAMA
Ascot Branch Library	120 W Florence Ave, Los Angeles 90003	7/27/17	Frances Jaffe	
Willowbrook Library	11838 Wilmington Ave, Los Angeles 90059	7/27/17	Adrienne Myhand	
Mark Twain Library	9621 S. Figueroa St, Los Angeles 90003	7/27/2017	Sara Tekavec	
Pico Union Branch Library	1030 S Alvarado St, Los Angeles 90006	7/27/2017	Kathleen Ellison	
The Los Angeles Central Library	630 W 5th St, Los Angeles 90071	7/27/17	Heewon Paick	
Lincoln Heights Branch Library	2530 Workman St, Los Angeles 90031	7/27/17	Steven Cheng	
El Sereno Branch Library	5226 S. Huntington Drive, Los Angeles 90032	7/27/17	Shuhong Ni	

Actor Danny Glover's Birthday Celebration Launches the 'Human Justice' Revolution



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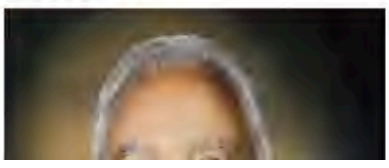

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NOTICIAS

Trump: pandilleros indocumentados torturan y matan a jóvenes de EEUU

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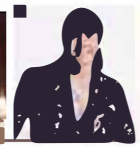


MUNDO

aliados, mientras los cuatro y otras once personas ciudadanas que se solidarizaron con ellos, intentaron entrar al edificio del capitolio.

El Movimiento Cosecha difundió un manifiesto en el que señalan que perseguirán la protección de DACA y del resto de los indocumentados, de la misma manera que iniciaron el movimiento Dreamer hace más de 10 años, ganando protección para casi un millón de ellos en 2012.

"Nos rehusamos a poner nuestra fe en políticos de Washington para dar alivio a nuestra comunidad", dijo el manifiesto, que rechazó que el nuevo Dream Act presentado en el senado sea la solución inmediata. "Ese proyecto de ley no es nuestra tabla de salvación, estamos poniendo la fe en nuestra gente y sabemos que será necesario llevar a cabo acciones valientes y poner nuestra seguridad en juego para luchar por todos".

Herederos

El grupo se declaró heredero de las tácticas de resistencia no violenta y desobediencia civil de Cesar Chavez, Dolores Huerta y Larry Itliong, líderes de la lucha de los campesinos que usaron tácticas similiares hace varias décadas.

"Hemos aprendido de los millones de afroamericanos que han desafiado al racismo de Jim Crow y alimentaron el Movimiento por los Derechos Civiles. Basándose en esta tradición, Cosecha considera la no cooperación como nuestra mejor táctica para construir el apoyo popular y asegurar victorias reales para los 11 millones de inmigrantes indocumentados en los Estados Unidos"

La selección del capitolio en Austin, Texas, tiene que ver con el prominente rol que el gobernador de ese estado, Greg Abbot, y el procurador Ken Paxton están teniendo en el movimiento contra DACA y en favor de las deportaciones masivas de la nueva Administración.

Texas también aprobó recientemente una ley, la SB4, que al entrar en vigencia el 1 de septiembre requerirá que las agencias de la ley hagan tareas de agentes de inmigración. Los jóvenes dijeron que no estaban dispuestos a esperar que entrara en vigor la nueva ley o que diez procuradores demandaran contra DACA sino que empezarían desde ya una presión sostenida para movilizar todo el apoyo posible a la comunidad inmigrante.

Describieron además que aparte de este tipo de protestas realizarían capacitaciones de activistas, búsqueda de apoyo político y eventualmente, diferentes niveles de boicot. •

La lucha sigue

«Aprendimos de millones de afroamericanos que desafiaron al racismo y alimentaron el Movimiento por los Derechos Civiles».

De las 39 personas que sobrevivieron la tragedia de San Antonio 29 fueron hospitalizadas, siete de ellas ya fueron dadas de alta y son interrogadas.

Sobrevivientes de tragedia en Texas tras 'visas U'

Redacción

Varios de los inmigrantes que sobrevivieron a la tragedia en Texas, que dejó un saldo de 10 muertos, podrían pedir visas a Estados Unidos a cambio de sus testimonios contra los traficantes de personas para que sean llevados a la justicia y paguen por sus delitos.

Silvia Mintz una abogada del consulado de Guatemala en Houston se ha puesto en contacto con funcionarios del Departamento de Seguridad Nacional para revisar las posibilidades que hay de otorgar "visas U", a los sobrevivientes de la tragedia en Texas, según publicaron medios locales.

Este tipo de visa, destaca la abogada se pueden otorgar a personas que han sido víctimas de algunos crímenes, como en este caso lo es el tráfico de personas y que puedan otorgar información a las autoridades estadounidenses para dar con los delincuentes.

Brandon Rodrigo Martínez Dde Loera, uno de los sobrevivientes de la tragedia. /ARCHIVO

El pasado domingo fueron rescatados 39 personas, la mayoría mexicanos, de un tráiler que estaba estacionado en unos almacenes de Walmart en San Antonio.

Los indocumentados presentaron signos de deshidratación por lo que fueron trasladados a diversos hospitales para su atención médicca, conforme pasaro las horas el número de muertos aumentó a 10.

"Si podemos establecer el caso, seguiremos adelante y buscaremos las visas U", destacó la abogada Mintz, según pública la agencia Reuters.

Sin embargo para Shane Folden, agente especial del Departamento de Seguridad Nacional en San Antonio, afirmó que es demasiado pronto para hablar de visas para los inmigrantes que sobrevivieron a la tragedia de Texas.

De las 39 personas que sobrevivieron 29 fueron hospitalizadas, siete de ellas ya fueron dadas de alta •

Monday, September 11, 2017 at 4:31:13 PM Pacific Daylight Time

Subject: Fwd: Join us! Upcoming Sidewalk Repair Program Scoping Mee; ngs
Date: Friday, July 28, 2017 at 4:02:18 PM Pacific Daylight Time
From: Cervantes, Daniel
To: David Moreno

I just received your Live email blast. Please see below.

Daniel Cervantes
Adver; sing Account Execu; ve
Los Angeles Times

e Daniel.Cervantes@la; mes.com
o 818.334.7859

Begin forwarded message:

From: "City of Los Angeles Sidewalk Repair Program" <Broadcast@Safe-Mail-Sender.com>
Date: July 28, 2017 at 4:00:04 PM PDT
To: daniel.cervantes@la; mes.com
Subject: Join us! Upcoming Sidewalk Repair Program Scoping MeeMngs

The Sidewalk Repair Program Environmental Review Has Begun!

- The purpose of the Sidewalk Repair Program (proposed Project) is to continue to amend and expand implementation of Safe Sidewalks LA and make City pedestrian facilities compliant with applicable accessibility requirements.
- The proposed Project would repair and upgrade sidewalks and curb ramps throughout the City of Los Angeles.
- Street tree removals and replacements, along with utility relocations, may be needed.
- The City may adopt policies and/or ordinances to assist in the administration of the proposed Sidewalk Repair Program and its objectives.
- A Notice of Preparation (NOP) and Initial Study (IS), which describe the proposed Sidewalk Repair Program and the anticipated scope of the EIR, are available for public review and comment at sidewalks.lacity.org/environmental-review-process.

Join us at the Scoping Meetings!

Learn about the proposed Project and EIR process.

Wednesday, August 9, 2017 **6:00 p.m. – 8:00 p.m.**	**Monday, August 14, 2017** **6:00 p.m. – 8:00 p.m.**	**Thursday, August 24, 2017** **6:00 p.m. – 8:00 p.m.**
Ronald F Deaton Civic Auditorium 100 W 1st St Los Angeles, CA 90012	**Mid-Valley Senior Citizen Center** 8825 Kester Avenue Panorama City, CA 91402	**Westchester Senior Citizen Center** 8740 Lincoln Blvd Los Angeles, CA 90045

**All requests for reasonable accommodations must be made three working days in advance of the scheduled meeting date by calling Shilpa Gupta at (213) 485-4560.*

Ways to provide input:

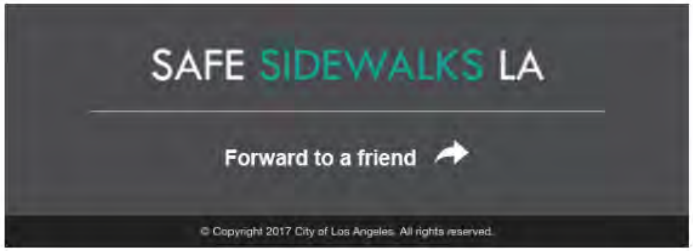
- **Make a comment** at a scoping meeting.
- **Submit comments** at: sidewalks.lacity.org/environmental-review-process
- **Email** shilpa.gupta@lacity.org with "SRP" in the subject line and a valid

mailing address in the email

- **Mail** written comments to:

Shilpa Gupta, Environmental Supervisor
Los Angeles Bureau of Engineering
Environmental Management Group
1149 S. Broadway, Suite 600, Mail Stop 939
Los Angeles, CA 90015

Visit our website for additional information:
sidewalks.lacity.org/environmental-review-process



Worry and hope in the era of Trump

Muslims see president as unfriendly, but many find support from compatriots.

By Laura King

WASHINGTON — What has life been like for Muslims in the U.S. since Donald Trump became president? A wide-ranging new survey highlights growing worries within the community, but also points to a fundamental faith in the American dream.

Almost three-quarters of American Muslims surveyed — 74% — see Trump as unfriendly toward them, but nearly half also say that non-Muslims in their lives — neighbors, colleagues and strangers — have stepped up and offered support and encouragement in recent months, according to the Pew Research Center survey.

One respondent, identified as a Muslim woman under 30, told the Pew researchers that she had experienced "rude comments straight to my face" when wearing a hijab in public. But she added: "I've also had people say really nice things about my hijab, or say it's beautiful."

While more than 6 in 10 U.S. Muslims say they believe Islam is still not viewed by others as part of the country's mainstream, overwhelming numbers said they are proud to be both Americans and Muslims, and a large majority sees no clash between Islam and democracy, according to Pew. The survey, released Wednesday, was the first of its kind conducted by the organization since President Trump took office.

During his campaign and his first six months in the Oval Office, Trump and his administration have done much to cast a harsh spotlight on Muslims, sometimes portraying the religion itself as a threat. A watered-down version of the sweeping travel ban decreed by Trump almost immediately upon taking office has taken partial effect, targeting six Muslim-majority countries, and hate crimes, particularly against those displaying overt signs of their Muslim faith, have been on the rise.

Many have internalized larger political concerns, reporting an increased sense of personal anxiety. "Far more Muslims express negative emotions associated with Trump than positive ones," the Pew researchers wrote.

In the 2016 presidential election, U.S. Muslims — many of whom were put off by rhetoric such as Trump's call for a "total and complete shutdown" on Muslims entering the country, or offended by being tarred by association with terrorist attacks worldwide — voted for Trump's opponent, Hillary Clinton, by a nearly 4-1 margin.

Despite feelings of not being fully accepted in the United States, 70% of the Muslims surveyed expressed an enduring belief that hard work can lead to success in this country. That figure has remained largely consistent since a similar Pew survey in 2007.

Nearly half of the Muslims surveyed — 48% — said they had faced some form of discrimination in the last year, coinciding with Trump's candidacy, such as name-calling or threats. But the levels increase substantially among respondents who said their mode of dress or other visible characteristics identified them as devout Muslims, such as women who wear head coverings or men who wear long beards and traditional dress. Among that group, 64% said they had faced hostility or discrimination.

There were also signs of a more accepting attitude among Muslims regarding U.S. social mores. In the 2007 Pew survey, 68% of Muslims disapproved of same-sex relationships; now a slight majority — 52% — say that homosexuality should be accepted by society.

Muslims make up about 1% of the U.S. population, or about 3.35 million people, by the researchers' estimate, and they are one of the fastest-growing religious minorities, increasing by about 100,000 per year. The largest numbers of American Muslims have roots in the Indian subcontinent — Pakistan, India and Bangladesh — with smaller numbers coming from the Middle East and sub-Saharan Africa.

Despite repeated suggestions from Trump that Muslims sympathize with others of their faith who resort to terrorism, the survey finds overwhelmingly negative views among American Muslims toward Islamic extremism, with more than 4 in 5 describing it as a threat to the world.

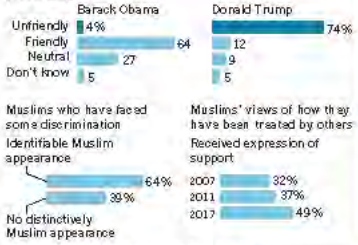
But researchers also found mistrust of domestic U.S. law enforcement, with about 30% saying that authorities sometimes tricked those suspected of terrorism-related activity, or arrested them by mistake.

The survey of 1,001 adults was conducted between Jan. 23 and May 2, using both landline and mobile phones and posing questions in English, Arabic, Farsi and Urdu. The margin of error was plus or minus 5.8 percentage points, the researchers said.

laura.king@latimes.com

How they view the president

U.S. Muslims' perceptions of the incumbent and his predecessor



Source: Pew Research Center 2017 survey of U.S. Muslims

Chris Keane Los Angeles Times

Shannon Mustafa / Flint Journal

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Psychologists face trial for harsh CIA interrogations

Suit over detainees mistreated in the war on terrorism is set to go before a jury.

By Rick Anderson

SEATTLE — A lawsuit brought by former detainees held at CIA "black site" prisons overseas will indeed go to trial — the first such proceeding in the post-Sept. 11 era, and one that aims to hold two civilian psychologists responsible for helping to develop harsh interrogation techniques.

The government and attorneys for the two psychologists have attempted to halt the trial, and even the federal judge hearing the case, Justin Quackenbush, urged the plaintiffs and defendants to consider a settlement instead. "If you want to go on and try this case before a jury, you may," he told attorneys for the ex-detainees, who are suing for unspecified monetary damages.

"But I caution you," Quackenbush added, the litigants and the CIA, which has been an interested party in the case, would be better off to "sit down and reach a reasonable conclusion."

The litigants were unmoved, and on Friday, after almost three hours of arguments in the last of a series of pretrial hearings, Quackenbush decided the historic case was trial-ready. The hearing was held in Spokane, Wash., with audio of the proceedings carried on a call-in telephone line.

Though earlier attempts by others to sue the CIA for alleged torture were derailed by claims of threats to national security, a partially released Senate report in 2014 exposed much of the history of "extraordinary renditions" and harsh interrogation methods during the Bush administration, and the CIA agreed to comply with most document requests in this case.

The American Civil Liberties Union brought the suit on behalf of Suleiman Abdullah Salim, a Tanzanian fisherman abducted by the CIA in Somalia in 2003, allegedly tortured, and released five years later with a document stating he posed no threat to the U.S.

Another ACLU plaintiff, Mohammed Ahmed Ben Soud, a Libyan also abducted in 2003, was allegedly tortured in Afghanistan, then held by authorities in Libya after the Kadafi regime was overthrown.

The ACLU also represents the Afghan family of Gul Rahman, who was abducted and died after two weeks in CIA custody, chained up, in diapers and suffering from hypothermia. He was held at a facility in Afghanistan called Cobalt prison, or the "Salt Pit."

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Their methods included waterboarding, beatings, forced rectal "feeding" and experiments with glaring lights and incessant music.

Mitchell and Jessen earned $81 million through a series of government contracts from 2005 until President Obama ended the arrangement, and torture tactics, in 2009. The pair contended that because they were contractors, the blame for any failures belonged to their employer, the CIA.

In court, the psychologists' attorneys argued that their clients couldn't be held responsible for simply doing "business with the CIA pursuant to their contracts." In an effort Friday to get the case dismissed, the defendants compared their situation to that of World War II manufacturers who supplied the Nazis with poison gas, and who later argued they weren't responsible for how the gas was used.

ACLU attorney Dror Ladin noted that the post-war Nuremberg tribunals found that private contractors were in fact responsible if they provided "unlawful means" that allowed them to profit from war crimes.

"In the same case that Mitchell and Jessen cite," Ladin said, "the military tribunal found the owner of a chemical company that sold Zyklon B to the Nazis guilty, even though only the Nazis had final say on which prisoners would be gassed."

The trial set for Sept. 5.

Anderson is a special correspondent.

Los Angeles Times

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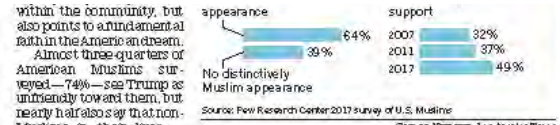

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CHRIS KEEGAN / Los Angeles Times

SHANNON MUSTIPHER / Wall Street Journal

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NEIGHBORHOOD COUNCILS
EMPOWER LA
Department of
NEIGHBORHOOD EMPOWERMENT

GM's Message 07.28.17

I hope our newsletter finds you well. I had a very productive time in New York City the past week finishing up a year long project with the Aspen Institute on values for inclusive and innovative cities in the US. We will be finalizing a report for release, but my hope is that we will be able to craft these values into a How-To guide for any city looking to co-create solutions with their stakeholders in a transparent and meaningful way for community issues. After hearing stories across the country from other participants about the struggles they face in working with government, I'm grateful for LA's Neighborhood Council system, and the opportunities it provides for Angelenos to connect with City Hall.

Speaking of connecting with City Hall, the new City Council committee meeting times have been released. Get started with your Community Impact Statements now so you can be a part of the 350 filed CISs we hope Neighborhood Councils will reach this year. We're cooking up ideas to assist you not only filing CISs, but also to assist when Neighborhood Council board members come to City Hall to present them. Check out next week's Neighborhood Council Monthly Profile to weigh in!

It's always bittersweet to see great public servants retire from the City. In the last few weeks, Raymond Chan, Mayor Eric Garcetti's Deputy Mayor for Economic Development and former General Manager for Building and Safety, retired from the City. Ray was honored by City Council this week for his wonderful

It's always bittersweet to see great public servants retire from the City. In the last few weeks, Raymond Chan, Mayor Eric Garcetti's Deputy Mayor for Economic Development and former General Manager for Building and Safety, retired from the City. Ray was honored by City Council this week for his wonderful work, which was so well deserved. After many years of dedicated service to the South Robertson Neighborhood Council community, LAPD Senior Lead Officer Mario Gonzales is retiring. Mario was honored last week at the SoRoNC board meeting where he received City Council recognition from Council President Herb Wesson. Wishing Ray and Mario much happiness in retirement!

Don't forget the Congress of Neighborhoods Planning Committee meets this Sunday. They'll be meeting every Sunday in August. Next week's Board of Neighborhood Commissioners meeting has moved from Tuesday to Thursday night in Pacoima to not conflict with Neighborhood Councils' National Night Out events. Also next week, the Planning Department will be holding their first Planning 101 training in South LA and Harbor areas,and we will support the new Hermon Neighborhood Council with their selection process for their board members.

Have a wonderful weekend!

Best,

Grayce Liu,
General Manager
Department of Neighborhood Empowerment (aka) EmpowerLA
Empower Yourself, Empower Your Community, EmpowerL A

21

411

[EmpowerLA Calendar]

21	411
[Community Impact Statements Filed]	[Neighborhood Council Agendas Posted to ENS]

[Neighborhood Council Monthly Profiles]

[Neighborhood Council Policies]

[Legislative Report]

DATA L.A. Control Panel

Mayor's Message

STATEMENT: MAYOR GARCETTI ON PRESIDENT TRUMP'S BAN ON MILITARY SERVICE BY TRANSGENDER AMERICANS "No one who is patriotic, courageous, and selfless enough to serve in the armed forces should be denied that opportunity because of...

[Read More]

Safe Sidewalks LA

Reconnecting Los Angeles One Sidewalk at a Time What is the Sidewalk Repair Program? The purpose of the Sidewalk Repair Program (proposed Project) is to continue to amend and expand implementation of Safe Sidewalks LA and make City pedestrian facilities...

Read More

Family Preparedness in Uncertain Times

Free immigration seminar! Family Friendly! Taller de immigracion Quiere desayunar e informarse gratis sobre el proceso migratorio? Gratis: aproveche a preguntarle a un abogado de immigracion de confienza! Saturday, July 29, 2017 10:00 a.m. Free breakfest and parking...

Read More

Igniting a spark for LAFD

Fighting Fire with Females Last weekend the Los Angeles Fire Department hosted its 3rd Girls Camp in hopes of inspiring teen girls to pursue a career with the LAFD. I am grateful to have had the opportunity to participate in the intensive and learn about a day in the life...

Read More

OUTREACH TIP: SEND US YOUR OUTREACH QUESTIONS + LEARN HOW TO GET STAKEHOLDER FEEDBACK

Successful outreach is about listening, and not just about spreading the word. Click through to learn how to submit your outreach questions for future Outreach Tip articles, and learn some simple, no-cost ways to gather feedback from your stakeholders. The Outreach...

Read More

National Parks Lifetime Senior Pass Rate Increase Effective 8/27/17

Greetings Adventurers! There are over 400 National Parks within the U.S. and visiting them may become more difficult as entry passes become more expensive. As of August 27, 2017, the cost of the National Parks Lifetime Senior Pass (available to seniors 62 and over) will...

Read More

LADOT Video: Yellow Zones

LADOT Sergeant Luciano Meza provides the basics for parking in a Yellow Loading Zone. Click here to watch....

Read More

2017 LAFD Community Survey

The Los Angeles Fire Department is in the process of updating the current Strategic Plan. The Strategic Plan will guide future operations of the Department and ensure alignment with the needs and values of the communities we serve. We are seeking valuable input from our stakeholders. Please participate in shaping the future of the Los Angeles Fire Department by completing the 2017 LAFD Community Survey. Your participation as a community member is an integral part of developing the plan.

INSTRUCTIONS:

- Visit this web link from a computer or mobile device:
- https://www.surveymonkey.com/r/KBSSZYP
- Answer all the questions to the best of your ability, even if you have not had cause to call the LAFD for service
- The survey should take less than 2 minutes

Thank you for your participation in shaping the future of your Los Angeles Fire Department.

(available to seniors 62 and over) will...

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- https://www.surveymonkey.com/r/KBSSZYP
- Answer all the questions to the best of your ability, even if you have not had cause to call the LAFD for service
- The survey should take less than 2 minutes

Thank you for your participation in shaping the future of your Los Angeles Fire Department.

You can also keep up with EmpowerLA on [illegible] and [illegible]

Confirm that you like this.

Click the "Like" button.

NEIGHBORHOOD COUNCILS
EMPOWER LA
Department of
NEIGHBORHOOD EMPOWERMENT

GM's Message 9.08.17

I hope our newsletter finds you well. The Congress of Neighborhoods is upon us! Please join us bright and early tomorrow so you can have a full tummy going into the Opening Session of Congress. Mayor Eric Garcetti will be joining keynote speaker, Los Angeles County Supervisor Mark Ridley-Thomas, in the morning before we take the famous City Council Chambers picture with the Mayor and the Congress participants. You'll also want to give yourselves time to go through the Neighborhood Council Bridge Display between City Hall and City Hall East to view the great accomplishments of the Neighborhood Councils the last 15 years. After the Congress, make sure you join the Neighborhood Council Sustainability Alliance and Los Angeles Neighborhood Council Coalition for a mixer down the street. Limited complimentary passes are available so please RSVP by emailing ncsa@empowerla.org .

The Board of Neighborhood Commissioners met on Tuesday to present Mid City West Community Council and Hollywood United Neighborhood Council with their 15 year anniversary certificates. They also discussed their proposed updates to the Neighborhood Council subdivision policy. You can weigh in as a Neighborhood Council or individual by sending your comments to Commission@empowerla.org .

I'm excited to share that the City's Innovation & Performance Commission (IPC) is inviting Neighborhood Council members to submit innovative ideas that would help make Los Angeles a better place, which they provide funding for from a $1 million Innovation Fund created by Mayor Garcetti. The City Clerk's new online Neighborhood Council Funding Program platform was funded by the IPC and won an Outstanding IT Project Award at the 2017 LA Digital Government Summit last week. Many thanks to IPC Commissioner and former Studio City Neighborhood Council President John Walker for championing the project and to the City Clerk for completing the awesome platform! For more information on how to submit, please see below. Also, don't forget to submit for the 2nd annual Clean Streets LA Challenge , too!

I was thrilled to learn that the International Association for Public Participation (IAP2) selected me for their 2017 IAP2 USA Greater Good Award, which recognizes outstanding leadership, service and application of the IAP2 core values in the field of public participation. This honor would not have happened without my work with the Neighborhood Councils, which inspires me every day to find new ways to connect Angelenos to City Hall. So many thanks to the Neighborhood Councils and to our EmpowerLA and City family for the support!!

Best,

Grayce Liu,
General Manager
Department of Neighborhood Empowerment (aka) EmpowerLA
Empower Yourself, Empower Your Community, EmpowerL A

EmpowerLA Calendar

55	965
Community Impact Statements Filed	Neighborhood Council Agendas Posted to ENS

Neighborhood Council Monthly Profiles

Neighborhood Council Policies

Legislative Report

DATA L.A. Control Panel

Mayor's Message

STATEMENT: MAYOR GARCETTI ON THE EARTHQUAKE IN MEXICO "Friendship means standing together in good times and bad, and the thoughts of all Angelenos are with the people of southern Mexico who are recovering today following last night's powerful earthquake...

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CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE

OFFICIAL NOTICE
FOR THE COMMUNITY OF SUN VALLEY
PLEASE READ IMMEDIATELY

AMENDMENT TO THE NOTICE OF TREATMENT
FOR THE MEDITERRANEAN FRUIT FLY

Medfly Amendment to the Notice of Treatment for the community of Sun Valley, Los Angeles County

Between August 17 and September 1, 2017, seven adult Mediterranean fruit flies (Medflies), Ceratitis capitata (Wiedemann), were trapped in the community of Sun Valley, Los Angeles County. Based on the survey data, pest biology, information from the California Department. ..

Read More

Innovation Fund

Do you have an idea that would make our City a better place? A way the City could save money, or generate new revenue? How about something that would save energy or save time? The City of Los Angeles has created an Innovation Fund, and we want to hear from you...

Read More

Proposed Process Overhaul Released - City Planning Standardizes Project Review

Today, the re:code LA team of City Planning unveiled a proposal that will cut the number of project review processes in half. This new set of processes & procedures will maintain long-standing opportunities for public participation, and make it easier for both applicants and...

Read More

Palms NC 1st Annual Report

In June of 2016, the Palms community elected the 2016-2018 Palms Neighborhood Council to help make Palms a great community to live in. Below is our annual report - the first of its kind in the history of our neighborhood council...

Read More

REMINDER: Interested Persons Meeting - Lobbying Ordinance Review

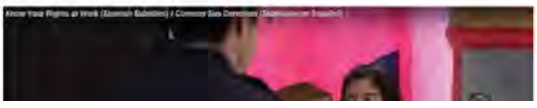
The Ethics Commission will be holding three additional interested persons meetings on the Municipal Lobbying Ordinance. Please RSVP to ethics.policy@lacity.org and join us for one or more of the following meetings: Thursday, September 7, 2017 1:30pm - 3:30pm...

Read More

Sidewalk Repair Program Environmental Review Process

Reconnecting Los Angeles One Sidewalk at a Time The City of Los Angeles Bureau of Engineering (BOE) has started the environmental review process for the proposed Sidewalk Repair Program (proposed Project). The proposed Project would continue, amend and expand...

Read More



Congress of Neighborhoods is this Saturday - here's our event guide

This Saturday September 9th is the annual Congress of Neighborhoods at City Hall! If you haven't yet registered, please click here to do so now. Here's our guide to what to bring, and what's happening. Headline speakers this year include Chairman of the Los Angeles County...

Read More

Student Produced Know Your Rights Films

LA Commons and CARECEN partnered to produce Know Your Rights films created by students. The films were done by students to learn leadership concepts on a subject that was affecting their communities and are in Spanish and English...

Read More

EmpowerLA Podcast: Interview with Joy Atkinson; President of The Board of Neighborhood Commissioners

Our guest for today's episode is Joy Atkinson, the new President of the Board of Neighborhood Commissioners (aka BONC). Joy is a lifelong Angeleno with a talent for community outreach. She has a long and distinguished resume working at various levels of government in service...

Read More

Clean Streets LA Challenge Applications Now Being Accepted!

Mayor Eric Garcetti, the Department of Public Works and Department of Neighborhood Empowerment are encouraging Angelenos to join together to clean our neighborhoods as part of the Clean Streets LA program. The Clean...

Read More

You can also keep up with EmpowerLA on Twitter, Facebook, and Instagram.

Confirm that you like this.

Click the "Like" button.

City of Los Angeles Bureau of Engineering

Sponsored ·

Got ideas about the future of fixing sidewalks in L.A.? Use our online form to get your comment on the record with the City!

VISIT: http://sidewalks.lacity.commentinput.com/

Comments Due - Sept. 15th!

Environmental Study Underway

sidewalks.lacity.commentinput.com

Contact Us

Joyce Patton and 18 others

17 Comments 2 Shares

Like Comment Share

City of Los Angeles Department of Recreation and Parks

David Home

Like Follow Share

City of Los Angeles Department of Recreation and Parks
@LACityParks

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Events
Photos
Videos
Notes
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Community

Create a Page

City of Los Angeles Department of Recreation and Parks
added 2 new photos.
July 28 ·

The Environmental Review Process for the City's Sidewalk Repair Program has begun. Members of the public who would like to share comments can do so by attending three upcoming public meetings, submit comments online or send comments in writing.
For more information on the sidewalk program and the public environmental review process - including meeting dates and times -- please go to www.sidewalks.lacity.org under EIR-New! They will be accepting comments until September 15th.

Like Comment Share

2

Write a comment...

City of Los Angeles Department of Recreation and Parks
August 21 at 12:50pm ·

Government Organization

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5,977 people follow this

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Government Organization

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Councilmember M...
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RECOMMENDED GAMES MORE

Benji Gutierrez likes Ebelyn Colon's photo.
Nick Spear shared a link.
Christian Edwards likes Cleveland Indians's post.
Lorna Xu likes USC Media Arts and Practice's post.
William Billy Vela reacted to Zuhey Espinoza's post.
Ifelola Ojuri likes Humans of New York's photo.
Samir Seale likes Chiseled Adonis's video: James White SAVAGE STIFF ARM!!
Austin Dunn reacted to Eric Scott's post.
Ariel Sobel likes Zioness

YOUR PAGES
City of Los Angeles ... 9+

CONTACTS
Matt Keibler
Maricela Aquino 23m

Great Streets
@LAGreatStreets

Follow

The City of LA is kicking of an environmental review for its Sidewalk Program. Learn how to get involved here: mailchi.mp/bc358715c559/j...

10:18 AM - 28 Jul 2017

18 Retweets **39** Likes

Los Angeles Walks, Investing in Place and LA Street Services

3 18 39

The Sidewalk Repair Program Environmental Review Has Begun

in *city of los angeles* / *public safety* July 31, 2017 **0** comments

The City has engaged in a massive Sidewalk Repair Program in part to repair and upgrade sidewalks and curb ramps adjacent to City-owned pedestrian facilities, so that they are compliant with applicable accessibility requirements. Street tree removals and replacements, along with utility relocations, may be needed, as well. Additionally, the City may adopt policies and/or ordinances to assist in the administration of the proposed Sidewalk Repair Program and its objectives.

In order to do this, the City must engage in an environmental review of the project. A Notice of Preparation (NOP) and Initial Study (IS), which describe the proposed Sidewalk Repair Program and the anticipated scope of the Environmental Impact Review, are available for public review and comment at the following website: sidewalks.lacity.org/environmental-review-process.

Ways to provide input:

Make a comment at a scoping meeting:

Wednesday, August 9, 2017	Monday, August 14, 2017	Thursday, August 24, 2017
6:00 p.m. – 8:00 p.m.	6:00 p.m. – 8:00 p.m.	6:00 p.m. – 8:00 p.m.
Ronald F Deaton Civic Auditorium	**Mid-Valley Senior Citizen Center**	**Westchester Senior Citizen Center**
100 W 1st St.	8825 Kester Avenue	8740 Lincoln Blvd
Los Angeles, CA 90012	Panorama City, CA 91402	Los Angeles, CA 90045

Submit comments at sidewalks.lacity.org/environmental-review-process;
Email shilpa.gupta@lacity.org with "SRP" in the subject line and a valid mailing address in the email;
Mail written comments to:

Shilpa Gupta, Environmental Supervisor I
Los Angeles Bureau of Engineering
Environmental Management Group
1149 S. Broadway, Suite 600, Mail Stop 939
Los Angeles, CA 90015

Related

LA Commits to $1.4 Billion Sidewalk Repair Plan
November 30, 2016
In "City of Los Angeles"

SAFE SIDEWALKS LA
January 27, 2017
In "Arleta"

2016-2017 City Budget Emphasizes Improved Services
May 21, 2016
In "Arleta"

SHARE

NEXT BOARD MEETING:

Tuesday, September 19, 2017, 6:30pm

Arleta NC General Board Meeting
Beachy Elementary School
9757 Beachy Ave
Arleta, CA 91331
Meeting Agenda: www.arletanc.org…
More…

See all »

NEXT COMMITTEE MEETINGS

No Events
See all »

JOIN OUR EMAIL LIST

Email Address*

First Name

Last Name

Are you an Arleta NC stakeholder?

- Yes, I live in the Arleta NC Area.
- Yes, I work in the Arleta NC Area.
- Yes, I live AND work in the Arleta NC Area.
- Yes, I am part of an organization within the Arleta NC Area.
- No, I am not a stakeholder.

* = required field

YOAV SIGN ME UP!

ARLETA NEIGHBORHOOD EVENTS

Arleta NC General Board Meeting
Tuesday, September 19, 2017, 6:30pm
Beachy Elementary School
9757 Beachy Ave
Arleta, CA 91331
More…

Arleta Neighbors in Action Monthly Meeting
Thursday, September 21, 2017, 7pm
9803 Gullo Ave
Arleta, CA 91331
More…

Neighborhood Council Emergency Preparedness Alliance Meeting
Saturday, September 23, 2017, 10am – 12pm
Location TBD
More…

National VFW Day
Friday, September 29, 2017
More…

Yom Kippur
Friday, September 29, 2017
More…

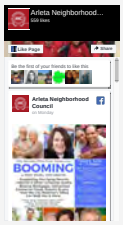
Board of Neighborhood Commissioners Meeting
Tuesday, October 3, 2017, 6pm
More…

Arleta Looky-Loos Neighborhood Watch Coalition Monthly Meeting
Tuesday, October 3, 2017, 6:45pm
Liberty Temple Church
13821 Osborne St.
Arleta, CA 91331
More…

L.A. City Council Session in the Valley
Friday, October 6, 2017, 10am
Van Nuys City Hall
14410 Sylvan St
Van Nuys, CA 91401
More…

See all »

ANC ON FACEBOOK



EMPOWERLA

NIXLE – COMMUNITY SAFETY ALERTS

JOIN OUR EMAIL LIST

Email Address*

First Name

Last Name

Are you an Arleta NC stakeholder?

* = required field

YOAV SIGN ME UP!

RECEIVE AGENDAS BY EMAIL

Receive Meeting Agendas via Email

If you would like to be notified of our meetings and receive the **agendas via email**, go to L.A. City's website and sign up using their simple form.

SEARCH OUR SITE

Search

The Sidewalk Repair Program Environmental Review Has Begun

BY CPNCADMIN | JUL 31, 2017 | LOS ANGELES CITY, PUBLIC SAFETY |

The City has engaged in a massive Sidewalk Repair Program in part to repair and upgrade sidewalks and curb ramps adjacent to City-owned pedestrian facilities, so that they are compliant with applicable accessibility requirements. Street tree removals and replacements, along with utility relocations, may be needed, as well. Additionally, the City may adopt policies and/or ordinances to assist in the administration of the proposed Sidewalk Repair Program and its objectives.

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Make a comment at a scoping meeting:

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6:00 p.m. – 8:00 p.m.	6:00 p.m. – 8:00 p.m.	6:00 p.m. – 8:00 p.m.
Ronald F Deaton Civic Auditorium	Mid-Valley Senior Citizen Center	Westchester Senior Citizen Center
109 W 1st St	8825 Kester Avenue	8740 Lincoln Blvd
Los Angeles, CA 90012	Panorama City, CA 91402	Los Angeles, CA 90045

Submit comments at sidewalks.lacity.org/environmental-review-process;
Email shilpa.gupta@lacity.org with "SRP" in the subject line and a valid mailing address in the email;
Mail written comments to:
Shilpa Gupta, Environmental Supervisor I
Los Angeles Bureau of Engineering
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1149 S. Broadway, Suite 600, Mail Stop 939
Los Angeles, CA 90015

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LA Commits to $1.4 Billion Sidewalk Repair Plan
November 30, 2016
In "Canoga Park"


SAFE SIDEWALKS LA
January 23, 2017
In "Canoga Park"


2016-2017 City Budget Emphasizes Improved Services
May 16, 2016
In "Canoga Park"

CPNC Events and Board Meetings

Canoga Park Neighborhood Council General Board Meeting
Wednesday, September 27, 2017, 7pm
Canoga Park Community Center
7248 Owensmouth Ave
Canoga Park, CA 91303
More...

Canoga Park Neighborhood Council General Board Meeting
Wednesday, October 25, 2017, 7pm
Canoga Park Community Center
7248 Owensmouth Ave
Canoga Park, CA 91303
More...

More Events »

Events in and around Canoga Park

Patriot Day and National Day of Service and Remembrance
Monday, September 11, 2017
More Info:
nationaldaycalendar.com...

Canoga Park NC Joint Executive Committee and Budget Committee Meeting
Wednesday, September 13, 2017, 5pm
Henri's Restaurant (Back room)
21601 Sherman Way,
Canoga Park, CA 91303
Agenda:
www.canogaparknc.org...

Neighborhood Watch Meeting
Wednesday, September 13, 2017, 7pm
Topanga Community Police Station
21501 Schoenborn St.
Canoga Park, CA 91304
More Info:
www.canogaparknc.org...

San Fernando Valley Veterans Employment Committee (SFV/VEC)
Thursday, September 14, 2017, 1pm
Sepulveda VA, 16111 Plummer St.,
North Hills, CA 91343
More Info: tinyurl.com...

Valley Alliance of Neighborhood Councils (VANC) Meeting
Thursday, September 14, 2017, 6:30pm
Sherman Oaks Hospital - Doctor's Conference Room
4929 Van Nuys Blvd
Sherman Oaks, CA

More Events »

Receive Agendas by Email

Receive Meeting Agendas via Email

If you would like to be notified of our meetings and receive the **agendas via email**, go to L.A. City's website and sign up using their simple form.

The Safe Sidewalks LA (SSLA) Notice of Preparation / Initial Study

August 1, 2017 News

SAFE SIDEWALKS LA

The Safe Sidewalks LA (SSLA) Notice of Preparation / Initial Study was released at the end of July. You can download the documents below which are also posted on the SRP website, sidewalks.lacity.org/environmental-review-process.

Download the Notice of Preparation
Download the Initial Study / Environmental Checklist

Public scoping meetings will be held to obtain input on the scope and contents of the EIR:

Wednesday, August 9th, 2017
Ronald F. Deaton Civic Auditorium
100 W 1st Street, Los Angeles, CA 90012
Event time: 6:00 p.m. – 8:00 p.m.

Monday, August 14th, 2017

Meeting schedules

Board
Second Wednesdays, 7:00 p.m.
Ebell of Los Angeles
Dining Room
743 S. Lucerne, 90005

Land Use Committee
Fourth Tuesdays, 6:30 p.m.
Wilshire United Methodist Church
Assembly Room
4350 Wilshire Blvd., 90005

Transportation Committee
Third Mondays of even-numbered months, 7:00 p.m.

Monday, August 14th, 2017
Mid-Valley Senior Citizen Center
8825 Kester Avenue, Panorama City, CA 91402
Event time: 6:00 p.m. – 8:00 p.m.

Thursday, August 24, 2017
Westchester Senior Citizen Center
8740 Lincoln Boulevard, Los Angeles, CA 90045
Event time: 6:00 p.m. – 8:00 p.m.

For more information regarding the Environmental Review Process, please contact:

Shilpa Gupta, Environmental Supervisor I
Department of Public Works
Bureau of Engineering, EMG
1149 S. Broadway, Suite 600, Mail Stop 939
Los Angeles, CA 90015
Or email at Shilpa.Gupta@lacity.org

You can submit comments online at the following link: http://sidewalks.lacity.commentinput.com/.

Please be sure to include your contact information. You may also upload documents when submitting a comment.

The comment period ends September 15, 2017.

Bookmark.

← FREE Workshop on Civic Engagement & City Services

months, 7:00 p.m.
Marlborough School - Library
250 S. Rossmore Ave., 90004

Outreach Committee
First Saturdays, 9:00 a.m.
Bricks & Scones Cafe
403 N. Larchmont Blvd., 90004

Sustainability Committee
Quarterly (next meeting TBA)
Marlborough School - Collins Room D200
250 South Rossmore Avenue, CA 90004

Follow us

Calendar

September 2017

M	T	W	T	F	S	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

Contacts

General Information:
info@greaterwilshire.org
or (323) 539-GWNC (4962).

Paper Mail:
419 N. Larchmont Blvd., #331
Los Angeles, CA 90004

Land Use Committee:
landuse@greaterwilshire.org

Outreach Committee:
outreach@greaterwilshire.org

Transportation Committee:
transportation@greaterwilshire.org

Subway Construction Complaints, Feedback, and Other Submissions:
subway@greaterwilshire.org

Treasurer & Funding Information:
treasurer@greaterwilshire.org

Website:
webmaster@greaterwilshire.org

Elections:
election@greaterwilshire.org

City Hall Contacts:
http://empowerla.org/thefast-est-route-to-city-hall/

To contact your GWNC Area or Interest Group Representative see our Board Member Roster page

GWNC Citizen Recognition Program

Do you know someone who has worked tirelessly on behalf of our neighborhood? Someone who deserves recognition for their efforts? A true local hero – of any age?

Nominate them!

Learn more...

Nominate them!

Learn more...

LA-32 Neighborhood Council

(https://www.la32nc.org/)

(https://www.la32nc.org/2017/07/sidewalk-repair-program-environmental-review-begun/)

The Sidewalk Repair Program Environmental Review Has Begun

Posted on July 31, 2017 (https://www.la32nc.org/2017/07/sidewalk-repair-program-environmental-review-begun/) by LA32NCadmin (https://www.la32nc.org/author/LA32NCadmin/)

The City has engaged in a massive Sidewalk Repair Program in part to repair and upgrade sidewalks and curb ramps adjacent to City-owned pedestrian facilities, so that they are compliant with applicable accessibility requirements. Street tree removals and replacements, along with utility relocations, may be needed, as well. Additionally, the City may adopt policies and/or ordinances to assist in the administration of the proposed Sidewalk Repair Program and its objectives.

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Ways to provide input:

Make a comment at a scoping meeting:

Wednesday, August 9, 2017 **6:00 p.m. – 8:00 p.m.**	**Monday, August 14, 2017** **6:00 p.m. – 8:00 p.m.**	**Thursday, August 24, 2017** **6:00 p.m. – 8:00 p.m.**
Ronald F Deaton Civic Auditorium 100 W 1st St Los Angeles, CA 90012	**Mid-Valley Senior Citizen Center** 8825 Kester Avenue Panorama City, CA 91402	**Westchester Senior Citizen Center** 8740 Lincoln Blvd Los Angeles, CA 90045

Next Board Meeting

LA-32 Neighborhood Council
General Board Meeting
Wednesday, October 4, 2017, 6pm
El Sereno Senior Citizen Center
4818 Klamath Place
Los Angeles, CA 90032

Agenda: www.la32nc.org…

Join Our Email List

Email Address*

First Name

Last Name

* = required field

Sign Me Up!

LA-32 NC Agendas Emailed to You!

Sign up here for the L.A. City Early Notification System (ENS). The City will email our agendas to you. (https://www.lacity.org/your-government/council-votes/subscribe-meeting-agendas/neighborhood-councils)

Submit comments at sidewalks.lacity.org/environmental-review-process (http://sidewalks.lacity.org/environmental-review-process);
Email shilpa.gupta@lacity.org (mailto:shilpa.gupta@lacity.org) with "SRP" in the subject line and a valid mailing address in the email;
Mail written comments to:

Shilpa Gupta, Environmental Supervisor I
Los Angeles Bureau of Engineering
Environmental Management Group
1149 S. Broadway, Suite 600, Mail Stop 939
Los Angeles, CA 90015

Share this:

10

(https://www.la32nc.org/2017/07/sidewalk-repair-program-environmental-review-begun/?share=reddit&nb=1)

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LA Commits to $1.4 Billion Sidewalk Repair Plan (https://www.la32nc.org/2016/11/la-commits-to-1-4-billion-sidewalk-repair-plan/)
November 30, 2016
In "LA-32"

(https://www.la32nc.org/2017/01/safe-sidewalks-la/)
SAFE SIDEWALKS LA (https://www.la32nc.org/2017/01/safe-sidewalks-la/)
January 27, 2017
In "LA-32"

(https://www.la32nc.org/2016/05/2016-2017-city-budget-emphasizes-improved-services/)
2016-2017 City Budget Emphasizes Improved Services (https://www.la32nc.org/2016/05/2016-2017-city-budget-emphasizes-improved-services/)
May 21, 2016
In "LA-32"

Posted in City of Los Angeles (https://www.la32nc.org/category/city-of-los-angeles-2/), Public Safety (https://www.la32nc.org/category/public-safety-2/).

Comments are closed.

Next Post → (https://www.la32nc.org/2017/07/national-parks-lifetime-senior-pass-rate-increase/)
← Previous Post (https://www.la32nc.org/2017/07/new-l-city-council-committee-meeting-times/)

Upcoming Neighborhood Events

Patriot Day and National Day of Service and Remembrance
Monday, September 11, 2017

POW/MIA Recognition Day
Friday, September 15, 2017

Rules, Elections, Intergovernmental Relations, and Neighborhoods Committee
Friday, September 15, 2017, 9 – 10am
City Hall - John Ferraro Council Chamber - Room 340
200 North Spring Street
Los Angeles CA 90012

Neighborhood Council Budget Advocates Meeting
Saturday, September 16, 2017, 10am – 12pm
West Los Angeles Municipal Building
1645 Corinth Ave
Los Angeles, CA 90025

Board of Neighborhood Commissioners Meeting
Monday, September 18, 2017, 1pm
City Hall, 10th Floor Conference Center Room 1060
200 N Spring Street
Los Angeles, CA 90012

Hollenbeck CPAB Meeting
Wednesday, September 20, 2017, 6 – 8pm
Hollenbeck Police Station in the community room
1936 East 1st Street
Los Angeles, CA 90033

Neighborhood Council Emergency Preparedness Alliance Meeting
Saturday, September 23, 2017, 10am – 12pm
Location TBD

Click Here to See the Full Calendar

Department of Neighborhood Empowerment

http://empowerla.org/ (http://empowerla.org/)

(https://www.la32nc.org/2017/07/sidewalk-repair-program-environmental-review-begun/?share=email&nb=1)

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(https://www.la32nc.org/2016/05/2016-2017-city-budget-emphasizes-improved-services/)
2016-2017 City Budget Emphasizes Improved Services
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Click Here to See the Full Calendar

Department of Neighborhood Empowerment

http://empowerla.org/ (http://empowerla.org/)

4927 N Huntington Drive, Suite 111, Los Angeles, CA 90032

The Sidewalk Repair Program Environmental Review Has Begun

Posted on July 31, 2017 by LBNCadmin

The City has engaged in a massive Sidewalk Repair Program in part to repair and upgrade sidewalks and curb ramps adjacent to City-owned pedestrian facilities, so that they are compliant with applicable accessibility requirements. Street tree removals and replacements, along with utility relocations, may be needed, as well. Additionally, the City may adopt policies and/or ordinances to assist in the administration of the proposed Sidewalk Repair Program and its objectives.

In order to do this, the City must engage in an environmental review of the project. A Notice of Preparation (NOP) and Initial Study (IS), which describe the proposed Sidewalk Repair Program and the anticipated scope of the Environmental Impact Review, are available for public review and comment at the following website: sidewalks.lacity.org/environmental-review-process.

Ways to provide input:

Make a comment at a scoping meeting:

Wednesday, August 9, 2017 6:00 p.m. – 8:00 p.m.	Monday, August 14, 2017 6:00 p.m. – 8:00 p.m.	Thursday, August 24, 2017 6:00 p.m. – 8:00 p.m.
Ronald F Deaton Civic Auditorium 100 W 1st St Los Angeles, CA 90012	**Mid-Valley Senior Citizen Center** 8825 Kester Avenue Panorama City, CA 91402	**Westchester Senior Citizen Center** 8740 Lincoln Blvd Los Angeles, CA 90045

Submit comments at sidewalks.lacity.org/environmental-review-process;
Email shilpa.gupta@lacity.org with "SRP" in the subject line and a valid mailing address in the email;
Mail written comments to:

Shilpa Gupta, Environmental Supervisor I

Next Meeting

Lake Balboa NC Board Meeting
Wednesday, October 4, 201
6:30pm
Gault Street Elementary School
17000 Gault St
Lake Balboa, CA 91406

LBNC Email List

Email Address*

First Name*

Last Name*

* = required field

SIGN ME UP!

Upcoming Events In and Around Lake Balboa

Patriot Day and National Day of Service and Remembrance
Monday, September 11, 2017

Community Police Advisory Board (CPAB) Meeting
Wednesday, September 13, 2017, 7pm
West Valley Police Station Community Room
19020 Vanowen St.
Reseda, CA

San Fernando Valley Veterans Employment Committee (SFV/VEC)
Thursday, September 14, 2017, 1pm
Sepulveda VA, 16111 Plummer St., North Hills, 91343

Valley Alliance of Neighborhood Councils (VANC) Meeting
Thursday, September 14, 2017, 6:30pm
Sherman Oaks Hospital - Doctor's Conference Room
4929 Van Nuys Blvd
Sherman Oaks, CA

Shilpa Gupta, Environmental Supervisor I
Los Angeles Bureau of Engineering
Environmental Management Group
1149 S. Broadway, Suite 600, Mail Stop 939
Los Angeles, CA 90015

Liked this? Help us out by sharing it!

Related

LA Commits to $1.4 Billion Sidewalk Repair Plan
November 30, 2016
In "Lake Balboa Community"

SAFE SIDEWALKS LA
January 27, 2017
In "Lake Balboa Community"

Los Angeles Will Finally Fix its Sidewalks!
April 4, 2015
In "Los Angeles City"

Update: Sepulveda Basin Clean-Up

4 thoughts on "The Sidewalk Repair Program Environmental Review Has Begun"

Mike McGill July 31, 2017 at 10:04 am
My grandparents' generation would see something broken and just fix it. I don't understand the need for multiple meetings and environmental impact reports to fix what's an obvious problem. It's not like they're installing new sidewalks where they previously didn't exist, right? I'm a huge fan of the environment (as everyone who's alive should be) but to me the concept of environmental review is usually a bureaucratic stalling technique that adds unnecessary time and cost to any project. If they see a sidewalk like the one in the picture it's pretty obvious to anyone with any semblance of common sense of needs to be replaced. No need for meetings or studies. That's my 2¢ (not adjusted for inflation).

Liina Arens July 31, 2017 at 10:10 am
Why don't they just take the backlog of service requests and just fix the problem. My service request is a good 3 to 4 years old. Probably should check if they are still active or deleted????

Janice Hantsbarger July 31, 2017 at 10:22 am
When they did repair the sidewalk in front of my house on Addea, the Mental Giants In Charge did it on a school day at 3pm, meaning that the cement was ripe for taggers. So I have had to look at a swastika and KKK since then.

Leela Valencia Woods July 31, 2017 at 10:04 pm
First remove these damn root bound trees that are not only messing up the sidewalks but costing homeowners thousands in plumbing problems. Don't get me started on how much those damn tree roots have cost me since we bought our house in 2009

Comments are closed.

4929 Van Nuys Blvd
Sherman Oaks, CA

POW/MIA Recognition Day
Friday, September 15, 2017

Rules, Elections, Intergovernmental Relations, and Neighborhoods Committee
Friday, September 15, 2017, 9 – 10am
City Hall - John Ferraro Council Chamber - Roo 340
200 North Spring Street
Los Angeles CA 90012

Neighborhood Council Budget Advocates Meeting
Saturday, September 16, 2017, 10am – 12pm
West Los Angeles Municipal Building
1645 Corinth Ave
Los Angeles, CA 90025

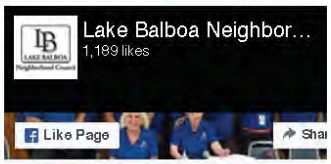
LBNC Health and Public Safety Committee Meeting
Saturday, September 16, 2017, 10am
The Flyaway Bus Terminal
2nd Floor
7610 Woodley Avenue
Van Nuys, CA 91406
Agenda: www.lakebalboanc.org...

Agendas in Your Inbox

If you would like to be notified of our meeti and receive the **agendas via email**, go to L City's website and sign up using their simp form.

EmpowerLA

LBNC on Facebook



LBNC on Facebook

SAFE SIDEWALKS LA

THIS EVENT HAS PASSED.

SAFE SIDEWALKS LA
August 24 @ 6:00 pm - 8:00 pm

Participate in the Sidewalk Repair Program's Last Environmental Review Meeting – THURSDAY!
Learn about the proposed Project and EIR process.
The Sidewalk Repair Program

- The purpose of the Sidewalk Repair Program (proposed Project) is to continue to amend and expand implementation of Safe Sidewalks LA and make City pedestrian facilities compliant with applicable accessibility requirements.

Details

Date:
August 24

Time:
6:00 pm - 8:00 pm

Event Category:
Community Events

Venue

Westchester Senior Citizen Center

8740 Lincoln Blvd
Los Angeles, CA 90045
United States
Google Map

- The proposed Project would repair and upgrade sidewalks and curb ramps throughout the City of Los Angeles.
- Street tree removals and replacements, along with utility relocations, may be needed.
- The City may adopt policies and/or ordinances to assist in the administration of the proposed Sidewalk Repair Program and its objectives.
- A Notice of Preparation (NOP) and Initial Study (IS), which describe the proposed Sidewalk Repair Program and the anticipated scope of the EIR, are available for public review and comment at sidewalks.lacity.org/environmental-review-process.

Can't make it? Additional ways to get involved:

- **Make a comment** at a scoping meeting
- **Submit comments** at sidewalks.lacity.org/environmental-review-process
- **Email** shilpa.gupta@lacity.org with "SRP" in the subject line and a valid mailing address in the email
- **Mail** written comments to:

Shilpa Gupta, Environmental Supervisor I
Los Angeles Bureau of Engineering
Environmental Management Group
1149 S. Broadway, Suite 600, Mail Stop 939
Los Angeles, CA 90015
Visit our website for additional information:
http://sidewalks.lacity.org/environmental-review-process

+ GOOGLE CALENDAR + ICAL EXPORT

Google Map

Website:
http://sidewalks.lacity.org/environmental-review-process

Related Events

FREE Two Way Radio 101 Class

October 28 @ 10:00 am - 12:00 pm

Spinning Black Holes, Exploding Stars, and Hyperluminous Pulsars: Recent Results from the NuSTAR Satellite

December 15 @ 7:00 pm

DOMESTIC VIOLENCE RESTRAINING ORDER CLINIC:

October 4 @ 4:00 pm - 8:00 pm

Recurring Event (See all)

Share This Story, Choose Your Platform!

‹ Wildlife Workshop

"State of Devonshire" Neighborhood Watch Meeting ›

View City Calendar | View EmpowerLA Calendar

North Hills West
Neighborhood Council
P.O. Box 2091
North Hills, CA 91393
Phone (818) 809-9158
board@nhwnc.net

3rd Thursday of every month at 7:00pm
New Horizons - Sam's Cafe
15725 Parthenia St.
North Hills, CA 91343

Sign up for Agenda emails through City Notification System

Sign Up for EmpowerLA Newsletter

Provide Your Input on Sidewalk Repair Program

Friday, August 18, 2017

Last year as part of a lawsuit settlement, the city began a comprehensive sidewalk repair program called Safe Sidewalks LA, with the objective of investing more than $30 million a year over the next 30 years to make all 11,000 miles of city sidewalks safe and accessible. This program allows residents to request repairs and use rebates to accelerate repairs.

The city is now giving notice that they are beginning an environmental review process on the Sidewalk Repair Program and the public is invited to weigh in and submit public comment by midnight September 15, 2017. Public input during this scoping period will shape the scope and content of the analysis in the Draft EIR. Once completed, the Draft EIR will include the results of the technical studies the City conducted and be circulated for public and agency review and comment.

The project in question is the continued expansion and implementation of Safe Sidewalks LA, in order to make City pedestrian facilities compliant with applicable accessibility requirements.

Potential environmental effects associated with the proposed Project include the following: Aesthetics, Air Quality, Biological Resources, Cultural Resources, Geology/Soils, Greenhouse Gas Emissions, Hazards and Hazardous Materials, Hydrology and Water Quality, Land Use and Planning, Noise, Public Services, Transportation and Traffic, Tribal Cultural Resources, and Utilities and Service Systems.

Of note is the potential impact on street trees. Sidewalk repair will likely result in the removal of large quantities of mature street trees that are the cause of the sidewalk damage. Steet trees are expected to be replaced at a 2:1 ration per current policy. The initial study discusses the potential impacts related to trees.

Sidewalk repairs have been a frequent topic at Porter Ranch Neighborhood Council meetings over the years, so we thought our stakeholders might want to know more about this program and be interested in providing public comment.

Study Document for Public Comment: Initial Study Environmental Checklist

More about current Safe Sidewalks LA

Notice of Preparation

Sidewalk Repair Program Scoping Meeting Presentation August 2017

Sidewalk Repair Fact Sheet

List of physical locations to view the Notice of Preparation / Initial Study

PRNC MEETINGS

PRNC Board Meeting
Wed, Sep 13, 2017, 6:15 PM
Porter Ranch Community School

PRNC Board Meeting
Wed, Oct 11, 2017, 6:15 PM
Porter Ranch Community School

PRNC Board Meeting
Wed, Nov 8, 2017, 6:15 PM
Porter Ranch Community School

PRNC Board Meeting
Wed, Dec 13, 2017, 6:15 PM
Porter Ranch Community School

CITY EVENTS

Neighborhood Watch - East of Tampa
Tue, Sep 12, 2017, 7:00 PM
St. Euphrasia Church

Community Information Session on Homelessness
Wed, Sep 20, 2017, 6:00 PM
Our Redeemer Lutheran Church, Winnetka

Neighborhood Watch - West of Tampa
Thu, Sep 28, 2017, 7:00 PM
St. John Eudes

Neighborhood Watch - East of Tampa
Tue, Oct 10, 2017, 7:00 PM
St. Euphrasia Church

Neighborhood Watch - West of Tampa
Thu, Oct 26, 2017, 7:00 PM

Sidewalk Repair Fact Sheet

List of physical locations to view the Notice of Preparation / Initial Study

City's EIR webpage

Neighborhood Watch - West of Tampa
Thu, Oct 26, 2017, 7:00 PM
St. John Eudes

How to Submit Comments

Please note: **Your input will become part of the public record and will be included in the Draft EIR**.

- Submit comments online at the following link:http://sidewalks.lacity.commentinput.com/. Please be sure to include your contact information.
- Email your comment to Shilpa.Gupta@lacity.org (please include 'SRP' in the subject line). Please include your contact information, including name, telephone number, mailing address, and e-mail address so that we can contact you if we have any questions regarding your comment. We will also use this information to add you to the mailing list so that you can learn when the Draft EIR becomes available.
- Complete a comment card or write a letter that includes your contact information. Please send your comment to:

Shilpa Gupta, Environmental Supervisor I
City of Los Angeles Public Works, Bureau of Engineering
Environmental Management Group
1149 S. Broadway, Suite 600, Mail Stop 939

The Porter Ranch Neighborhood Council is an organization that is officially certified by the City of Los Angeles to increase our influence with City lawmakers and departments to improve our community.

The PRNC came about as a result of Los Angeles City Charter Reform and interested stakeholders in our community. The Board is elected by stakeholders and holds monthly meetings, usually on the first Wednesday of the month. The agenda is emailed to those who subscribe (see the green box in the upper corner), on our website here and posted at 11280 Corbin Avenue, Northridge, CA 91326 on a bulletin board facing Corbin street.

The Board is comprised of volunteers who want to help you make Porter Ranch a better place to live, work and grow. We can't do it for you, but we can do it with you.

Van Nuys Neighborhood Council

The Van Nuys Neighborhood Council meets on the second Wednesday of the month at 7pm. The General Meeting is held at 6262 Van Nuys Blvd.

Safe Sidewalks LA

Safe Sidewalks LA

Reconnecting Los Angeles One Sidewalk at a Time

What is the Sidewalk Repair Program?

- The purpose of the Sidewalk Repair Program (proposed Project) is to continue to amend and expand implementation of Safe Sidewalks LA and make City pedestrian facilities compliant with applicable accessibility requirements.
- The proposed Project would repair and upgrade sidewalks and curb ramps throughout the City of Los Angeles.
- Street tree removals and replacements, along with utility relocations, may be needed.
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- A Notice of Preparation (NOP) and Initial Study (IS), which describe the proposed Sidewalk Repair Program and the anticipated scope of the EIR, are available for public review and comment at sidewalks.lac-

- A Notice of Preparation (NOP) and Initial Study (IS), which describe the proposed Sidewalk Repair Program and the anticipated scope of the EIR, are available for public review and comment at sidewalks.lacity.org/environmental-review-process.

ONLINE
Submit comments: sidewalks.lacity.org/environmental-review-process
EMAIL: shilpa.gupta@lacity.org
"SRP" as the subject. Valid mailing address in the email.
You can mail written comments to:
Shilpa Gupta
Environmental Supervisor I
Los Angeles Bureau of Engineering Environmental Management Group
1149 S. Broadway, Suite 600, Mail Stop 939 Los Angeles, CA 90015

ATTEND A PUBLIC SCOPING MEETING:*

Wednesday, August 9, 2017 | 6:00 p.m. – 8:00 p.m. Ronald F Deaton Civic Auditorium
100 W 1st St, Los Angeles, CA 90012
Monday, August 14, 2017 | 6:00 p.m. – 8:00 p.m. Mid-Valley Senior Citizen Center
8825 Kester Avenue, Panorama City, CA 91402
Thursday, August 24, 2017 | 6:00 p.m. – 8:00 p.m. Westchester Senior Citizen Center
8740 Lincoln Blvd, Los Angeles, CA 90045

Free parking at each of the scoping meeting locations.
*All requests for reasonable accommodations must be made three working days in advance of the scheduled meeting date by calling Shilpa Gupta at (213) 485-4560.

This entry was posted in LA Public Works (LAPW) on July 28, 2017 [http://vnnc.org/2017/07/safe-sidewalks-la-3/] by vnncadmin.

You can mail written comments to:
Shilpa Gupta
Environmental Supervisor I
Los Angeles Bureau of Engineering Environmental Management Group
1149 S. Broadway, Suite 600, Mail Stop 939 Los Angeles, CA 90015

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This entry was posted in LA Public Works (LAPW) on July 28, 2017 [http://vnnc.org/2017/07/safe-sidewalks-la-3/] by vnncadmin.

Canoga Park NC
@CanogaParkNC

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The Sidewalk Repair Program Environmental Review Has Begun

The Sidewalk Repair Program Environmental Review Has B...
The City has engaged in a massive Sidewalk Repair Program in part to repair and upgrade sidewalks and curb ramps adjacent to City-owned pedestrian facilities, so that they are compliant with
canogaparknc.org

9:48 AM - 31 Jul 2017

17120 Rinaldi Ave, Granada Hills, CA 91344 | (818) 822-2382 | info@ghnnc.org

For information on the Etiwanda Gateway Project, click here. For more information on Heritage Development Group click here.

CATEGORY: CITY OF LOS ANGELES

POSTED ON June 30, 2017 AUTHOR GHNNCadmin CATEGORIES City of Los Angeles, Public Safety

THE SIDEWALK REPAIR PROGRAM ENVIRONMENTAL REVIEW HAS BEGUN

The City has engaged in a massive Sidewalk Repair Program in part to repair and upgrade sidewalks and curb ramps adjacent to City-owned pedestrian facilities, so that they are compliant with applicable accessibility requirements. Street tree removals and replacements, along with utility relocations, may be needed, as well. Additionally, the City may adopt policies and/or ordinances to assist in the administration of the proposed Sidewalk Repair Program and its objectives.

In order to do this, the City must engage in an environmental review of the project. A Notice of Preparation (NOP) and Initial Study (IS), which describe the proposed Sidewalk Repair Program and the anticipated scope of the Environmental Impact Review, are available for public review and comment at the following website: **sidewalks.lacity.org/environmental-review-process.**

Ways to provide input: Read more »

SHARE THIS

POSTED ON July 26, 2017 AUTHOR GHNNCadmin CATEGORIES City of Los Angeles

NEW L.A. CITY COUNCIL COMMITTEE MEETING TIMES

Click here for the new City Council Committee Meeting times. Read more »

SHARE THIS

POSTED ON July 3, 2017 AUTHOR GHNNCadmin CATEGORIES Beautification, City of Los Angeles, Granada Hills North, Transportation

GHNNC STREET REPAIR BLITZ

The Neighborhood Council Initiative (known to us as the Street Blitz), run by the Bureau of Street Services (BSS), will be in Granada Hills North next week. Our area will be assigned a two-person crew on a hot asphalt truck for one day to patch street potholes, pop-outs, small eroded or cracked areas, and do minor curb and sidewalk patching. The crew is not equipped to handle tree roots that have damaged the street, or one they able to do any major repair for uplifted sidewalks.

Up to 15 locations will be inspected, so we're looking for the worst spots that can be patched. Depending on the conditions and amount of asphalt required, not all identified locations will get fixed during the blitz. The BSS crew will be inspecting approximately twelve locations via 5-1-1. We're asking for your help in preparing a list for submission to BSS. Since the crew is limited to areas within Greater Neighborhood Council boundaries, the locations MUST be north of the 118 freeway, west of the 405 freeway, and east of Aliso Canyon, up to the County line.

Please make your submission no later than July 10, include the type of repair (pothole, pop-out, depression, minor tilted sidewalk, etc.), the address (preferred) or intersection, and which side of the street (north bound, east side, etc.). The more info you can provide, the less time spent by BSS trying to find the location. Remember, potholes and minor repairs only. Tree root damage is out, as are streets and sidewalks that require more extensive repairs.

Send your request to **whopkins@ghnnc.org.**

SHARE THIS

POSTED ON June 30, 2017 AUTHOR GHNNCadmin CATEGORIES City of Los Angeles

CITY OF LOS ANGELES RELEASES MUCH ANTICIPATED DRAFT CANNABIS REGULATIONS

After more than a year of working directly with residents and stakeholders, City Councilmembers encourage an ongoing public dialogue of new rules in the months to come

Los Angeles City Council President Herb J. Wesson, Jr. was joined today by Councilmembers Bob Blumenfield, Paul Koretz and Nury Martinez in releasing the city's draft regulations governing commercial cannabis activity. The City Council has been engaging in an open and public dialogue over the last year about how to best regulate all aspects of the cannabis industry citywide. Today marks another step forward in the transparent process with the beginning of a 30-day public comment period prior to any further action by the City Council.

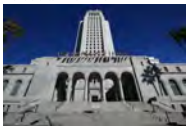
After implementing Measure M in a historic 80.4% passage rate, Wesson immediately began the process of gleaning best practices from neighboring cities and states who had already established responsible cannabis regulations. Wesson who chairs the Rules, Elections, Intergovernmental Relations, and Neighborhoods committee which has overseen the crafting of the draft regulations. Since beginning the process Wesson has held over a dozen meetings, including in the evenings, inviting members of the public, industry experts, and regulators from other states including Colorado, Oregon, and Washington to provide testimony.

"We will continue to have a robust dialogue about the regulatory framework and a healthy debate of Los Angeles' growing cannabis industry prior to final recommendations being considered by the City Council, said Los Angeles City Council President Herb J. Wesson, Jr. "I'm calling on all residents and stakeholders to provide comments and feedback on the draft documents to ensure the pending regulations are inclusive of all communities." **Read more »**

SHARE THIS

POSTED ON March 30, 2017 AUTHOR GHNNCadmin CATEGORIES City of Los Angeles

REPORT SHOWS FISCAL IMPROVEMENT FOR LA



As the City of Los Angeles nears the end of its current fiscal year, a new report from the City Administrative Officer shows a significant decrease in the city's budget deficit. Although the city is not out of the woods just yet, Los Angeles has narrowed it's 2016-2017 fiscal year from $535 million to $67 million, thanks to work by the Budget and Finance Committee, an increase in revenue, and the discipline of city departments. The city's Reserve Fund is also set to remain at levels higher than it has been in decades.

Next month, the Budget Committee reviews the Mayor's 2017-2018 budget proposal. Once the budget is released and hearings begin, the committee will meet with all of the various city departments to hear about their needs and listen to the public's input.

SHARE THIS

POSTED ON January 27, 2017 AUTHOR GHNNCadmin CATEGORIES City of Los Angeles

LA CITY COUNCIL UNANIMOUSLY VOTES TO BRING THE 2024 OLYMPICS TO LOS ANGELES

This week, the Los Angeles City Council, alongside dozens of Olympic athletes who call Los Angeles home, voted to approve the LA2024 bid for the Olympic and Para-Olympic Games.

Los Angeles is a cultural and industrial mashup unlike anywhere else in the world. Residents from over 100 countries are held together by a collective optimism, a push for progress, and a dedication to sport. The spirit of our community is based on harnessing creativity and curiosity for the purpose of positive change. Hosting the Olympic and Para-Olympic Games continues to spark passion for Angelenos throughout the city.

Los Angeles is currently competing against Paris and Budapest to host the summer 2024 games. The International Olympics Committee is slated to announce its decision in September 2017. If selected, LA would become a three-time host of the summer games.

Click here to read the full bid for the 2024 Olympic Games. Read more »

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NEXT BOARD MEETING

GHNNC Regular Board Meeting
Tuesday, October 3, 2017, 6:30pm
Sunlight Christian School Auditorium
17120 Rinaldi Ave
Granada Hills, CA 91344
Agenda: www.ghnnc.org...
More Details »

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AGENDAS IN YOUR INBOX

If you would like to be notified of our meetings and receive the agendas via email, go to L.A. City's website and sign up using their simple form.

NEIGHBORHOOD EVENTS

Bird Watching Walk in O' Melveny Park
Saturday, September 16, 2017, 8am - 11:30am
O' Melveny Park
Granada Hills, CA

GHNNC Emergency Preparedness Sub-Committee Meeting
Tuesday, September 19, 2017, 7pm - 8:30pm
17120 Rinaldi Ave
Granada Hills, CA 91344
Agenda: www.ghnnc.org...

Granada Hills Crabfest
Friday, September 22, 2017, 4 - 10pm
Corbin's 8 Antares Dr#A6 Del Rio Ln
Granada Hills, CA 91344

Aliso Canyon Community Action Workshop
Saturday, September 23, 2017, 10:30am - 12:30pm
Castlebay Lane Charter Elementary Auditorium
19855 Castlebay Lane, Porter Ranch, CA 91326

Neighborhood Council Emergency Preparedness Alliance Meeting
Saturday, September 23, 2017, 10am - 12pm
Location TBD

More Events »

Search ...

The Sidewalk Repair Program Environmental Review Has Begun!

- The purpose of the Sidewalk Repair Program (proposed Project) is to continue to amend and expand implementation of Safe Sidewalks LA and make City pedestrian facilities compliant with applicable accessibility requirements.
- The proposed Project would repair and upgrade sidewalks and curb ramps throughout the City of Los Angeles.
- Street tree removals and replacements, along with utility relocations, may be needed.
- The City may adopt policies and/or ordinances to assist in the administration of the proposed Sidewalk Repair Program and its objectives.
- A Notice of Preparation (NOP) and Initial Study (IS), which describe the proposed Sidewalk Repair Program and the anticipated scope of the EIR, are available for public review and comment at sidewalks.lacity.org/environmental-review-process.

Join us at the Scoping Meetings!

Learn about the proposed Project and EIR process.

Join us at the Scoping Meetings!

Learn about the proposed Project and EIR process.

Wednesday, August 9, 2017 6:00 p.m. – 8:00 p.m.	Monday, August 14, 2017 6:00 p.m. – 8:00 p.m.	Thursday, August 24, 2017 6:00 p.m. – 8:00 p.m.
Ronald F Deaton Civic Auditorium 100 W 1st St Los Angeles, CA 90012	**Mid-Valley Senior Citizen Center** 8825 Kester Avenue Panorama City, CA 91402	**Westchester Senior Citizen Center** 8740 Lincoln Blvd Los Angeles, CA 90045

**All requests for reasonable accommodations must be made three working days in advance of the scheduled meeting date by calling Shilpa Gupta at (213) 485-4560.*

Ways to provide input:

- **Make a comment** at a scoping meeting
- **Submit comments** at sidewalks.lacity.org/environmental-review-process
- **Email** shilpa.gupta@lacity.org with "SRP" in the subject line and a valid mailing address in the email
- **Mail** written comments to:

Shilpa Gupta, Environmental Supervisor I
Los Angeles Bureau of Engineering
Environmental Management Group
1149 S. Broadway, Suite 600, Mail Stop 939
Los Angeles, CA 90015

Visit our website for additional information:
sidewalks.lacity.org/environmental-review-process

SAFE SIDEWALKS LA

Forward to a friend

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Appendix C: Safe Sidewalks LA Environmental Review Process Webpage

1. **Safe Sidewalks LA Environmental Review Process Webpage**
    - **a.** EIR Process Overview
    - **b.** Ways to Participate
    - **c.** Webpage Text

SAFE SIDEWALKS LA

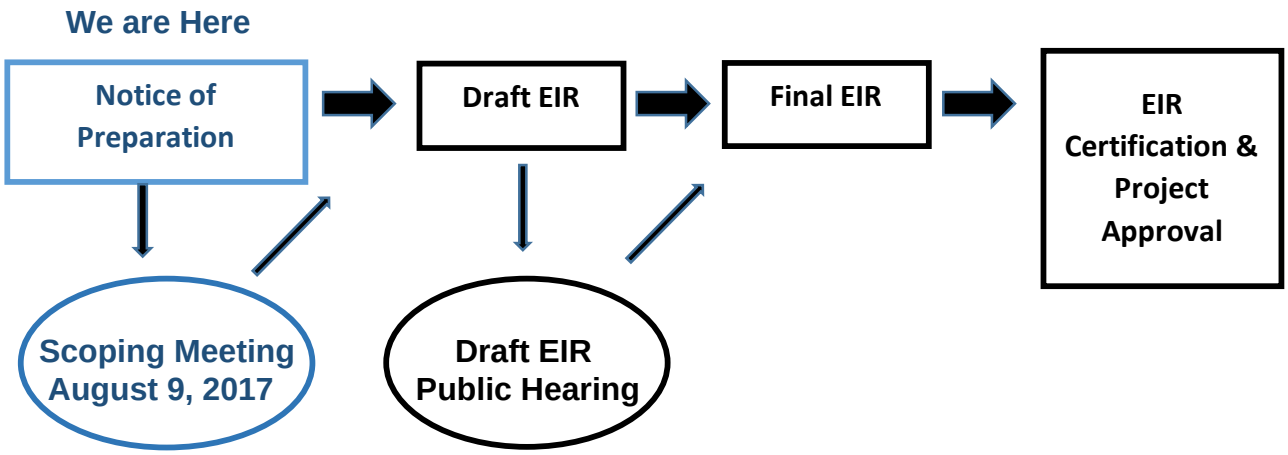
ENGINEERING
CITY OF LOS ANGELES

Environmental Review Process

The City of Los Angeles Bureau of Engineering is beginning the environmental review process for the proposed extension of the Safe Sidewalks LA Program. The City has determined that an Environmental Impact Report (EIR) is required. A Notice of Preparation (NOP) and Initial Study (IS), which describe the Sidewalk Repair Program and the anticipated scope of the EIR, are available for public review and comment. This phase in the environmental review process is called the 'scoping period' (see figure below) and typically lasts 30 days.

Agency and public input during the scoping period will shape the scope and content of the analysis in the Draft EIR. Once completed, the Draft EIR will share the results of the technical studies the City conducted and be circulated for public and agency review and comment.

EIR Process Milestones



Environmental documentation related to the proposed Citywide Sidewalk Repair Program can be found here: http://www.sidewalks.lacity.org/environmental-review-process

We want your input! Here are the ways to participate:

- Review Sidewalk Repair Program Notice of Preparation/Initial Study and submit comments by mail or email by **September 15, 2017** to:

  Shilpa Gupta, Environmental Supervisor I
  City of Los Angeles Public Works, Bureau of Engineering

Environmental Management Group
1149 S. Broadway, Suite 600, Mail Stop 939
Los Angeles, CA 90015

- Email: Shilpa.Gupta@lacity.org (Please include 'SRP' in the email subject line)

  Please include the name, telephone number, mailing address, and e-mail address of a person to contact if we have any questions regarding your comment.

- Attend a public scoping meeting:

  August 9, 2017, 6:00 p.m. – 8:00 p.m.
  Ronald F. Deaton Civic Auditorium
  100 W 1st Street, Los Angeles, CA 90012
  Verbal and written public comments will also be accepted at the meeting.

  August 14, 2017, 6:00 p.m. – 8:00 p.m.
  Mid-Valley Senior Citizen Center
  8825 Kester Avenue, Panorama City, CA 91402
  Verbal and written public comments will also be accepted at the meeting.

  August 24, 2017, 6:00 p.m. – 8:00 p.m.
  Westchester Senior Citizen Center
  8740 Lincoln Blvd, Los Angeles, CA 90045
  Verbal and written public comments will also be accepted at the meeting.

Documents Available
(Click on underlined text to view or download)

Sidewalk Repair Program Notice of Preparation (English)

Sidewalk Repair Program Notice of Preparation (Spanish)

Sidewalk Repair Program Notice of Preparation/Initial Study

Environmental Scoping Meetings Flyer

SAFE SIDEWALKS LA

ENGINEERING
CITY OF LOS ANGELES

SIDEWALK REPAIR PROGRAM
Environmental Review Process - We Want Your Comments!

The City of Los Angeles, Bureau of Engineering is the Lead Agency for the environmental review process for the proposed program. The City must consider the potential environmental effects of the proposed program and reduce or avoid these impacts when possible. The City is preparing an Environmental Impact Report (EIR) to discuss these potential impacts. We are now in the scoping phase where the City is requesting comments from regulatory agencies and the public on the Notice of Preparation/Initial Study regarding what environmental issues should be addressed in the EIR. Once the Draft EIR has been prepared, agencies and public will also be invited to review and comment.

Ways to Participate:

- **Provide verbal and/or written comments at the following Scoping Meetings:**

  August 9, 2017, 6:00 p.m. – 8:00 p.m.
  Ronald F. Deaton Civic Auditorium
  100 W 1st Street, Los Angeles, CA 90012

  August 14, 2017, 6:00 p.m. – 8:00 p.m.
  Mid-Valley Senior Citizen Center
  8825 Kester Avenue, Panorama City, CA 91402

  August 24, 2017, 6:00 p.m. – 8:00 p.m.
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- **Email comments to:**
  Shilpa.Gupta@lacity.org (Please include 'SRP' in the email subject line)

  Please include the name, telephone number, mailing address, and e-mail address of a person to contact if we have any questions regarding your comment.

- **Submit a comment card or letter by mail to:**
  RE: Sidewalk Repair Program
  Shilpa Gupta, Environmental Supervisor I
  City of Los Angeles Public Works, Bureau of Engineering
  Environmental Management Group
  1149 S. Broadway, Suite 600, Mail Stop 939
  Los Angeles, CA 90015

SAFE SIDEWALKS LA

ENGINEERING
CITY OF LOS ANGELES

- **Questions about the environmental review process? Please call:**
  Shilpa Gupta, Environmental Supervisor I, at (213) 485-4560

- **COMMENTS DUE September 15, 2017**

Copies of the Notice of Preparation/Initial Study are available here:

- **Electronic:** http://www.sidewalks.lacity.org/environmental-review-process

- **Hard Copies:** Available at the scoping meetings and the following locations

Council District	Organization	Address
CD 1	Lincoln Heights Branch Library	2530 Workman St, Los Angeles, CA 90031
	Cypress Park Branch Library	1150 Cypress Ave, Los Angeles, CA 90065
	Pico Union Branch Library	1030 S Alvarado St, Los Angeles, CA 90006
CD 2	North Hollywood Amelia Earhart Regional Library	5211 Tujunga Ave, North Hollywood, CA 91601
	Valley Plaza Library	12311 Vanowen St, North Hollywood, CA 91605
CD 3	West Valley Regional Branch Library	19036 Vanowen St, Reseda, CA 91335
	Encino-Tarzana Branch Library	18231 Ventura Blvd, Tarzana, CA 91356
CD 4	Sherman Oaks Library	14245 Moorpark St, Sherman Oaks, CA 91423
	Fairfax Branch Public Library	161 S Gardner St, Los Angeles, CA 90036
CD 5	Robertson Library	1719 Robertson Blvd, Los Angeles, CA 90035
	Westwood Branch Library	1246 Glendon Ave, Los Angeles, CA 90024
CD 6	Sun Valley Library	7935 Vineland Ave, Sun Valley, CA 91352
	Panorama City Branch Library	14345 Roscoe Blvd, Panorama City, CA 91402
CD 7	Sunland-Tujunga Branch Library	7771 Foothill Blvd, Tujunga, CA 91042
	Pacoima Branch Library	13605 Van Nuys Blvd, Pacoima, CA 91331
CD 8	Hyde Park Branch Library	2205 W Florence Ave, Los Angeles, CA 90043

	Mark Twain Library	9621 S. Figueroa Street, Los Angeles, CA 90003
CD 9	Ascot Branch Library	120 W Florence Ave, Los Angeles, CA 90003
	Vermont Square Branch Library	1201 W 48th St, Los Angeles, CA 90037
CD 10	Jefferson Library	2211 W Jefferson Blvd, Los Angeles, CA 90018
	Pio Pico Library	694 S Oxford Ave, Los Angeles, CA 90005
CD 11	Westchester Loyola Village Library	7114 W Manchester Ave, Los Angeles, CA 90045
	Mar Vista Branch Library	12006 Venice Blvd, Los Angeles, CA 90066
	West Los Angeles Regional Library	11360 California Route 2, Los Angeles, CA 90025
CD 12	Granada Hills Library	10640 Petit Ave, Granada Hills, CA 91344
	Mid Valley Regional Library	16244 Nordhoff St, North Hills, CA 91343
	Chatsworth Branch Library	21052 Devonshire St, Chatsworth, CA 91311
CD 13	Edendale Branch Library	2011 Sunset Blvd, Los Angeles, CA 90026
	Frances Howard Goldwyn-Hollywood Regional Branch Library	1623 Ivar Ave, Los Angeles, CA 90028
	Silver Lake Branch Library	2411 Glendale Blvd, Los Angeles, CA 90039
CD 14	Arroyo Seco Library	6145 N Figueroa St, Los Angeles, CA 90042
	The Los Angeles Central Library	630 W 5th St, Los Angeles, CA 90071
	El Sereno Branch Library	5226 S. Huntington Drive, Los Angeles, CA 90032
CD 15	San Pedro Regional Library	931 S Gaffey St, San Pedro, CA 90731
	Willowbrook Library	11838 Wilmington Ave, Los Angeles, CA 90059

Organization	**Address**
City of Los Angeles Bureau of Engineering	1149 S. Broadway, Suite 600, Los Angeles, CA 90015
City of Los Angeles City Clerk	200 N. Spring Street, Room 360, Los Angeles, CA 90012

SAFE SIDEWALKS LA

ENGINEERING
CITY OF LOS ANGELES

Sidewalk Repair Program

The City is proposing to continue and expand implementation of the Safe Sidewalks LA Program, also known as the Sidewalk Repair Program, over the next 30 years, meeting the requirements of the approved Settlement Agreement. The proposed program does not include the installation of new sidewalks; only existing sidewalks and walkways will be repaired or replaced under the proposed program.

Work under the proposed program may include the repair, remediation, construction, design, inspection, monitoring and administration of or relating to the following types of improvements:

- Installation of missing curb ramps
- Repair of damage that street tree roots have caused to sidewalk or walkway surfaces
- Upgrading of existing curb ramps
- Repair of broken and/or uneven pavement in the pedestrian rights of way
- Repair of vertical or horizontal displacement or upheaval of the sidewalk or crosswalk surfaces
- Correction of non-compliant cross-slopes in sidewalks or sections of sidewalks
- Removal of protruding and overhanging objects and/or obstructions
- Widening of restricted pedestrian rights of way when required
- Providing clearance to the entrances of public bus shelters
- Repair of excessive gutter slopes at the bottom of curb ramps leading into crosswalks
- Elimination of curb ramp lips on curb ramps
- Installation of accessible tree grates
- Installation of utility covers
- Addressing other non-compliant accessibility conditions, as appropriate

SCOPING PUBLIC COMMENT PERIOD: In accordance with California Environmental Quality Act (CEQA) statutes and Guidelines, the LABOE has prepared a Notice of Preparation (NOP) and an Initial Study (IS) that is being circulated to agencies, organizations, neighbors, interested parties and the general public for review and comment. **Comments on the IS will be accepted until September 15, 2017.** Using the information obtained through the scoping period, the City will prepare an Environmental Impact Report (EIR) to analyze the environmental impacts of the proposed Project and alternatives.

SAFE SIDEWALKS LA

ENGINEERING
CITY OF LOS ANGELES

Public scoping meetings will be held on:

August 9, 2017, 6:00 p.m. – 8:00 p.m.
Ronald F. Deaton Civic Auditorium
100 W 1st Street, Los Angeles, CA 90012
Verbal and written public comments will also be accepted at the meeting.

August 14, 2017, 6:00 p.m. – 8:00 p.m.
Mid-Valley Senior Citizen Center
8825 Kester Avenue, Panorama City, CA 91402
Verbal and written public comments will also be accepted at the meeting.

August 24, 2017, 6:00 p.m. – 8:00 p.m.
Westchester Senior Citizen Center
8740 Lincoln Blvd, Los Angeles, CA 90045
Verbal and written public comments will also be accepted at the meeting.

The NOP and IS are available for public review at the following locations:

Council District	Organization	Address
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	Cypress Park Branch Library	1150 Cypress Ave, Los Angeles, CA 90065
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Organization	**Address**
City of Los Angeles Bureau of Engineering	1149 S. Broadway, Suite 600, Los Angeles, CA 90015
City of Los Angeles City Clerk	200 N. Spring Street, Room 360, Los Angeles, CA 90012

Please send your written comments by **September 15, 2017** to:

Shilpa Gupta, Environmental Supervisor I
City of Los Angeles Public Works, Bureau of Engineering
Environmental Management Group
1149 S. Broadway, Suite 600, Mail Stop 939

Comments may also be submitted by email to Shilpa.Gupta@lacity.org (please include 'SRP' in the subject line). Please also include the name, telephone number, mailing address, and e-mail address of a person to contact if we have any questions regarding your comment.

Report **(Click on underlined text to view report)**	**Review Status**	**Public Review Period**
Citywide Sidewalk Repair Program Notice of Preparation (English) **Citywide Sidewalk Repair Program Notice of Preparation (Spanish)** **Citywide Sidewalk Repair Program Notice of Preparation/Initial Study**	Open	7/27/17 - 9/15/17

Appendix D: Additional Outreach

1. **Stakeholder Email Campaigns**
    a. Email Campaigns
2. **Neighborhood Council Announcements**
    a. Sign-Up Sheets
3. **City Council Offices**
    a. City Council Social Media Posts

Participate in the Sidewalk Repair Program's First Environmental Review Meeting Tomorrow (Wednesday)!

Learn about the proposed Project and EIR process.

Wednesday, August 9, 2017
6:00 p.m. – 8:00 p.m.
Ronald F Deaton Civic Auditorium
100 W 1st St
Los Angeles, CA 90012

**All requests for reasonable accommodations must be made three working days in advance of the scheduled meeting date by calling Shilpa Gupta at (213) 485-4560.*

The Sidewalk Repair Program

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Can't make it? Additional ways to get involved:

- **Make a comment** at a scoping meeting (additional dates here)
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Participate in the Sidewalk Repair Program's Second Environmental Review Meeting - TONIGHT!

Learn about the proposed Project and EIR process.

Monday, August 14, 2017
6:00 p.m. – 8:00 p.m.
Mid-Valley Senior Citizen Center
8825 Kester Avenue
Panorama City, CA 91402

**All requests for reasonable accommodations must be made three working days in advance of the scheduled meeting date by calling Shilpa Gupta at (213) 485-4560.*

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Visit our website for additional information:
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Participate in the Sidewalk Repair Program's Last Environmental Review Meeting - THURSDAY!

Learn about the proposed Project and EIR process.

Thursday, August 24, 2017
6:00 p.m. – 8:00 p.m.
Westchester Senior Citizen Center
8740 Lincoln Blvd
Los Angeles, CA 90045

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The Sidewalk Repair Program's Environmental Review Comment Period is Ending - September 15th!

Provide Your Feedback Here

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Visit our website for additional information:
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The Sidewalk Repair Program's Environmental Review Comment Period is Ending Tomorrow: Friday, September 15th!

Provide Your Feedback Here

The Sidewalk Repair Program

- The purpose of the Sidewalk Repair Program (proposed Project) is to continue to amend and expand implementation of Safe Sidewalks LA and make City pedestrian facilities compliant with applicable accessibility requirements.
- The proposed Project would repair and upgrade sidewalks and curb ramps throughout the City of Los Angeles.
- Street tree removals and replacements, along with utility relocations, may be needed.
- The City may adopt policies and/or ordinances to assist in the administration of the proposed Sidewalk Repair Program and its objectives.
- A Notice of Preparation (NOP) and Initial Study (IS), which describe the proposed Sidewalk Repair Program and the anticipated scope of the EIR, are

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- A Notice of Preparation (NOP) and Initial Study (IS), which describe the proposed Sidewalk Repair Program and the anticipated scope of the EIR, are available for public review and comment at sidewalks.lacity.org/environmental-review-process.

Additional ways to provide feedback:

- **Submit comments** at http://sidewalks.lacity.commentinput.com/
- **Email** shilpa.gupta@lacity.org with "SRP" in the subject line and a valid mailing address in the email
- **Mail** written comments to:

Shilpa Gupta, Environmental Supervisor I
Los Angeles Bureau of Engineering
Environmental Management Group
1149 S. Broadway, Suite 600, Mail Stop 939
Los Angeles, CA 90015

Visit our website for additional information:
sidewalks.lacity.org/environmental-review-process

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- **Mail** written comments to:

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Los Angeles Bureau of Engineering
Environmental Management Group
1149 S. Broadway, Suite 600, Mail Stop 939
Los Angeles, CA 90015

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SAFE SIDEWALKS LA

ENGINEERING
CITY OF LOS ANGELES

Sidewalk Repair Program
Environmental Review Process

To receive additional updates and information on the Sidewalk Repair Program's Environmental Review Process, please sign up below.

First Name (Please Print Clearly)	Last Name (Please Print Clearly)	Email (Please Print Clearly)
Phyllis ~~Lozano~~	Lozano	PPL1@me.com
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Megan	McClaire	mmcclaire@advanceproj.org
MIKE	BATSTICK	BATSTICK@YAHOO.COM
RICK	STOCKER	RICKSTOCKER@GMAIL.COM

SAFE SIDEWALKS LA

ENGINEERING
CITY OF LOS ANGELES

MIM

Sidewalk Repair Program
Environmental Review Process

To receive additional updates and information on the Sidewalk Repair Program's Environmental Review Process, please sign up below.

First Name (Please Print Clearly)	Last Name (Please Print Clearly)	Email (Please Print Clearly)
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Valeida Gory		region8rep@mincla.org
MINC		info@mincla.org
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NICK SPANO	SPANO	nfspano@yahoo.com
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Julianna	Lassleben	jlassleben@gmail.com
Shelley	C. Brown	curiousr@me.com
Raul	Lopez	rlopez@lafsa.org
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Steve	Dunwoody	stevedunwoody@gmail.com
Brittany Blackie		brittany.blackie@gmail.com
Noel Brathwaite		
Marguerite Davis		
Veranza Rios		
Veraniza		

I think this is it

SAFE SIDEWALKS LA

ENGINEERING
CITY OF LOS ANGELES

Sidewalk Repair Program
Environmental Review Process

To receive additional updates and information on the Sidewalk Repair Program's Environmental Review Process, please sign up below.

First Name (Please Print Clearly)	Last Name (Please Print Clearly)	Email (Please Print Clearly)
Gregory Amerson	Amerson	GregoryAmerson999@yahoo
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Dolores Caldwell		
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Colen	Fresh	
~~Jim~~	~~Hines~~	~~Jhines@rubeletcontracting.com~~
MJ Parker	Parker	mjp13241@lausd.net
Mary ~~Scott~~	Scott	
Linda ~~Cleveland~~	Cleveland	Wattsusa@gmail.com

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Sidewalk Repair Program
Environmental Review Process

To receive additional updates and information on the Sidewalk Repair Program's Environmental Review Process, please sign up below.

First Name	Last Name	Email
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~~RITA~~	~~COOK~~	RMCONT@777@GMAIL
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Bridget	Hirsch	bridget.byrnes.hirsch@
JOHN	ACEVEDO	ahomesweethome@ernc.lo
Jesse	SAUCEDO	jesse.saucedo@ernc.la@att.net

imported into NB - David

SAFE SIDEWALKS LA

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CITY OF LOS ANGELES

Sidewalk Repair Program
Environmental Review Process

To receive additional updates and information on the Sidewalk Repair Program's Environmental Review Process, please sign up below.

First Name	Last Name	Phone	Email
Brad	Lee	323-2181315	—
Sandra Jenkins		323/ 963-2936	—
Jackie	PRUITT	323-4533215	
Veronica	Santana	213-357-8671	

SAFE SIDEWALKS LA

ENGINEERING
CITY OF LOS ANGELES

Sidewalk Repair Program
Environmental Review Process

To receive additional updates and information on the Sidewalk Repair Program's Environmental Review Process, please sign up below.

First Name (Please Print Clearly)	Last Name (Please Print Clearly)	Email (Please Print Clearly)
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Al	Betancourt	al.betancourt@outlook.com

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Sidewalk Repair Program
Environmental Review Process

To receive additional updates and information on the Sidewalk Repair Program's Environmental Review Process, please sign up below.

	First Name	Last Name	Email
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3.	Alem	Abebe	alemefl@yahoo.com
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	Keysha	Baynes	On file
4.	Lubanja	Tilahun	lubanja.LT@gmail.com
	DAVID Berhanu?	DAHLKE	DADADAHLKE@gmail.com
5.	Berhanu	ASFAW	berhanuasfaw@yahoo.com
	Ann	Davenport	ann.davenport65@gmail.com
6.	Diann	FARMER	farmerfarmer40@aol.com
	Diana?		farmerfarmer40?
1.	Laurie ?	Nemschoff	nemschoff laur@mindspring.com
2.			
3.	Alem	Abebe	alemefl@yahoo.com ✓
4.	Lubanja [illegible]	Tilahun	lubanja.LT@gmail.com ✓
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			alemefl@yahoo.com

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CITY OF LOS ANGELES

Sidewalk Repair Program
Environmental Review Process

To receive additional updates and information on the Sidewalk Repair Program's Environmental Review Process, please sign up below.

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~~Jennifer Knopp~~	Knopp	~~Knopp3x@roadrunner.com~~
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~~Carmen~~	Perez	
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Gary	Aggas	garyaggas@sbcglobal.net
Mike	O'Gara	~~MIKEO'GARASVANC~~
		MIKEOGARASVANC@AOL.COM

SAFE SIDEWALKS LA

ENGINEERING
CITY OF LOS ANGELES

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Environmental Review Process

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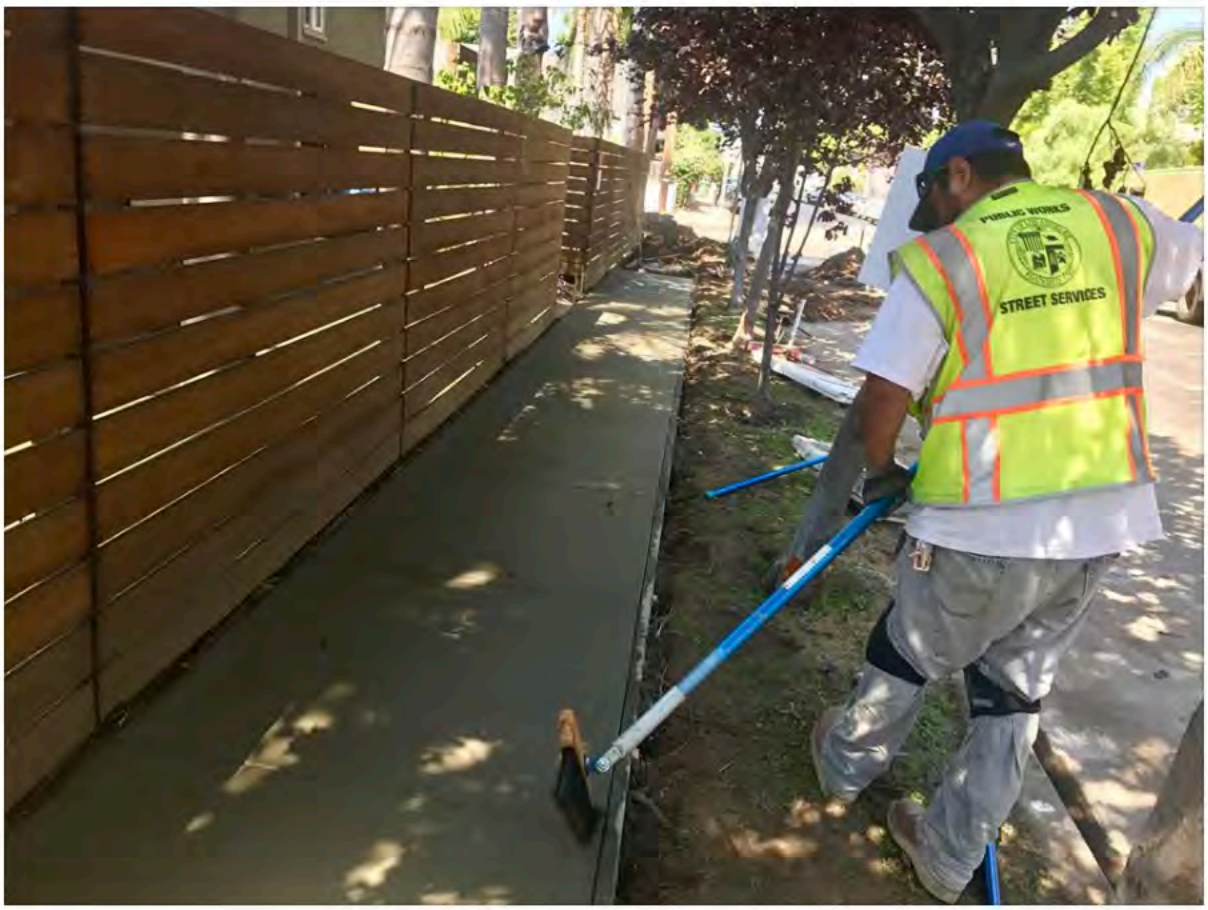
JEFF	CAMP	jeff.camp@lacity.org
Ophelia	Daniel	opheliadaniel33@yahoo.com
Marius	Stelly	marius.stelly@unnc.org
Lizy	Moromisato	lizy.moromisato@gmail.com

Councilmember Mike Bonin

Yesterday at 8:06am ·

City crews are hard at work in CD11 this week! Shout out to the Bureau of Street Services for fixing the Shell Avenue sidewalk in Venice.

Do you have recommendations for the City on its Sidewalk Repair Program EIR? Get your comment on the official record this week by visiting http://sidewalks.lacity.commentinput.com/"



Like Comment Share

Kristina Korn Shires, Heidi Buech and 28 others

Chronological

2 Shares

Mitch Englander @Mitch_Englander · 23h

LA's Sidewalk Repair Program Environmental Review Open Comment ends Sept 15. Info: sidewalks.lacity.org/environmental-… Comment: sidewalks.lacity.commentinput.com

3

Mitchell Englander - Los Angeles City Councilmember

23 hrs ·

LA's Sidewalk Repair Program Environmental Review Comment Period ends on September 15th.

For more information, go to sidewalks.lacity.org/environmental-review-process and to comment, go to sidewalks.lacity.commentinput.com.

Like Comment Share

Reseda Blvd

1 Share

Councilmember Marqueece Harris-Dawson

20 hrs ·

The comment period for the Environmental Review of the City's Sidewalk Repair Program is Ending on Friday, September 15th!

Make sure you share your thoughts with the city, including the needs we have in #SouthLA.

Get your comment on the official record by visiting http://sidewalks.lacity.commentinput.com.

Sidewalk Repair Program

SIDEWALKS.LACITY.COMMENTINPUT.COM

Like Comment Share

Nicole Vick, Jesse Aguiar and 4 others

12 Shares

Jose Huizar
54 mins · 🌐

The #CityofLA is conducting an environmental review process for the sidewalk repair program and the public comment period ends on Friday. Make your voice heard about what you want to see, including improvements in #CD14!

Leave your comment for the official record here:
http://sidewalks.lacity.commentinput.com/?id=BNbMi

Like Comment Share

Nick Saturn, Katherine Quintanilla and 3 others Top Comments

1 Share 1 Comment

Jose Huizar @josehuizar · 53m

#CityofLA is undergoing a Sidewalk Repair Program & you can make your voice heard until Friday. Comment here: sidewalks.lacity.commentinput.com/?id=BNbMi

1 1 1

Paul Koretz @PaulKoretzCD5 · Sep 7

Comment Period for the Environmental Review of the City's Sidewalk Repair Program is Ending on Friday, September 15th! COMMENT ONLINE

1 4

Paul Koretz

COUNCILMEMBER • 5TH DISTRICT • CITY OF LOS ANGELES

LEGISLATIVE ACTION

Perfecting the Parkway Policy

The City of Los Angeles will no longer allow people to park their cars in a parkway (the space between the sidewalk and curb.) Under L.A.M.C. 80.53, no person shall stop, stand or park a vehicle within the area of a parkway. A parkway can also be located where no curb exists between the sidewalk and the public street, the area reserved by the City for landscaping and utilities.

The move was prompted by parked vehicles blocking the pedestrian right of way. This is both a safety hazard and a neighborhood nuisance. Councilmember Koretz, who serves on the Transportation Committee, was happy to usher this improvement to our communities. The Department of Transportation has been placing warnings on vehicles in the past weeks but will begin enforcement (issuing parking citations) on August 14.

COMMUNITY IMPROVEMENTS

Upper Stone Canyon Reservoir Project

The LADWP has begun a water quality improvement project on Upper Stone Canyon Reservoir that will protect water quality, enhance water storage and improve area fire protection. Residents will begin to see more truck activity beginning

Upper Stone Canyon Reservoir Project

The LADWP has begun a water quality improvement project on Upper Stone Canyon Reservoir that will protect water quality, enhance water storage and improve area fire protection. Residents will begin to see more truck activity beginning next week using the I-405 freeway and Mulholland Drive to access the property. Please note: No trucks are allowed to head east from the reservoir. Heavier truck traffic between the hours of 7:00am-5:00pm will begin in mid-September. Some Saturday work may be required. For project updates, please visit www.LADWP.com/upperstone.

SoCalGas Pipeline Replacement Project on Sepulveda Blvd. will continue through late December 2017

SoCalGas has begun conducting pipeline safety work on South Sepulveda Boulevard between Sepulveda Way and Casiano Road Los Angeles. While no interruption to natural gas service is anticipated, drivers might want to think about finding alternate routes in their commute. This effort is part of SoCalGas' Pipeline Safety Enhancement Plan (PSEP), a multi-billion-dollar program that tests and updates the natural gas pipeline infrastructure in Southern California.

Customers with questions or concerns about the construction work may call SoCalGas' Customer Contact Center anytime, 24 hours a day, seven days a week at 1-800-427-2200. Customers may smell the odor of natural gas. Although this is normal when crews are working, SoCalGas encourages anyone who has concerns about the smell of gas to call from a safe location.

WORK: Monday - Friday: 9:00am - 3:30pm
HOURS Saturday 8:00am - 6:00pm

Some night work from 10:00pm-6:00am at the intersection of Moraga and Sepulveda.

Westwood Greenway: Overland Ave. to Westwood Blvd

This week, the LA Conservation Corps' Clean and Green team was out cleaning up the southern portion of the Westwood Greenway from Overland Ave. to Westwood Blvd. More than 30 kids from the program helped remove weeds, dry brush, and gave much need care to the Greenway.

Burbank Blvd improvements: Balboa Blvd to Hayvenhurst

The Department of Street Services did an amazing job clearing the weeds along the median on Burbank Blvd. from Balboa to Hayvenhurst. In addition, the Army Corp of Engineers is cleaning out the trash and debris on the south side of the street for fire safety. Councilmember Koretz

Burbank Blvd improvements: Balboa Blvd to Hayvenhurst

The Department of Street Services did an amazing job clearing the weeds along the median on Burbank Blvd. from Balboa to Hayvenhurst. In addition, the Army Corp of Engineers is cleaning out the trash and debris on the south side of the street for fire safety. Councilmember Koretz would like to thank Street Services and the Army Corp for helping keep our neighborhoods safe and clean.

OUT IN THE COMMUNITY

Homeless Encampments

Every month our office receives an average of two hundred fifty calls with questions about homeless encampments, the process for cleaning up encampments and the services offered to homeless individuals.

Following the direction and guidance of the City Attorney's office, here's the process:

1. If you are concerned about a homeless encampment in the Fifth District, please send an email to Paul.Koretz@lacity.org with a photo and the closest address to its location.
2. A field deputy will notify you that they've received the request and will then submit the information to the Bureau of Sanitation.
3. When the Bureau of Sanitation authorizes a homeless encampment cleanup, a report will be sent to the Los Angeles Homeless Service Authority (LAHSA), where LAHSA field representatives will engage with the homeless person at least three times.
4. If the homeless individual(s) refuse services provided through LAHSA, the Authority will then notify the Bureau of Sanitation to process the encampment for cleanup.
5. Each Council District is provided one day per month when the top five homeless encampments will be cleaned up. The Council office provides the top five locations to the Bureau of Sanitation.
6. The Bureau of Sanitation then coordinates with the local Police Divisions for the determined encampment cleanup day. Please note that due to safety concerns, the Bureau will not clean an encampment if the LAPD is not present.
7. The Bureau of Sanitation will post a 72-hour notice near the homeless encampment informing the homeless individual(s) how long they have until the City arrives to service the area.
8. The Bureau of Sanitation and the LAPD arrive at the requested site directing the homeless person to move their personal belongings so that the Bureau can remove all hazardous waste, trash/debris, and power wash the area.

Please note that when the Bureau of Sanitation completely sanitizes the area, the homeless individual(s) may return to the location. As this happens quite often, please refer to the first step so that the location is re-authorized for cleanup. The Bureau is not allowed to return to a location after it has been serviced, and they cannot refer to an old authorization in order to expedite a service clean up. Altogether, the time it takes the City to coordinate and process an encampment is 10 to 20 business days.

Art and Culture in Council District 5

The Cultural Affairs Commission has approved two public art projects this month in the Fifth Council district -- the Freedom Sculpture and the Overland Avenue Mural.

Art and Culture in Council District 5

The Cultural Affairs Commission has approved two public art projects this month in the Fifth Council district -- the Freedom Sculpture and the Overland Avenue Mural.

The Freedom Sculpture, a Statue of Liberty for the West Coast, was installed this summer on the 4th of July, and is now officially managed by the City of Los Angeles. Gifted by the Farhang Foundation to celebrate freedom and Iranian-American culture, the sculpture symbolizes the promotion of cultural diversity in West Los Angeles. Councilmember Koretz was honored to accept this gift on behalf of the City of Los Angeles.

The Cultural Affairs Commission also approved the Overland Avenue Mural which will be installed on the retaining wall of the 3200 block of Overland Ave. The mural will showcase a number of indigenous species to the West Los Angeles area, with an otherworldly sense of space using abstract color and shapes.

FRIENDLY REMINDERS

The Sidewalk Repair Program Environmental Review Has Begun

As we have previously reported, the City has engaged in a massive Sidewalk Repair Program in part to repair and upgrade sidewalks and curb ramps adjacent to City-owned pedestrian facilities so that they are compliant with applicable accessibility requirements. Street tree removals and replacements, along with utility relocations, may be needed, as well. Additionally, the City may adopt policies and/or ordinances to assist in the administration of the proposed Sidewalk Repair Program and its objectives.

In order to do this, the City must engage in an environmental review of the project. A Notice of Preparation (NOP) and Initial Study (IS), which describe the proposed Sidewalk Repair Program and the anticipated scope of the Environmental Impact Review, are available for public review and comment at the following website: sidewalks.lacity.org/environmental-review-process.

Make a comment at one of the remaining scoping meetings this month:

Monday, August 14, 2017 **6:00 p.m. – 8:00 p.m.** **Mid-Valley Senior Citizen Center** 8825 Kester Avenue	**Thursday, August 24, 2017** **6:00 p.m. – 8:00 p.m.** **Westchester Senior Citizen Center** 8740 Lincoln Blvd

Make a comment at one of the remaining scoping meetings this month:

Monday, August 14, 2017 **6:00 p.m. – 8:00 p.m.** **Mid-Valley Senior Citizen Center** 8825 Kester Avenue Panorama City, CA 91402	**Thursday, August 24, 2017** **6:00 p.m. – 8:00 p.m.** **Westchester Senior Citizen Center** 8740 Lincoln Blvd Los Angeles, CA 90045

Submit comments at sidewalks.lacity.org/environmental-review-process
Email shilpa.gupta@lacity.org with "SRP" in the subject line and a valid mailing address in the email
Mail written comments to:

Shilpa Gupta, Environmental Supervisor I
Los Angeles Bureau of Engineering
Environmental Management Group
1149 S. Broadway, Suite 600, Mail Stop 939
Los Angeles, CA 90015

Planning 101 Trainings for LA Community Members

Friendly reminder: The Department of City Planning and the Department of Neighborhood Empowerment will be hosting a series of Planning 101 Trainings throughout the month of August. The trainings are intended to provide an overview of the basic elements of planning, land use, and zoning for community members who are new to the planning process or for those who would like to get a refresher course. Please RSVP if you would like to attend one of these trainings by email lisette.covarubias@lacity.org or via phone at 213.978.1321.

West:
Wednesday, August 16, 6:00pm-9:30pm
Westchester Municipal Building, Community Room
7166 W. Manchester Ave.
Los Angeles, CA 90045

Valley:
Monday, August 28, 6:00pm-9:30pm
Pacoima City Hall
13520 Van Nuys Blvd, 2nd Floor
Pacoima, CA 91342

Follow Us

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Los Angeles, CA 90045

Valley:
Monday, August 28, 6:00pm-9:30pm
Pacoima City Hall
13520 Van Nuys Blvd, 2nd Floor
Pacoima, CA 91342

Follow Us

Paul Krekorian
20 hrs ·

#SafeSidewalksLA wants to hear from you. The City of Los Angeles is conducting an environmental review process for the sidewalk repair program. As we move ahead with our comprehensive plan to fix sidewalks, the review will continue to amend and expand the repair program over the next 30 years. The comment period ends Friday, Sept. 15. You can submit your feedback online at http://sidewalks.lacity.org/environmental-review-process

Environmental Review Process | Safe Sidewalks LA

NEW! Please see the attached presentation from the Scoping Meeting held on August 9, 2017 at the Deaton Auditorium. Sidewalk Repair Program Scoping...

SIDEWALKS.LACITY.ORG

Like Comment Share

Sam Baker and JoAnn Krekorian

Top Comments

1 Share

Paul Krekorian @PaulKrekorian · 21h

#SafeSidewalksLA wants to hear from you. Submit your feedback about the city's 30 year plan to fix sidewalks in LA. ow.ly/yd3d30fa2zv

1 1 2

Nury Martinez
2 hrs ·

The City of Los Angeles is conducting an environmental review process for the sidewalk repair program, Safe Sidewalks LA.

The time period for the public to submit comments and concerns on the environmental Notice of Preparation/Initial Study ends on Friday September 15, 2017

The City of Los Angeles encourages members of the public to submit a comment by going to the Safe Sidewalks LA comment page at http://sidewalks.lacity.commentinput.com/. Comments can be submitted online or in writing via mail.

The purpose of the environmental review is to continue to amend and expand implementation of the sidewalk repair program and make City pedestrian facilities compliant with applicable accessibility requirements.

Like Comment Share

Mayra Garcia, Cindy Ortiz and 5 others

Councilmember David E. Ryu

19 hrs · 🌐

The city wants to hear from you!
Comment Period for the Environmental Review of the City's Sidewalk Repair Program is ending this Friday, September 15th.

Get your comment on the official record here:
http://sidewalks.lacity.commentinput.com.

Sidewalk Repair Program

SIDEWALKS.LACITY.COMMENTINPUT.COM

Like Comment Share

5 Top Comments

Councilmember David Ryu, Council District 4 AGENCY

The City of Los Angeles is conducting an environmental review process for the sidewalk repair program, Safe Sidewalks LA.

The time period for the public to submit comments and concerns on the environmental Notice of Preparation/Initial Study ends on Friday September 15, 2017

The City of Los Angeles encourages members of the public to submit a comment by going to the Safe Sidewalks LA comment page at http://sidewalks.lacity.commentinput.com.... Comments can be submitted online or in writing via mail.

About the Sidewalk Repair Program
The purpose of the...Read more

Sep 11 in General to subscribers of Council District 4

View or reply Thank · Private message

David E. Ryu @davideryu · 19h

Public comment for the Environmental Review of the City's Sidewalk Repair Program ends Friday 9/15. Comment here: sidewalks.lacity.commentinput.com

Herb J. Wesson, Jr.
September 10 at 10:30am ·

The City is conducting an environmental review of Safe Sidewalks LA, our Sidewalk Repair Program, and we want to hear from you. Share your thoughts on this program at http://sidewalks.lacity.commentinput.com.

Like Comment Share

Nery Larios Velasquez, Jacqueline Nunn and 3 others

Top Comments

Herb J. Wesson, Jr. @HerbJWesson · Sep 8

The City is doing an environmental review for Safe Sidewalks L.A and wants to hear from you. Share your thoughts bit.ly/2wN8qDg

2 6 4

12 Sep Weigh-In on SafeSidewalks L.A.

Posted at 20:07h in Newsletter by Caolinn Mejza • Share

The City of Los Angeles is conducting an environmental review of Safe Sidewalks L.A., the City's sidewalk repair program, and wants to hear from you. The purpose of the review is to continue amending and implementing the sidewalk repair program and make our pedestrian areas more accessible. Provide your comments before the September 15th deadline at http://sidewalks.lacity.commentinput.com

Recent Posts

Opening Kaiser Permanente Baldwin Hills-Crenshaw

Kicking off Civic Engagement Month with EmpowerLA

Celebrating the 90th Anniversary of the L.A. County Fair

Lunch with Rabbi Rubin and Congregation Etz Chaim of Hancock Park

Increasing Immigrant Protections Following DACA Decision

LAFD in Houston and Florida

Weigh-In on SafeSidewalks L.A.

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Statement

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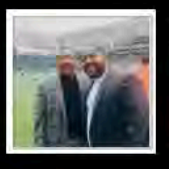


Appendix E: Public Information Materials

1. **Informational Materials – Handouts**
    a. Station Guide
    b. Brochure
    c. Speaker Card
    d. Written Comment Sheet
2. **Informational Materials – Project Display Boards**
3. **Informational Materials – Project Presentation**

STATION ROAD MAP

WELCOME!

SAFE SIDEWALKS LA

USE THIS "STATION ROAD MAP" TO GUIDE YOUR EXPERIENCE.

1. START HERE

Make sure you sign-in to receive project updates.

2. PROPOSED PROJECT

Learn more about Safe Sidewalks LA and the proposed Project.

3. ENVIRONMENTAL REVIEW PROCESS

Learn about the environmental review process and the potential environmental impacts identified.

4. STREET TREES

Learn about the environmental impacts associated with street tree removal and replacement.

5. COMMENTS

Provide your input.

HOW TO PARTICIPATE IN TONIGHT'S MEETING

Thank you for taking the time to participate in the public scoping meeting for the proposed Sidewalk Repair Program ("proposed Project"). Tonight you will learn more about the Environmental Review Process and have an opportunity to provide input on the proposed Project.

1. **Sign-In.**
2. **Visit** the Stations.
3. **Learn** about the proposed Project at 6:15 p.m.
4. **Comment:**
   - **Written - comment via the comment sheets or electronically on laptops provided.**
   - **Oral - Speak during the public comment portion of tonight's meeting by filling out a speaker card.**

OTHER WAYS TO GET YOUR COMMENT ON THE OFFICIAL RECORD:

1. *Submit a comment via the comment sheets or laptops provided.*
2. *Submit comments at sidewalks.lacity.org/environmental-review-process.*
3. *Email shilpa.gupta@lacity.org with "SRP" in the subject line and a valid mailing address in the email.*
4. *Mail a comment by September 15, 2017 to:*

Shilpa Gupta
Environmental Supervisor I
Los Angeles Bureau of Engineering
Environmental Management Group
1149 S. Broadway, Suite 600, Mail Stop 939
Los Angeles, CA 90015

THANK YOU!

Visit our website for additional information: sidewalks.lacity.org/environmental-review-process

SAFE SIDEWALKS LA

Sidewalk Repair Program Environmental Study

Continuing, Amending and Expanding Safe Sidewalks LA

- The purpose of the Sidewalk Repair Program (proposed Project) is to continue to amend and expand implementation of Safe Sidewalks LA and make City pedestrian facilities compliant with applicable accessibility requirements.
- The proposed Project would repair and upgrade sidewalks and curb ramps throughout the City of Los Angeles.
- Street tree removals and replacements, along with utility relocations, may be needed.
- The City may adopt policies and/or ordinances to assist in the administration of the proposed Sidewalk Repair Program and its objectives.
- A Notice of Preparation (NOP) and Initial Study (IS), which describe the proposed Sidewalk Repair Program and the anticipated scope of the Environmental Impact Report (EIR), are available for public review and comment at ***sidewalks.lacity.org/environmental-review-process.***

Environmental Review Process

To Provide Input:

ATTEND
Public Scoping Meetings. All presentations start at 6:15 p.m. (See reverse side for details).

ONLINE
Visit **sidewalks.lacity.org/environmental-review-process**.

EMAIL
shilpa.gupta@lacity.org with "SRP" in the subject line and a valid mailing address in the email.

MAIL
You can mail written comments to Shilpa Gupta (address below).

Written Comments Mailing Address:

Shilpa Gupta, Environmental Supervisor I Los Angeles Bureau of Engineering Environmental Management Group
1149 S. Broadway, Suite 600, Mail Stop 939 Los Angeles, CA 90015

PUBLIC SCOPING MEETINGS*

Wednesday, August 9, 2017
6:00 p.m. – 8:00 p.m.
(presentation starts at 6:15)
Ronald F Deaton Civic Auditorium
100 W 1st St
Los Angeles, CA 90012

Monday, August 14, 2017
6:00 p.m. – 8:00 p.m.
(presentation starts at 6:15)
Mid-Valley Senior Citizen Center
8825 Kester Avenue
Panorama City, CA 91402

Thursday, August 24, 2017
6:00 p.m. – 8:00 p.m.
(presentation starts at 6:15)
Westchester Senior Citizen Center
8740 Lincoln Blvd
Los Angeles, CA 90045

*All requests for reasonable accommodations must be made three working days in advance of the scheduled meeting date by calling Shilpa Gupta at: **(213) 485-4560**.

Frequently Asked Questions

Q: *What is the proposed Project?*
A: The proposed Project would continue, amend and expand implementation of Safe Sidewalks LA over approximately 30 years to make City pedestrian facilities compliant with applicable accessibility requirements. Existing sidewalks and walkways will be repaired or replaced under the proposed Project. Street tree removals and replacements, along with utility relocations, may be needed. The City may also adopt policies and/or ordinances to assist in the administration of the proposed Project.

Q: *What is Safe Sidewalks LA and how does it work ?*
A: Safe Sidewalks LA is an ongoing sidewalk repair program that offers three ways for constituents to initiate repairs:

- Access Request - Individuals with a mobility disability may submit a request for a sidewalk repair.
- Rebate - Any residential or commercial property owner may voluntarily repair a sidewalk to meet accessibility requirements and then receive a rebate in a specified amount.
- Report a Sidewalk Problem - The general public may report a sidewalk in need of repair.
- For additional information regarding Safe Sidewalks LA, please visit ***sidewalks.lacity.org***.

Q: *How will street trees be impacted by the Project?*
A: The proposed Project will potentially result in the removal of large quantities of mature street trees that are the cause of sidewalk damage. Street trees are expected to be replaced at a 2:1 ratio, consistent with current City policy. An ordinance and/or policy may be developed to establish criteria for the proposed Project related to street tree preservation, and removal and replacement. The Initial Study discusses the potential impacts from the proposed Project related to street trees.

Q: *Where can I get more information about the environmental review process?*
A: Visit ***sidewalks.lacity.org/environmental-review-process;*** review the NOP and IS; and submit your comments regarding potential environmental impacts of the proposed Project. Comments are due by September 15, 2017.

Copies of the NOP and IS are available in 35 libraries across the City of Los Angeles for review. A map of the public library locations is available at the webpage above.

Examples of Sidewalk Damage and Access Barriers


Cracking


Uplift


Missing curb ramps

SAFE SIDEWALKS LA

Estudio ambiental del Programa de Reparación de Aceras

Continuar, modificar y expandir "Aceras Seguras para Los Ángeles"

- El propósito de la propuesta de Programa de Reparación de Aceras es el de continuar, modificar y expandir la implementación de Aceras Seguras para Los Angeles, a fin de que los servicios para los peatones urbanos cumplan con los requerimientos aplicables de accesibilidad.
- El programa propuesto de reparación de aceras busca reparar y mejorar las aceras y las rampas de los cordones de acera a lo largo de toda la ciudad.
- Se repararán o reemplazaran las aceras y pasarelas peatonales, así como los espacios donde faltan las aceras.
- La ciudad podrá adoptar políticas y/u ordenanzas para apoyar en la administración eficiente del Programa propuesto para la Reparación de Aceras y sus objetivos.
- Un Aviso de Preparación (NOP, por sus siglas en inglés) y Estudio Inicial (IS, por sus siglas en inglés), que describen el programa propuesto de reparación de aceras y el alcance anticipado del Informe de Impacto Medioambiental (EIR, por sus siglas en inglés), están disponibles para la revisión pública y comentan en ***sidewalks.lacity.org/environmetal-review-process.***

Proceso de revisión del informe de impacto medioambiental (EIR)

Para participar en el proceso:

PARTICIPAR

Reuniones Públicas. Todas las presentaciones comenzarán a las 6:15 p.m. (Vea el reverso por los detalles).

EN LÍNEA

Visite: ***sidewalks.lacity.org/environmental-review-process.***

CORREO ELECTRONICO

shilpa.gupta@lacity.org incluya "SRP" en la línea correspondiente al asunto y una dirección de correo postal en el cuerpo del correo electrónico.

CORREO POSTAL

Usted puede enviar sus comentarios escritos por correo postal, dirigiéndose a Shilpa Gupta (la dirección postal está al pie).

Dirección Postal para los comentarios escritos:

Shilpa Gupta, Environmental Supervisor I Los Angeles Bureau of Engineering Environmental Management Group
1149 S. Broadway, Suite 600, Mail Stop 939 Los Angeles, CA 90015

REUNIONES PÚBLICAS*

Miércoles, 9 de Agosto de 2017, desde las 6:00 p.m. hasta las 8:00 p.m. (la presentación comienza a las 6:15)

Ronald F Deaton Civic Auditorium
100 W 1st St
Los Angeles, CA 90012

Lunes, 14 de Agosto de 2017, desde las 6:00 p.m. hasta las 8:00 pm (la presentación comienza a las 6:15)

Mid-Valley Senior Citizen Center
8825 Kester Avenue
Panorama City, CA 91402

Jueves, 24 de agosto de 2017, desde las 6:00 A.m. Hasta las 8:00 p.m. (la presentación comienza a las 6:15)

Westchester Senior Citizen Center
8740 Lincoln Blvd
Los Angeles, CA 90045

*Todas as solicitudes para acomodos razonables deberán ser realizadas con tres días laborales de anticipación a las fechas programadas para las reuniones, llamando a Shilpa Gupta al: **(213) 485-4560**.

Preguntas Frecuentes

Q: *¿Cuál es el Proyecto propuesto?*
A: El Proyecto propuesto continuaría, modificaría y expandiría la implementación de Aceras Seguras para Los Angeles durante aproximadamente 30 años, a fin de que los servicios para los peatones urbanos cumplan con los requerimientos aplicables de accesibilidad. Se repararán o reemplazaran las aceras y pasarelas peatonales según el Proyecto propuesto. Se podría necesitar la remoción y reemplazo de los árboles de la calle, así como reubicar algunos servicios públicos. La ciudad podrá adoptar políticas y/u ordenanzas para apoyar en la administración del Programa propuesto para la Reparación de Aceras y sus objetivos.

Q: *¿Que es el Programa de Reparación de Aceras y cómo funcionará?*
A: Aceras Seguras para Los Angeles es un programa de reparación de aceras en curso que ofrece tres maneras para que los electores inicien las reparaciones:

- Solicitud de Acceso: Las personas con discapacidad de movimiento pueden enviar una solicitud de reparación de aceras.
- Reembolso: Cualquier dueño de una propiedad residencial o comercial pude reparar en forma voluntaria la acerca a fin de cumplir con los requerimientos de accesibilidad y entonces recibir el reembolso del monto especificado de los gastos.
- Informar sobre un problema de la acera: El público en general puede informar sobre la necesidad de reparación de una acera en particular.
- Para mas información, por favor visite el sitio web: ***sidewalks.lacity.org.***

Q: *¿Cómo serían afectados los arboles de las calles debido al Proyecto?*
A: El Proyecto propuesto potencialmente va a retirar árboles maduros que dañan la acera. Los árboles se prevé sustituir en una proporción de 2:1, bajo la política de la ciudad. Una ordenanza y/o política puede ser desarrollado para establecer criterios para la propuesta de proyecto relacionado con la conservación y la extracción y reemplazo de árboles. El IS analiza el impacto potencial de la propuesta del proyecto.

Q: *¿Dónde puedo obtener más información sobre El Informe de Impacto Medioambiental (EIR)?*
A: Visite ***sidewalks.lacity.org./environmental-review-process***, revise la NOP/IS, y envié comentarios sobre impactos posibles ambientales del proyecto. Los comentarios son debido al 15 de Septiembre de 2017.

Copias de la NOP/IS están disponible en 35 bibliotecas en Los Ángeles para su revisión. Un mapa de las ubicaciones de bibliotecas está disponible en la página web anterior.

Ejemplos de daños en las aceras y de las barreras de acceso

Agrietamiento

Levantamiento de acera

Falta de rampas

sidewalks.lacity.org/environmental-review-process

SAFE SIDEWALKS LA

ENGINEERING
CITY OF LOS ANGELES

REQUEST TO SPEAK

PUBLIC SCOPING MEETING

Please print.

Date: _____

Name: _____

Organization: _____

Address: _____

PLEASE SUBMIT THIS FORM TO A STAFF MEMBER.

NOTE: Speakers cannot cede their time to other people to speak on their behalf.

SAFE SIDEWALKS LA

ENGINEERING
CITY OF LOS ANGELES

REQUEST TO SPEAK

PUBLIC SCOPING MEETING

Please print.

Date: _____

Name: _____

Organization: _____

Address: _____

PLEASE SUBMIT THIS FORM TO A STAFF MEMBER.

NOTE: Speakers cannot cede their time to other people to speak on their behalf.

SAFE SIDEWALKS LA

ENGINEERING
CITY OF LOS ANGELES

Comment Sheet / *Hoja del Comentario*

Please use this form to provide feedback and comments to the City of Los Angeles Bureau of Engineering on the proposed project and the content of the Draft Environmental Impact Report. Your input will become part of the public record and will be included in the Draft EIR. Comments are due no later than 11:59 p.m. on September 15, 2017 (end of the public comment period). Please submit your comments via email to shilpa.gupta@lacity.org or mail them to Shilpa Gupta, Environmental Supervisor I Los Angeles Bureau of Engineering, Environmental Management Group, 1149 S. Broadway, Suite 600, Mail Stop 939 Los Angeles, CA 90015. Thank you for participating.

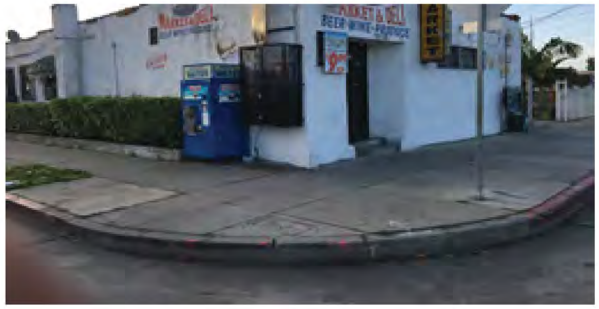
Name / *Nombre*:	Organization (if any) / *Organización (si hay alguno):*
Address / *Domicilio*:	
Phone Number / *Número de Télefono:*	Email Address / *Correo Electrónico*:

Comments / *Comentarios*:

*Continue on reverse side if needed / *Continúe en el reverso si lo necesita*

START HERE

REGISTRARSE AQUÍ



Before

During

After

Sidewalk Repair Program

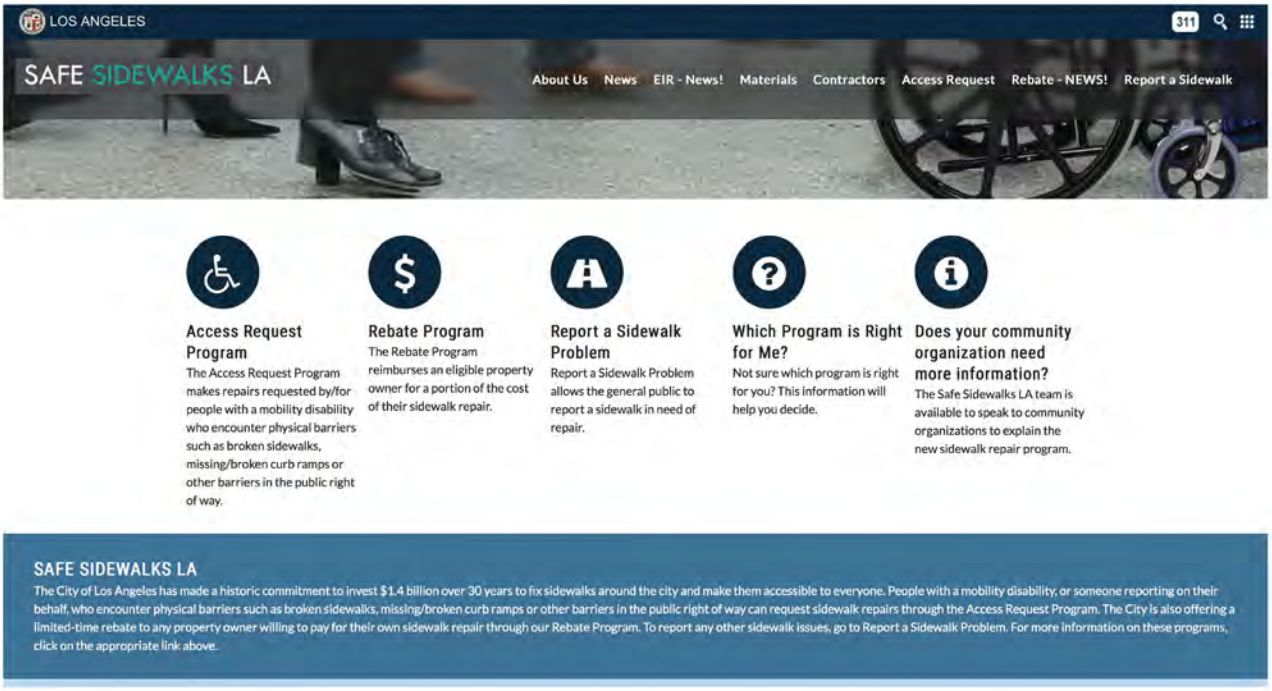
ENGINEERING
CITY OF LOS ANGELES

Proposed Project

Project Purpose:

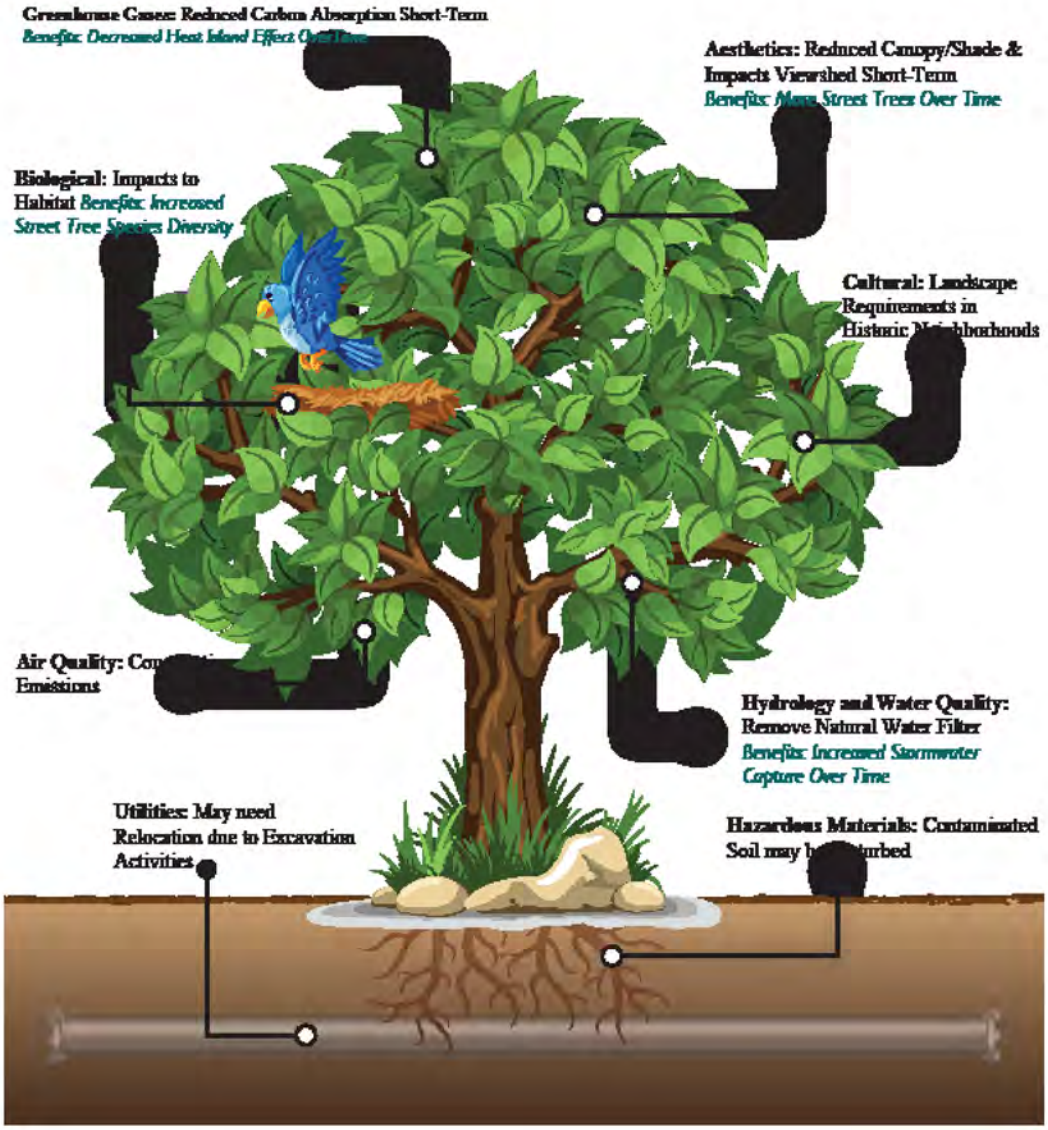
Continue, amend, and expand implementation of Safe Sidewalks LA and make City pedestrian facilities compliant with applicable accessibility requirements.

- Safe Sidewalks LA: Access Request, Rebate, and Report a Sidewalk Problem (Program Access Improvements).
- Approval of street tree preservation, removal, and replacement criteria.
- Utility relocations as applicable.



Potential Impacts to Street Trees

Environmental Impacts Associated with Street Tree Removal and Replacement

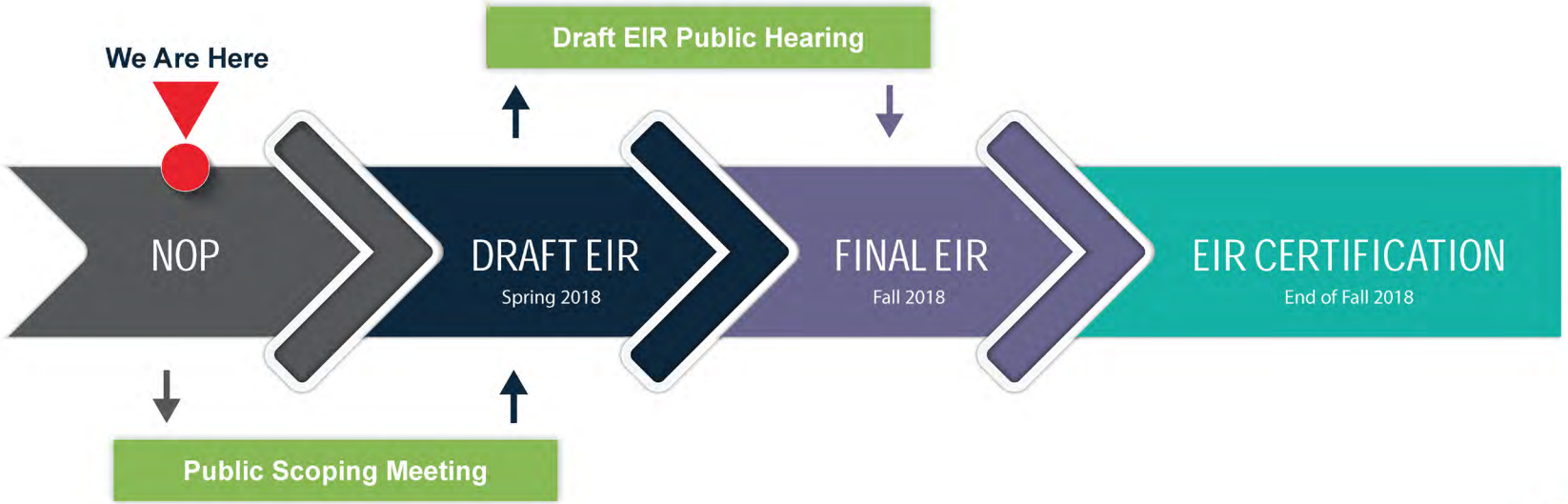


STREET TREES

Sidewalk Repair Program

ENGINEERING

Environmental Review Process



ENVIRONMENTAL REVIEW PROCESS

Sidewalk Repair Program

ENGINEERING
CITY OF LOS ANGELES

Potential Environmental Impacts

- Aesthetics
- Air Quality
- Biological Resources
- Cultural Resources
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology/Water Quality
- Land Use/Planning
- Noise
- Transportation/Traffic
- Tribal Cultural Resources
- Utilities and Service Systems

Air Quality

Aesthetics

Hydrology/Water Quality

Biological Resources

Cultural Resources

Transportation/Traffic

ENVIRONMENTAL REVIEW PROCESS

Sidewalk Repair Program

ENGINEERING
CITY OF LOS ANGELES

COMMENTS

COMENTARIOS

ATTEND
Public Scoping Meetings. All presentations start at 6:15 p.m.

ONLINE
Visit **sidewalks.lacity.org/environmental-review-process**.

EMAIL
shilpa.gupta@lacity.org with "SRP" in the subject line and a valid mailing address in the email.

MAIL
You can mail written comments to Shilpa Gupta (see address below).

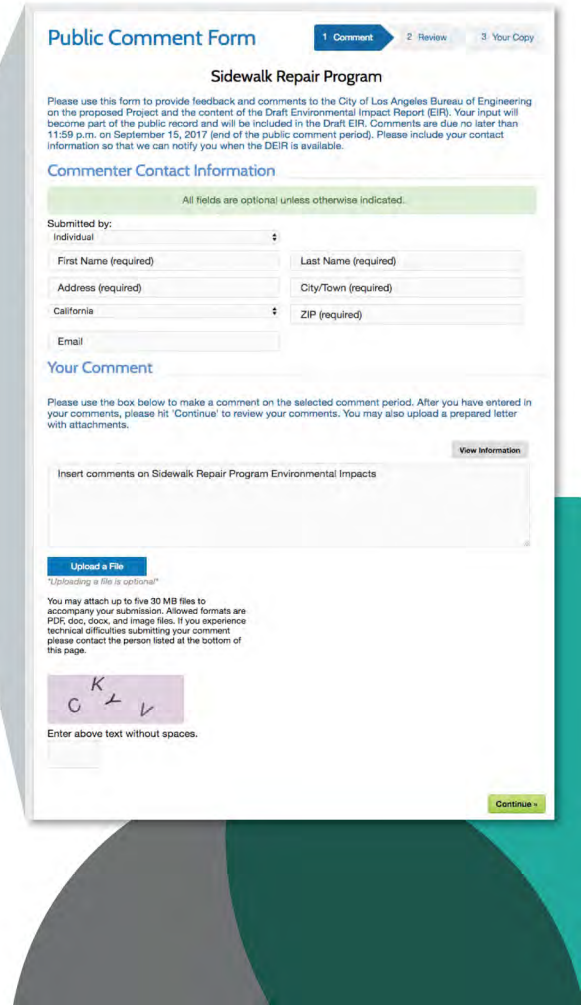
Mailing Address:
Shilpa Gupta, Environmental Supervisor I
Los Angeles Bureau of Engineering
Environmental Management Group
1149 S. Broadway, Suite 600, Mail Stop 939
Los Angeles, CA 90015

1. Attend a scoping meeting and make comments during the public comment period. A transcript will be created of the meeting to record your comment. Please make sure to sign in at the meeting to join the mailing list and receive environmental review updates.

2. Submit comments online at the following link: **sidewalks.lacity.commentinput.com** Please be sure to include your contact information.

3. Email your comment to Shilpa.Gupta@lacity.org (please include 'SRP' in the subject line). Please include your contact information, including name, telephone number, mailing address, and e-mail address so that we can contact you if we have any questions regarding your comment. We will also use this information to add you to the mailing list so that you can receive environmental review updates.

4. Complete a comment card or write a letter that includes your contact information to our mailing address.



Sidewalk Repair Program

ENGINEERING
CITY OF LOS ANGELES

COMMUNITY UPDATE

ENGINEERING
CITY OF LOS ANGELES

SAFE SIDEWALKS LA

City of Los Angeles Sidewalk Repair Program

Last Updated:
August 11, 2017

Agenda

consensus to add City Seal by Engineering logo on all slides

ENGINEERING
CITY OF LOS ANGELES

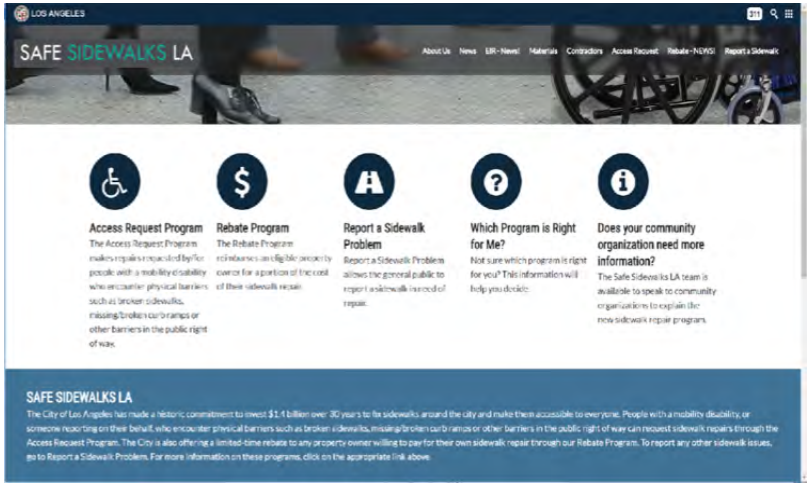
- Sidewalk Repair Program Project Description
- Environmental Review Process
- Potential Environmental Impacts
- How to Provide Input
- Public Comment

Sidewalk Repair Program-Proposed Project

ENGINEERING
CITY OF LOS ANGELES

Project Purpose: Continue, amend, and expand implementation of Safe Sidewalks LA and make City pedestrian facilities compliant with applicable accessibility requirements

- Safe Sidewalks LA: Access Request, Rebate, and Report a Sidewalk Problem (Program Access Improvements).
- Approval of street tree preservation, removal and replacement criteria
- Utility relocations as applicable



Existing Conditions
Examples of Sidewalk Damage and Access Barrier

1

11,000 miles of sidewalks estimated within LA City. Conditions of these existing sidewalks vary greatly.

2

3

4

Existing Conditions
Examples of Sidewalk Damage and Access Barrier

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5

6

7

8

Construction Activities

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- **Work under the proposed Project may include:**
  - Installation of missing curb ramps; repair/correction of existing curb ramps
  - Removal and replacement of broken, uneven, displaced, or uplifted sidewalks
  - Correction of non-compliant slopes
  - Providing clearance and/or widening along the pedestrian path of travel
  - Utility relocation, and/or installation or correction of utility covers
  - Repairs and/or removal and replacement of driveways, curbs, and gutters impacted by accessibility requirements
  - Street tree preservation, removal, and/or replacement
  - Street tree root pruning and canopy pruning
  - Addressing other non-compliant accessibility conditions, as required

Construction Activities

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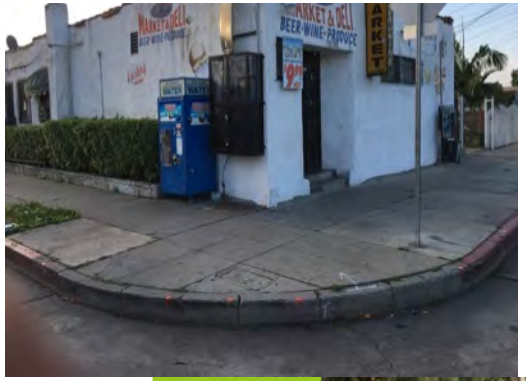
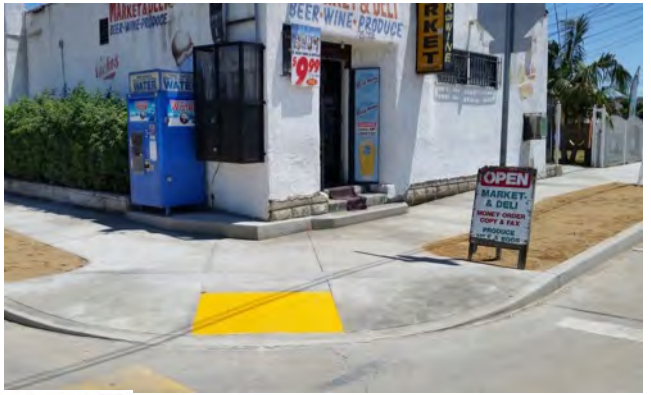
CITY OF LOS ANGELES

Before



During

After



Environmental Review Process Overview

Project Objectives

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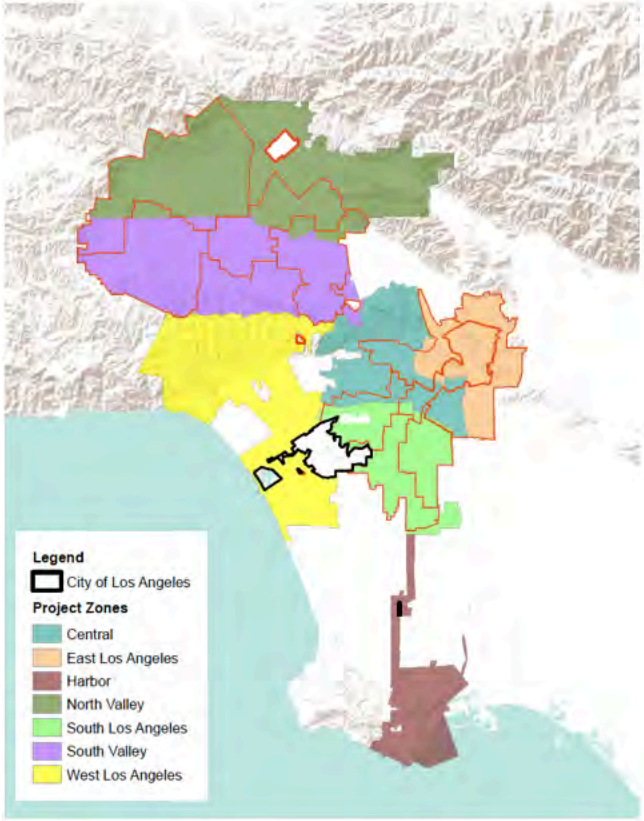
CITY OF LOS ANGELES

1. Continue to implement and amend the existing Safe Sidewalks LA program, as needed, for sidewalk and curb ramp repairs within the City.

2. Identify criteria for street tree preservation, and removal and replacement requirements where street trees are the cause of sidewalk damage and adopt policies and/or an ordinance related to these criteria to implement the proposed Project.

3. Consider the City's sustainability goals when implementing the Sidewalk Repair Program.

Location and Project Zone Communities



Project Zone

- North Valley
- South Valley
- West Los Angeles
- Central Los Angeles
- East Los Angeles
- South Los Angeles
- Harbor

Project Zone	Total Area (sq. miles)	Council Districts	Population	Housing Units
North Valley	126.8	2,3,6,7,12	707,390	203,971
South Valley	97.6	2,3,4,5,6,12	758,815	288,505
West LA	90.0	4,5,11	431,348	194,409
Central LA	48.8	1,4,5,9,10,13,14	733,525	291,297
East LA	37.6	1,4,13,14	432,611	130,516
South LA	43.8	1,8,9,10,15	734,593	218,287
Harbor	33.9	15	205,218	67,000
Totals	478.5		4,003,500	1,393,985

Environmental Resource Areas Potentially Impacted by Proposed Project

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CITY OF LOS ANGELES

-Aesthetics

-Air Quality

-Biological Resources

-Cultural Resources

-Greenhouse Gas Emissions

-Hazards and Hazardous Materials

-Hydrology/Water Quality

-Land Use/Planning

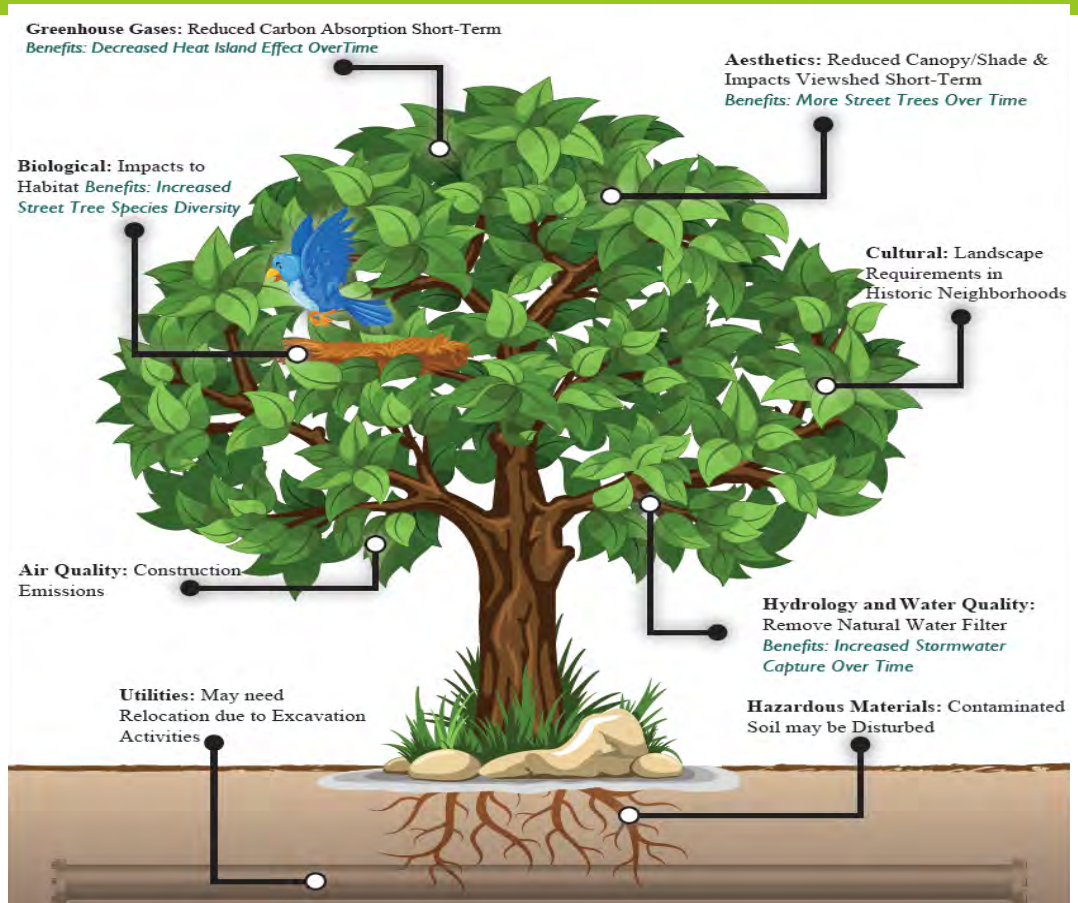
-Noise

-Transportation/ Traffic

-Tribal Cultural Resources

-Utilities and Service Systems

Potential Environmental Impacts Associated with Street Tree Removal and Replacement



Scoping Phase

ENGINEERING
CITY OF LOS ANGELES

Public Scoping Comment Period

July 27, 2017 through September 15, 2017

Public Scoping Meetings

- August 9, 2017, 6 p.m.–8 p.m., Ronald F. Deaton Civic Auditorium, 100 W 1st St (Main), Los Angeles, CA 90012

- August 14, 2017, 6 p.m.–8 p.m., Mid-Valley Senior Citizen Center, 8825 Kester Ave, Panorama City, CA 91402

- August 24, 2017, 6 p.m.–8 p.m., Westchester Senior Citizen Center, 8740 Lincoln Blvd, Westchester, CA 90045

Availability of the Notice of Preparation/Initial Study

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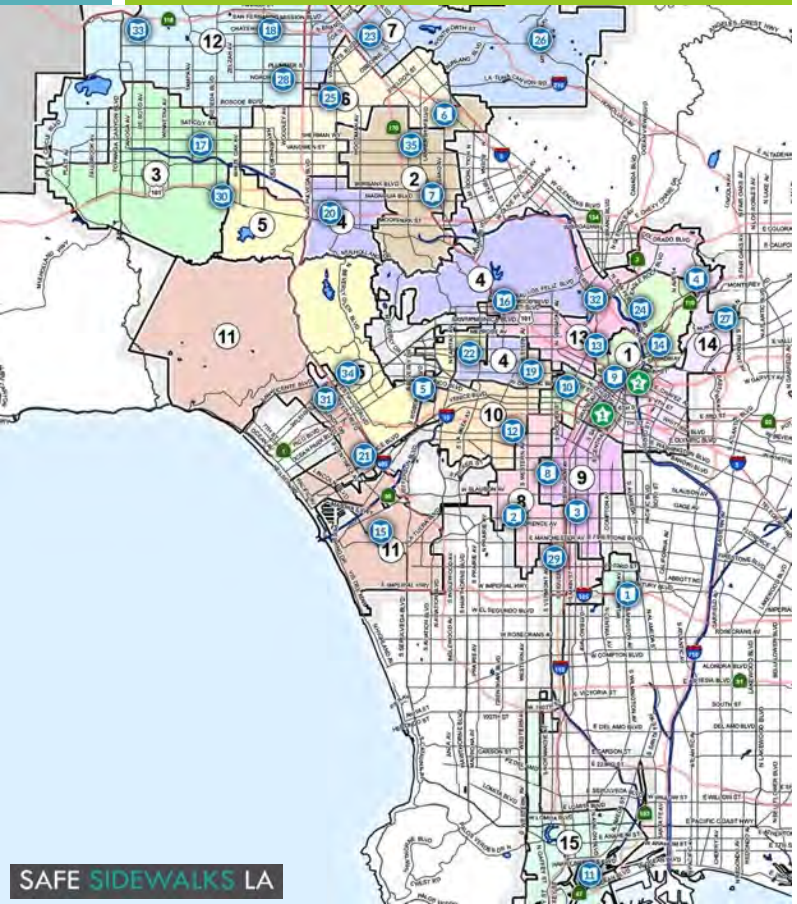

1. Willowbrook Library
2. Hyde Park Branch Library
3. Ascot Branch Library
4. Arroyo Seco Library
5. Robertson Library
6. Sun Valley Library
7. North Hollywood Amelia Earhart
8. Vermont Square Branch
9. The Los Angeles Central
10. Pico Union Branch Library
11. San Pedro Regional Library
12. Jefferson Library
13. Edendale Branch Library
14. Lincoln Heights Branch 15. Westchester Loyola Village
16. Frances Howard Goldwyn-Hollywood Regional
17. West Valley Regional
18. Granada Hills Library
19. Pio Pico Library
20. Sherman Oaks Library
21. Mar Vista Branch Library
22. Fairfax Branch Public
23. Pacoima Branch Library
24. Cypress Park Branch Library
25. Panorama City Branch
26. Sunland-Tujunga Branch
27. El Sereno Branch Library
28. Mid-Valley Regional Library
29. Mark Twain Library
30. Encino-Tarzana Branch
31. West Los Angeles Regional
32. Silver Lake Branch Library
33. Chatsworth Branch Library
34. Westwood Branch Library
35. Valley Plaza Library

City Clerk's Office
LA Bureau of Engineering

We Want to Hear From You

Comments at Tonight's Scoping Meeting

- **Verbal Comments:**
  - Commenters may speak in the microphone
  - Submit speaker card at *Comments* station

- **Written Comments at *Comments* Station via:**
  - Online Comments (Laptop provided)
  - Comment Sheets

Thank you for participating!

We Want to Hear From You

ENGINEERING
CITY OF LOS ANGELES

To Provide Input:

ATTEND

Public Scoping Meetings. All presentations start at 6:15 pm

ONLINE

Visit **sidewalks.lacity.org/environmental-review-process** to submit comments.

EMAIL

shilpa.gupta@lacity.org with "SRP" in the subject line and a valid mailing address in the email.

MAIL

You can mail written comments to Shilpa Gupta (address below).

sidewalks.lacity.org/environmental-review-process

Written Comments Mailing Address
Shilpa Gupta, Environmental Supervisor I
Los Angeles Bureau of Engineering, Environmental Management Group
1149 S Broadway Suite 600, Mail Stop 939
Los Angeles, CA 90015

Appendix B
Biology Reports

Appendix B1 **Street Tree Count**

Appendix B2 **Sensitive Plant Species with Potential to Occur within the Project Site**

Appendix B3 **Sensitive Wildlife Species with Potential to Occur within the Project Site**

Appendix B1

Street Tree Count

Merkel & Associates, Inc.
5434 Ruffin Road, San Diego, CA 92123
Tel: 858/560-5465 • Fax: 858/560-7779
San Diego ◦ San Rafael ◦ Arcata ◦ Nehelam ◦ Tacoma

July 6, 2018
M&A #16-083-01

Shilpa Gupta, MPA, ENV SP
Environmental Management
Bureau of Engineering, Department of Public Works
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City of Los Angeles Sidewalk Repair Program: Tree Canopy Loss and Replacement Model

Purpose

The City of Los Angeles Sidewalk Repair Program is anticipated to remove approximately 12,859 trees over a 30 year period. The tree removal rate is anticipated to escalate in association with the increasing extent of sidewalk repairs that similarly escalates through the program period. Concurrent with the sidewalk repair and associated street tree removals anticipated to occur, there is a programmatic tree replacement required at a minimum rate of 2:1 (replacement trees to removed trees). Replacement trees are to be planted within one year of tree removals. In association with the street tree removal, there is a reduction of tree canopy that can be characterized as both a reduction in the overall tree canopy within the City and a reduction in the canopy of street trees. Understanding how the program would affect the overall Citywide tree canopy is important in evaluating the program influence on multiple aspects of the environment. Understanding changes in the extent of street tree canopy is more connected to the built environment and community character and heat island considerations.

To address the anticipated effect of the project on City tree canopy, a numeric model was developed that would allow for examination of the effects of tree removals and replacements under changing Program variables, including tree sizes removed, timing of tree removals, and the number and timing of replacement tree planting.

Tree Canopy Area Model Overview

The tree canopy area model has been developed as an annual time stepped assessment of tree canopy losses and gains under the Sidewalk Repair Program. The model analyzes the 30 year period of proposed operation of the Sidewalk Repair Program plus a period beyond the Program years during which time maturation of the planted street trees would continue. The model is based on inputs derived from City provided data associated with prior sidewalk repair and tree replacement activities that have been conducted over prior periods as well as other data sources. Because the model uses time steps for assessment of tree canopy area gains and losses, the changes in canopy area can be tracked through time by examining the individual components of gains, losses, or the sum of gains and losses. Further, the change can be benchmarked against baseline canopy areas for the Citywide tree canopy or the City street tree canopy to evaluate the percentage of change in City tree canopy as a function of time in association with the implementation of the Program.

Tree Loss and Replacement Model Variables

Model Inputs and Assumptions

In order to evaluate the change in tree canopy over the course of the Program requires consideration of a number of factors including the following:

- Number, timing, and tree canopy size of trees removed under the Program;
- Number, timing, tree canopy size, and maturation rate for replacement trees, and;
- Percent mortality of trees planted under the program.

Tree Canopy Removal

- *Numbers and Timing of Tree Removal*

The number of trees anticipated to be removed under the Sidewalk Repair Program is based on the many factors that cannot be evaluated a priori for the entirety of the program period. As a result it is necessary to estimate tree removals based on available data. To develop a tree removal estimate, the LABOE reviewed the tree removal data from FY 2016-2017 and tabulated the trees removed, by species, in conjunction with the extent of sidewalk repairs performed, by square footage (Table 1).

- *Canopy Area of Trees Removed*

By accessing the City provided Sidewalk Repair Program Tree Report database (December 20, 2017, 14:45:00 date stamp) the number and species of trees removed during completion of FY 2016-2017 activities were determined. The tree species data from the tree tracking database was coded with the mean mature canopy size for the tree species as derived using data from Urban Forest Ecosystems Institute Selectree database maintained at CalPoly (https://selectree.calpoly.edu/) and Common Trees of Los Angeles (https://www.treepeople.org/sites/default/files/pdf/). Where only the minimum and maximum canopy at maturity was reported, the average of these values was used to determine to serve as an estimator of the mean canopy diameter. Using the species, count, and mean canopy diameter data, the overall average tree canopy diameter and area was determined for removal trees. This was achieved by determining the mean mature canopy of each tree species from which an average canopy area was calculated. The areas of trees were summed across the 352 trees removed during the sampled period and the total canopy area was then divided by the number of trees to develop a canopy area for the average removal tree. This was then used to determine the average canopy diameter for trees removed under the Program. The average tree removed under the Sidewalk Repair Program has been estimated to have a canopy diameter of 38.53 feet and an average canopy area of 1,166 square feet (0.027 acre). For purposes of this model, assumptions have been made that at the time trees are removed, they have reached mature size and canopy spread and that the mean canopy diameter of trees removed in all years will be similar to the average based on FY2016-2017 removals.

Using the assumed average tree canopy size, it is then possible to multiply each tree removed by the global average removal tree size to develop an estimate of the area of trees removed per year and total under the Program. In summary, the removal of an estimated 12,859 street trees is expected to result in a loss of 344 acres of street tree canopy.

Table 1. Tree removal quantity estimate based on annual sidewalk repair area estimates (data source: City of Los Angeles BOE, March 2018)

Year	Fiscal Year	Estimated Sidewalk Repair (sq. ft)	Estimated # of street tree removals*
Year 0	Prior to July 2016		
NOP Year 1	FY 2017-2018	968,750	292
2	FY 2018-2019	968,750	292
3	FY 2019-2020	968,750	292
4	FY 2020-2021	968,750	292
5	FY 2021-2022	968,750	292
6	FY 2022-2023	1,116,969	336
7	FY 2023-2024	1,116,969	336
8	FY 2024-2025	1,116,969	336
9	FY 2025-2026	1,116,969	336
10	FY 2018-2027	1,116,969	336
11	FY 2027-2028	1,287,500	388
12	FY 2028-2029	1,287,500	388
13	FY 2029-2030	1,287,500	388
14	FY 2030-2031	1,287,500	388
15	FY 2031-2032	1,287,500	388
16	FY 2032-2033	1,484,375	447
17	FY 2033-2034	1,484,375	447
18	FY 2034-2035	1,484,375	447
19	FY 2035-2036	1,484,375	447
20	FY 2036-2037	1,484,375	447
21	FY 2037-2038	1,712,188	515
22	FY 2038-2039	1,712,188	515
23	FY 2039-2040	1,712,188	515
24	FY 2040-2041	1,712,188	515
25	FY 2041-2042	1,712,188	515
26	FY 2042-2043	1,974,063	594
27	FY 2043-2044	1,974,063	594
28	FY 2044-2045	1,974,063	594
29	FY 2045-2046	1,974,063	594
30	FY 2046-2047	1,974,063	594
Program Total		**42,719,219**	**12,859**

*Tree Removal Rate is based on FY '16-'17 Tree Removal Rates Tracked by City

Tree Canopy Replacement

- *Canopy Area of Replacement Trees*

The City Sidewalk Repair Program Tree Report database (December 20, 2017, 14:45:00 date stamp) also documented the trees by species and number replanted during the FY 2016-2017 activities. From these data it was possible to develop a ratio of tree species replanted and using the same methodologies as outlined for the removal trees, it was possible to determine the mean mature canopy diameter for trees being planted under the Program. In the case of replacement trees the mean mature canopy diameter was calculated to be 30.48 feet and an average canopy area of 730 square feet (0.017 acre). As can be seen, the mean mature canopy area of replacement trees is 62.6 percent of the area of removal trees. As a result, a 1:1 replacement of trees would result in a net reduction in total tree area and more replacement trees would be required than trees removed to result in a net balance of canopy area.

- *Maturation Rate of Replacement Trees*

Tree maturity is considered to be the point at which a tree canopy expansion rate approaches zero. At this point, the annual canopy may grow or decline based on prevailing factors, although the tree trunk, root system, and woody structural members may continue to develop thickness. There are few well documented studies on tree maturation rates due to the number of uncontrolled variables that may influence the rate of development, the number of species in culture, and the duration over which data would need to be collected to be robust. Slow growing trees may take 20-30 years to achieve full size, while fast growing trees may achieve full size within 10-15 years. Very slow growing trees may take 30-40 years to mature, while some rapid growing species may achieve full size within 5 years. For cultural landscape tree species, rapid growth rates have generally been favored and pursued in hybridization and nursery stock and landscape promotion. Conversely, very rapid growth is often seen with tree species having high water demand and weak canopy structure. Such trees are not favored in landscape uses. As a result, trees in use in urban greening, residential, and municipal landscaping programs tend to reach maturity more rapidly than native hardwood trees, but slower than soft-wood and riparian trees. The intermediate maturation period between 10 years and 20 years has generally been used in selection for landscape trees. An average maturation rate of 15 years has been selected for use in modeling tree canopy replacement. While the City does not maintain data on street tree maturation rates, the estimate of 15 years to maturity was checked for reasonableness by conferring with field staff from the City's Urban Forestry Division, Chief Forester, Tim Tyson with Urban Forestry Division, and other arborists within the International Society of Arborists (ISA). Obviously species by species and region by region variance occurs, however inadequate data exists for analyses at such scales.

Tree canopy expansion rates between tree planting and maturity are not constant, but rather they vary based on a number of intrinsic physiological and extrinsic environmental factors. Generally tree maturation under benign environmental conditions follows a sigmoidal growth curve with an early exponential element followed by a linear phase and an ultimate transition to an asymptotic curvature with slowed growth as the tree reaches maturity. Variability in the shape of the growth curves that result from differences between tree species and environmental conditions blur the shape of the curves having the greatest influence on the shallowest slopes in the curve (the exponential and asymptotic ends). As a result, the more variability within intrinsic and extrinsic controls on growth, while retaining a determinant point of maturity, the more linear the average

growth becomes. For this reason a simple linear growth model was applied in the analysis. This growth model assumes equal expansion in canopy area occurs for each year during maturation of a tree and no expansion following 15 years post-planting.

- *Mortality Rate of Replacement Trees*

Under the Sidewalk Repair Program, street trees planted for the Program are maintained for a period of three years during which they are watered and cared for in order to achieve self-sufficient establishment. Should they die during this period, they are replaced. However, after a three year establishment period, trees are considered to be established and are no longer tended to or tracked. During this period mortality of a tree planted under this Program would not be addressed by replacement. After trees achieve full maturity they are considered part of the baseline tree canopy within the City, are not considered to be uniquely vulnerable to mortality, and are not separately considered within the environmental effects of this Program. As a result, during the period of maturation for each tree, there is a window of time during which trees are not tracked and if trees die, their loss would be considered to be within the purview of the Program.

For purposes of analysis, causation behind tree mortality is not considered to be relevant. Whether a tree dies due to factors of inadequate water, root binding, disease, or whether it dies due to vandalism, fire, or traffic accident is not important in the analysis. The estimate of tree losses from such mortality events vary from approximately 2 percent to as much as 8 percent. Low estimates of mortality are derived from consideration of the rate of mortality in trees that are nearing the end of the establishment or which have just been planted. Higher levels of mortality assume sweeping losses regionally due to disease. The difficulty in rectifying what rate of mortality should be assumed is that low rates of loss do not reflect adequate temporal influence of random events and thus likely underestimate mortality, while high mortality reflect known disease effects in tree species that are now avoided in replacement tree planting to minimize disease losses. For this reason, the higher mortality rate is also likely high. In the case of mortality rate, the higher estimate of 8 percent has been selected for use for two reasons. First, post-establishment and pre-maturation mortality is very poorly tracked and thus it is conservative to include a higher estimator. Second, while tree species selections are generally made to avoid known diseases and pest problems, there have been increasing frequencies of new disease outbreaks, drought periods, and beetle infestations over the past two decades and the long-duration of the proposed Program (30 years) plus the post-Program tree maturation period makes it more likely than not that additional periods of widespread tree losses in the City may occur and again it is prudent to be conservative with this metric.

Baseline Tree Canopy Area

- *Baseline Tree Canopy*

In order to evaluate the scale of tree canopy impact and recovery relative to the existing environment it is necessary to determine the tree canopy baseline against which changes in canopy area are to be evaluated. Specifically this included the following:

- Determining the overall tree canopy area and distribution for the City of Los Angeles, and;
- Determining the street tree canopy area for the City of Los Angeles.

Citywide Tree Canopy Area

Estimates of tree canopy within the City vary and defining the extent of tree canopy is not an exact science over an area the size of Los Angeles. In 2008 the tree canopy for the City was estimated to total 52,493 acres within the City of Los Angeles (McPherson et al 2008). In an eloquent geospatial analysis methodology, a separate estimate of the Los Angeles tree canopy area was completed by analyzing 2006 data collected by the Los Angeles Region Imagery Acquisition Consortium (LAR-IAC) Program. This countywide analysis was conducted by the County of Los Angeles Chief Information Office using Digital Elevation Model (DEM), Digital Surface Model (DSM), and Color Infrared (CIR) imagery (Greninger 2011). In October 2011 the GIS analysis was further refined to remove additional artifacts (Greninger 2011). From the County tree canopy dataset, the tree canopy cover within the City of Los Angeles was extracted and estimated to be 45,061 acres. The results of the Greninger 2011 mapping have been used in the present assessment as they are both most refined and most conservative. However, the relatively high variance between canopy area estimates from the reasonably synoptic data used in the USDA (2002-2005 Quick-Bird satellite imagery) and Greninger (2006 LAR-IAC) should be considered when evaluating the degree of uncertainty in canopy coverage over the scale of the City of Los Angeles. The tree canopy within the City has been plotted over a map of the City in order to identify the distribution of tree canopy by region, council district, and urban and native lands (Figure 1). The distribution of tree canopy within the City is clustered and variable with the majority of the tree canopy being distributed through the foothills of the Santa Monica Mountains concentrated in Council Districts 4, 5, and 11 (Table 2). Sparser tree canopy is more typical of the heavily urbanized portions of the City located on the floor of the San Fernando Valley and the central portions of the City and harbor regions.

Table 2. Citywide Tree Canopy Area by Council District

Council District	Total Area (acres)	Tree Canopy (acres)	Percent Canopy Cover
District 1	10,115	1,304	12.9%
District 2	16,013	2,326	14.5%
District 3	23,453	3,856	16.4%
District 4	26,255	5,821	22.2%
District 5	24,025	5,739	23.9%
District 6	17,400	1,319	7.6%
District 7	34,640	3,998	11.5%
District 8	10,265	813	7.9%
District 9	8,341	563	6.7%
District 10	9,266	801	8.6%
District 11	40,840	9,693	23.7%
District 12	37,593	4,669	12.4%
District 13	8,713	1,010	11.6%
District 14	15,472	1,585	10.2%
District 15	20,539	1,564	7.6%
Total	**302,928**	**45,061**	**14.9%**

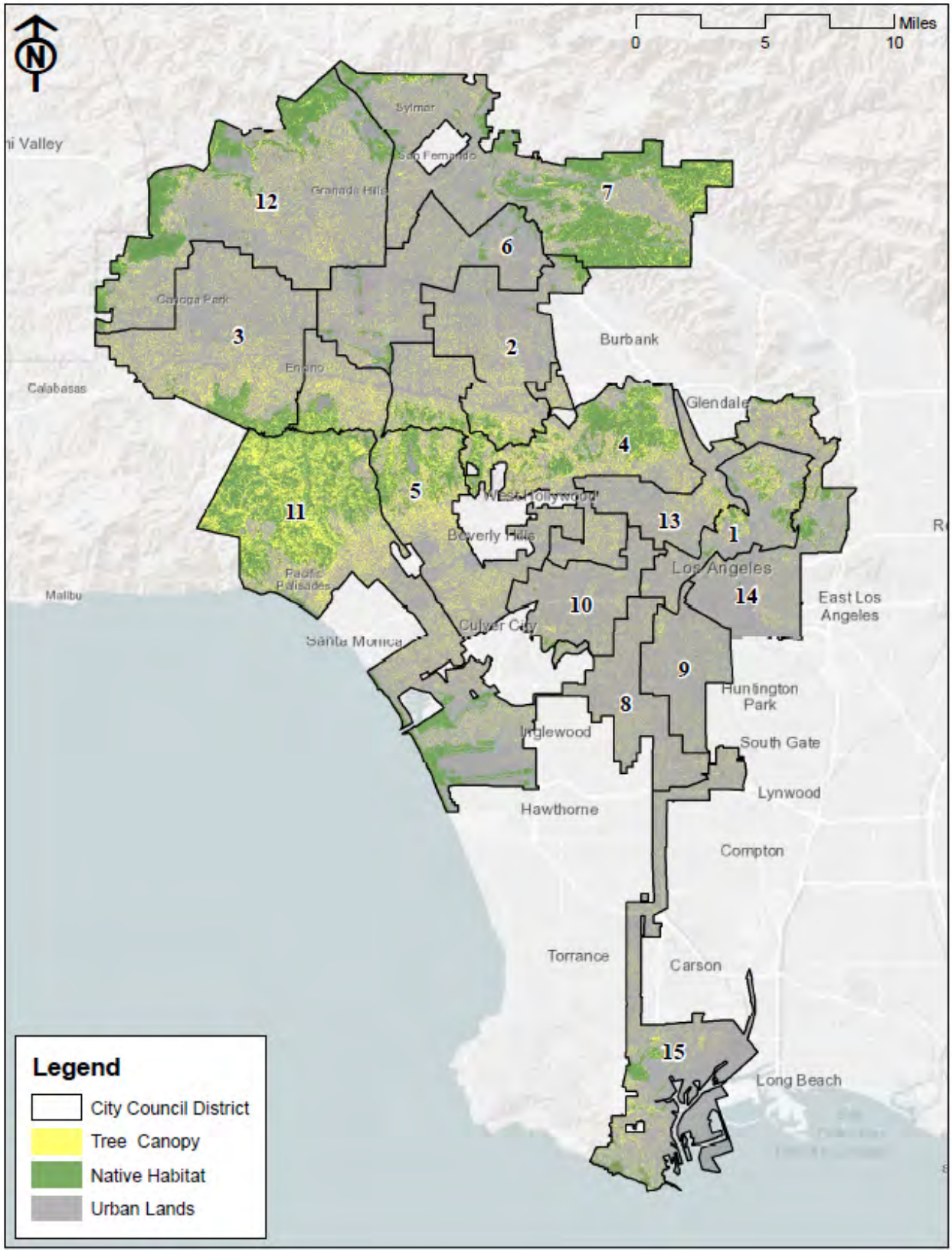

Figure 1. Tree canopy areal extent across the City of Los Angeles within native and urban landscapes.

Street Tree Canopy Area

A street tree inventory was conducted in 2014 by the City of Los Angeles (City of Los Angeles, Urban Forestry Division, 2014). This inventory identified 711,248 individual trees comprised of 585 species (including a few synonymous taxa). The frequency of tree species within the City is not evenly distributed with a limited number of species making up the majority of the trees (Figure 2). To estimate the tree canopy area as well the composition of street trees by life history type, the most abundant 56 species, comprising 80 percent of all street trees, were characterized by average mature canopy diameter and whether the tree species were conifer, broadleaf evergreen, or deciduous. Mature canopy diameter was again determined by species using data from Urban Forest Ecosystems Institute Selectree database maintained at CalPoly (https://selectree.calpoly.edu/) and Common Trees of Los Angeles (https://www.treepeople.org/sites/default/files/pdf/).

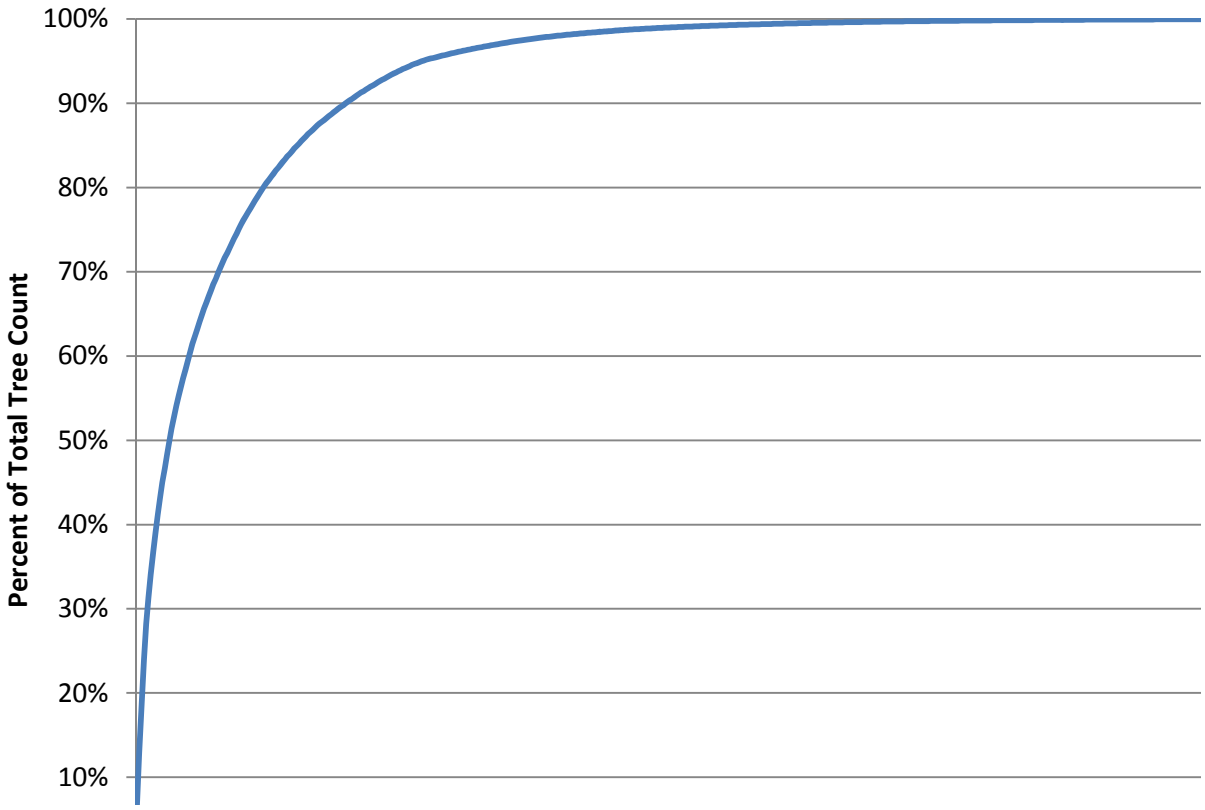

Figure 2. Percent of the total number of street trees within the City of Los Angeles by species

The average canopy diameter and distribution of life history type (deciduous, broadleaf evergreen, and conifer) for the 80 percent of the trees evaluated by species were assumed to reflect the average characteristics of the street trees across the total species list. Using the top 80 percent of all trees as a surrogate for the whole of the whole of the street trees present in the City, the make-up of the City street tree canopy was calculated (Table 3).

Table 3. City of Los Angeles Street Tree Canopy Area and Composition

Estimated Street Tree	Deciduous	Broadleaf Evergreen	Conifer	Total
Total Canopy Area (acres)	5,884	10,891	896	17,670
Total Tree Count	262,375	387,842	61,031	711,248
Percent of Trees by Count	37%	55%	9%	100%
Percent of Canopy Area	33%	62%	5%	100%
Total Species Count	209	313	63	585
Average Tree Canopy Dia. (ft)	35.2	39.4	28.5	37.1

The street tree analysis suggests that the largest and most abundant street trees are broadleaf evergreen trees with slightly smaller deciduous trees making up about half of the canopy area of evergreens comprised of both broadleaf evergreens and conifers. The smallest and least abundant street trees are conifers. Street trees within the City of Los Angeles are believed to comprise approximately 39.2 percent of the tree canopy within the City, making up a remarkably high proportion of the total tree canopy with the City.

Notably the mature canopy area of trees removed under the Sidewalk Repair Program in FY2016-2017 were estimated to have a canopy diameter of 38.53 feet which is slightly above (3.9%) the mean mature canopy size estimated for street trees within the City and slightly below (2.2%) the mean canopy diameter for broadleaf evergreen. This slight size bias above the average tree size would be expected since larger trees tend to be more frequently related to sidewalk damage than smaller trees.

Modeled Tree Canopy Area Impact

To model the tree canopy changes through time a baseline of total street tree canopy area from 2014 was adopted as 17,670 acres. Canopy tree area reduction was determined as a stepwise reduction in street tree canopy area based on accumulating losses of area as a result of estimates of trees removed each year (Table 1) times the mean canopy area (0.027 acre). Slight differences may occur in manually calculated values due to rounding. The losses of tree canopy area under the program would be expected to result in an accelerating rate of canopy loss in five year steps as the program activities increase until Year 30. At that point no additional losses would be expected to occur (Figure 3). If there were no offsetting tree replanting activities, the removals of trees under the program would the street tree canopy would be depressed to an estimated total area of 17,326 acres, a reduction in canopy of 1.95 percent. The Street Tree Program would be expected to result in 0.66 percent reduction in Citywide tree canopy if no replanting were to occur.

With restoration planting occurring within one year of removal, the extent of replanting and subsequent maturation expansion over time dictates the expansion of canopy from replacement trees. With each consecutive program year, additional replacement trees are added and canopy area expands as a result of both new trees and previously planted trees that grow for a period of 15 years and then sustain at the mean mature canopy area. Because mortality of trees is unpredictable in time and location, the mortality rate has been incorporated into the analysis by

discounting the individual tree area for all replacement trees by 8 percent such that the resulting total replacement tree canopy area is 8 percent below the canopy area that would be achieved by multiplying the replacement tree mean canopy area by the number of replacement trees planted. The net change in tree canopy is derived by summing the negative deflections (tree removals) and the positive deflections (tree replacement planting and subsequent maturation).

Figure 3 illustrates an example of one model run illustrating the results of tree replacement planting at a rate of 2:1 for trees removed during Program Years 1-10, followed by an increase in planting rate to 3:1 for Program Years 11-21 and a subsequent reduction in tree replacement ratio back to 2:1 for Program Years 22-30. As can be seen in this scenario, while losses of tree canopy area terminate with the end of the 30 year Program (red line), expansion continues due to maturation of the trees planted within 15 years of the end of the program (green line). As a result, the net effect of removals and plantings results in a complex curve driven by both removal and planting through the Program period, but only the replanted trees following the program termination (blue line). The expansion in canopy ultimately ends when all trees reach maturity.

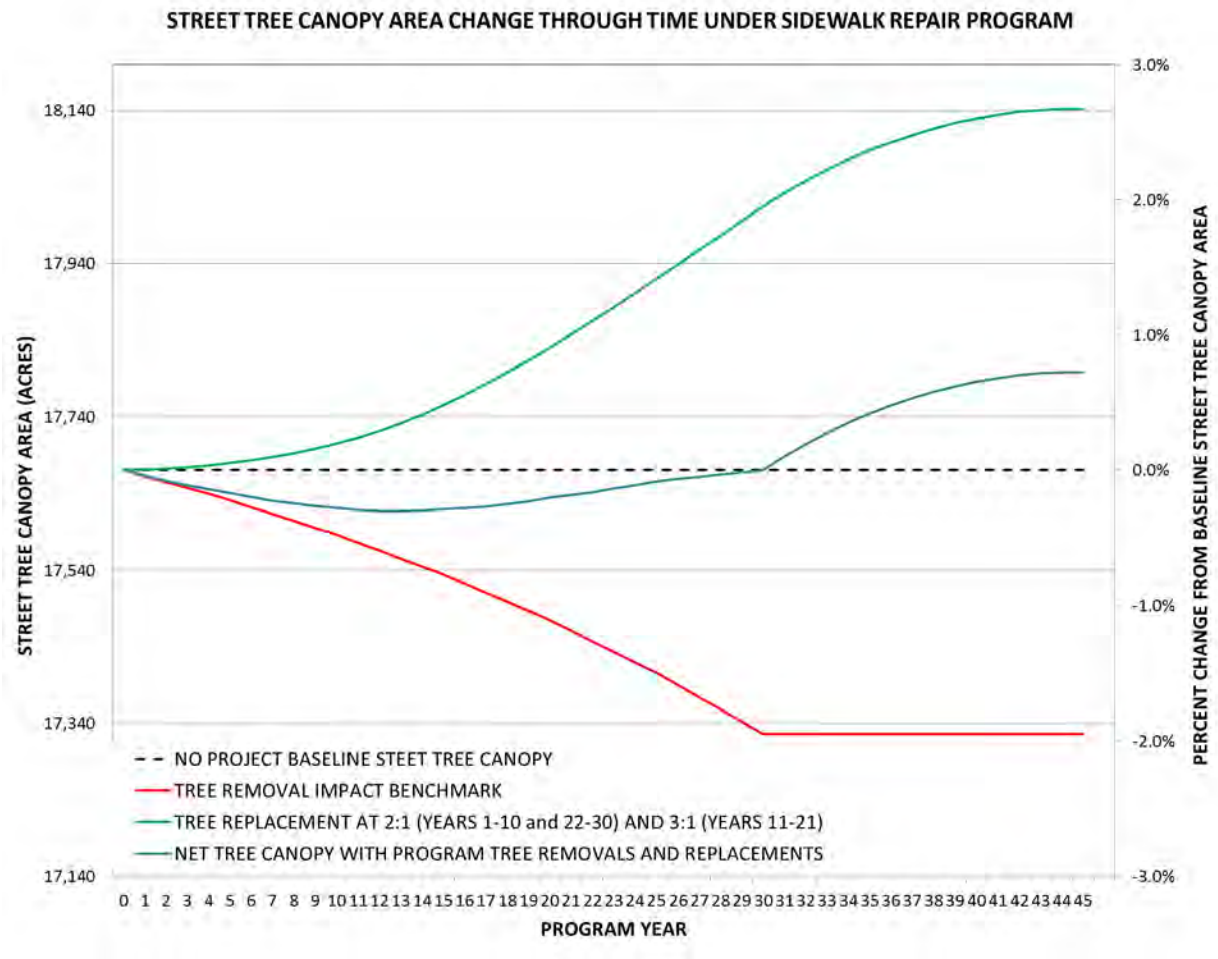

Figure 3. Street tree canopy area loss and gain example model output

In this scenario, the blue line reflects net deviation in street tree canopy as a result of the Program implementation. The reduction in tree canopy area is substantially mitigated by gains in tree planting. While the loss curve would result in an approximate reduction in tree canopy area of 1.95 percent the net result of planting along with removals reduces the negative deflection from baseline to 0.30 percent as a maximum in year 13 in Program Years 13 and 14 and an ultimate slight net gain in tree canopy of 0.72 percent after the end of the Program.

Application of the Model

The model was run for 26 total scenarios of tree replanting as scaled against tree removals. These scenarios explored the effects of altering parameters such as average replacement tree size, tree replacement ratios, front-end loading of tree replacement, sensitivity testing of changing mortality rates, and application of variable replacement ratios. In general, these scenarios were not benchmarked against the baseline tree canopy but rather were examined based only on points of intersection of loss and gain curves from a zero origin and positive values for both gains and losses. The results of these investigations are provided separately as charts in EIR Appendix G-4 and are not further discussed here.

Scenarios investigated were not all considered viable on cost, resource capacity, or technical bases, however, the scenarios were useful in exploring the sensitivity of the model to various changes and the scenarios provided assistance to the City Program team in both communicating effects of differing tree replacement scenarios and in settling on viable scenarios for evaluation through the environmental review process.

If you have any questions with respect to the modeling approach, please contact us. As indicated, the scenario model outputs are provided in a separate data document.

Sincerely,

Keith Merkel
Principal Ecologist

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Tree Removal and Replacement Scenarios

Los Angeles Sidewalk Repair Program
Tree Removal and Replacement Scenarios Investigated

July 6, 2018

Merkel & Associates

In total 26 different tree replacement model runs (including sub-model runs) were evaluated using the canopy replacement model prepared for the Sidewalk Repair Program. A total of 25 different tree replacement scenarios were evaluated. Among these there were some scenarios postulated for review that could not be modeled due to inadequate definition of the input variables. Those scenarios that were examined are summarized by output charts on the following pages. The model driving this analysis is described in *City of Los Angeles Sidewalk Repair Program: Tree Canopy Loss and Replacement Model* (Merkel & Associates 2018).

Description of Evaluated Scenarios
SCENARIO 1 - Loss Groups 1-4=25% each, Replant Groups 1-3=33.3% each (15 year maturation, 2:1 replacement, no net mortality)
SCENARIO 2 - Loss Group 3=50%, Loss Group 4=50%; Replant Group 1=50%, Replant Group 2=50% (15 year maturation, 2:1 Replacement, no net mortality)
SCENARIO 3 - Loss Group 3=50%, Loss Group 4=50%; Replant Group 1=50%, Replant Group 2=50% (15 year maturation, 3:1 Replacement, no net mortality)
SCENARIO 4 - Loss Group 3=25%, Loss Group 4=75% Replant Groups 1-3=33.3% each (15 year maturation, 2:1 replacement, no net mortality)
SCENARIO 5 - Loss Group 3=25%, Loss Group 4=75% Replant Groups 1-3=33.3% each (15 year maturation, 3:1 replacement, no net mortality)
SCENARIO 6 - Loss Group 2=10%, Loss Group 3=80%, Loss Group 4=10%; Replant Group 1=40%, Replant Group 2=40%, Replant Group 3=20% (15 year maturation, 2:1 replacement, no net mortality)
SCENARIO 7 - Front end load planting of Scenario 6 (1000 more trees/yr (2019-2023) reduce 1000 trees/yr (2041-2046) (Loss Group 4=10%, Group 3=80%, Group 2=10%; Replant Group 1-2=40% each, Group 3=20% (15 year mat., 2:1 Replacement, no net mortality)
SCENARIO 9 - Front end load planting of Scenario 6 (1000 more trees/yr (2019-2023) reduce 1000 trees/yr (2041-2046) - Planting follows current species replacements (15 year mat., 2:1 Replacement+

Front Load, 2%-8% mortality)
SCENARIO 10 - Actual Tree Removal History with average replacement trees at 95% of removal tree radius (2:1 Replacement 2%-8% Long-term Mortality)
SCENARIO 11 – Current practices of 2:1 replacement ; no specific replacement time; 5% mortality; Canopy size of replacement tree is the largest tree possible in existing tree wells **(not modeled due to lack of necessary variable specificity)**
SCENARIO 12 - Equal Canopy Tree Replacement (mature canopy of replacement trees equal the same size as lost trees) (2:1 Replacement 2%-8% Long-term Mortality)
SCENARIO 13 - Canopy Size Scenario -PDF/MM (2:1 Replacement 2%-8% Long-term Mortality)
SCENARIO 14 - Canopy Size Scenario -PDF/MM (2:1 Replacement 8% Long-term Mortality)
SCENARIO 15- Different Replacement Ratio6-PDF/MM; Undefined replacement ratio; Replacement w/in one year of removal; Replacement trees equal the size of canopy lost **(not modeled due to lack of necessary variable specificity)**
SCENARIO 16- Mix of front loading and a different replacement ratio and Canopy Size--PDF/MM **(not modeled due to lack of necessary variable specificity)**
SCENARIO 17- Mix of front loading and a different replacement ratio and Canopy Size--PDF/MM **(not modeled due to lack of necessary variable specificity)**
SCENARIO 18- Mix of front loading and a different replacement ratio and Canopy Size--PDF/MM **(not modeled due to lack of necessary variable specificity)**
SCENARIO 19 - Effect of Tree Replacement Multiplier (Current Tree Sizing (Average Canopy Diameter = 30.48') Replacement 8% Long-term Mortality) • SCENARIO 19a - 2:1 • SCENARIO 19b – 5:2 • SCENARIO 19c – 3:1 • SCENARIO 19d – 4:1
SCENARIO 20 - Effects of front loading replacements by adding 600 trees/year early in program (Current Tree Sizing (X=30.48' D), Base 2:1 Replacement, 8% Long-term Mortality)
SCENARIO 21 - Influence of increasing mean replacement tree canopy diameter on canopy replacement area (2:1 Replacement at variable radii, 8% Long-term Mortality)
SCENARIO 22 - Effects of front loading replacements by adding 200trees/year for multiple years with

reduction to 1:1 replacement at end of program (Current Tree Sizing (X=30.48' D), Base 2:1 Replacement, 8% Long-term Mortality)

- SCENARIO 22a - Effects of front loading replacements by adding 200trees/year for 5 years with reduction to 1:1 replacement at end of program (Current Tree Sizing (X=30.48' D), Base 2:1 Replacement, 8% Long-term Mortality)
- SCENARIO 22b - Effects of front loading replacements by adding 200trees/year for 10 years with reduction to 1:1 replacement at end of program (Current Tree Sizing (X=30.48' D), Base 2:1 Replacement, 8% Long-term Mortality)

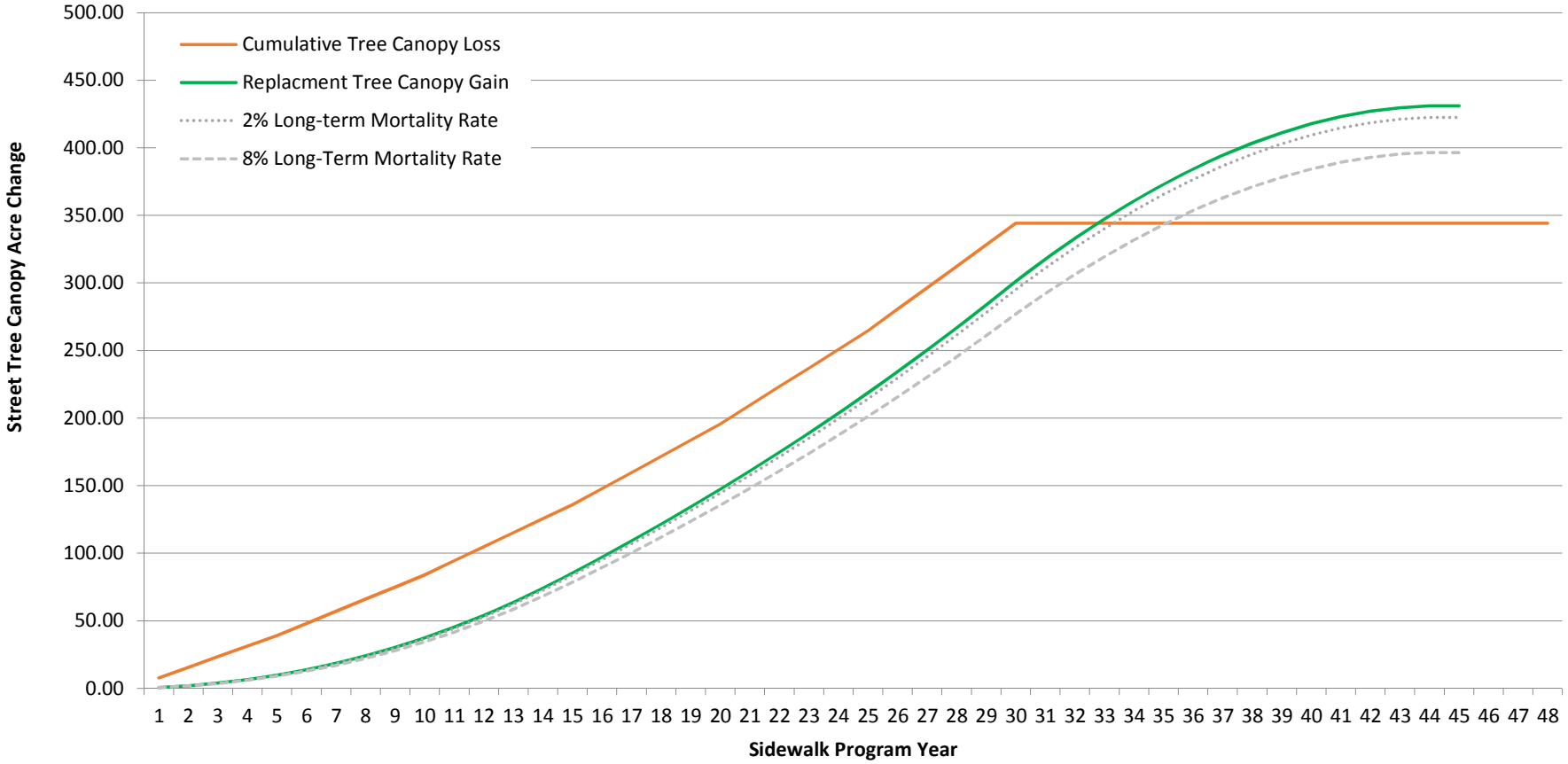
SCENARIO 23 - Effects of front loading replacements by adding 200trees/year for 30 years with no reduction at end of program (Current Tree Sizing (X=30.48' D), Base 2:1 Replacement, 8% Long-term Mortality)

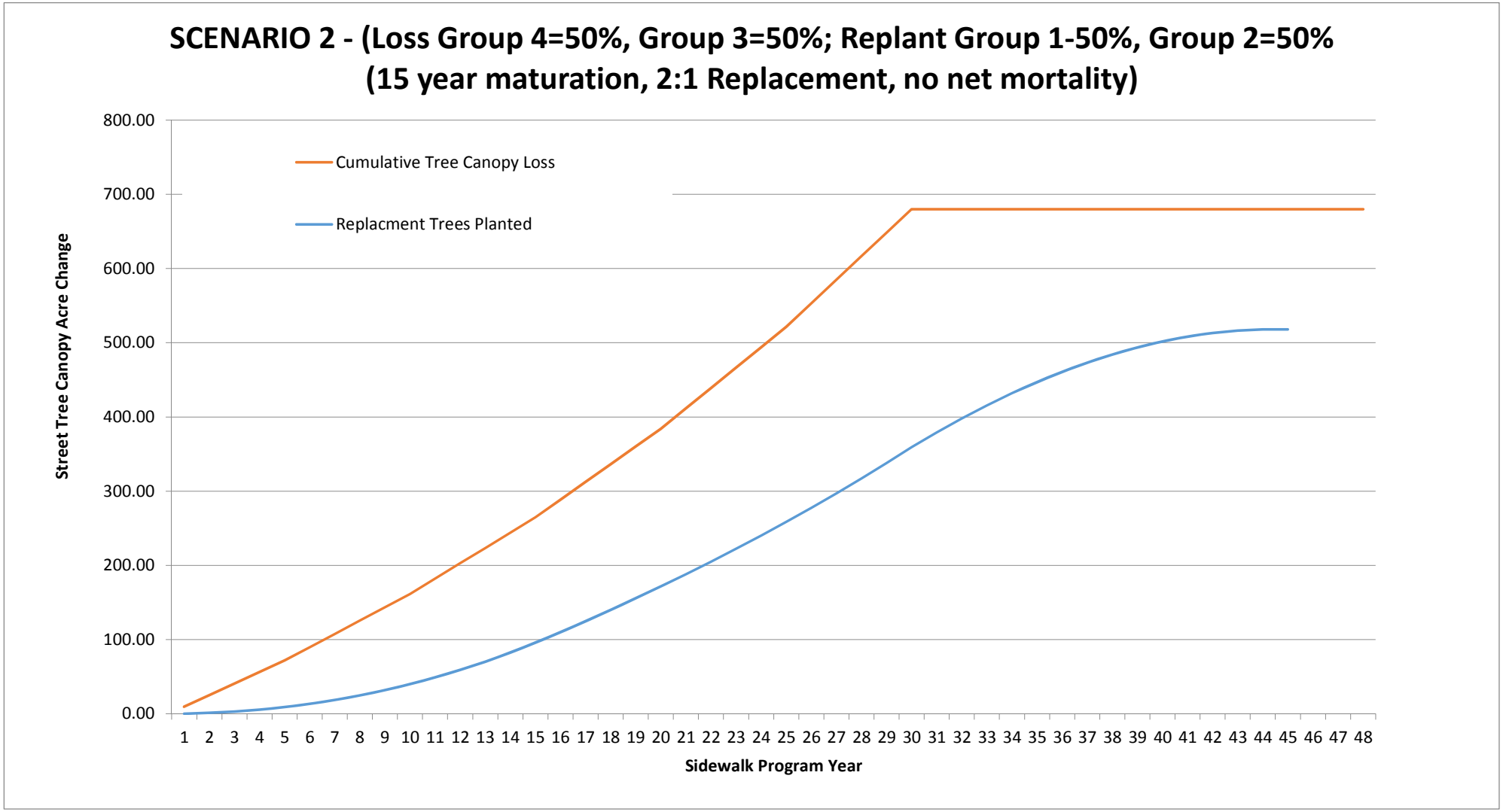
SCENARIO 24 - Effects of front loading replacements by adding 300trees/year for 20 years with reduction to 1:1 replacement at end of program (Current Tree Sizing (X=30.48' D), Base 2:1 Replacement, 8% Long-term Mortality)

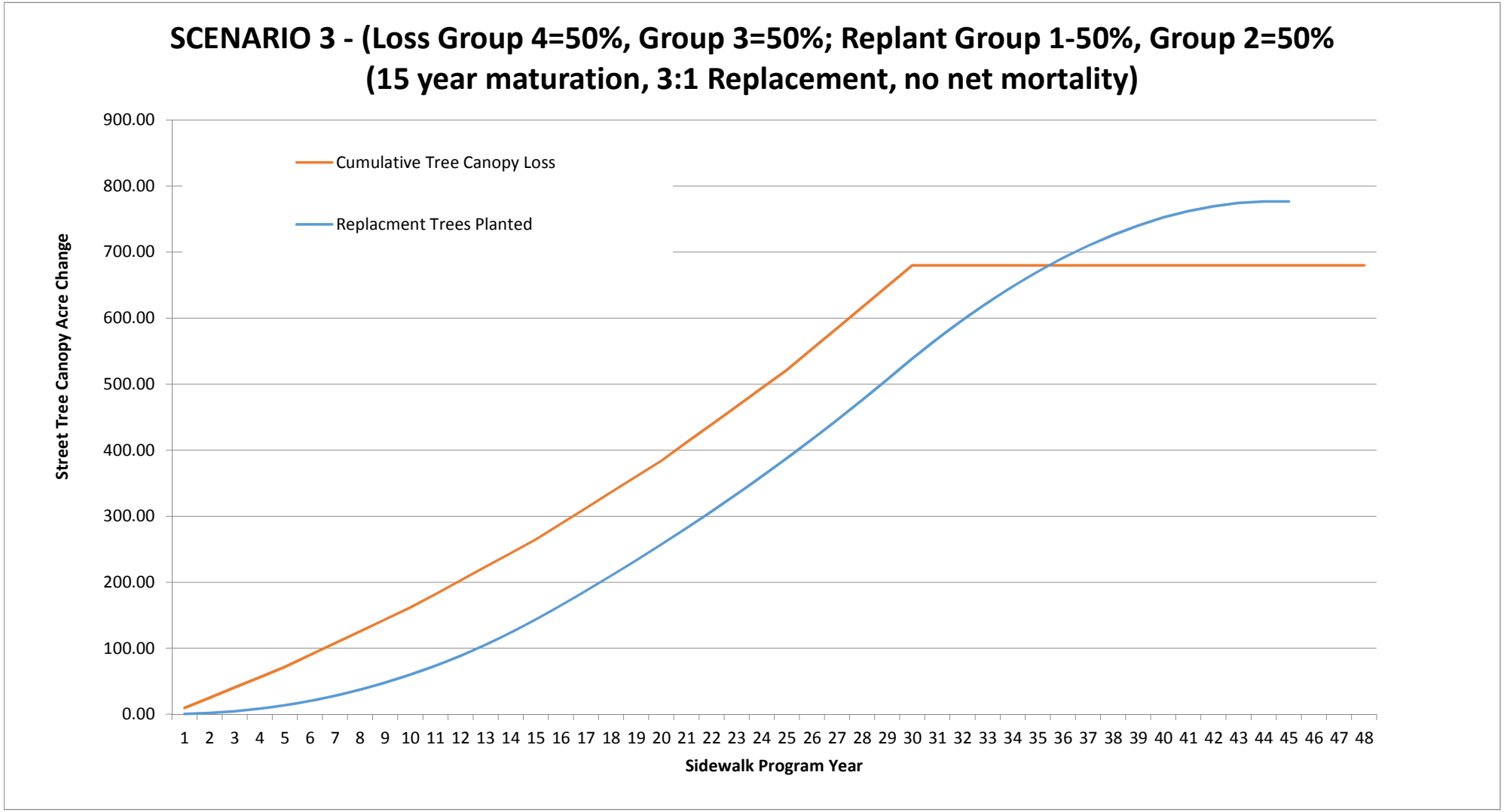
SCENARIO 25 - 2:1 Replacement for first 10 years - Ratio based ramp up commencing in Year 11 to meet full canopy replacement in Year 30 (Current Tree Sizing (X=30.48' D), Base 2:1 Replacement, 8% Long-term Mortality)

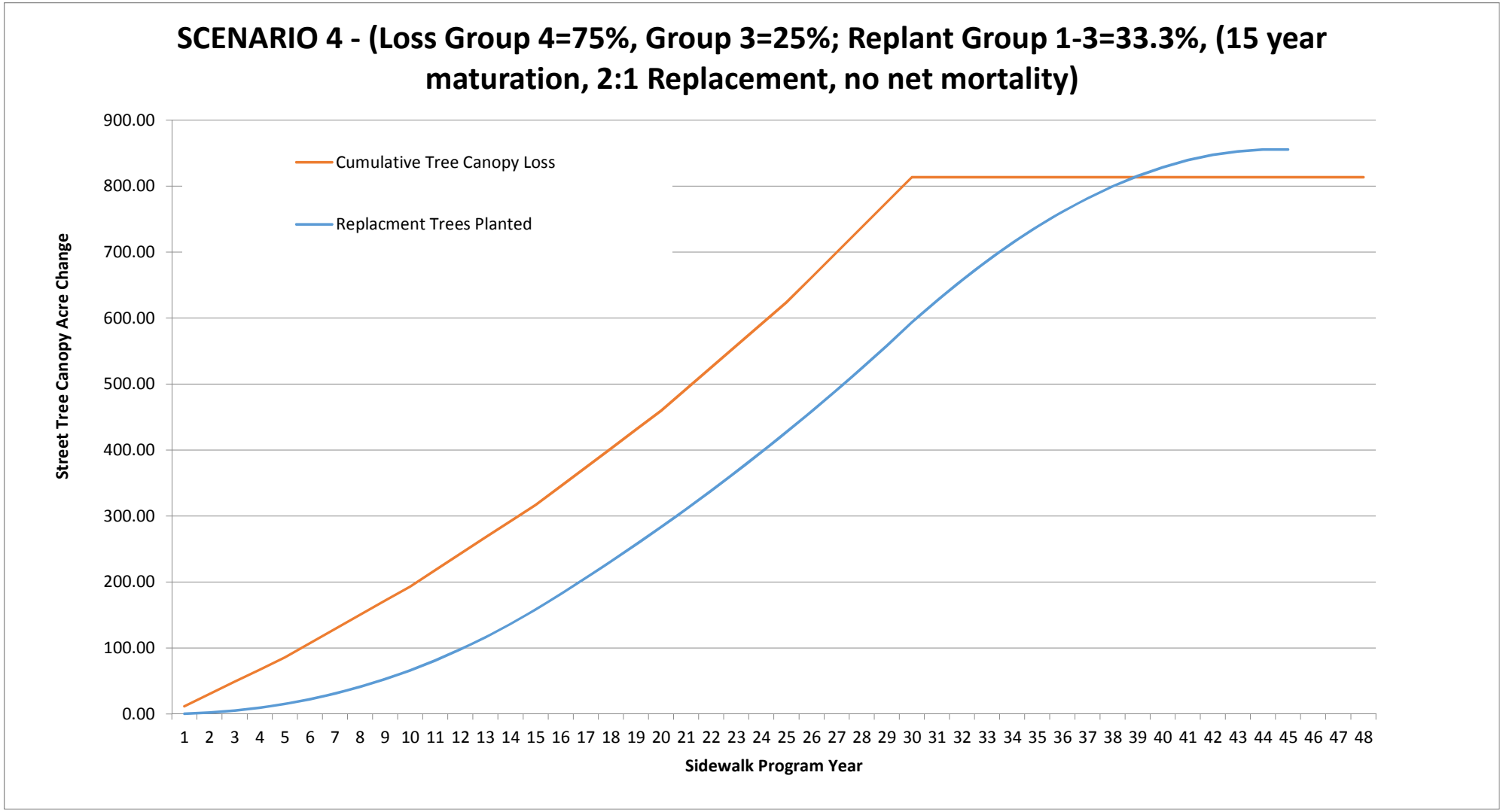
- SCENARIO 25a - 2:1 Tree replacement for 10 years (2017-2027) replacement with current tree sizing practices (30.48' D), Expand ratio to 3:1 beginning Year 11 (meets YR 27)- 35,437 Trees
- SCENARIO 25b - 2:1 Tree replacement for 10 years (2017-2027) replacement with current tree sizing practices (30.48' D), Expand ratio to 3:1 beginning Year 11, drop to 2:1 at Year 22 (meets YR 30)-30,404 Trees

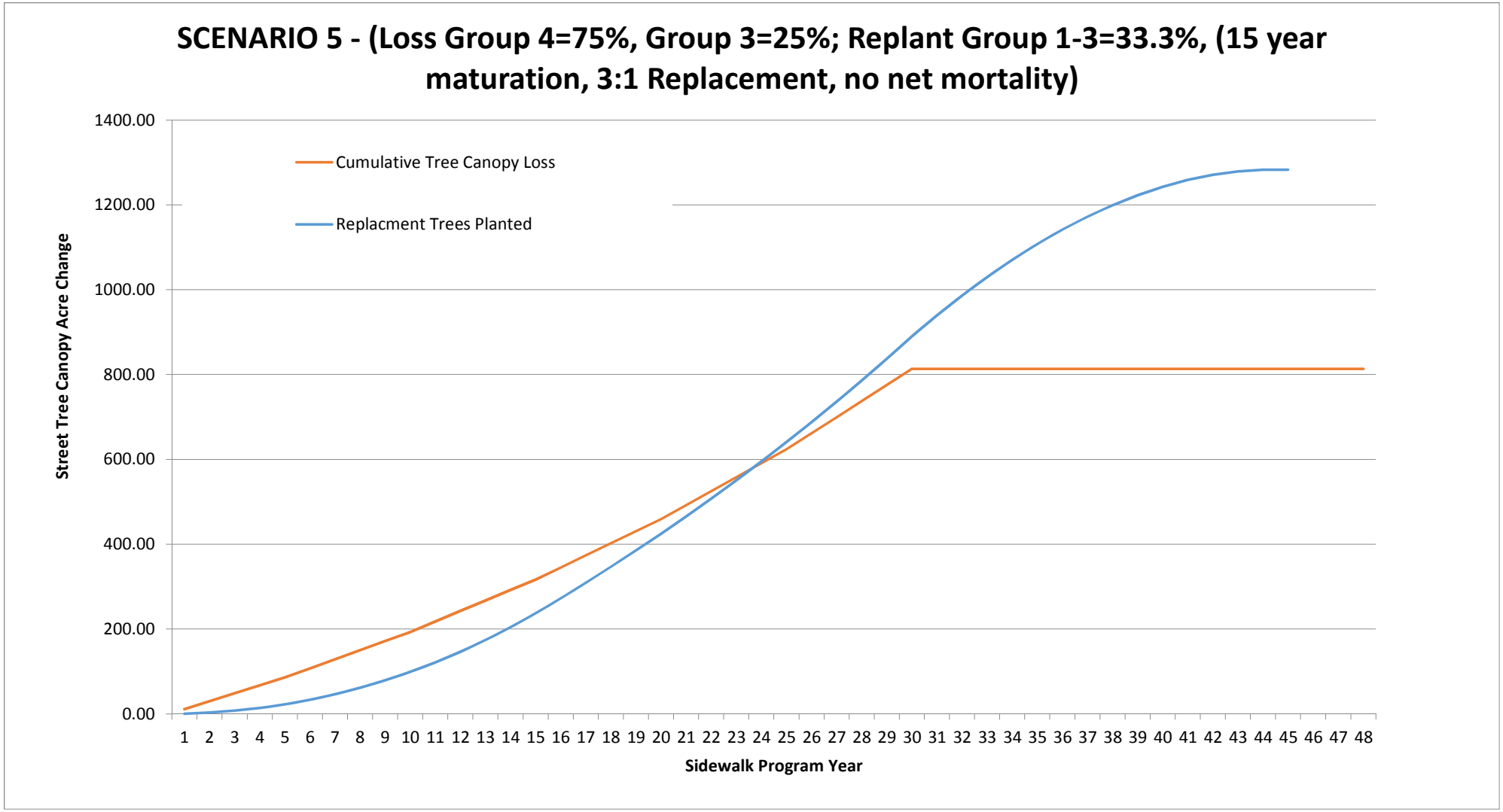
SCENARIO 1 - (Actual Tree Removal Replacement History, 2%-8% Long-term Mortality)

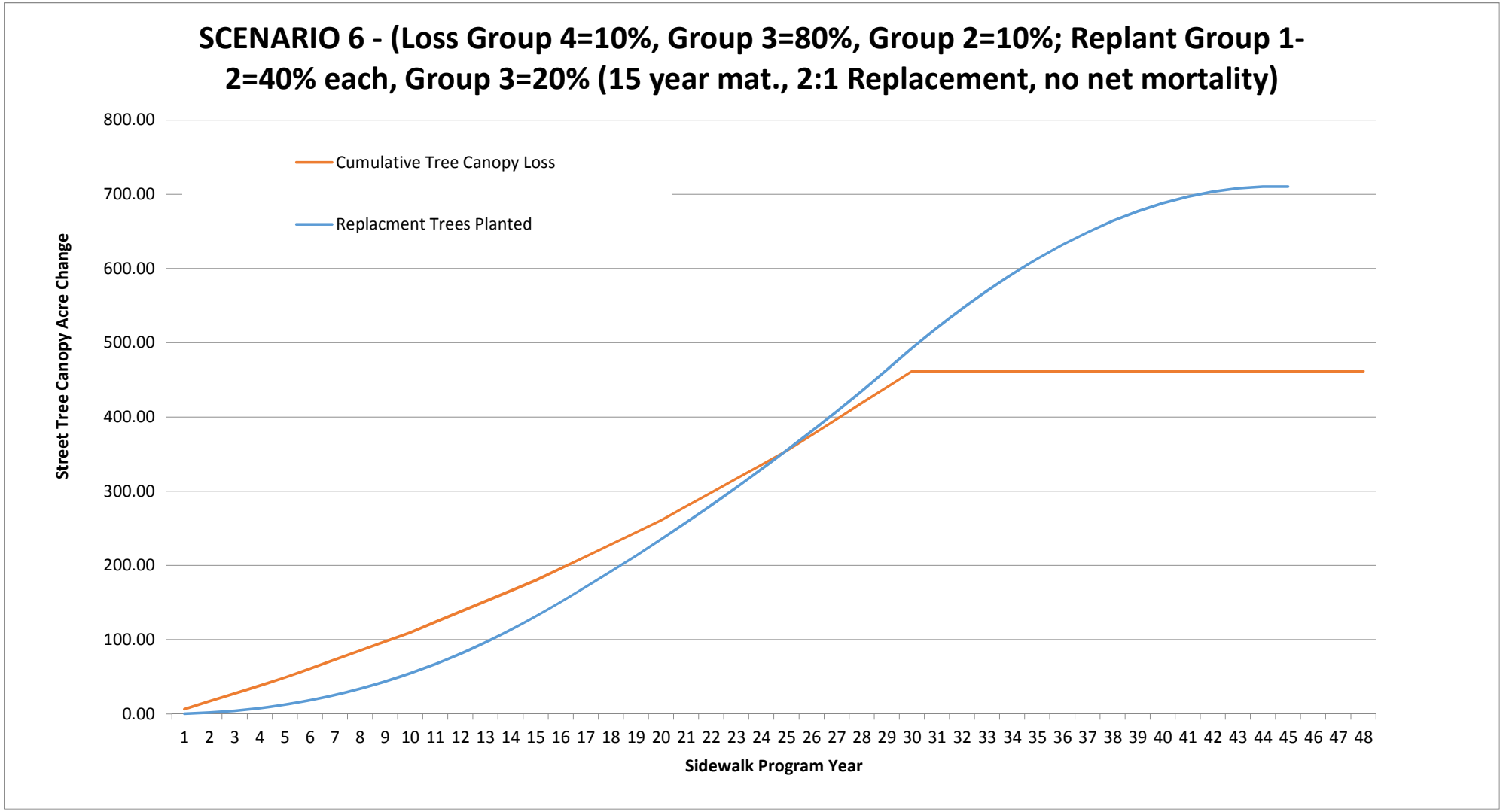


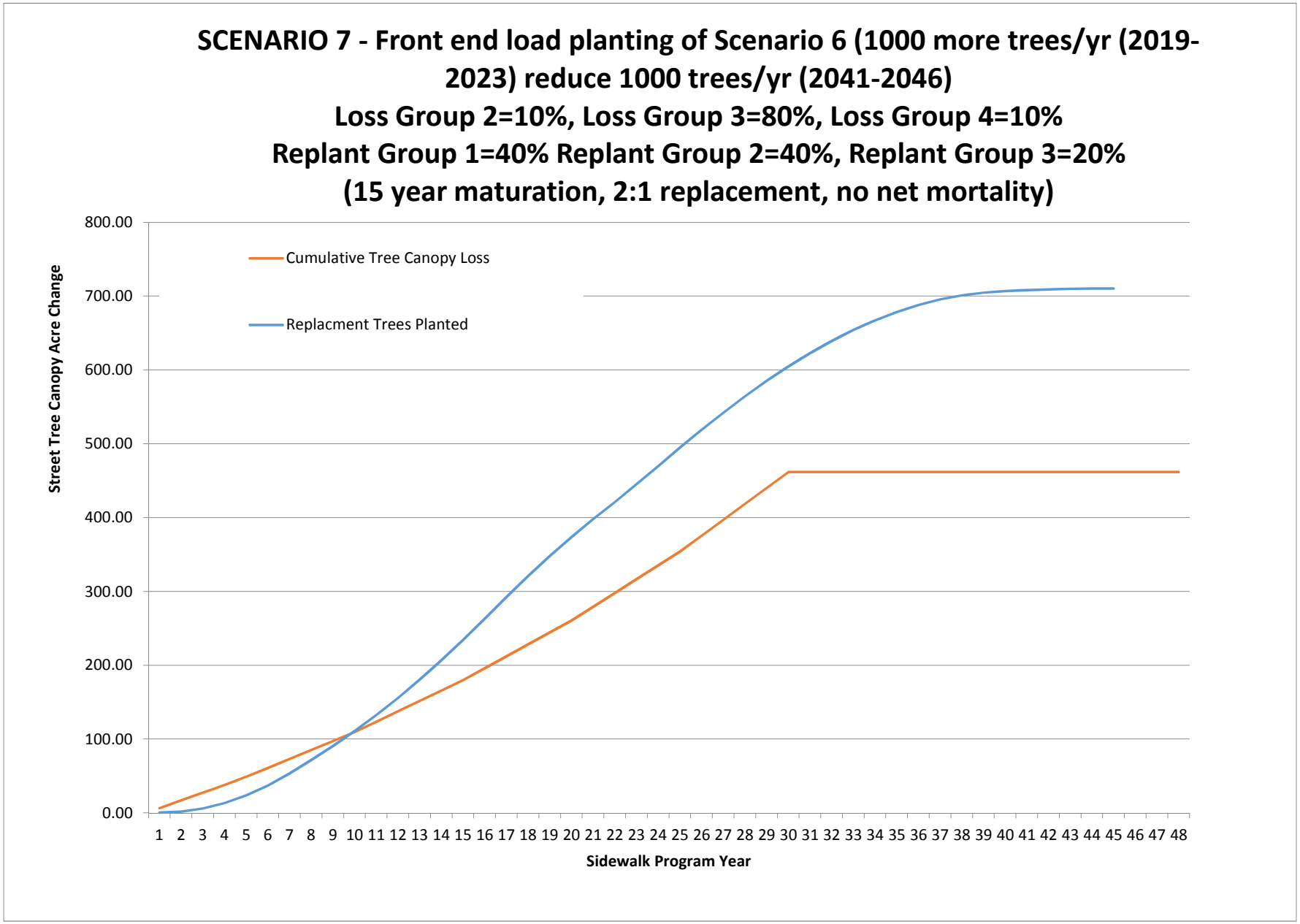

SCENARIO 2 - (Loss Group 4=50%, Group 3=50%; Replant Group 1-50%, Group 2=50%
(15 year maturation, 2:1 Replacement, no net mortality)
Cumulative Tree Canopy Loss
Replacment Trees Planted
Street Tree Canopy Acre Change
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
Sidewalk Program Year


SCENARIO 3 - (Loss Group 4=50%, Group 3=50%; Replant Group 1-50%, Group 2=50%
(15 year maturation, 3:1 Replacement, no net mortality)
Cumulative Tree Canopy Loss
Replacment Trees Planted
Street Tree Canopy Acre Change
900.00
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
Sidewalk Program Year

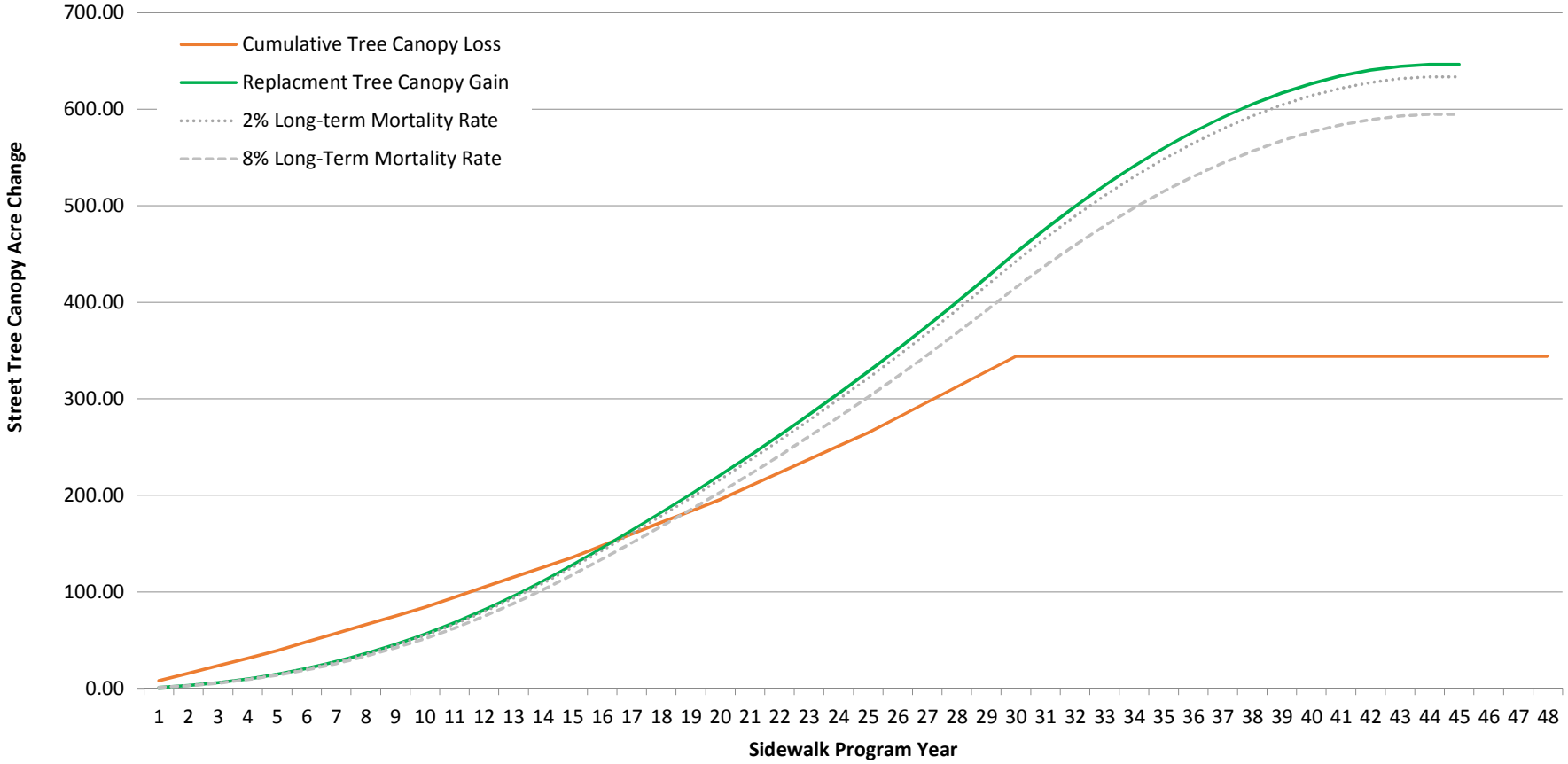

SCENARIO 4 - (Loss Group 4=75%, Group 3=25%; Replant Group 1-3=33.3%, (15 year maturation, 2:1 Replacement, no net mortality)
Cumulative Tree Canopy Loss
Replacment Trees Planted
Street Tree Canopy Acre Change
900.00
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
Sidewalk Program Year


SCENARIO 5 - (Loss Group 4=75%, Group 3=25%; Replant Group 1-3=33.3%, (15 year maturation, 3:1 Replacement, no net mortality)
Cumulative Tree Canopy Loss
Replacment Trees Planted
Street Tree Canopy Acre Change
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
Sidewalk Program Year

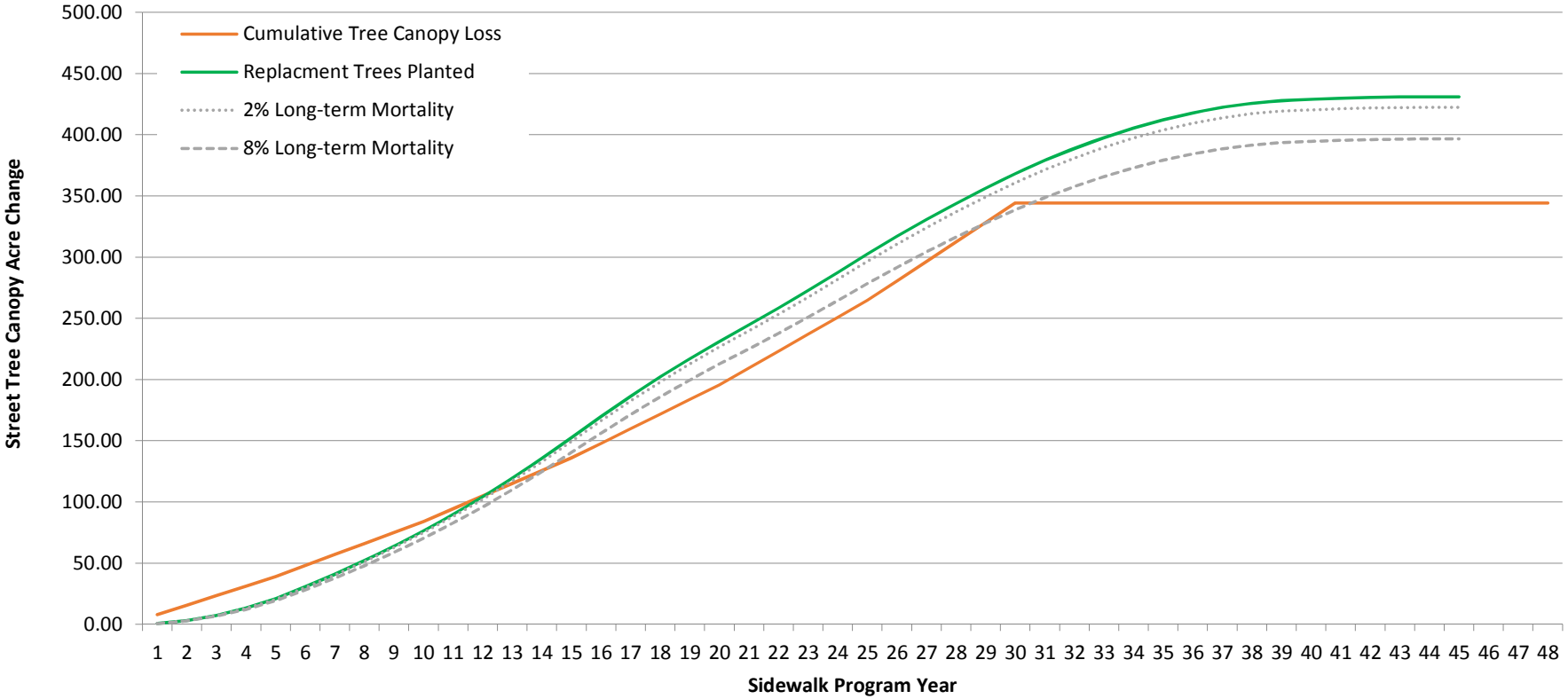

SCENARIO 6 - (Loss Group 4=10%, Group 3=80%, Group 2=10%; Replant Group 1-2=40% each, Group 3=20% (15 year mat., 2:1 Replacement, no net mortality)
Cumulative Tree Canopy Loss
Replacment Trees Planted
Street Tree Canopy Acre Change
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
Sidewalk Program Year

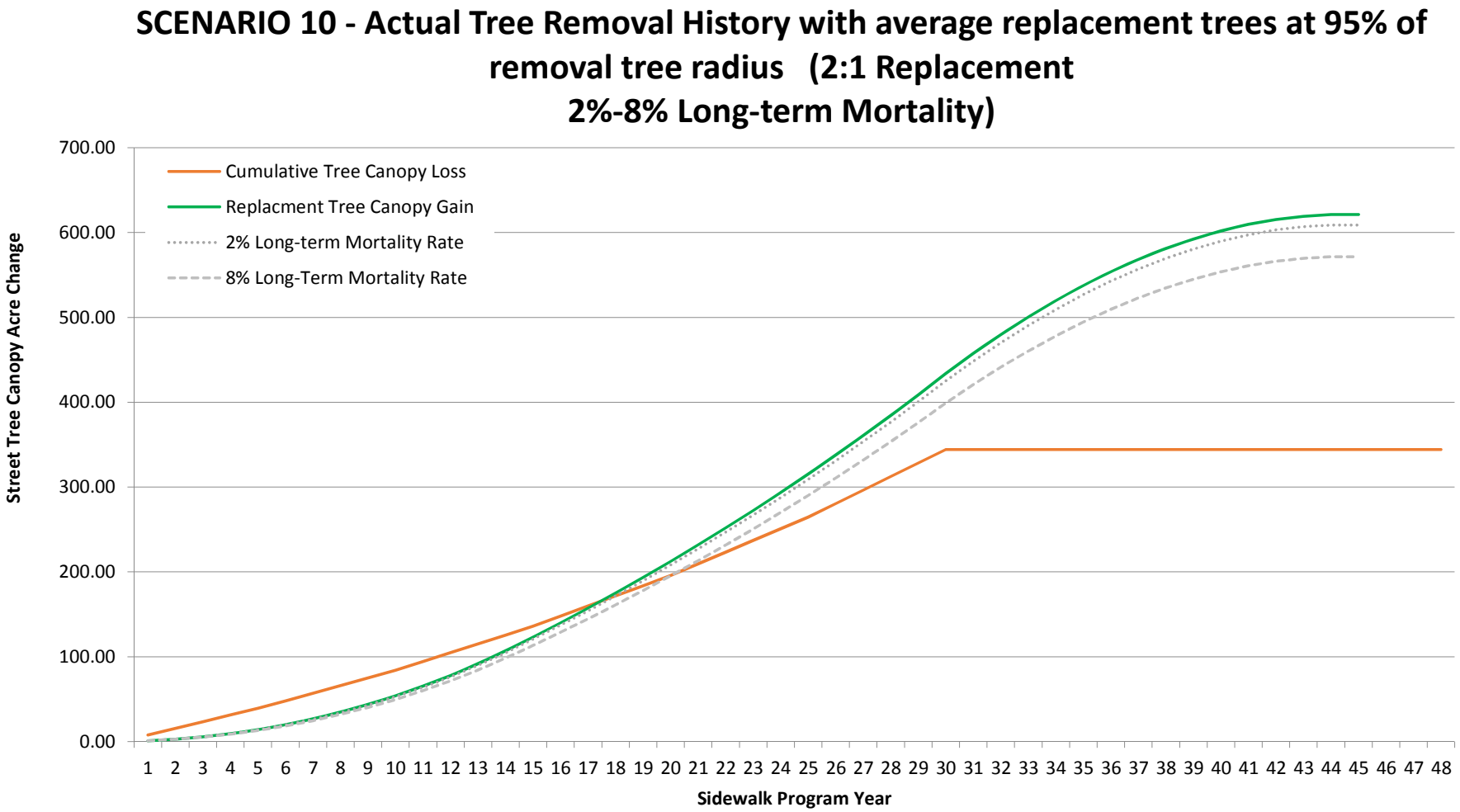

SCENARIO 7 - Front end load planting of Scenario 6 (1000 more trees/yr (2019-2023) reduce 1000 trees/yr (2041-2046)
Loss Group 2=10%, Loss Group 3=80%, Loss Group 4=10%
Replant Group 1=40% Replant Group 2=40%, Replant Group 3=20%
(15 year maturation, 2:1 replacement, no net mortality)
Street Tree Canopy Acre Change
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
Cumulative Tree Canopy Loss
Replacment Trees Planted
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
Sidewalk Program Year

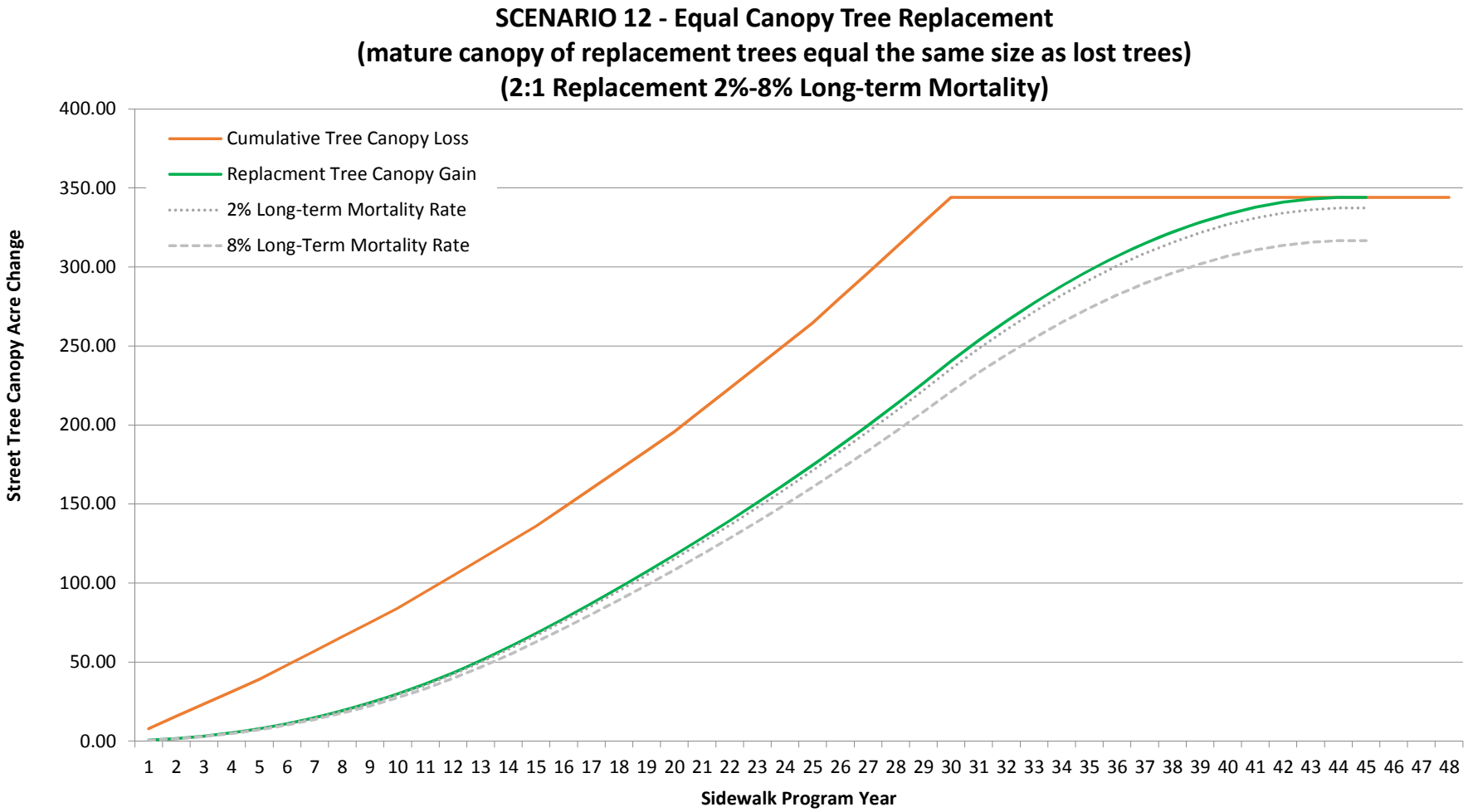
SCENARIO 8 - Actual Tree Removal Replacement History (3:1 Replacement 2%-8% Long-term Mortality)

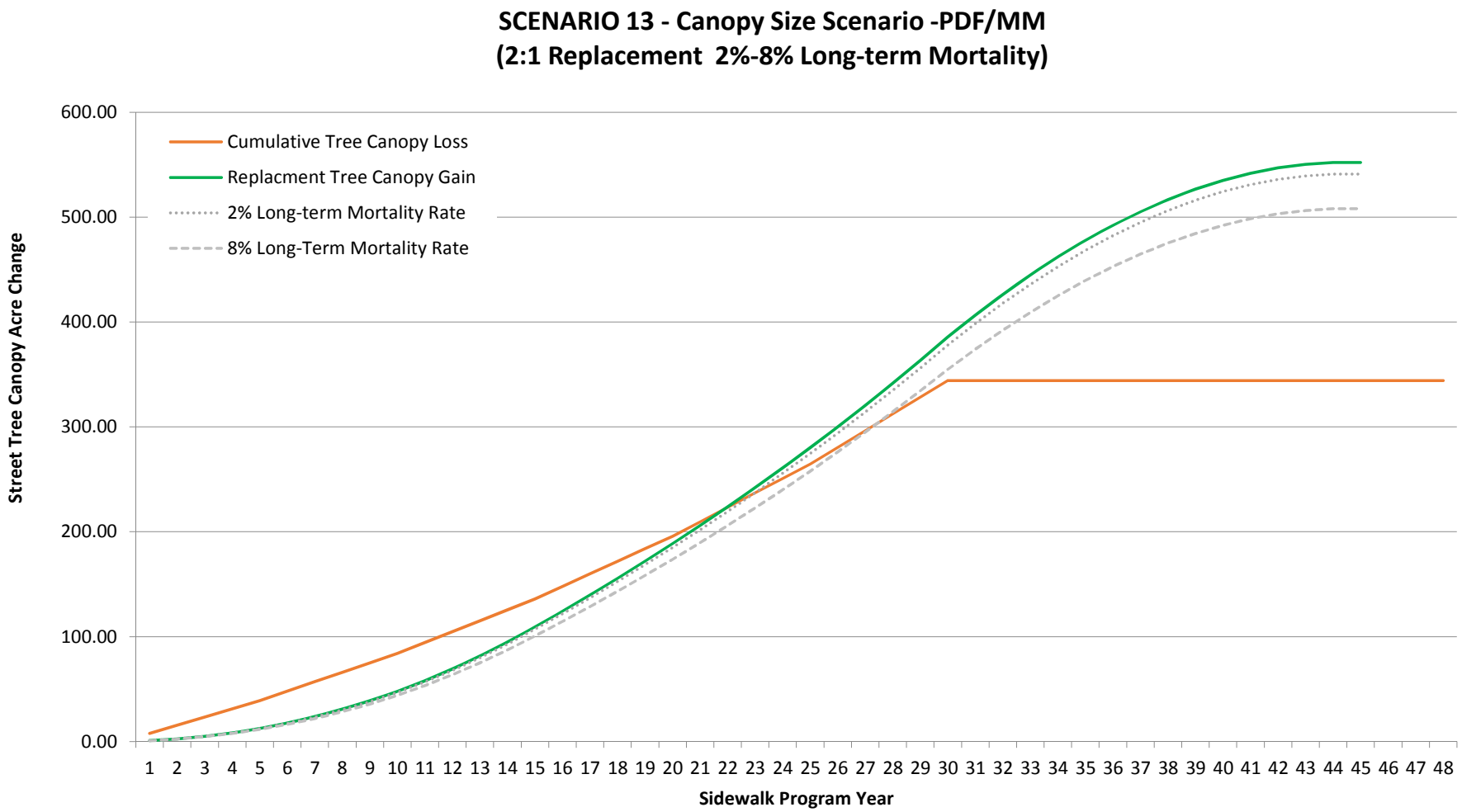


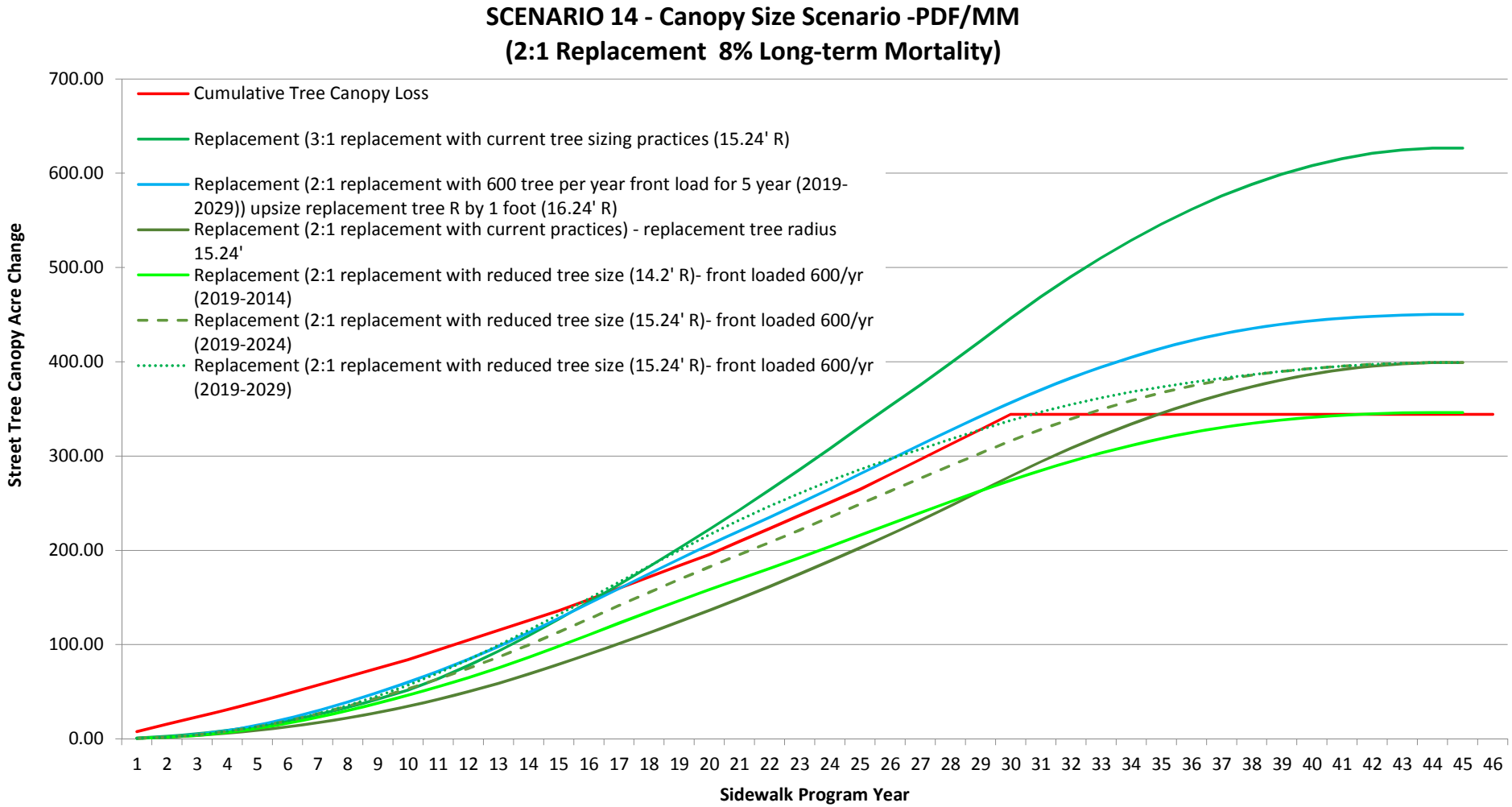
SCENARIO 9 - Front end load planting of Scenario 6 (1000 more trees/yr (2019-2023) reduce 1000 trees/yr (2041-2046) - Planting follows current species replacements (15 year mat., 2:1 Replacement+ Front Load, 2%-8% mortality)

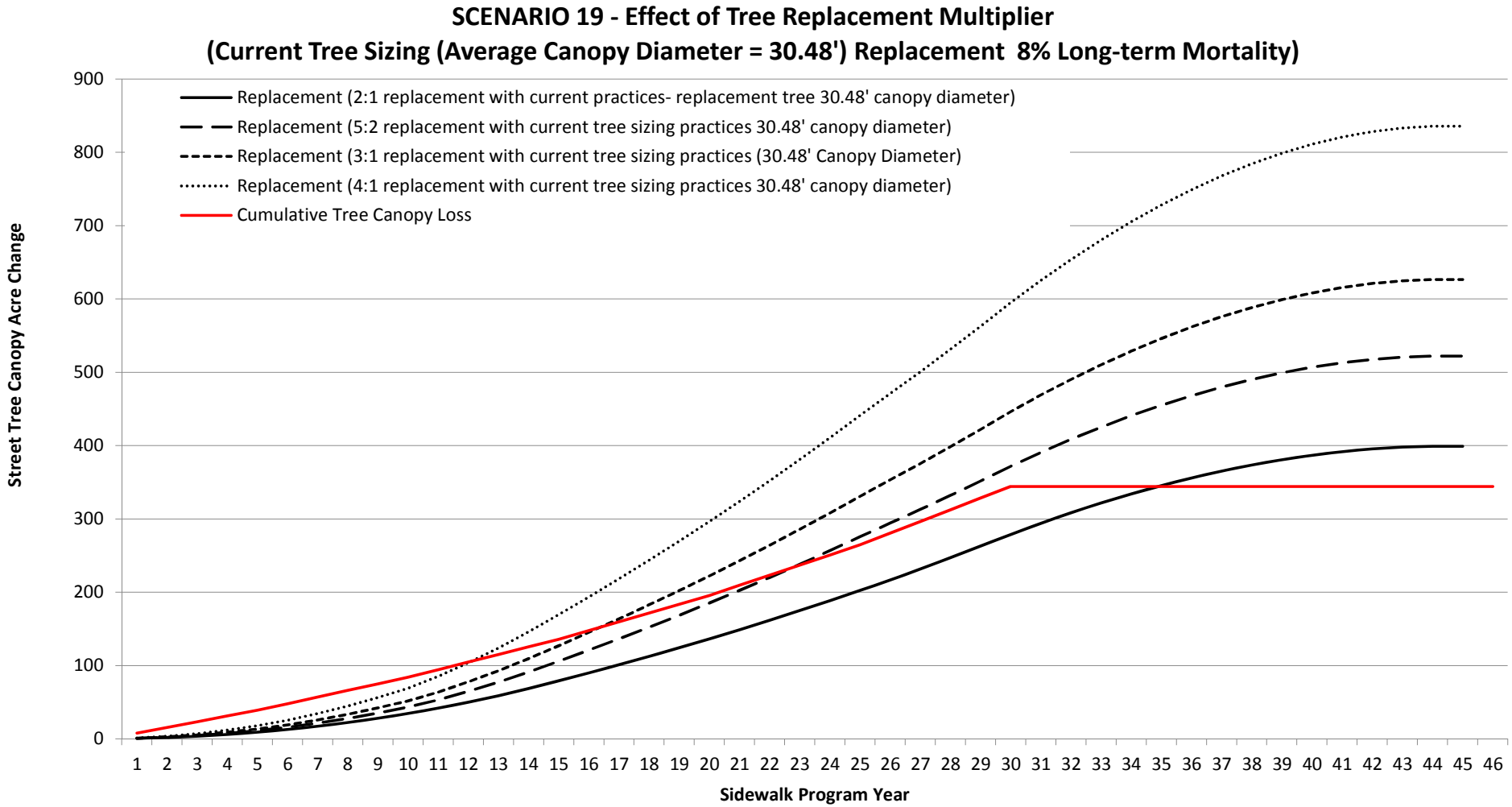


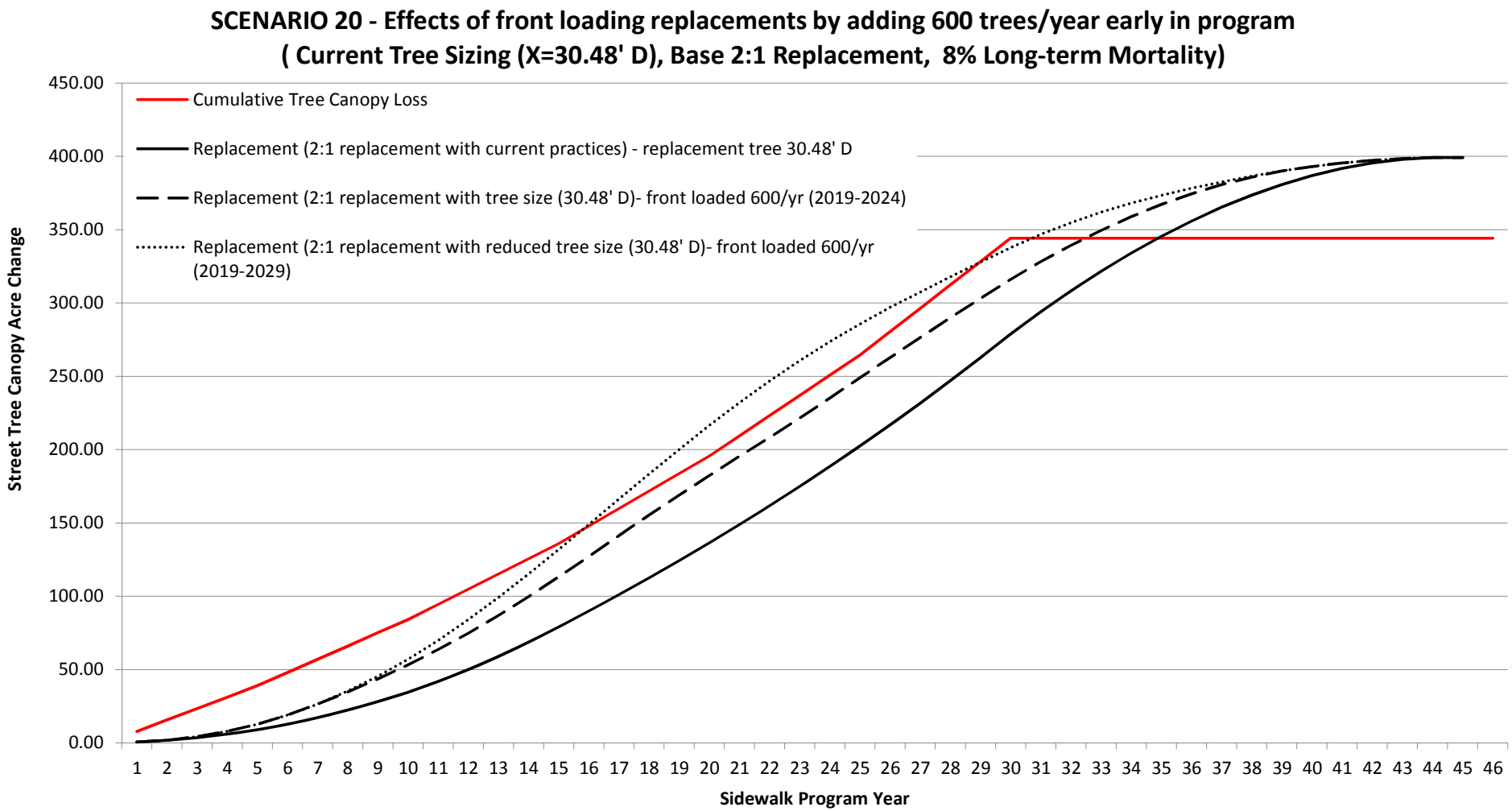

SCENARIO 10 - Actual Tree Removal History with average replacement trees at 95% of removal tree radius (2:1 Replacement 2%-8% Long-term Mortality)
Cumulative Tree Canopy Loss
Replacment Tree Canopy Gain
2% Long-term Mortality Rate
8% Long-Term Mortality Rate
Street Tree Canopy Acre Change
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
Sidewalk Program Year

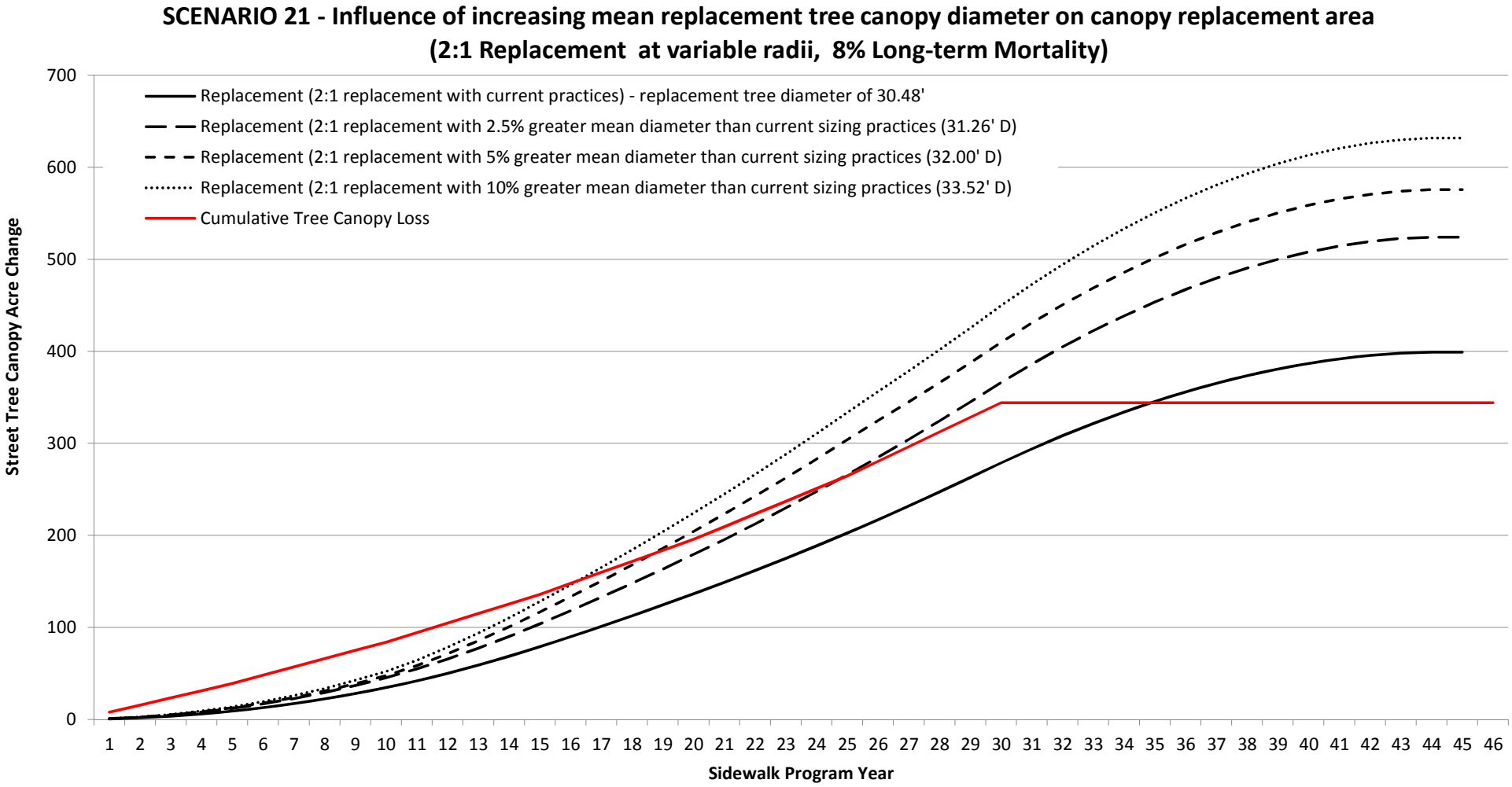

SCENARIO 12 - Equal Canopy Tree Replacement
(mature canopy of replacement trees equal the same size as lost trees)
(2:1 Replacement 2%-8% Long-term Mortality)
Cumulative Tree Canopy Loss
Replacment Tree Canopy Gain
2% Long-term Mortality Rate
8% Long-Term Mortality Rate
Street Tree Canopy Acre Change
400.00
350.00
300.00
250.00
200.00
150.00
100.00
50.00
0.00
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
Sidewalk Program Year


SCENARIO 13 - Canopy Size Scenario -PDF/MM
(2:1 Replacement 2%-8% Long-term Mortality)
Cumulative Tree Canopy Loss
Replacment Tree Canopy Gain
2% Long-term Mortality Rate
8% Long-Term Mortality Rate
Street Tree Canopy Acre Change
600.00
500.00
400.00
300.00
200.00
100.00
0.00
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
Sidewalk Program Year

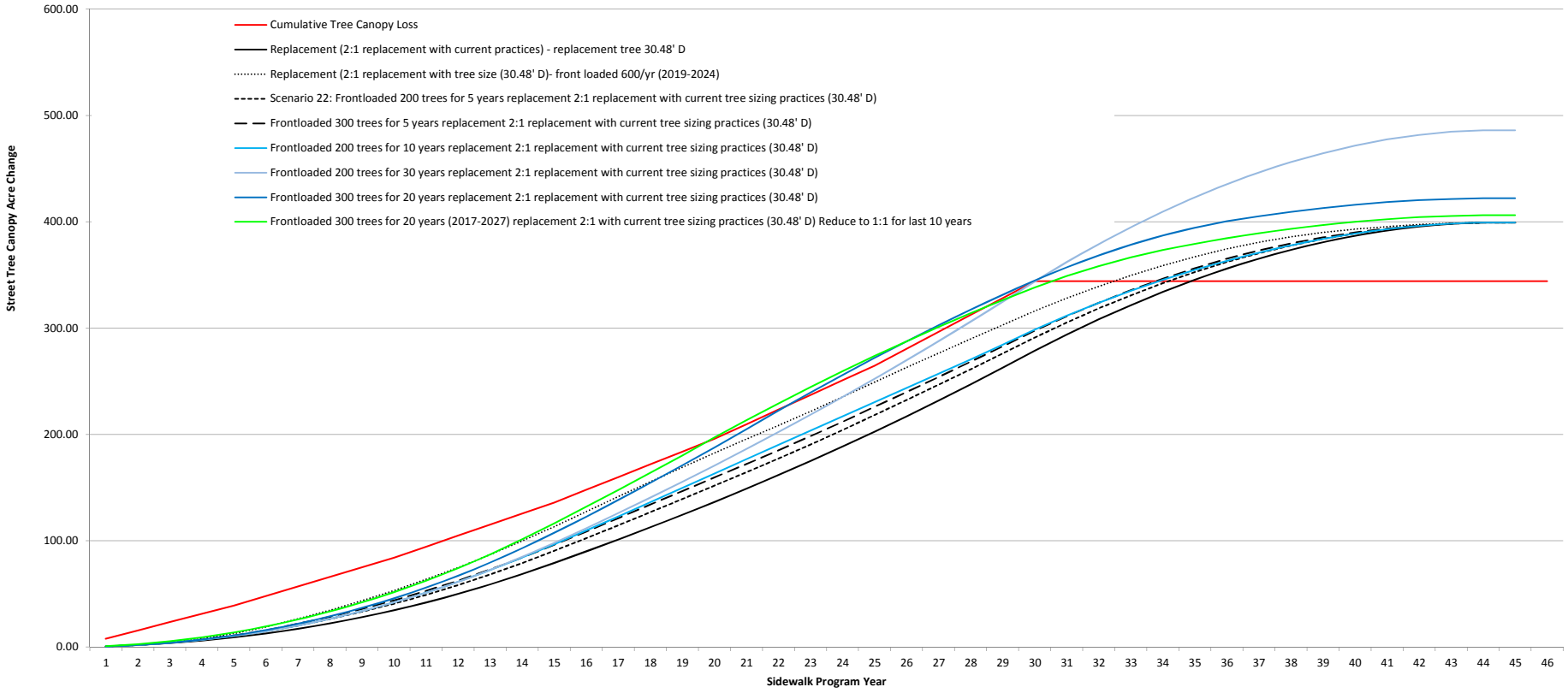

SCENARIO 14 - Canopy Size Scenario -PDF/MM
(2:1 Replacement 8% Long-term Mortality)
Street Tree Canopy Acre Change
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
Cumulative Tree Canopy Loss
Replacement (3:1 replacement with current tree sizing practices (15.24' R)
Replacement (2:1 replacement with 600 tree per year front load for 5 year (2019-2029)) upsize replacement tree R by 1 foot (16.24' R)
Replacement (2:1 replacement with current practices) - replacement tree radius 15.24'
Replacement (2:1 replacement with reduced tree size (14.2' R)- front loaded 600/yr (2019-2014)
Replacement (2:1 replacement with reduced tree size (15.24' R)- front loaded 600/yr (2019-2024)
Replacement (2:1 replacement with reduced tree size (15.24' R)- front loaded 600/yr (2019-2029)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46
Sidewalk Program Year


SCENARIO 19 - Effect of Tree Replacement Multiplier
(Current Tree Sizing (Average Canopy Diameter = 30.48') Replacement 8% Long-term Mortality)
Replacement (2:1 replacement with current practices- replacement tree 30.48' canopy diameter)
Replacement (5:2 replacement with current tree sizing practices 30.48' canopy diameter)
Replacement (3:1 replacement with current tree sizing practices (30.48' Canopy Diameter)
Replacement (4:1 replacement with current tree sizing practices 30.48' canopy diameter)
Cumulative Tree Canopy Loss
Street Tree Canopy Acre Change
0
100
200
300
400
500
600
700
800
900
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46
Sidewalk Program Year

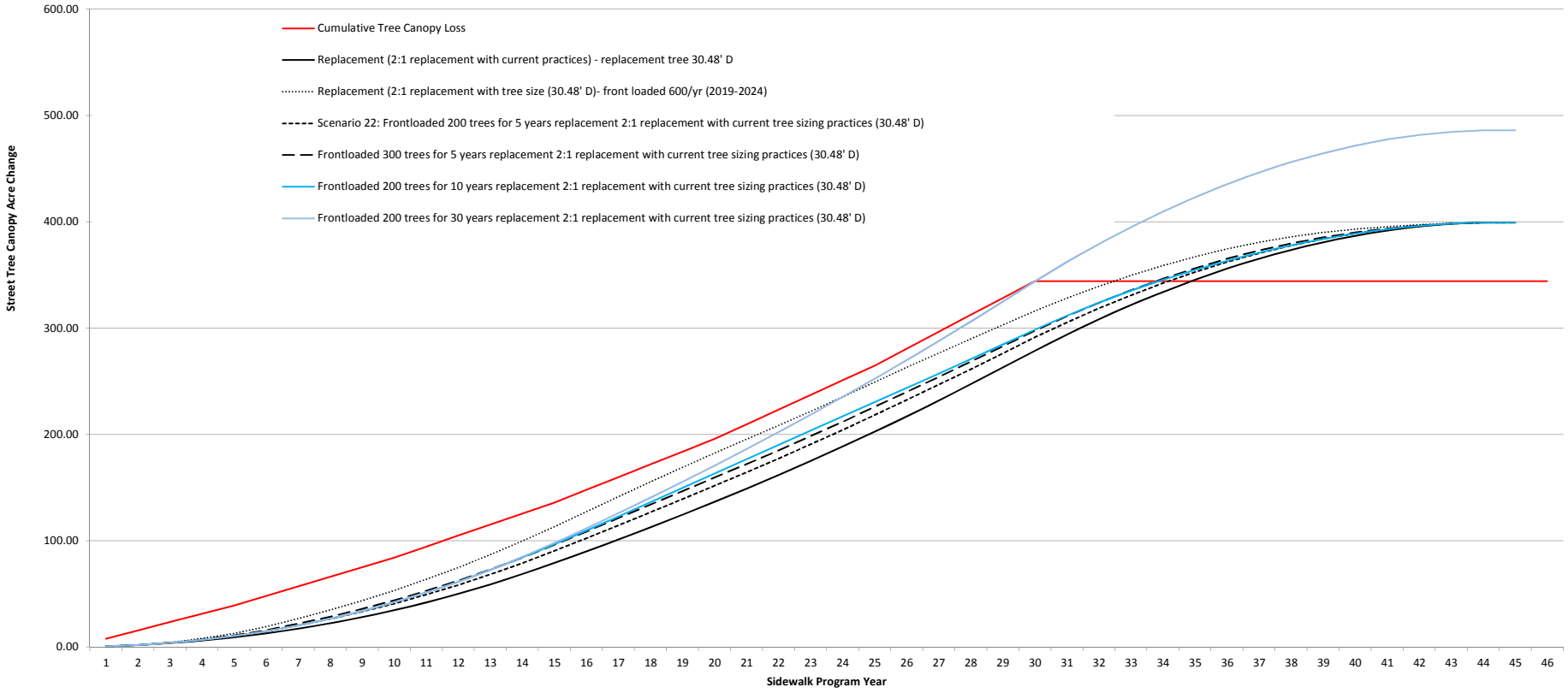

SCENARIO 20 - Effects of front loading replacements by adding 600 trees/year early in program
(Current Tree Sizing (X=30.48' D), Base 2:1 Replacement, 8% Long-term Mortality)
Cumulative Tree Canopy Loss
Replacement (2:1 replacement with current practices) - replacement tree 30.48' D
Replacement (2:1 replacement with tree size (30.48' D)- front loaded 600/yr (2019-2024)
Replacement (2:1 replacement with reduced tree size (30.48' D)- front loaded 600/yr (2019-2029)
Street Tree Canopy Acre Change
450.00
400.00
350.00
300.00
250.00
200.00
150.00
100.00
50.00
0.00
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46
Sidewalk Program Year


SCENARIO 21 - Influence of increasing mean replacement tree canopy diameter on canopy replacement area
(2:1 Replacement at variable radii, 8% Long-term Mortality)
Replacement (2:1 replacement with current practices) - replacement tree diameter of 30.48'
Replacement (2:1 replacement with 2.5% greater mean diameter than current sizing practices (31.26' D)
Replacement (2:1 replacement with 5% greater mean diameter than current sizing practices (32.00' D)
Replacement (2:1 replacement with 10% greater mean diameter than current sizing practices (33.52' D)
Cumulative Tree Canopy Loss
Street Tree Canopy Acre Change
0
100
200
300
400
500
600
700
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46
Sidewalk Program Year

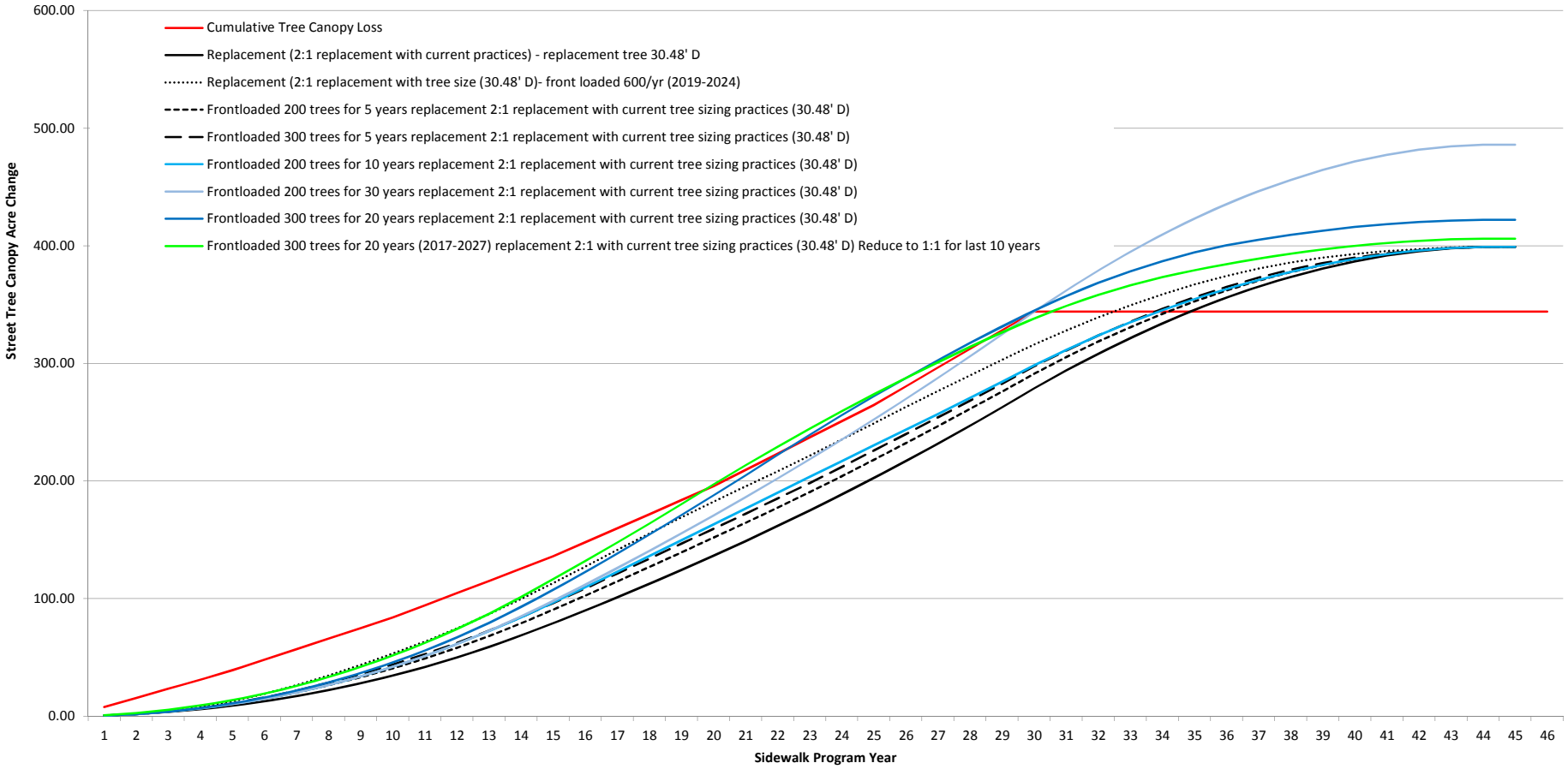
SCENARIO 22 - Effects of front loading replacements by adding 200trees/year for multipe years with reduction to 1:1 replacement at end of program
(Current Tree Sizing (X=30.48' D), Base 2:1 Replacement, 8% Long-term Mortality)



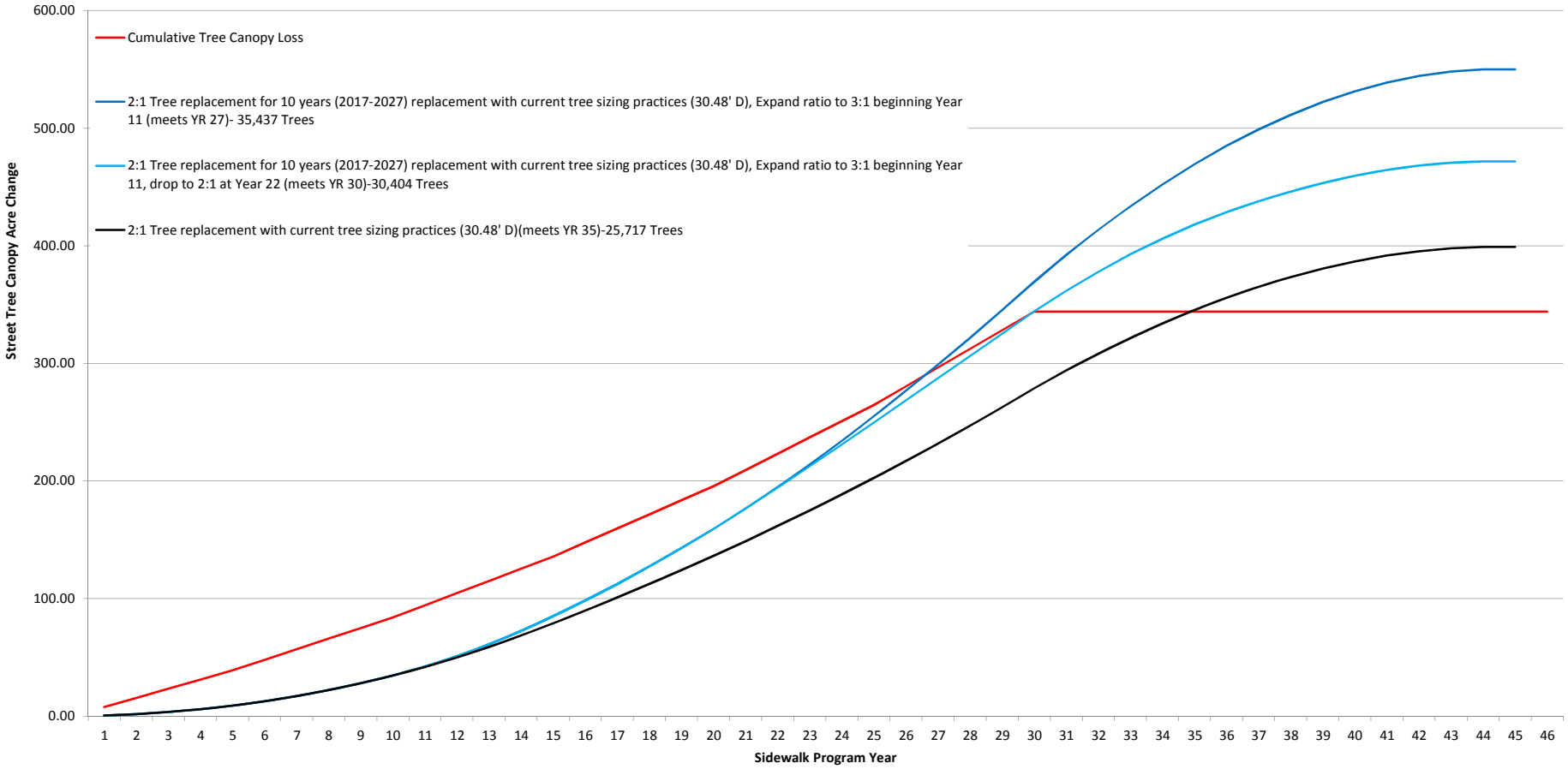
SCENARIO 23 - Effects of front loading replacements by adding 200trees/year for 30 years with no reduction at end of program
(Current Tree Sizing (X=30.48' D), Base 2:1 Replacement, 8% Long-term Mortality)



SCENARIO 24 - Effects of front loading replacements by adding 300trees/year for 20 years with reduction to 1:1 replacement at end of program
(Current Tree Sizing (X=30.48' D), Base 2:1 Replacement, 8% Long-term Mortality)



SCENARIO 25 - 2:1 Replacement for first 10 years - Ratio based ramp up commencing in Year 11 to meet full canopy replacement in Year 30
(Current Tree Sizing (X=30.48' D), Base 2:1 Replacement, 8% Long-term Mortality)



Los Angeles City Street Tree Count and Groups-2014

Tree Species and Count

SPECIES	COUNT
CRAPE MYRTLE (Lagerstroemia indica)	46,670
MEXICAN FAN PALM (Washingtonia robusta)	44,498
AMERICAN SWEETGUM (Liquidambar styraciflua)	42,540
SOUTHERN MAGNOLIA (Magnolia grandiflora)	36,535
INDIAN LAUREL FIG (Ficus microcarpa 'Nitida')	30,529
JACARANDA (Jacaranda acutifolia / mimosifolia)	21,956
LONDON PLANE (Platanus acerifolia)	19,363
CAMPHOR TREE (Cinnamomum camphora)	19,300
ITALIAN CYPRESS (Cupressus sempervirens)	15,988
CANARY ISLAND PINE (Pinus canariensis)	15,538
MODESTO ASH (Fraxinus velutina 'Modesto')	13,936
CARROTWOOD (Cupaniopsis anacardioides)	13,211
CAROB (Ceratonia siliqua)	12,020
QUEEN PALM (Arecastrum romanzoffianum)	11,521
EVERGREEN PEAR (Pyrus kawakamii)	11,190
CANARY ISLAND DATE PALM (Phoenix canariensis)	10,739
GLOSSY PRIVET (Ligustrum lucidum)	10,382
LIVE OAK (Quercus agrifolia)	8,878
VICTORIAN BOX (Pittosporum undulatum)	7,946
SHAMEL ASH (Fraxinus uhdei)	7,636
BRAZILIAN PEPPER (Schinus terebinthifolius)	7,635
CHINESE ELM (Ulmus parvifolia)	7,455
WEEPING FIG (Ficus benjamina)	7,372
CHINESE EVERGREEN ELM (Ulmus parvifolia semperviren)	7,079
WHITE MULBERRY (Morus alba)	6,976
SIBERIAN ELM (Ulmus pumila)	6,730
BOTTLE TREE (Brachychiton populneus)	5,863
SCARLET BOTTLEBRUSH (Callistemon lanceolatus)	5,793
CAROLINA LAUREL CHERRY (Prunus caroliniana)	5,706
BOTTLEBRUSH (Callistemon citrinus)	5,650
CALIFORNIA SYCAMORE (Platanus racemosa)	5,572
BRISBANE BOX (Tristania conferta)	4,994
SO. CALIFORNIA BLACK WALNUT (Juglans californica)	4,977
ORNAMENTAL PEAR (Pyrus calleryana)	4,975
GOLDENRAIN TREE (Koelreuteria paniculata)	4,734
AFRICAN FERN PINE (Podocarpus gracilior)	4,711
ALEPPO PINE (Pinus halepensis)	4,396
TULIP TREE (Liriodendron tulipifera)	4,343
BRADFORD PEAR (Pyrus calleryana)	4,225
YEW PINE (Podocarpus macrophyllus)	4,192
DEODAR CEDAR (Cedrus deodara)	4,081
CALIFORNIA PEPPER (Schinus molle)	4,067
OLEANDER (Nerium oleander)	4,047
BLACK LOCUST (Robinia pseudoacacia)	4,008
AUSTRALIAN WILLOW (Geijera parviflora)	3,989
GOLD MEDALLION TREE (Cassia leptophylla)	3,780
ARIZONA ASH (Fraxinus velutina)	3,486
BLUE GUM (Eucalyptus globulus)	3,485
OLIVE (Olea europaea)	3,368
CHINESE FLAME TREE (Koelreuteria bipinnata)	3,363
WHITE BIRCH (Betula pendula)	3,234

Tree Species and Count

SPECIES	COUNT
CALIFORNIA FAN PALM (Washingtonia filifera)	3,198
LAVENDER TRUMPET TREE (Tabebuia avellanadae)	3,174
PINK CRAPE MYRTLE (Lagerstroemia i. 'Rosea')	3,073
HOLLY OAK (Quercus ilex)	2,924
PURPLE-LEAF PLUM (Prunus cerasifera)	2,915
BLACK ACACIA (Acacia melanoxylon)	2,786
DESERT GUM (Eucalyptus rudis)	2,770
JAPANESE BLACK PINE (Pinus thunbergiana)	2,618
PINK TRUMPET TREE (Tabebuia impetiginosa)	2,555
HOLLYWOOD JUNIPER (Juniperus chin. 'Torulosa')	2,550
SPANISH DAGGER (Yucca gloriosa)	2,499
PURPLE ORCHID TREE (Bauhinia purpurea)	2,412
RED FLOWERING GUM (Eucalyptus ficifolia)	2,363
MONTEREY PINE (Pinus radiata)	2,322
SILVER DOLLAR GUM (Eucalyptus polyanthemos)	2,284
BRUSH CHERRY (Syzygium paniculatum)	2,239
PURPLE ORCHID TREE (Bauhinia variegata)	2,231
HONG KONG ORCHID TREE (Bauhinia blakeana)	2,223
WINDMILL PALM (Trachycarpus fortunei)	2,113
WESTERN CATALPA (Catalpa speciosa)	2,078
CAJEPUT TREE (Melaleuca quinquenervia)	2,035
SILK-FLOSS TREE (Chorisia speciosa)	1,998
PEPPERMINT TREE (Agonis flexuosa)	1,987
ORANGE (Citrus sinensis)	1,952
ITALIAN STONE PINE (Pinus pinea)	1,922
SILK OAK (Grevillea robusta)	1,824
SILVER MAPLE (Acer saccharinum)	1,794
TIPU (Tipuana tipu)	1,780
SAWTOOTH ZELKOVA (Zelkova serrata)	1,623
SWEETSHADE (Hymenosporum flavum)	1,619
ENGLISH WALNUT (Juglans regia)	1,593
KING PALM (Archontophoenix cunningham.)	1,582
NEW ZEALAND CHRISTMAS TREE (Metrosideros excelsus)	1,567
WEEPING BOTTLE BRUSH (Callistemon viminalis)	1,557
CHINESE FLAME TREE (Koelreuteria bipinnata)	1,539
RED IRONBARK (Eucalyptus sideroxylon)	1,526
PEACH (Prunus persica)	1,480
RED GUM (Eucalyptus camaldulensis)	1,477
FERN PINE (Podocarpus gracilior)	1,449
QUEENSLAND PITTOSPORUM (Pittosporum rhombifolium)	1,434
PURPLE-LEAF PLUM (Prunus pissardii)	1,405
CORK OAK (Quercus suber)	1,387
TREE OF HEAVEN (Ailanthus altissima)	1,377
CHINESE PISTACHE (Pistacia chinensis)	1,338
LEMON-SCENTED GUM (Eucalyptus citriodora)	1,313
SWAMP MAHOGONY (Eucalyptus robusta)	1,312
AVOCADO (Persea americana)	1,303
GOLDEN TRUMPET TREE (Tabebuia chrysotricha)	1,261
MODESTO ASH (Fraxinus velutina glabra)	1,241
MAIDENHAIR TREE (Ginkgo biloba)	1,238
AMERICAN ELM (Ulmus americana)	1,188

Tree Species and Count

SPECIES	COUNT
EDIBLE LOQUAT (Eriobotrya japonica)	1,161
ITALIAN ALDER (Alnus cordata)	1,161
CHINABERRY (Melia azedarach)	1,144
TORREY PINE (Pinus torreyana)	1,144
WESTERN REDBUD (Cercis occidentalis)	1,139
SOUTHERN LIVE OAK (Quercus virginiana)	1,138
JAPANESE PRIVET (Ligustrum japonicum)	1,080
RIVER SHE-OAK (Casuarina cunninghamiana)	1,054
LEMON (Citrus limon)	999
CUNNINGHAM BEEFWOOD (Casuarina cunninghamiana)	998
PALM SPECIES (Palm spp.)	984
COAST REDWOOD (Sequoia sempervirens)	936
WHITE ALDER (Alnus rhombifolia)	921
LEYLAND CYPRESS (Cupressocyparis leylandii)	918
NORFOLK ISLAND PINE (Araucaria excelsa)	908
CHITALPA (CHITALPA TASHKENTENSIS)	882
APRICOT (Prunus armeniaca)	881
HORSETAIL TREE (Casuarina equisetifolia)	870
PLUM (Prunus domestica)	809
KAFFIRBOOM CORAL TREE (Erythrina caffra)	765
AUSTRALIAN BRUSH CHERRY (Eugenia myrtifolia)	763
RUBBER TREE (Ficus elastica)	732
GUADALUPE PALM (Brahea edulis)	621
MIMOSA (Albizia julibrissin cultivar)	619
SUGAR GUM (Eucalyptus cladocalyx)	553
HOLLYWOOD TWISTED JUNIPER (Juniperus chin. 'Torulosa')	520
MEDITERRANEAN FAN PALM (Chamaerops humilis)	508
AFRICAN SUMAC (Rhus lancea)	494
RUSTY-LEAF FIG (Ficus rubiginosa)	487
RIGIDLEAF MELALEUCA (Melaleuca styphelioides)	486
MOCK ORANGE (Pittosporum tobira)	483
SYDNEY GOLDEN WATTLE (Acacia longifolia)	482
CAPE CHESTNUT (Calodendrum capense)	478
EUROPEAN WHITE BIRCH (Betula alba pendula)	465
MYOPORUM (Myoporum laetum)	465
MORETON-BAY FIG (Ficus macrophylla)	449
WILSON HOLLY (Ilex altaclar. 'Wilsonii')	446
BAILEY ACACIA (Acacia baileyana)	440
FLAX-LEAF PAPERBARK (Melaleuca linariifolia)	434
GREEN WATTLE (Acacia decurrens)	424
PAPER MULBERRY (Broussonetia papyrifera)	412
DRACAENA (Cordyline australis)	404
ARIZONA CYPRESS (Cupressus glabra)	403
WATERMELON RED CRAPE MYRTLE (Lagerstroemia i. 'Wat. Red')	400
EDIBLE FIG (Ficus carica)	390
CALIFORNIA BLACK WALNUT (Juglans hindsii)	389
XYLOSMA (Xylosma congestum)	386
ORIENTAL ARBORVITAE (Thuja orientalis)	384
SILK TREE (Albizia julibrissin)	366
CATALINA CHERRY (Prunus lyonii)	358
MANNA GUM (Eucalyptus viminalis)	353

Tree Species and Count

SPECIES	COUNT
LAVENDER CRAPE MYRTLE (Lagerstroemia i. 'Purpurea')	348
PECAN (Carya illinoinensis)	344
LOMBARDY POPLAR (Populus nigra 'Italica')	340
HONEY LOCUST (Gleditsia triacanthos)	335
JUNIPER (Juniperus chinensis)	330
ORIENTAL ARBORVITAE (Platycladus orientalis)	329
TOYON (Heteromeles arbutifolia)	329
CALABRIAN PINE (Pinus brutia)	328
BOX ELDER (Acer negundo)	327
PINEAPPLE GUAVA (Feijoa sellowiana)	318
AMERICAN SYCAMORE (Platanus occidentalis)	313
SAUCER MAGNOLIA (Magnolia X soulangiana)	311
HOLLYLEAF CHERRY (Prunus ilicifolia)	297
INCENSE CEDAR (Calocedrus decurrens)	297
EDIBLE APPLE (Malus syvestris)	282
BUSHY BLUE GUM (Eucalyptus glob. 'Compacta')	281
ALMOND (Prunus amygdalus)	274
WEEPING WILLOW (Salix babylonica)	268
FLOWERING PLUM (Prunus X blireiana)	261
AMERICAN ARBORVITAE (Thuja occidentalis)	258
DATE PALM (Phoenix dactylifera)	254
BRONZE LOQUAT (Eriobotrya deflexa)	244
WHITE CRAPE MYRTLE (Lagerstroemia i. 'Alba')	233
PFITZER JUNIPER (Juniperus chin. 'Pfitzerana')	229
PINDO PALM (Butia capitata)	227
FRASER'S PHOTINIA (Photinia fraseri)	225
BLUE ELDERBERRY (Sambucus caerulea)	220
STRAWBERRY TREE (Arbutus unedo)	218
VALLEY OAK (Quercus lobata)	211
POMEGRANATE (Punica granatum)	210
SILVER DOLLAR TREE (Eucalyptus cinerea)	208
THORNLESS HONEY LOCUST (Gleditsia triacanthos inermi)	201
GIAND BIRD OF PARADISE (Strelitzia nicolai)	199
BLACK WALNUT (Juglans nigra)	195
CHINESE TALLOWTREE (Sapium sebiferum)	192
NORFOLK ISLAND PINE (Araucaria heterophylla)	186
WHITE IRONBARK (Eucalyptus leucoxylon)	186
JAPANESE MAPLE (Acer palmatum)	185
GRAPEFRUIT (Citrus X paradisi)	184
WILLOW-LEAVED PEPPERMINT (Eucalyptus nicholii)	179
CORAL TREE SPECIES (Erythrina spp.)	177
RED CRAPE MYRTLE (Lagerstroemia i. 'Rubra')	177
PYGMY DATE PALM (Phoenix roebelenii)	176
CYPRESS SPECIES (Cupressus spp.)	173
ABYSSINIAN BANANA (Musa ensete)	170
CAPE PITTOSPORUM (Pittosporum viridiflorum)	161
HIBISCUS SPECIES (Hibiscus spp.)	161
KAFFIR PLUM (Harpephyllum caffrum)	160
INCENSE CEDAR (Libocedrus decurrens)	158
SALTY GUM (Eucalyptus tereticornis)	153
VIRGINIA LIVE OAK (Quercus virginiana)	152

Tree Species and Count

SPECIES	COUNT
CHINESE HACKBERRY (Celtis sinensis)	151
PENCIL TREE (Euphorbia tirucalli)	149
MELALEUCA (Melaleuca nesophila)	147
NEW CALEDONIA PINE (Araucaria columnaris)	143
PECAN (Carya pecan)	143
NAKED CORAL TREE (Erythrina coralloides)	142
PRIMROSE TREE (Lagunaria patersonii)	140
WHITE SAPOTE (Casimiroa edulis)	133
GIANT YUCCA (Yucca elephantipes)	132
FREMONT COTTONWOOD (Populus fremontii)	131
HYBRID CATALPA (Catalpa X hybrida)	131
IDAHO LAVENDER LOCUST (Robinia ambigua 'Idahoensis')	129
INDIAN LAUREL FIG (Ficus retusa)	124
COCKSPUR CORAL TREE (Erythrina crista-galli)	120
JUNIPER SPECIES (Juniperus spp.)	113
HACKBERRY SPECIES (Celtis spp.)	111
SAGO PALM (Cycas revoluta)	111
SWEET BAY (Laurus nobilis)	106
FIDDLELEAF FIG (Ficus lyrata)	105
MONKEY PUZZLE TREE (Araucaria araucana)	102
CAROLINA POPLAR (Populus canadensis)	98
ATHEL TREE (Tamarix aphylla)	96
RED OAK (Quercus rubra)	96
ROSE-OF-CHINA (Hibiscus rosa-sinensis)	93
OCTOPUS TREE (Brassaia actinophylla)	92
BLACK COTTONWOOD (Populus trichocarpa)	91
CALIFORNIA JUNIPER (Juniperus californica)	90
JAPANESE FLOWERING CHERRY (Prunus serrulata)	89
PINK FLOWERING LOCUST (Robinia ambig. 'Decaisneana')	87
CHIR PINE (Pinus roxburghii)	86
TANGERINE (Citrus reticulata)	86
COCONUT PALM (Cocos nucifera)	85
ROSE-OF-SHARON (Hibiscus syriacus)	85
CHINESE COLUMNAR JUNIPER (Juniperus chin. 'Columnaris')	83
COLORADO BLUE SPRUCE (Picea pungens)	83
ORIENTAL SWEETGUM (Liquidambar orientalis)	81
TOMLINSON ASH (Fraxinus uhdei 'Tomlinson')	80
DRACAENA (Dracaena australis)	79
LAUREL SUMAC (Rhus laurina)	79
CHINESE FRINGE TREE (Chionanthus retusus)	78
HOPSEED (Dodonaea viscosa)	77
PERUVIAN PEPPER TREE (Schinus polygamus)	77
SAUCER MAGNOLIA (Magnolia soulangiana)	77
EDIBLE APPLE (Malus sylvestris)	73
SILVER WATTLE (Acacia dealbata)	72
EASTERN REDBUD (Cercis canadensis)	71
FLAME TREE (Brachychiton acerifolius)	69
JAPANESE PLUM (Prunus salicina)	69
JAPANESE PERSIMMON (Diospyros kaki)	68
LAUREL-LEAF SNAILSEED (Cocculus laurifolius)	68
SPOTTED GUM (Eucalyptus maculata)	68

Tree Species and Count

SPECIES	COUNT
CHINESE SWEETGUM (Liquidambar formosana)	67
PURPLE HOPSEED (Dodonaea viscosa 'Purpurea')	66
MEXICAN BLUE PALM (Brahea armata)	63
CHINESE JUNIPER (Juniperus chinensis)	60
WHITE POPINAC (Leucaena glauca)	60
ATLAS CEDAR (Cedrus atlantica)	59
MARRI (Eucalyptus calophylla)	59
COMMON BANANA (Musa X paradisiaca)	58
MONTEREY CYPRESS (Cupressus macrocarpa)	58
TEXAS UMBRELLA TREE (Melia aze. 'Umbraculiformis')	58
BLUE POTATO BUSH (Lycianthus rantonnetii)	55
CALIFORNIA BAY (Umbellularia californica)	55
SENEGAL PALM (Phoenix reclinata)	55
BISHOP PINE (Pinus muricata)	54
FORMOSA SWEETGUM (Liquidambar formosana)	54
RAYWOOD ASH (Fraxinus oxycarpa)	54
AUSTRALIAN TEA TREE (Leptospermum laevigatum)	52
ELM SPECIES (Ulmus spp.)	52
MAYTEN TREE (Maytenus boaria)	52
WHITE ORCHID TREE (Bauhinia variegata 'Candida')	52
FAN PALM SPECIES (Livistona spp.)	51
COMMON BANANA (Musa paradisiaca sapientum)	50
CORAL GUM (Eucalyptus torquata)	50
CRABAPPLE (Malus floribunda)	50
BALD CYPRESS (Taxodium distichum)	48
JAPANESE VIBURNUM (Viburnum japonicum)	48
WILLOW (Salix commutata)	48
ARROYO WILLOW (Salix lasiolepis)	47
CEDAR OF LEBANON (Cedrus libani)	47
JELECOTE PINE (Pinus patula)	47
DRAGON TREE (Dracaena draco)	46
TEA TREE (Leptospermum scoparium)	46
HOLLY SPECIES (Ilex spp.)	44
REDBUD (Cercis occidentalis)	44
ROUNDLEAF SWEETGUM (Liquidambar rotundiloba)	44
WILLOW (Salix spp.)	44
BLUE ATLAS CEDAR (Cedrus atlantica 'Glauca')	43
JAPANESE PAGODA TREE (Sophora japonica)	43
WILLOW ACACIA (Acacia saligna)	42
GUATEMALAN HOLLY (Olmediella betschlerana)	41
HAT TREE (Brachychiton discolor)	41
JERUSALEM THORN (Parkinsonia aculeata)	41
RED MULBERRY (Morus rubra)	41
BALSAM POPLAR (Populus balsamifera)	39
SAND PEAR (Pyrus pyrifolia)	39
TREE TOBACCO (Nicotiana glauca)	39
MEALY-WHITE GUM (Eucalyptus pulverulenta)	38
SCOTCH PINE (Pinus sylvestris)	38
STRAWBERRY GUAVA (Psidium littorale)	38
BUSHY YATE (Eucalyptus lehmannii)	37
WILLOW PITTOSPORUM (Pittosporum phillyraeoides)	37

Tree Species and Count

SPECIES	COUNT
AUSTRALIAN TREE FERN (Sphaeropteris cooperii)	36
COMMON CATALPA (Catalpa bignonioides)	36
COMMON GUAVA (Psidium guajava)	36
COMMON HACKBERRY (Celtis occidentalis)	36
GLOSSY ARALIA TREE (Tupidanthus calyptratus)	36
KNIFE ACACIA (Acacia cultriformis)	36
CYPRESS (Cupressus nevadensis)	35
PARADOX WALNUT (Juglans X 'Paradox')	34
FLOWERING PLUM (Prunus blireiana)	33
PLUME ALBIZIA (Albizia distachya)	33
WESTERN HACKBERRY (Celtis reticulata)	33
CALIFORNIA BIG TREE (Sequoiadendron giganteum)	32
DIGGER PINE (Pinus sabiniana)	31
CHINESE PHOTINIA (Photinia serrulata)	30
ENGLISH HOLLY (Ilex aquifolium)	30
SMOOTH-BARK ARIZONA CYPRESS (Cupressus glabra)	30
WESTERN RED CEDAR (Thuja plicata)	30
EVERBLOOMING ACACIA (Acacia longifolia)	29
MACADAMIA (Macadamia integrifolia)	29
WEEPING MYALL (Acacia pendula)	29
EDIBLE PEAR (Pyrus communis)	28
MONTEZUMA CYPRESS (Taxodium mucronatum)	28
PUSSY WILLOW (Salix discolor)	28
SOAPBARK TREE (Quillaja saponaria)	28
CALIFORNIA PRIVET (Ligustrum ovalifolium)	26
SMALL-LEAVED GUM (Eucalyptus parvifolia)	26
AMERICAN WHITE ASH (Fraxinus americana)	25
EUROPEAN HACKBERRY (Celtis australis)	25
WHITE POPLAR (Populus alba)	25
BLACK WILLOW (Salix nigra)	24
COMMON PERSIMMON (Diospyros virginiana)	24
FIREWHEEL TREE (Stenocarpus sinuatus)	24
INDIAN HAWTHORN (Rhapiolepis indica)	24
JEFFREY PINE (Pinus jeffreyi)	24
PAPER BIRCH (Betula papyrifera)	24
PIN OAK (Quercus palustris)	24
ARAUCARIA SPECIES (Araucaria spp.)	23
BUNYA-BUNYA TREE (Araucaria bidwillii)	23
KATSURA TREE (Cercidiphyllum japonicum)	23
PRINCESS TREE (Paulownia tomentosa)	23
QUEENSLAND UMBRELLA TREE (Schefflera actinophylla)	23
BEEFWOOD (Casuarina stricta)	22
CORKSCREW WILLOW (Salix matsudana 'Tortuosa')	22
KUMQUAT (Fortunella margarita)	22
LIME (Citrus aurantifolia)	22
NEW ZEALAND CHASTE TREE (Vitex lucens)	22
SWEET CHERRY (Prunus avium)	22
YELLOW OLEANDER (Thevetia peruviana)	22
YOSHINO FLOWERING CHERRY (Prunus yedoensis)	22
FORBES CYPRESS (Cupressus forbesii)	21
QUEENSLAND NUT (Macadamia ternifolia)	21

Tree Species and Count

SPECIES	COUNT
STIFF BOTTLEBRUSH (Callistemon rigidus)	21
GIANT BIRD OF PARADISE SHRUB (Caesalpinia gilliesii)	20
HEATH MELALEUCA (Melaleuca ericifolia)	20
MAUL OAK/CANYON LIVE OAK (Quercus chrysolepis)	20
CANOE BIRCH (Betula papyrifera)	19
CHINESE FAN PALM (Livistona chinensis)	19
SUGAR BUSH (Rhus ovata)	19
WOOLLY SENNA (Cassia tomentosa)	19
BANYAN FIG (Ficus mysorensis)	18
CHINESE PARASOL TREE (Firmiana simplex)	18
COLORADO JUNIPER (Juniperus scopulorum)	18
COULTER PINE (Pinus coulteri)	18
LAURUSTINUS (Viburnum tinus)	18
RIDGE-FRUITED MALLEE (Eucalyptus incrassata)	18
RIVER BIRCH (Betula nigra)	17
BLACK MULBERRY (Morus nigra)	16
KINGANS FRUITLESS MULBERRY (Morus alba 'Kingan')	16
NECTARINE (Prunus persica nucipersica)	16
PACIFIC PLUM (Prunus subcordata)	16
POPLAR (Populus)	16
RED MAPLE (Acer rubrum)	16
BIGLEAF MAPLE (Acer macrophyllum)	15
PLUME ALBIZIA (Albizia lopantha)	15
RED CLUSTERBERRY (Cotoneaster lacteus)	15
CALIFORNIA SCRUB OAK (Quercus dumosa)	14
CRIMSON MALLEE BOX (Eucalyptus lansdowneana)	14
DOUGLAS FIR (Pseudotsuga menziesii)	14
FLOWERING ASH (Fraxinus ornus)	14
SPANISH-BAYONET (Yucca aloifolia)	14
SWEET HAKEA (Hakea suaveolens)	14
AMERICAN MOUNTAIN ASH (Sorbus americana)	13
CALIFORNIA BLACK OAK (Quercus kelloggii)	13
CHINESE HOLLY (Ilex cornuta)	13
CHINESE WISTERIA (Wisteria sinensis)	13
DAWN REDWOOD (Metasequoia glyptostroboides)	13
MAUL OAK (Quercus chrysolepis)	13
MORAINE ASH (Fraxinus holo. 'Moraine')	13
RED BAY (Persea borbonia)	13
AMERICAN CHESTNUT (Castanea dentata)	12
CATALINA IRONWOOD (Lyonothamnus floribundus)	12
JAPANESE CAMELLIA (Camellia japonica)	12
JUNIPER (Juniperus monosperma)	12
MONTEBELLO ASH (Fraxinus velutina 'Coriacea')	12
PINK MELALEUCA (Melaleuca nesophila)	12
PONYTAIL PALM (Beaucarnea recurvata)	12
SHORE PINE (Pinus contorta)	12
TUPIDANTHUS (Tupidanthus calyptratus)	12
BOWER WATTLE (Acacia subporosa)	11
CHILEAN PEPPER TREE (Schinus polygamus)	11
CHINESE JUJUBE (Ziziphus jujuba)	11
COLORADO RED LOCUST (Robinia pse. 'Colorado')	11

Tree Species and Count

SPECIES	COUNT
ENGELMAN SPRUCE (Picea engelmannii)	11
LILLY OF THE VALLEY TREE (Tricuspidaria dependens)	11
SPANISH CHESTNUT (Castanea sativa)	11
STAR MAGNOLIA (Magnolia stellata)	11
BUSHY YATE/LEHMANS YATE (Eucalyptus lehmannii)	10
MT. ATLAS MASTIC TREE (Pistacia atlantica)	10
MYRTLE (Myrtus communis)	10
OSAGE ORANGE (Maclura pomifera)	10
PINK BOTTLE TREE (Brachychiton discolor)	10
POTATO TREE (Solanum macranthum)	10
SWISS MOUNTAIN PINE (Pinus mugo)	10
WEEPING MULBERRY (Morus alba 'Pendula')	10
CHERIMOYA (Annona cherimola)	9
DROOPING MELALEUCA (Melaleuca armillaris)	9
FLAMEGOLD (Koelreuteria elegans)	9
HOOP PINE (Araucaria cunninghamii)	9
PEPPERMINT EUCALYPTUS (Eucalyptus amygdalina)	9
PONDEROSA PINE (Pinus ponderosa)	9
SANDANKWA VIBURNUM (Viburnum suspensum)	9
SANTA CRUZ ISLAND IRONWOOD (Lyonothamnus asplenifolius)	9
SMALLLEAF SWEETGUM (Liquidambar orientalis)	9
STRIBLING FRUITLESS MULBERRY (Morus alba 'Striblingii')	9
TECATE CYPRESS (Cupressus forbesii)	9
AFRICAN TULIP TREE (Spathodea campanulata)	8
BO TREE (Ficus religiosa)	8
DOGWOOD (Cornus spp.)	8
ENGLISH ELM (Ulmus procera)	8
JAPANESE CEDAR (Cryptomeria japonica)	8
KENTIA PALM (Howea forsterana)	8
PAPAYA (Carica papaya)	8
PINON PINE (Pinus edulis)	8
RED HORSE-CHESTNUT (Aesculus carnea)	8
ROUND-LEAF MOORT (Eucalyptus platypus)	8
SCARLET-PLUME (Euphorbia fulgens)	8
TAIWAN CHERRY (Prunus campanulata)	8
TARATA (Pittosporum eugenioides)	8
FLOWERY SENNA (Cassia corymbosa)	7
LILLY OF THE VALLEY TREE (Crinodendron patagua)	7
RED-CAP GUM (Eucalyptus erythrocorys)	7
WASHINGTON THORN (Crataegus phaenopyrum)	7
YATE (Eucalyptus cornuta)	7
FLANNEL BUSH (Fremontodendron californicum)	6
FLOWERING MAPLE (Abutilon striatum)	6
LILLY PILLY TREE (Acmena smithii)	6
MADEIRA BAY FIG (Persea indica)	6
NORWAY MAPLE (Acer platanoides)	6
RED WILLOW (Salix laevigata)	6
WHITE-FLOWERED MIMOSA (Albizia julibrissin 'Alba')	6
AUSTRIAN PINE (Pinus nigra)	5
BECHTEL CRABAPPLE (Malus ioensis 'Plena')	5
BLACK ALDER (Alnus glutinosa)	5

Tree Species and Count

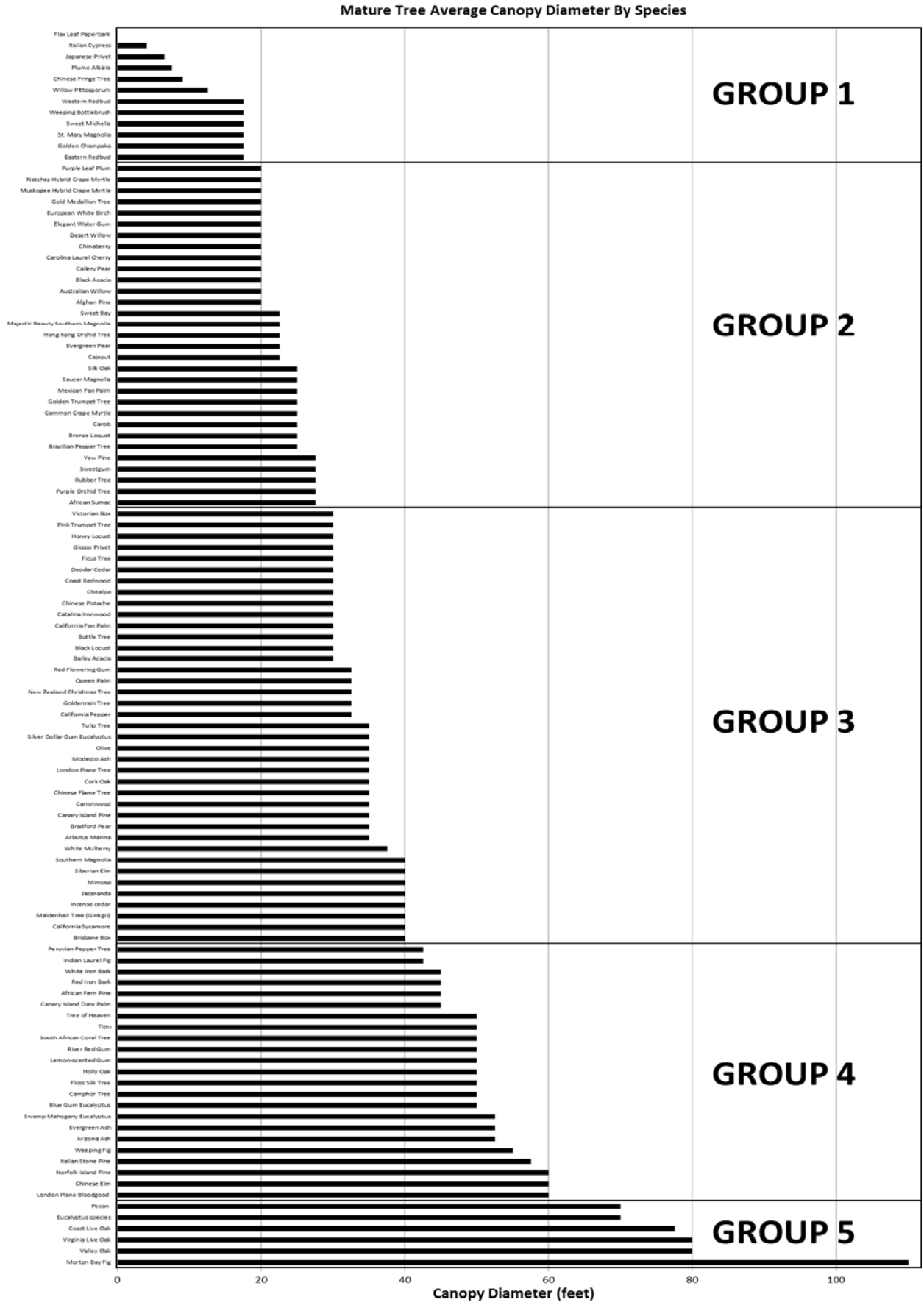
SPECIES	COUNT
CHINESE FOUNTAIN PALM (Livistona chinensis)	5
FLOWERING DOGWOOD (Cornus florida)	5
KUMQUAT (Fortunella japonica)	5
LACEBARK PINE (Pinus bungeana)	5
MONARCH BIRCH (Betula maximowicziana)	5
NEW ZEALAND PALM (Dracaena indivisa)	5
PINK FLOWERING TAMARISK (Tamarix parviflora)	5
PINK IRONBARK (Eucalyptus sider. 'Rosea')	5
QUINCE TREE (Cydonia oblonga)	5
RING-LEAF WILLOW (Salix babylonica 'Crispa')	5
RUSSIAN OLIVE (Elaeagnus augustifolia)	5
SIRIS TREE (Albizia lebbeck)	5
SUGAR MAPLE (Acer saccharum)	5
SWEET BAY MAGNOLIA (Magnolia virginiana)	5
SYDNEY GOLDEN WATTLE (Acacia floribunda)	5
TRIDENT MAPLE (Acer buergeranum)	5
BENGAL PALM (Phoenix paludosa)	4
CALIFORNIA BUCKEYE (Aesculus californica)	4
CALIFORNIA ELDERBERRY (Sambucus caerulea 'Velutina')	4
CARIBBEE ROYSTONEA PALM (Roystonea oleracea)	4
CHINESE WINGNUT (Pterocarya stenoptera)	4
CLIFF DATE PALM (Phoenix rupicola)	4
FRAGRANT OLIVE (Osmanthus fragrans)	4
KARO (Pittosporum crassifolium)	4
LIVISTONA PALM (Livistona australis)	4
MEXICAN HAND PLANT (Chiranthodendron pentadactyl)	4
NATAL CORAL TREE (Erythrina humeana)	4
NOSEGAY (Plumeria rubra)	4
OREGON ASH (Fraxinus oregona)	4
POINSETTIA (Euphorbia pulcherrima)	4
PORT ORFORD CEDAR (Chamaecyparis lawsoniana)	4
RED ALDER (Alnus oregona)	4
SCARLET OAK (Quercus coccinea)	4
SMOKE TREE (Cotinus coggygria)	4
SOUR ORANGE (Citrus aurantium)	4
TANBARK OAK (Lithocarpus densiflorus)	4
TREE ALOE (Aloe arborescens)	4
WHITE PEPPERMINT (Eucalyptus pulchella)	4
ALLIGATOR JUNIPER (Juniperus deppeana)	3
AMERICAN HOLLY (Ilex opaca)	3
ARIZONA CYPRESS (Cupressus arizonica)	3
BRAZILWOOD (Caesalpinia echinata)	3
COMMON JUNIPER (Juniperus communis)	3
COMMON LILAC (Syringa vulgaris)	3
FALSE CYPRESS SPECIES (Chamaecyparis spp.)	3
FISHTAIL PALM (Caryota ochlandra)	3
FRANGIPANI (Plumeria rubra)	3
ITALIAN BUCKTHORN (Rhamnus alaternus)	3
JAPANESE RED PINE (Pinus densiflora)	3
LEMONADE BERRY (Rhus integrifolia)	3
MADRONA (Arbutus menziesii)	3

Tree Species and Count

SPECIES	COUNT
MESA OAK (Quercus engelmannii)	3
NATAL PLUM (Carissa grandiflora)	3
PARANA PINE (Araucaria angustifolia)	3
QUEENSLAND GREVILLEA (Grevillea banksii)	3
RED FIR (Abies magnifica)	3
ROSE GUM (Eucalyptus grandis)	3
SPANISH FIR (Abies pinsapo)	3
SPINDLE TREE (Euonymous japonica)	3
TRINIDAD FLAME BUSH (Calliandra tweedii)	3
WHITE BOTTLEBRUSH (Callistemon salignus)	3
AUSTRALIAN FAN PALM (Livistona australis)	2
AUSTRALIAN JUNIPER-MYRTLE (Agonis juniperina)	2
BEECH (Fagus grandifolia)	2
ENGLISH YEW (Taxus baccata)	2
EVERGREEN DOGWOOD (Cornus capitata)	2
FERNLEAF CATALINA IRONWOOD (Lyonothamnus f. asplenifol.)	2
FLOWERING CHERRY (Prunus subhirtella)	2
FOOTHILL ASH (Fraxinus dipetala)	2
FULL MOON MAPLE (Acer japonicum)	2
GIANT ARBORVITAE (Thuja plicata)	2
GLOBE WILLOW (Salix matsudana 'Navajo')	2
GOLDEN WATTLE (Acacia pycnantha)	2
GUM-BARKED COOLABAH (Eucalyptus intertexta)	2
HIMALAYAN JUNIPER (Juniperus recurva)	2
HIMALAYAN PINE (Pinus wallichiana)	2
IRISH YEW (Taxus baccata 'Stricta')	2
JAPANESE FLOWERING APRICOT (Prunus mume)	2
KNOBCONE PINE (Pinus attenuata)	2
LAWSON CYPRESS (Chamaecyparis lawsoniana)	2
MORETON BAY CHESTNUT (Castanospermum australe)	2
MOUNTAIN IRONWOOD (Cercocarpus betuloides)	2
MT ATLAS PISTACHE TREE (Pistacia atlantica)	2
NEW ZEALAND LAUREL (Corynocarpus laevigata)	2
PARLOR PALM (Chamaedorea elegans)	2
PINK FLOWERING GUM (Eucalyptus leuc. 'Rosea')	2
PINK POWDER PUFF (Calliandra haematocephala)	2
PORTUGAL LAUREL (Prunus lusitanica)	2
QUEENSLAND KAURI (Agathis robusta)	2
RED MAHOGANY (Eucalyptus resinifera)	2
SOUR CHERRY (Prunus cerasus)	2
SPANISH RED OAK (Quercus falcata)	2
TEXAS PALMETTO (Sabal mexicana)	2
THORNY ELAEAGNUS (Elaeagnus pungens)	2
WHITE BASSWOOD (Tilia heterophylla)	2
WHITE BOTTLE BRUSH (Melaleuca decora)	2
WHITE PINE (Pinus strobus)	2
WHITE WILLOW (Salix alba)	2
BLUE BLOSSOM (Ceanothus thyrsiflorus)	1
CALIFORNIA NUTMEG (Torreya californica)	1
CHASTE TREE (Vitex agnus-castus)	1
CHILEAN WINE PALM (Jubaea chilensis)	1

Tree Species and Count

SPECIES	COUNT
COMMON MANZANITA (Arctostaphylos manzanita)	1
COYOTE BRUSH (Baccharis pilularis)	1
FLOWERING MAPLE (Abutilon pictum thompsonii)	1
GOWEN CYPRESS (Cupressus goveniana)	1
GUM MYRTLE (Angophora lanceolata)	1
JAPANESE YEW PINE (Podocarpus m. 'Maki')	1
KANGAROO THORN (Acacia armata)	1
LG. FRUIT RED FLOWERING GUM (Eucalyptus macro. 'Rosea')	1
LILAC MELALEUCA (Melaleuca decussata)	1
MOCKERNUT HICKORY (Carya tomentosa)	1
NEEDLE PALM (Trithrinax acanthacoma)	1
PARRY PINYON PINE (Pinus quadrifolia)	1
PAUL'S SCARLET HAWTHORN (Crataegus oxycantha 'Paulii')	1
PLUME CEDAR (Cryptomeria japon. 'Elegans')	1
RED SPRUCE (Picea rubens)	1
ROSE APPLE (Syzygium jambos)	1
SEA-URCHIN TREE (Hakea laurina)	1
SHOESTRING ACACIA (Acacia stenophylla)	1
SILVER SAW PALM (Acoelorrhaphe wrightii)	1
SILVER TREE (Leucodendron argenteum)	1
SINGLELEAF PINYON PINE (Pinus monophylla)	1
SKY FLOWER (Duranta repens)	1
TIGER-CLAW CORAL TREE (Erythrina rubinerba)	1
TITOKI (Alectryon excelsus)	1
TOTAL	**711,248**


Mature Tree Average Canopy Diameter By Species
Flax Leaf Paperbark
Italian Cypress
Japanese Privet
Plume Albizia
Chinese Fringe Tree
Willow Pittosporum
Western Redbud
Weeping Bottlebrush
Sweet Michelia
St. Mary Magnolia
Golden Champaka
Eastern Redbud
GROUP 1
Purple Leaf Plum
Natchez Hybrid Crape Myrtle
Muskogee Hybrid Crape Myrtle
Gold Medallion Tree
European White Birch
Elegant Water Gum
Desert Willow
Chinaberry
Carolina Laurel Cherry
Callery Pear
Black Acacia
Australian Willow
Afghan Pine
Sweet Bay
Majestic Beauty Southern Magnolia
Hong Kong Orchid Tree
Evergreen Pear
Cajeput
Silk Oak
Saucer Magnolia
Mexican Fan Palm
Golden Trumpet Tree
Common Crape Myrtle
Carob
Bronze Loquat
Brazilian Pepper Tree
Yew Pine
Sweetgum
Rubber Tree
Purple Orchid Tree
African Sumac
GROUP 2
Victorian Box
Pink Trumpet Tree
Honey Locust
Glossy Privet
Ficus Tree
Deodar Cedar
Coast Redwood
Chitalpa
Chinese Pistache
Catalina Ironwood
California Fan Palm
Bottle Tree
Black Locust
Bailey Acacia
Red Flowering Gum
Queen Palm
New Zealand Christmas Tree
Goldenrain Tree
California Pepper
Tulip Tree
Silver Dollar Gum Eucalyptus
Olive
Modesto Ash
London Plane Tree
Cork Oak
Chinese Flame Tree
Carrotwood
Canary Island Pine
Bradford Pear
Arbutus Marina
White Mulberry
Southern Magnolia
Siberian Elm
Mimosa
Jacaranda
Incense cedar
Maidenhair Tree (Ginkgo)
California Sycamore
Brisbane Box
GROUP 3
Peruvian Pepper Tree
Indian Laurel Fig
White Iron Bark
Red Iron Bark
African Fern Pine
Canary Island Date Palm
Tree of Heaven
Tipu
South African Coral Tree
River Red Gum
Lemon-scented Gum
Holly Oak
Floss Silk Tree
Camphor Tree
Blue Gum Eucalyptus
Swamp Mahogany Eucalyptus
Evergreen Ash
Arizona Ash
Weeping Fig
Italian Stone Pine
Norfolk Island Pine
Chinese Elm
London Plane Bloodgood
GROUP 4
Pecan
Eucalyptus species
Coast Live Oak
Virginia Live Oak
Valley Oak
Morton Bay Fig
GROUP 5
0
20
40
60
80
100
Canopy Diameter (feet)

Appendix B2

Sensitive Plant Species with Potential to Occur within the Project Site

Sensitive Plant Species with Potential to Occur within the Project Site

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
Abrams' alumroot *Heuchera abramsii*	4.3	Perennial rhizomatous herb. Rocky soil in upper montane coniferous forest; 2800-3500 m (9184 - 11480 ft.). Blooming period: July - August	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Abrams' oxytheca *Acanthoscyphus parishii var. abramsii*	1B.2	Annual herb. Chaparral, sand and shale. 1143-2057 m (3750-6748 ft.). Blooming period: June-August.	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
adobe yampah *Perideridia pringlei*	4.3	Perennial herb. Serpentine or often clay soils in chaparral, cismontane woodland, coastal scrub, pinyon and juniper woodland; 300-1800 m (984 - 5904 ft.). Blooming period: April - July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Agoura Hills dudleya *Dudleya cymosa ssp. agourensis*	FT, 1B.2	Perennial herb. Rocky and volcanic soils in chaparral and cismontane woodland; 200-500 m (656 - 1640 ft.). Blooming period: May - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
alkali mariposa lily *Calochortus striatus*	1B.2	Perennial bulbiferous herb. Alkaline and mesic soils in chaparral, chenopod scrub, Mojavean desert scrub, meadows, seeps, desert grasslands; 70-1595 m (230 - 5232 ft.). Blooming period: April - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
alpine sulfur-flowered buckwheat *Eriogonum umbellatum var. minus*	4.3	Perennial herb. Gravelly soil in upper montane and subalpine coniferous forest; 1800-3068 m (5904 - 10063 ft.). Blooming period: June - September	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
aphanisma *Aphanisma blitoides*	1B.2	Annual herb. Sandy soils in coastal bluff scrub, coastal dunes, and coastal scrub; 1-305 m (3-1000 ft). Blooming period: March - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
appressed muhly *Muhlenbergia appressa*	2B.2	Annual herb. Rocky coastal scrub, Mojavean desert scrub, and valley and foothill grassland; 20-1600 m (65-5248 ft). Blooming period: April - May	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
Baja navarretia *Navarretia peninsularis*	1B.2	Annual herb. Mesic soils in chaparral openings, lower montane coniferous forest, meadows and seeps, and pinyon and juniper woodland; 1500 - 2300 m (4920-7544 ft). Blooming period: June - August	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Bakersfield cactus *Opuntia basilaris var. treleasei*	FE, CE, 1B.1	Stem succulent shrub. Sandy to gravelly soil in chenopod scrub, cismontane woodland, and valley and foothill grassland; 120-1140 m (394 - 3739 ft.). Blooming period: April - May	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Ballona cinquefoil *Potentilla multijuga*	1A	Perennial herb. Meadows and seeps in brackish water; 0-2 m (0 - 7 ft.). Blooming period: June - August	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Barstow woolly sunflower *Eriophyllum mohavense*	1B.2	Annual herb. Chenopod scrub, mojavean desert scrub, and playas; 500-960 m (1640 - 3149 ft.). Blooming period: March - May	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Beach spectaclepod *Dithyrea maritima*	CT, 1B.1	Perennial rhizomatous herb. Coastal dunes and sandy coastal scrub; 3-50 m (10 - 164 ft.). Blooming period: March - May	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Big Bear Valley milk-vetch *Astragalus lentiginosus var. sierrae*	1B.2	Perennial herb. Gravelly to rocky soil in meadows, seeps, Mojavean desert scrub, upper montane coniferious forest, pinyon and juniper woodland; 1800-2600 m (5904 - 8528 ft.). Blooming period: April - August	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Big Bear Valley *woollypod* *Astragalus leucolobus*	1B.2	Perennial herb. Rocky areas in lower and upper montane coniferous forest, pavement pebble plain, and pinyon and juniper woodland; 1750-2885 m (5740-9642 ft). Blooming period: May - July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Blochman's dudleya *Dudleya blochmaniae ssp. blochmaniae*	1B.1	Perennial herb. Rocky, often clay or serpentine soils in coastal bluff scrub, chaparral, coastal scrub, and valley and foothill grassland; 5-450 m (16-1476 ft). Blooming period: April - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
bluish spike-moss *Selaginella asprella*	4.3	Perennial rhizomatous herb. Granitic or rocky soils in cismontane woodland, lower montane coniferous forest, pinyon and juniper woodland, subalpine coniferous forest, and upper montane coniferous forest; 1600-2700 m (5248-8856 ft). Blooming period: July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Bolander's water-hemlock *Cicuta maculata var. bolanderi*	2B.1	Perennial herb. Marshes and swamps near coast in fresh or brackish water; 0-200 m (0 - 656 ft.). Blooming period: July - September	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Brand's star phacelia *Phacelia stellaris*	1B.1	Annual herb. Coastal dunes, coastal scrub; 1-400 m (3-1312 ft). Blooming period: March - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Braunton's milk-vetch *Astragalus brauntonii*	FE, 1B.1	Perennial herb. Recently burned and disturbed areas, in sandstone and carbonite soils, in chaparral, coastal scrub, and valley and foothill grasslands; 4-640 m (13 - 2099 ft.). Blooming period: January - August	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Brewer's calandrinia *Calandrinia breweri*	4.2	Annual herb. Sandy or loamy soils, disturbed and/or burned sites in chaparral and coastal scrub; 10-1220 m (32-4001 ft). Blooming period: March - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
bright green dudleya *Dudleya virens ssp. virens*	1B.2	Perennial herb. Chaparral, Coastal Sage Scrub. 13-60 m (42-196). Low water tolerant. Blooming period: April to July. Limited habitat info available.	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
California androsace *Androsace elongata ssp. acuta*	4.2	Annual herb. Chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland, and valley and foothill grassland; 150-1200 m (492-3937 ft). Blooming period: March - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
California box-thorn *Lycium californicum*	4.2	Perennial shrub. Coastal bluff scrub and coastal scrub; 5-150 m (16-492 ft). Blooming period: December - August	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
California muhly *Muhlenbergia californica*	4.3	Perennial rhizomatous herb. Mesic soils and seeps and streambeds; 100-2000 m (328 - 6560 ft.). Blooming period: June - September	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
California Orcutt grass *Orcuttia californica*	FE, CE, 1B.1	Annual herb. Vernal pools; 15-660 m (49-2165 ft). Blooming period: April - August	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
California satintail *Imperata brevifolia*	2B.1	Perennial rhizomatous herb. Mesic soils in chaparral, coastal scrub, mojavean desert scrub, riparian scrub, meadows and seeps (often alkali); 0-1215 m (0 - 3985 ft.). Blooming period: September - May	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
California sawgrass *Cladium californicum*	2B.2	Perennial rhizomatous herb. Meadows, seeps, marshes, and swamps either alkaline or freshwater; 60-865 m (197 - 2837 ft.). Blooming period: June - September	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
California spineflower *Mucronea californica*	4.2	Annual herb. Sandy soils in chaparral, cismontane woodland, coastal dunes, coastal scrub, and valley and foothill grassland; 0-1400 m (0-4592 ft). Blooming period: March - August	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Catalina crossosoma *Crossosoma californicum*	1B.2	Deciduous shrub. Rocky soils in chaparral and coastal scrub; 0-500 m (0 - 1640 ft.). Blooming period: February - May	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Catalina Island dudleya *Dudleya virens ssp. hassei*	1B.2	Perennial herb. Rocky soil in coastal bluff scrub; 0-400 m (0 - 1312 ft.). Blooming period: March - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Catalina mariposa lily *Calochortus catalinae*	4.2	Perennial bulbiferous herb. Chaparral, cismontane woodland, coastal scrub, and valley and foothill grassland; 15-700 m (49-2296 ft). Blooming period: February - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
chaparral ragwort *Senecio aphanactis*	2B.2	Annual herb. Chaparral, cismontane woodland, coastal scrub, and alkaline flats; 15-800 m (49-2624 ft.). Blooming period: January - April	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
chaparral rein orchid *Piperia cooperi*	4.2	Perennial herb. Chaparral, cismontane woodland, and valley and foothill grassland; 15-1585 m (49-5200 ft). Blooming period: March - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
chaparral sand-verbena *Abronia villosa var. aurita*	1B.1	Perennial herb. Coastal dunes; 0-100 m (0-328 ft). Blooming period: February - November	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
chickweed oxytheca *Sidotheca caryophylloides*	4.3	Annual herb. Sandy soil in lower montane coniferous forest; 1114-2600 m (3654 - 8528 ft.). Blooming period: July - September	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
cliff spurge *Euphorbia misera*	2B.2	Perennial shrub. Rocky areas in coastal bluff scrub, coastal scrub, and Mojavean desert scrub; 10-500 m (32-1640 ft). Blooming period: December - October	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Clokey's cryptantha *Cryptantha clokeyi*	1B.2	Annual herb. Mojavean desert scrub; 725-1365 m (2378 - 4477 ft.). Blooming period: April	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
club-haired mariposa lily *Calochortus clavatus var. clavatus*	4.3	Perennial bulbiferous herb. Clay, rocky, or serpentine soils in chaparral, coastal scrub, cismontane woodland, valley and foothill grassland; 75-1300 m (246 - 4264 ft.). Blooming period: May - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
coast woolly-heads *Nemacaulis denudata var. denudata*	1B.2	Annual herb. Coastal dunes; 0-100 m (0-328 ft). Blooming period: April - September	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
coastal dunes milk-vetch *Astragalus tener var. titi*	FE, CE, 1B.1	Annual herb. Often in vernally mesic areas in sandy coastal bluff scrub, coastal dunes, and mesic coastal prairie; 1-50 m (3-164 ft). Blooming period: March - May	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
coastal goosefoot *Chenopodium littoreum*	1B.2	Annual herb. Coastal dunes; 10-30 m (33 - 98 ft.). Blooming period: April - August	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
Coulter's goldfields *Lasthenia glabrata ssp. coulteri*	1B.1	Annual herb. Coastal salt marsh, coastal salt swamps, playas, vernal pools; 1-1220 m (3-4001 ft). Blooming period: February - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Coulter's matilija poppy *Romneya coulteri*	4.2	Perennial rhizomatous herb. Chaparral and coastal scrub; often in burned areas; 20-1200 m (65-3936 ft). Blooming period: March - July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Coulter's saltbush *Atriplex coulteri*	1B.2	Perennial herb. Alkaline or clay soils in coastal bluff scrub, coastal dunes, coastal scrub, and valley and foothill grassland; 3-460 m (9-1509 ft). Blooming period: March - October	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
crested milk-vetch *Astragalus bicristatus*	4.3	Perennial herb. Sandy or rocky ground in mostly carbonite soils in montane coniferous forest; 1700-2745 m (5576 - 9004 ft.). Blooming period: May - August	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
crowned muilla *Muilla coronata*	4.2	Perennial bulbiferous herb. Chenopod scrub, mojavean desert scrub, joshua tree and pinyon and juniper woodland; 765-1960 m (2509 - 6429 ft.). Blooming period: March - May	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Cuyama gilia *Gilia latiflora ssp. cuyamensis*	4.3	Annual herb. Sandy soil in pinyon and juniper woodland; 595-2000 m (1952 - 6560 ft.). Blooming period: April - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Davidson's bush-mallow *Malacothamnus davidsonii*	1B.2	Deciduous shrub. Chaparral, coastal scrub, cismontane and riparian woodland; 185-855 m (607 - 2804 ft.). Blooming period: June - January	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Davidson's saltscale *Atriplex serenana var. davidsonii*	1B.2	Annual herb. Alkaline conditions in coastal bluff scrub and coastal scrub; 10-200 m (32-656 ft). Blooming period: April - October	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
decumbent goldenbush *Isocoma menziesii var. decumbens*	1B.2	Perennial shrub. Chaparral and in sandy coastal scrub, often in sandy disturbed areas; 10-135 m (33-443 ft). Blooming period: April - November	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
desert cymopterus *Cymopterus deserticola*	1B.2	Perennial herb. Sandy soil in Joshua tree woodland and Mojavean desert scrub; 630-1500 m (2066 - 4920 ft.). Blooming period: March - May.	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Duran's rush *Juncus duranii*	4.3	Perennial rhizomatous herb. Mesic soils in montane coniferous forest, meadows, and seeps; 1768-2804 m (5799 - 9197 ft.). Blooming period: July - August	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Engelmann oak *Quercus engelmannii*	4.2	Deciduous tree. Cismontane woodland, chaparral, riparian woodland, and valley and foothill grassland; 50-1300 m (164-4265 ft). Blooming period: March - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
estuary seablite *Suaeda esteroa*	1B.2	Perennial herb. Coastal salt marshes and swamps; 0-5 m (0-16 ft). Blooming period: May - January	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Ewan's woodbeauty *Drymocallis cuneifolia var. ewanii*	1B.3	Perennial herb. meadows, seeps, and mesic areas in lower montane coniferous forests; 1900-2400 m (6232 - 7872 ft.). Blooming period: June - July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Fish's milkwort *Polygala cornuta var. fishiae*	4.3	Perennial deciduous shrub. Chaparral, cismontane woodland, and riparian woodland; 100-1000 m (328-3280 ft). Blooming period: May - August	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
fragrant pitcher sage *Lepechinia fragrans*	4.2	Perennial herb. Chaparral; 20-1310 m (66 - 4297 ft.). Blooming period: March - October	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Gairdner's yampah *Perideridia gairdneri ssp. gairdneri*	4.2	Perennial herb. Vernally mesic areas in broadleaf upland forest, chaparral, coastal prairie, valley and foothill grassland, and vernal pools; 0-610 m (0-2000 ft). Blooming period: June - October	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Gambel's water cress *Nasturtium gambelii*	FE, CT, 1B.1	Annual/perennial herb. Marshes and swamps, also riverbanks and lake margins; 5-500 m (16-1640 ft). Blooming period: January - July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
golden goodmania *Goodmania luteola*	4.2	Annual herb. Alkaline or clay soils in mojavean desert scrub, meadows, seeps, playas, and valley and foothill grassland; 20-2200 m (66 - 7216 ft.). Blooming period: April - August	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
golden violet *Viola purpurea ssp. aurea*	2B.2	Perennial herb. Sandy soils in Great Basin scrub and pinyon and juniper woodland; 1000-2500 m (3280-8200 ft). Blooming period: April - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
golden-rayed pentachaeta *Pentachaeta aurea ssp. aurea*	4.2	Annual herb. Chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, riparian woodland, and valley and foothill grassland; 80-1850 m (262-6068 ft). Blooming period: March - July.	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
golden-spined cereus *Bergerocactus emoryi*	2B.2	Perennial stem succulent. Sandy soils in costal scrub, chaparral, and closed-cone coniferous forest, moist ocean breezes may be a key to its habitat requirements; 3-395 m (9-1295 ft). Blooming period: May - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
gray monardella *Monardella australis ssp. cinerea*	4.3	Perennial rhizomatous herb. Lower, upper, and subalpine coniferous forest; 1800-3050 m (5904 - 10004 ft.). Blooming period: July - August	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Greata's aster *Symphyotrichum greatae*	1B.3	Perennial rhizomatous herb. Mesic soils in chaparral, cismontane and riparian woodland, broadleaved upland and lower montane coniferious forest; 300-2010 m (984 - 6593 ft.). Blooming period: June - October	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
green monardella *Monardella viridis ssp. viridis*	4.3	Perennial rhizomatous herb. Broadleafed upland forest, chaparral, cismontane woodland. 100-1010 m (328 – 3313 ft.) Blooming period: June - September	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
grey-leaved violet *Viola pinetorum var. grisea*	1B.3	Perennial herb. Meadows, seeps, upper montane and subalpine coniferous forest; 1500 - 3400 m (4920 - 11152 ft.). Blooming period: April - July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
Hall's monardella *Monardella macrantha ssp. hallii*	1B.3	Perennial rhizomatous herb. Broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland; 730- 2195 m (2394-7199 ft). Blooming period: June - October	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
heart-leaved thorn-mint *Acanthomintha obovata ssp. cordata*	4.2	Annual herb. Clay soils in chaparral, valley and foothill grasslands, cismontane and pinyon and juniper woodland; 785-1540 m (2575 - 5051 ft.). Blooming period: April - July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Hoover's eriastrum *Eriastrum hooveri*	4.2	Annual herb. Chenopod scrub, pinyona nd juniper woodland, valley and foothill grassland; 50-915 m (164 - 3001 ft.). Blooming period: March - July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
hot springs fimbristylis *Fimbristylis thermalis*	2B.2	Perennial rhizomatous herb. Alkaline soils near hot springs in meadows and seeps; 110-1340 m (361 - 4395 ft.). Blooming period: July - September	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Hubby's phacelia *Phacelia hubbyi*	4.2	Annual herb. Gravelly to rocky soil or talus in chaparral, coastal scrub, valley and foothill grassland; 0-1000 m (0 - 3280 ft.). Blooming period: April - July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
interior bush lupine *Lupinus excubitus var. johnstonii*	4.3	Shrub. Decomposed granitic soils in chaparral and lower montane coniferous forest; 1500-2500 m (4920 - 8200 ft.). Blooming period: May - July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
interior manzanita *Arctostaphylos parryana ssp. tumescens*	4.3	Evergreen shrub. Montane chaparral and cismontane woodland; 2100-2310 m (6888 - 7577 ft.). Blooming period: February - April	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
intermediate mariposa lily *Calochortus weedii var. intermedius*	1B.2	Perennial bulbiferous herb. Rocky and calcareous areas in chaparral, coastal scrub, and valley and foothill grassland; 105 -855 m (345-2804 ft). Blooming period: May -July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
island green dudleya *Dudleya virens ssp. insularis*	1B.2	Perennial herb. Rocky soil in coastal bluff scrub and coastal scrub; 5-300 m (16 - 984 ft.). Blooming period: April - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
island mountain-mahogany *Cercocarpus betuloides var. blancheae*	4.3	Evergreen shrub. Closed-cone coniferous forests and chaparral; 30-600 m (98 - 1968 ft.). Blooming period: February - May	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
island wallflower *Erysimum insulare*	1B. 3	Perennial herb. Mesas and cliffs. 0 – 304 m (0-1000 ft). Blooming period: March - May	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Jepson's bedstraw *Galium jepsonii*	4.3	Perennial rhizomatous herb. Granitic, rocky, or gravelly soil in lower and upper montane coniferous forest; 1540-2500 m (5051 - 8200 ft.). Blooming period: July - August	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Johnston's bedstraw *Galium johnstonii*	4.3	Perennial herb. Chaparral, lower montane coniferous forest, pinyon and juniper woodland, riparian woodland; 1220-2300 m (4001-7544 ft). Blooming period: June - July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Johnston's buckwheat *Eriogonum microthecum var. johnstonii*	1B.3	Deciduous shrub. Rocky soil in upper montane and subalpine coniferous forest; 1829-2926 m (5999 - 9597 ft.). Blooming period: July - September	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Johnston's monkeyflower *Mimulus johnstonii*	4.3	Annual herb. In the scree, disturbed areas, roadsides, and rocky to gravelly soils in lower montane coniferous forest; 975-2920 m (3198 - 9578 ft.). Blooming period: May - August	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Kern Canyon clarkia *Clarkia xantiana ssp. parviflora*	4.2	Annual herb. Sandy to rocky soil in chaparral, cismontane woodland, great basin scrub, and valley and foothill grassland; 700-3620 m (2296 - 11874 ft.). Blooming period: May - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Lancaster milk-vetch *Astragalus preussii var. laxiflorus*	1B.1	Perennial herb. Chenopod scrub; elevation range unknown due to lack of records. Blooming period: March - May	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
late-flowered mariposa lily *Calochortus fimbriatus*	1B.3	Perennial bulbiferous herb. Serpentine soils in chaparral, cismontane and riparian woodland; 275-1905 m (902 - 6248 ft.). Blooming period: June - August	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Lemmon's syntrichopappus *Syntrichopappus lemmonii*	4.3	Annual herb. Sandy to gravelly soil in chaparral, joshua tree woodland, and pinyon and juniper woodland; 500-1830 m (1640 - 6002 ft.). Blooming period: April - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
lemon lily *Lilium parryi*	1B.2	Perennial bulbiferous herb. Mesic areas in upper and lower montane coniferous forest, meadows and seeps, and riparian forest; 1220-2745 m (4001-9003 ft). Blooming period: July - August	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Lincoln rockcress *Boechera lincolnensis*	2B.3	Perennial herb. Creosote bush scrub, shadescale scrub; 850-2260 m (2788 - 7414 ft.). Blooming period: April - May	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Los Angeles sunflower *Helianthus nuttallii ssp. parishii*	1A	Perennial rhizomatous herb. Coastal salt and freshwater marshes and swamps; 10-1675 m (33 - 5494 ft.). Blooming period: August - October	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Lyon's pentachaeta *Pentachaeta lyonii*	FE, CE, 1B.1	Annual herb. Rocky or clay soils in coastal scrub, valley and foothill grassland, and openings in chaparral; 30-630 m (98 - 2066 ft.). Blooming period: March - August	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Malibu baccharis *Baccharis malibuensis*	1B.1	Deciduous shrub. Chaparral, coastal scrub, cismontane and riparian woodland; 150-305 m (492 - 1000 ft.). Blooming period: August	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
many-stemmed dudleya *Dudleya multicaulis*	1B.2	Perennial herb. Often in clay soils in chaparral, coastal scrub, and valley and foothill grassland; 15-790 m (49-2591 ft). Blooming period: April to July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
marcescent dudleya *Dudleya cymosa ssp. marcescens*	FT, CR, 1B.2	Perennial herb. Rocky and volcanic soils in chaparral; 150-520 m (492 - 1706 ft.). Blooming period: April - July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
marsh sandwort *Arenaria paludicola*	FE, CE, 1B.1	Perennial stoloniferous herb. Sandy soils in marshes and swamps with brackish freshwater; 3-170 m (10 - 558 ft.). Blooming period: May - August	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Mason's neststraw *Stylocline masonii*	1B.1	Annual herb. Sandy soil in chenopod scrub and pinyon and juniper woodland; 100-1200 m (328 - 3936 ft.). Blooming period: March - May	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
mesa horkelia *Horkelia cuneata var. puberula*	1B.1	Perennial herb. Sandy and gravelly soils within maritime chaparral, cismontane woodland, and coastal scrub; 70-810 m (229-2657 ft). Blooming period: February - September	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Mojave paintbrush *Castilleja plagiotoma*	4.3	Hemiparasitic perennial herb. Great basin scrub (alluvial soils), lower montane coniferous forests, Joshua tree, pinyon and juniper woodland; 300-2500 m (984 - 8200 ft.). Blooming period: April - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Mojave phacelia *Phacelia mohavensis*	4.3	Annual herb. Sandy to gravelly soil in meadows, seeps, cismontane, pinyon, and juniper woodland, lower montane coniferous forest; 1400-2500 m (4592 - 8200 ft.). Blooming period: April - August	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Mojave spineflower *Chorizanthe spinosa*	4.2	Annual herb. Sometimes alkaline soils in chenopod scrub, Joshua tree woodland, Mojavean desert scrub, and playas; 6-1300 m (20 - 4264 ft.). Blooming period: March - July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
monkey-flower savory *Clinopodium mimuloides*	4.2	Perennial herb. Streambanks and mesic soils in chaparral and central coast coniferous forests; 305-1800 m (1000 - 5904 ft.). Blooming period: June - October	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Mt. Gleason paintbrush *Castilleja gleasoni*	CR, 1B.2	Hemiparasitic perennial herb. Granitic soils in chaparral, lower montane coniferous forests, and pinyon and juniper woodland; 1160-2170 m (3805 - 7118 ft.). Blooming period: May - September	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Mt. Pinos onion *Allium howellii var. clokeyi*	1B.3	Perennial bulbiferous herb. Great basin scrub and pinyon and juniper woodland; 1300-1850 m (4264 - 6068 ft.). Blooming period: April - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
mud nama *Nama stenocarpum*	2B.2	Annual/perennial herb. Marshes and swamps, also riverbanks and lake margins; 5-500 m (16-1640 ft). Blooming period: January - July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
narrow-petaled rein orchid *Piperia leptopetala*	4.3	Perennial herb. Cismontane woodland, lower and upper montane coniferous forest; 380-2225 m (1246-7298 ft). Bloooming period: May - July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Nevin's barberry *Berberis nevinii*	FE, CE, 1B.1	Evergreen shrub. Sandy or gravelly soils in chaparral, cismontane woodland, coastal scrub, and riparian scrub; 274-825 m (898-2707 ft). Blooming period: March - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Newhall sunflower *Helianthus inexpectatus*	1B.1	Perennial rhizomatous herb. Freshwater and seeps in marshes, swamps, and riparian woodland; elevation range unknown. Blooming period: August - October	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
ocellated Humboldt lily *Lilium humboldtii ssp. ocellatum*	4.2	Perennial bulbiferous herb. Openings in chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, and riparian woodland; 30-1800 m (98-5904 ft). Blooming period: March - August	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Ojai navarretia *Navarretia ojaiensis*	1B.1	Annual herb. Openings in chaparral and coastal sage scrub and valley and foothill grassland; 275-620 m (902 - 2034 ft.). Blooming period: May - July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Orcutt's linanthus *Linanthus orcuttii*	1B.3	Annual herb. Openings in chaparral, lower montane coniferous forest, and pinyon and juniper woodland; 915-2145 m (3001-7035 ft). Blooming period: May - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Orcutt's pincushion *Chaenactis glabriuscula var. orcuttiana*	1B.1	Annual herb. Sandy soils in coastal bluff scrub and coastal dunes; 0-100 m (0-328 ft). Blooming period: January - August	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
pale-yellow layia *Layia heterotricha*	1B.1	Annual herb. Alkaline or clay soils in coastal scrub, valley and foothill grassland, cismontane and pinyon and juniper woodland; 300-1705 m (984 - 5592 ft.). Blooming period: March - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
Palmer's grapplinghook *Harpagonella palmeri*	4.2	Annual herb. Clay soils in chaparral, grasslands, coastal sage scrub; 20-955 m (65 to 3132 ft). Blooming period: March - May	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Palmer's mariposa lily *Calochortus palmeri var. palmeri*	1B.2	Perennial bulbiferous herb. Mesic soils in chaparral, lower montane coniferous forests, meadows and seeps; 1000-2390 m (3280 - 7839 ft.). Blooming period: April - July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
paniculate tarplant *Deinandra paniculata*	4.2	Annual herb. Coastal scrub, valley and foothill grasslands, vernal pools. 25-940 m (82 – 3083 ft.) Blooming period: April – November.	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Parish's brittlescale *Atriplex parishii*	1B.1	Annual herb. Alkaline soils in chenopod scrub, playas, and vernal pools; 25-1900 m (82-6232 ft). Blooming period: June - October	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Parish's gooseberry *Ribes divaricatum var. parishii*	1A	Deciduous shrub. Riparian woodland; 65-300 m (2132 - 984 ft.). Blooming period: February - April	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Parish's oxytheca *Acanthoscyphus parishii var. parishii*	4.2	Annual herb. Sandy to gravelly soil in chaparral and lower montante coniferious forest; 1220-2600 m (4002 - 8528 ft.). Blooming period: June - September	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Parish's popcorn-flower *Plagiobothrys parishii*	1B.1	Annual herb. Alkaline or mesic soils in great basin scrub and joshua tree woodland; 750-1400 m (2460 - 4592 ft.). Blooming period: March - November	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Parish's rupertia *Rupertia rigida*	4.3	Perennial herb. Chaparral, cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, pavement pebble plain; 700-2500 m (2297-8202 ft). Blooming period: June - August	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Parry's spineflower *Chorizanthe parryi var. parryi*	1B.1	Annual herb. Sandy or rocky openings in chaparral, coastal scrub, cismontane woodland, and valley and foothill grassland; 275-1220 m (902-4001 ft). Blooming period: April - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
Parry's sunflower *Hulsea vestita ssp. parryi*	4.3	Perennial herb. Granitic, carbonite, or rocky openings in lower and upper coniferous forest and pinyon and juniper woodland; 1370-2895 m (4494 - 9496 ft.). Blooming period: April - August	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Peirson's lupine *Lupinus peirsonii*	1B.3	Perennial herb. Gravelly to rocky soil in joshua tree, pinyon and juniper woodland, lower and upper montane coniferous forest; 1000-2500 m (3280 - 8200 ft.). Blooming period: April - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Peirson's morning-glory *Calystegia peirsonii*	4.2	Perennial rhizomatous herb. Chaparral, chenopod scrub, cismontane woodland, coastal scrub, lower montane coniferous forest, valley and foothill grassland; 30-1500 m (98 - 4920 ft.). Blooming period: April - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Peruvian dodder *Cuscuta obtusiflora var. glandulosa*	2B.2	Parasitic annual vine. Marshes and freshwater swamps; 15-280 m (49 - 918 ft.). Blooming period: July - October.	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
phlox-leaf serpentine bedstraw *Galium andrewsii ssp. gatense*	4.2	Perennial herb. Serpentine and rocky soil in chaparral, cismontane woodland, and lower montane coniferous forest; 150-1450 m (492 - 4756 ft.). Blooming period: April - July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
pine fritillary *Fritillaria pinetorum*	4.3	Perennial bulbiferous herb. Granitic or metamorphic rock in chaparral, pinyon and juniper woodland, lower, upper, and subalpine coniferous forest; 1735-3300 m (5691 - 10824 ft.). Blooming period: May - September	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
pine green-gentian *Frasera neglecta*	4.3	Perennial herb. Lower and upper montane coniferous forest, pinyon and juniper woodland; 1400-2500 m (4592 - 8200 ft.). Blooming period: May - July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
pinyon rockcress *Boechera dispar*	2B.3	Perennial herb. Granitic to gravelly soil in joshua tree, juniper, and pinyon pine woodland, and mojavean desert scrub; 1200-2540 m (3936 - 8331 ft.). Blooming period: March - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
Piute Mountains navarretia *Navarretia setiloba*	1B.1	Annual herb. Clay or gravelly loam soils in cismontane, pinyon and juniper woodland and valley and foothill grassland; 285-2100 m (935 - 6888 ft.). Blooming period: April - July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Plummer's baccharis *Baccharis plummerae ssp. plummerae*	4.3	Deciduous shrub. Rocky soils in chaparral, coastal scrub, broadleaf upland and cismontane woodland; 5-425 m (16 - 1394 ft.). Blooming period: May - October	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Plummer's mariposa lily *Calochortus plummerae*	4.2	Perennial bulbiferous herb. Granitic and rocky areas in chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, and valley and foothill grassland; 100-1700 m (328-5576 ft). Blooming period: May - July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
prostrate vernal pool navarretia *Navarretia prostrata*	1B.1	Annual herb. Mesic coastal scrub, meadows and seeps, alkaline valley and foothill grassland, and vernal pools; 15-1210 m (49-3968 ft). Blooming period: April - July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
red sand-verbena *Abronia maritima*	4.2	Perennial herb. Coastal dunes; 0-100 m (0-328 ft). Blooming period: February - November	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
rigid fringepod *Thysanocarpus rigidus*	1B.2	Annual herb. Dry rocky slopes in pinyon and juniper woodland; 600-2200 m (1968-7216 ft.). Blooming period: February - May	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Robbins' nemacladus *Nemacladus secundiflorus var. robbinsii*	1B.2	Annual herb. Openings in chaparral and valley and foothill grassland; 350-1700 m (1148 - 5576 ft.). Blooming period: April - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Robinson's pepper-grass *Lepidium virginicum var. robinsonii*	4.3	Annual herb. Openings in chaparral and sage scrub; below 885 m (2900 ft). Blooming Period: January - July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
Rock Creek broomrape *Orobanche valida ssp. valida*	1B.2	Parasitic perennial herb. Granitic soils in chaparral and pinyon and juniper woodland; 1250-2000 m (4100 - 6560 ft.). Blooming period: May - September	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
rock monardella *Monardella saxicola*	4.2	Perennial rhizomatous herb. Rocky, usually serpentinite soils in chaparral, closed-cone and lower montane coniferous forest; 500-1800 m (1640 - 5904 ft.). Blooming period: June - September	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
rock-loving oxytrope *Oxytropis oreophila var. oreophila*	2B.3	Perennial herb. Gravelly to rocky soils in subalpine coniferous forest and alpine boulder and rock fields; 3400-3800 m (11152 - 12464 ft.). Blooming period: June - September	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Rosamond eriastrum *Eriastrum rosamondense*	1B.1	Annual herb. Alkaline hummocks in often sandy soil in openings of chenopod scrub and the edges of vernal pools; 700-715 m (2296 - 2345 ft.). Blooming period: April - July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Ross' pitcher sage *Lepechinia rossii*	1B.2	Perennial herb. Chaparral; 305-790 m (1000 - 2591 ft.). Blooming period: May - September	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
sagebrush loeflingia *Loeflingia squarrosa var. artemisiarum*	2B.2	Annual herb. Sandy soil in desert dunes, great basin scrub, and sonoran desert scrub; 700-1615 m (2296 - 5297 ft.). Blooming period: April - May	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
salt marsh bird's-beak *Chloropyron maritimum ssp. maritimum*	FE, CE, 1B.2	Hemiparasitic annual herb. Coastal dunes and coastal salt marshes and swamps; 0-30 m (0-98 ft). Blooming period: May - October	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
salt spring checkerbloom *Sidalcea neomexicana*	2B.2	Perennial herb. Alkaline and mesic soils within chaparral, coastal scrub, lower montane coniferous forest, Mojavean desert scrub, and playas; 15-1530 m (49-5020 ft). Blooming period: March - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
San Antonio Canyon bedstraw *Galium angustifolium ssp. gabrielense*	4.3	Perennial herb. Granitic, sandy, or rocky soil in chaparral, lower montane coniferous forest; 1200-2650 m (3936 - 8692 ft.). Blooming period: April - August	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
San Antonio milk-vetch *Astragalus lentiginosus var. antonius*	1B.3	Perennial herb. Montane coniferous forest; 1500-2600 m (4920 - 8528 ft.). Blooming period: April - July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
San Bernardino aster *Symphyotrichum defoliatum*	1B.2	Perennial rhizomatous herb. Near ditches, streams, and springs in cismontane woodland, coastal scrub, lower montane coniferous forest, meadows and seeps, marshes and swamps, and vernally mesic valley and foothill grassland; 2-2040 m (7-6693 ft). Blooming period: July - November	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
San Bernardino grass-of-Parnassus *Parnassia cirrata var. cirrata*	1B.3	Perennial herb. Mesic soils, streamsides, and sometimes calcareous soils in montane coniferous forest, meadows, and seeps; 1250-2440 m (4100 - 8003 ft.). Blooming period: August - September	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
San Bernardino ragwort *Packera bernardina*	1B.2	Perennial herb. Mesic to alkaline meadows and seeps, pebble plains (semi desert pavement), and upper montane coniferous forest; 1800-2300 m (5904 - 7544 ft.). Blooming period: May - July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
San Fernando Valley spineflower *Chorizanthe parryi var. fernandina*	FC, CE, 1B.1	Annual herb. Sandy soil in coastal scrub and valley and foothill grassland; 150-1220 m (492 - 4002 ft.). Blooming period: April - July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
San Gabriel bedstraw *Galium grande*	1B.2	Deciduous shrub. Chaparral, cismontane woodland, broadleafed upland and lower montane coniferous forest; 425-1500 m (1394 - 4920 ft.). Blooming period: January - July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
San Gabriel linanthus *Linanthus concinnus*	1B.2	Annual herb. Rocky openings in chaparral, lower and upper montane coniferous forest; 1520-2800 m (4986 - 9184 ft.). Blooming period: April - July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
San Gabriel manzanita *Arctostaphylos glandulosa ssp. gabrielensis*	1B.2	Evergreen shrub. Rocky soil in chaparral; 595-1500 m (1952 - 4920 ft.). Blooming period: March	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
San Gabriel Mountains dudleya *Dudleya densiflora*	1B.1	Perennial herb. Granitic cliffs and canyon walls in chaparral, coastal scrub, lower montane coniferous forest, riparian and cismontane woodland; 244-610 m (800 - 2001 ft.). Blooming period: March - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
San Gabriel Mountains sunflower *Hulsea vestita ssp. gabrielensis*	4.3	Perennial herb. Rocky soil in lower and upper montane coniferous forest; 1500-2500 m (4920 - 8200 ft.). Blooming period: May - July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
San Gabriel oak *Quercus durata var. gabrielensis*	4.2	Evergreen shrub. Chaparral and cismontane woodland; 450-1000 m (1476 - 3280 ft.). Blooming period: April - May	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
San Gabriel ragwort *Senecio astephanus*	4.3	Perennial herb. Rocky slopes in coastal bluff scrub and chaparral; 400-1500 m (1312 - 4920 ft.). Blooming period: May - July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
San Gabriel River dudleya *Dudleya cymosa ssp. crebrifolia*	1B.2	Perennial herb. Granitic soil in chaparral; 275-457 m (902 - 1499 ft.). Blooming period: April - July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
San Jacinto Mountains daisy *Erigeron breweri var. jacinteus*	4.3	Perennial rhizomatous herb. Rocky soil in subalpine and upper montane coniferous forest; 2700-2900 m (8856 - 9512 ft.). Blooming period: June - September	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
Santa Barbara bedstraw *Galium cliftonsmithii*	4.3	Perennial herb. Cismontane woodland; 200-1220 m (656 - 4002 ft.). Blooming period: May - July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Santa Barbara honeysuckle *Lonicera subspicata var. subspicata*	1B.2	Evergreen shrub. Chaparral, cismontane woodland, and coastal scrub; 10-1000 m (33 - 3280). Blooming period: May - February	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Santa Barbara morning-glory *Calystegia sepium ssp. binghamiae*	1B.1	Perennial rhizomatous herb. Wetlands, marshes, alkaline soils, alluvial riparian scrub; 0-220 m (0 - 722 ft.). Blooming period: April - May (found in planter in 2011, previously thought extinct)	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Santa Catalina Island currant *Ribes viburnifolium*	1B.2	Evergreen shrub. Chaparral and cismontane woodland; 30-305 m (98-1000 ft). Blooming period: February - April	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Santa Catalina Island desert-thorn *Lycium brevipes var. hassei*	1B.1	Decidous shrub. Coastal bluff scrub and coastal scrub; -65-300 m (213 - 984 ft.). Blooming period: June - August	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Santa Cruz Island manzanita *Arctostaphylos crustacea ssp. subcordata*	4.2	Evergreen shrub. Rocky soils in chaparral and closed-cone coniferous forest; 100-730 m (328 - 2394 ft.). Blooming period: January - April	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Santa Monica dudleya *Dudleya cymosa ssp. ovatifolia*	FT, 1B.2	Perennial herb. Volcanic or sedimentary rocy soils in chaparral and coastal scrub; 150-1675 m (492 - 5494 ft.). Blooming period: March - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Santa Susana tarplant *Deinandra minthornii*	CR, 1B.2	Deciduous shrub. Rocky soils in chaparral and coastal scrub; 280-760 m (918 - 2493 ft.). Blooming period: July - November.	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
scalloped moonwort *Botrychium crenulatum*	2B.2	Perennial rhizomatous herb. Bogs, fens, meadows, seeps, marshes, freshwater swamps, montane coniferous forests; 1268-3280 m (4159 - 10758 ft.). Blooming period: June - September	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
seaside cistanthe *Cistanthe maritima*	4.2	Annual herb. Sandy soils in coastal bluff scrub, coastal scrub, and valley and foothill grassland; 5-300 m (16-984 ft). Blooming period: February - August	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
short-joint beavertail *Opuntia basilaris var. brachyclada*	1B.2	Stem succulent shrub. Chaparral, mojavean desert scrub, joshua tree, pinyon and juniper woodland; 425-1800 m (1394 - 5904 ft.). Blooming period: April - August	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
short-lobed broomrape *Orobanche parishii ssp. Brachyloba*	4.2	Parasitic perennial herb. Sandy coastal bluff scrub, coastal dunes, and coastal scrub; 3-305 m (9-1000 ft). Blooming period: April - October	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
silky lupine *Lupinus elatus*	4.3	Perennial herb. Lower and upper montane coniferous forest; 1500-3000 m (4920 - 9840 ft.). Blooming period: June - August	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
silvery false lupine *Thermopsis californica var. argentata*	4.3	Perennial rhizomatous herb. Lower montane coniferous forest and pinyon and juniper woodland; 665-1595 m (2181 - 5232 ft.). Blooming period: April - October	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
slender bedstraw *Galium angustifolium ssp. gracillimum*	4.2	Perennial herb. Granitic rocky outcrops. Joshua tree woodland, Sonoran desert scrub. 130-550 m (426 – 1804 ft). Blooming period: April – July.	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
slender mariposa lily *Calochortus clavatus var. gracilis*	1B.2	Perennial bulbiferous herb. Chaparral, coastal scrub, valley and foothill grassland; 320-1000 m (1050 - 3280 ft.). Blooming period: March - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
slender nemacladus *Nemacladus gracilis*	4.3	Annual herb. Sandy to gravelly soil in cismontane woodland and valley and foothill grassland; 120-1900 m (394 - 6232 ft.). Blooming period: March - May	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
slender-horned spineflower *Dodecahema leptoceras*	FE, CE, 1B.1	Annual herb. Sandy soils in chaparral, cismontane woodland, and alluvial fan coastal scrub; 200-760 m (656-2493 ft). Blooming period: April - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
small-flowered microseris *Microseris douglasii ssp. platycarpha*	4.2	Annual herb. Clay soils in cismontane woodland, coastal scrub, valley and foothill grassland, and vernal pools; 15-1070 m (49-3510 ft). Blooming period: March - May	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
small-flowered morning-glory *Convolvulus simulans*	4.2	Annual herb. Friable clay soils or serpentine seeps in chaparral openings, coastal scrub, and valley and foothill grassland; 30-700 m (98-2297 ft). Blooming period: March - July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Sonoran maiden fern *Thelypteris puberula var. sonorensis*	2B.2	Perennial rhizomatous herb. Meadows, seeps, and streams; 50-610 m (164 - 2001 ft.). Blooming period: January - September	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
South Coast saltscale *Atriplex pacifica*	1B.2	Annual herb. Coastal bluff scrub, coastal dunes, coastal scrub, playas; 0-140 m (0-459 ft). Blooming period: March - October	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
southern alpine buckwheat *Eriogonum kennedyi var. alpigenum*	1B.3	Perennial herb. Granitic and gravelly soil in alpine boulder and rock fields, and subalpine coniferous forest; 2600-3500 m (8528 - 11480 ft.). Blooming period: July - September	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Southern California black walnut *Juglans californica*	4.2	Deciduous tree. Alluvial areas in chaparral, cismontane woodland, and coastal scrub; 50-900 m (164-2952 ft). Blooming period: March - August	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
southern mountain misery *Chamaebatia australis*	4.2	Evergreen shrub. Gabbroic or metavolcanic chaparral; 300-1020 m (984-3345 ft). Blooming period: November - May	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
southern mountains skullcap *Scutellaria bolanderi ssp. austromontana*	1B.2	Perennial rhizomatous herb. Moist embankments of montane creeks, mesic chaparral, mesic cismontane woodland, and mesic lower montane coniferous forest; 425-2000 m (1394-6562 ft). Blooming period: June – August	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
southern tarplant *Centromadia parryi ssp. australis*	1B.1	Annual herb. Found within the margin of marshes and swamps, vernally mesic soils in valley and foothill grassland, and vernal pools; 0-480 m (0-1574 ft). Blooming period: May - November	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
southwestern spiny rush *Juncus acutus ssp. Leopoldii*	4.2	Perennial rhizomatous herb. Mesic soils in coastal dunes, alkaline seeps in meadows and seeps, and coastal salt marshes and swamps; 3-900 m (9-2953 ft). Blooming period: May - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
spreading navarretia *Navarretia fossalis*	FT, 1B.1	Annual herb. Chenopod scrub, assorted freshwater marshes and swamps, playas, and vernal pools; 30-655 m (98-2149 ft). Blooming period: April - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
suffrutescent wallflower *Erysimum suffrutescens*	4.2	Perennial herb. Maritime chaparral, coastal bluff scrub, coastal scrub, and coastal dunes; 0-150 m (0 - 492 ft.). Blooming period: January - July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
sylvan microseris *Microseris sylvatica*	4.2	Perennial herb. Chaparral, great basin scrub, valley and foothill grassland (in serpentinite soil), cismontane, pinyon and juniper woodland; 45-1500 m (148 - 4920 ft.). Blooming period: March - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Tehachapi ragwort *Packera ionophylla*	4.3	Perennial herb. Granitic to rocky soil in lower and upper montane coniferous forest; 1500-2700 m (4920 - 8856 ft.). Blooming period: June - July	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
thread-leaved brodiaea *Brodiaea filifolia*	FT, CE, 1B.1	Perennial bulbiferous herb. Often found in clay soils in openings in chaparral, cismontane woodland, coastal scrub, playas, valley and foothill grassland, and vernal pools; 25-1120 m (82-3673 ft). Blooming period: March - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
Transverse Range phacelia *Phacelia exilis*	4.3	Annual herb. Sandy to gravelly soil in lower and upper montane coniferous forest, meadows, seeps, and pebble plains (desert pavement); 1100-2700 m (3608 - 8856 ft.). Blooming period: May - August	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
urn-flowered alumroot *Heuchera caespitosa*	4.3	Perennial rhizomatous herb. Rocky soil in montane riparian forest, cismontane woodland, lower and upper montane coniferous forest; 1155-2650 m (3788 - 8692 ft.). Blooming period: May - August	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Ventura marsh milk-vetch *Astragalus pycnostachyus var. lanosissimus*	FE, CE, 1B.1	Perennial herb. Coastal dunes and scrub, marshes and swamps at ocean edges; 1-35 m (3 - 115 ft.). Blooming period: June - October	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
vernal barley *Hordeum intercedens*	3.2	Annual herb. Coastal dunes, coastal scrub, saline flats and depressions in valley and foothill grassland, and vernal pools; 5-1000 m (16-3280 ft). Blooming period: March - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Watson's amaranth *Amaranthus watsonii*	4.3	Annual herb. Mojavean and Sonoran desert scrub; 20-1700 m (66 - 5576 ft.). Blooming period: April - September	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
western dichondra *Dichondra occidentalis*	4.2	Perennial rhizomatous herb. Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland; 50-500 m (164 - 1640 ft.). Blooming period: January - July.	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
western sedge *Carex occidentalis*	2B.3	Perennial rhizomatous herb. Lower montane coniferous forest, meadows, and seeps; 1645-3135 m (5396 - 10283 ft.). Blooming period: June - August	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
western spleenwort *Asplenium vespertinum*	4.2	Perennial rhizomatous herb. Rocky areas in chaparral, cismontane woodland, and coastal scrub; 180-1000 m (590-3281 ft). Blooming period: February - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
white pygmy-poppy *Canbya candida*	4.2	Annual herb. Gravelly, sandy, or granitic soils in Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland; 600-1460 m (1968 - 4789 ft.). Blooming period: March - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
white rabbit-tobacco *Pseudognaphalium leucocephalum*	2B.2	Perennial herb. Sandy or gravelly soils in chaparral, cismontane woodland, coastal scrub, and riparian woodland; 0-2100 m (0-6888 ft). Blooming period: July - December	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
white-bracted spineflower *Chorizanthe xanti var. leucotheca*	1B.2	Annual herb. Sandy or gravelly soils in coastal scrub alluvial fans, Mojavean desert scrub, and pinyon and juniper woodland; 300-1200 m (984-3936 ft). Blooming period: April - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
white-veined monardella *Monardella hypoleuca ssp. hypoleuca*	1B.3	Perennial herb. Chaparral and cismontane woodland; 50-1525 m (164 - 5002 ft.). Blooming period: April - December	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
Wiggins' cryptantha *Cryptantha wigginsii*	1B.2	Annual herb. Often in clay soils in coastal scrub; 20-275 m (65-902 ft). Blooming period: February - June.	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
woolly chaparral-pea *Pickeringia montana var. tomentosa*	4.3	Annual herb. Coastal dunes, coastal scrub; 1-400 m (3-1312 ft). Blooming period: March - June	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
woolly mountain-parsley *Oreonana vestita*	1B.3	Perennial herb. Gravel or talus soil in lower, upper, and subalpine montane coniferous forest; 1615-3500 m (5297 - 11480 ft.). Blooming period: March - September	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.
woolly seablite *Suaeda taxifolia*	4.2	Evergreen shrub. Coastal bluff scrub, coastal dunes, and the margins of coastal salt marshes and swamps; 0-50 m (0-164 ft). Blooming period: January - December	None	Site is urban/developed. Suitable habitat for this species does not exist in the project area.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale

Sources: CDFW 2015; CNPS 2015; CNDDB 2015.

FE - listed as endangered under the federal Endangered Species Act

SE - listed as endangered under the California Endangered Species Act

CA Rare Plant Rank (CRPR) – Formerly known as CNPS List

1B. Rare, Threatened, or Endangered in California and elsewhere

2B. Rare, Threatened, or Endangered in California; more common elsewhere

4: Watch list, plants of limited distribution

Threat Ranks

.1 - Seriously threatened in California, >80% occurrences threatened

.2 – Moderately threatened in California, 20-80% occurrences threatened

.3 – Not very threatened in California, <20% occurrences threatened

Due to the urban developed nature of the proposed Project, federally or state-listed plants and plants considered rare by CRPR are not expected to occur.

Appendix B3

Sensitive Wildlife Species with Potential to Occur within the Project Site

Sensitive Wildlife Species with Potential to Occur within the Project Site

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
Invertebrates				
El Segundo blue butterfly *Euphilotes battoides allyni*	FE	Habitat limited two dunes with obligate host plant, coast buckwheat (*Eriogonum parvifolium*). Habitat loss has limited range to primarily two areas: dunes west of Los Angeles International Airport, the Chevron Butterfly Preserve.	None	Project area is urban and developed, and lacks dune habitat and larval host plants.
Palos Verdes blue butterfly *Glaucopsyche lygdamus palosverdesensis*	FE	Geographically isolated to Palos Verdes Peninsula. Require coast locoweed (*Astragalus trichopodus lonchus*) and deerweed (*Acmispon glaber*) as larval host plants.	None	Project area is urban and developed and lacks larval host plants.
Quino Checkerspot Butterfly *Euphydryas editha quino*	FE	Inhabits openings on clay soils within or near shrublands, grasslands, meadows, vernal pools, and lake margins. Closely tied to its larval host plants, dwarf plantain (*Plantago erecta*) or owl's clover (*Castilleja exserta ssp. exserta*).	None	Project area is urban and developed and lacks larval host plants.
Riverside fairy shrimp *Streptocephalus woottoni*	FE	Vernal pools. All known localities are below 2,300 feet (700 m) and are within 40 miles (64 km) of the Pacific Ocean.	None	Vernal pools and vernal pool complexes do not occur in the project area.
Vernal Pool Fairy Shrimp *Branchinecta lynchi*	FT	Vernal pools; inhabit small, clear-water sandstone depression pools and grassed swale, earth slump, or basalt-flow depression pools. Primary constituent elements of critical habitat include: complexes of swales and pools with intermittently or continuously flowing surface water; depressional features that become inundated by winter rains and continuously hold water for a minimum of 18 days; and sources of food and habitat structure within pools.	None	Vernal pools and vernal pool complexes do not occur in the project area.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
Fish				
Arroyo Chub *Gila orcuttii*	SSC	The species inhabits slow moving reaches and backwaters of cool to warm water streams (50-74°F [10-23°C]). They are commonly found over sand and silt substrates, and are known to be able to tolerate hypoxic conditions and elevated temperatures typical of southern California stream habitats.	None	Project area is urban and developed and lacks necessary freshwater resources for species.
Mohave tui chub *Siphateles bicolor mohavensis*	FE SE FPS	Occurs in well-oxygenated, cool, riverine habitat with water temperatures from 46-54.5°F (8.0-12.5°C). Habitat types are riffles, runs, and pools.	None	Project area is urban and developed and lacks necessary freshwater resources for species.
Santa Ana Speckled Dace *Rhinichthys osculus*	SSC	The species inhabits shallow riffles of cool perennial stream habitats, and prefers cobble substrates. In streams where riffles are interspersed with run and pool habitats, the species will concentrate in the riffle habitat.	None	Project area is urban and developed and lacks necessary freshwater resources for species.
Santa Ana Sucker *Catostomus santaanae*	FT	Most abundant in unpolluted, clear water, at temperatures that are typically less than 72 ^{0}F (22°C). Optimal stream conditions include course substrates (e.g., gravel, cobble, boulders), a combination of shallow riffle areas and deeper pools with algae present, and consistent flow. Adults prefer deeper water habitats such as pools and runs and utilize streams with gravelly substrates for spawning; juveniles occupy primarily riffle habitats. No fish have been found in streams with greater than 7 percent gradient. In-stream or bank habitat with riparian vegetation providing shade is important for larvae and juveniles. Tributary habitat inflows create refuge for larvae and juveniles	None	Project area is urban and developed and lacks necessary freshwater resources for species.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
Unarmored Threespine Stickleback *Gasterosteus aculeatus williamsoni*	FE SE FPS	Occur only in freshwater and require clear, flowing, well-oxygenated water with pools and areas of dense vegetation or organic growth for refugia and food supply. Prefers clean low turbidity water with temperatures no greater than approximately 75°F (24°C). They utilize eddies and vegetated banks for refugia in larger streams.	None	Project area is urban and developed and lacks necessary freshwater resources for species.
Steelhead (Southern California Coast Steelhead DPS) *Oncorhynchus mykiss*	FE	Steelhead are capable of surviving in a wide range of temperature conditions. They do best where dissolved oxygen concentration is at least 7 parts per million. In streams, deep low-velocity pools are important wintering habitats. Spawning habitat consists of gravel substrates free of excessive silt.	None	Project area is urban and developed and lacks necessary freshwater and marine resources for species.
Tidewater Goby *Eucyclogobius newberryi*	FE SSC	Adapted to coastal lagoons and the uppermost brackish zone of larger estuaries, rarely occurring in marine or freshwater habitats. Typically found in water less than 1 meter deep and salinities of less than 12 part per thousand.	None	Project area is urban and developed and lacks necessary brackish resources for species.
Amphibians				
Arroyo Toad *Anaxyrus californicus*	FE	Exposed shallow pools with a sand or gravel base are used for breeding. Breeding pools must occur in the vicinity of a braided sandy channel with shorelines or central bars made of stable, sandy terraces. Sandy terraces are utilized for foraging and aestivation. Upland habitat typically consist of riparian habitats of semi-arid areas with mature willow (Salix spp.) stands, cottonwoods (Populus spp.), western sycamore (Platanus racemose).	None	Project area is urban and developed and lacks necessary freshwater resources and substrate type for species.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
California Red-legged Frog *Rana draytonii*	FT SSC	California red-legged frogs use a variety of habitats, including aquatic, riparian, and upland habitat. Aquatic breeding habitat consists of low-gradient freshwater bodies, including natural and manmade ponds, backwaters within streams and creeks, marshes, lagoons, and dune ponds that hold water for a minimum of 20 weeks in all but the driest of years. It does not include deep lacustrine water habitat (e.g., deep lakes and reservoirs 50 acres or larger. California red-legged frogs may use uplands for moving to and from aquatic habitats during periods of wet weather or may seek out other aquatic habitats while ones they are in dry up.	None	Project area is urban and developed and lacks necessary freshwater resources for species.
Coast Range Newt *Taricha torosa*	SSC	Occurs from near seal level to around 6,000 feet (1,830 m). Frequent terrestrial habitats near suitable breeding habitat. Breeds in ponds, reservoirs, and slow moving streams	None	Project area is urban and developed and lacks necessary freshwater resources for species.
Foothill Yellow-legged Frog *Rana boylii*	CT	Occurs in Klamath Mountains; Cascade, north and south Coast, and Transverse Ranges; and Sierra Nevada up to approximately 6,000 feet. Creeks or rivers in woodland, forest, mixed chaparral, and wet meadow habitats with rock and gravel substrate and low overhanging vegetation along edge. Usually found near riffles with rocks and sunny banks nearby.	None	Project area is urban and developed and lacks necessary freshwater resources for species.
Southern Mountain Yellow-legged Frog *Rana muscosa*	FE SE	Habitat consists of rocky and shaded streams with boulders or vegetation to the water's edge. This species is highly aquatic and rarely found more than 3 feet (1 m) away from water. Found in creeks and streams with at least some portion with permanent water. Perennial flows are needed for reproduction, larval growth and survival of juveniles and adults. Are absent from the smallest creeks because they lack the depth for aquatic refuge and overwintering.	None	Project area is urban and developed and lacks necessary freshwater resources for species.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
Western Spadefoot *Spea hammondi*i	SSC	Are found in grassland and valley-foothill hardwood woodlands. Essential breeding habitat include temporary rainpools that last at least three weeks with water temperatures between 48°F to <86°F (9°C to < 30°C).	None	Project area is urban and necessary freshwater resources for species.
Reptiles				
California Glossy Snake *Arizona elegans occidentalis*	SSC	Prefers open areas in a variety of habitats, including light shrubby to barren desert scrub, grassland, chaparral, cismontane, and coastal sage scrub. The species is active mostly at night and remains underground during the day.	None	Project area is urban and developed and lacks natural habitat for species.
California legless lizard Anniella pulchra	SSC	Inhabits coastal dunes, valley-foothills, chaparral and coastal scrub areas with loose soil and leaf litter, can also be found under rocks and loose boards and debris. Feeds on small invertebrates.	None	Project area is urban and developed and lacks substrate and cover requirements for species.
Coast horned lizard Phrynosoma blainvilii	SSC	Found in arid and semi-arid climate conditions in chaparral, coastal sage scrub, primarily below 2,000 feet in elevation. Critical factors are the presence of loose soils with a high sand fraction; an abundance of native ants or other insects, especially harvester ants (Pogonomyrmex spp.), and the availability of both sunny basking spots and dense cover for refuge.	None	Project area is urban and developed and lacks cover and substrate requirements for species.
Coast Patched-Nosed Snake Salvadora hexalepis virgultea	SSC	Inhabits semi-arid brushy areas and chaparral in canyons, rocky hillsides, and plains.	None	Project area is urban and developed and lacks natural vegetation and habitat for species.
Coastal Whiptail *Aspidoscelis tigris stejnegeri*	SSC	Found in a variety of habitats, including coastal sage scrub, chaparral, riparian, oak woodlands, and rocky areas up to 5,000 ft. (1,500 m). Occur primarily in areas with habitats with sandy or gravel soils, and is often associated with washes. Not found in areas where the habitat has been fragmented by roads and development	None	Project area is urban and developed and lacks natural habitat and cover.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
Green Sea Turtle *Chelonia mydas*	FT	Occurs within or adjacent to the shallow eelgrass beds. Individuals may enter or leave the bay and can be found between Long Beach and Mexico.	None	Project area is urban and developed and does not occur in an aquatic marine setting.
Northern California legless lizard *Anniella pulchra*	SSC	Occurs in sparsely vegetated areas of beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces with sycamores, cottonwoods, or oaks. Leaf litter under trees and bushes in sunny areas often indicate suitable habitat.	None	Project area is urban and developed and lacks substrate and cover requirements for species.
Red Diamond Rattlesnake *Crotalus ruber*	SSC	Occurs from sea level to 3,000 feet (914m) in chaparral, woodland, and arid desert habitats with rocky areas and dense vegetation.	None	Project area is urban and developed and lacks natural habitat and cover.
San Diego Banded Gecko *Coleonyx variegatus abbottii*	SSC	Prefers rocky areas in coastal sage scrub and chaparral habitats.	None	Project area is urban and developed and lacks rocky areas with adequate cover.
South-Coast Garter Snake *Thamnophis sirtalis*	SSC	Restricted to marsh and upland habitats near permanent water that have good strips of riparian vegetation. Historical records indicate that this species formerly inhabited meadow-like habitats adjacent to marshlands	None	Project area is urban and developed and lacks necessary freshwater resources for species.
southern California legless lizard *Anniella stebbinsi*	SSC	Occurs in sparsely vegetated areas of beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces with sycamores, cottonwoods, or oaks. Leaf litter under trees and bushes in sunny areas often indicate suitable habitat.	None	Project area is urban and developed and lacks natural habitat and cover.
Two-striped Garter Snake *Thamnophis hammondii*	SSC	Inhabits perennial and intermittent streams with rocky beds and bordered by willow thickets or other dense vegetation.	None	Project area is urban and developed and lacks necessary freshwater resources for species.
western pond turtle *Emys marmorata*	SSC	Found in permanent and intermittent waters with adequate emergent substrate for basking. Feeds on invertebrates, tadpoles, fish, and aquatic vegetation.	None	Project area is urban and developed and lacks necessary freshwater resources for species.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
Birds				
American Peregrine Falcon *Falco peregrinus anatum*	FPS	Nests on cliff ledges or on tall building or bridges. Will forage over a wide variety of habitats.	Nesting: No Foraging: Yes	American peregrine falcon are frequently observed foraging in urban settings. Trees do not host adequate nesting potential, however birds which utilize street trees may are likely prey species to peregrine falcon.
American White Pelican *Pelecanus erythrorhynchos*	SSC	Only breeding colonies in the state occur at lower Klamath National Wildlife Refuge, Siskiyou County, and at Clear Lake, Modoc County; winters along the California coast from southern Sonoma County. Frequents freshwater lakes with islands for breeding; inhabits river sloughs, freshwater marshes, salt ponds, and coastal bays during the rest of the year.	Nesting: No Foraging: No	Project area is urban and developed and outside of the nesting range. Project area also lacks necessary aquatic resources for species.
Ashy Storm-petrel *Oceanodroma homochroa*	SSC	Nest on crevices of talus slopes, rock walls, sea caves, and sea cliffs.	Nesting: No Foraging: No	Project area lacks slopes and rock walls for nesting, and marine system for foraging.
Bald Eagle *Haliaeetus leucocephalus*	SE FPS	Nests and roosts in coniferous forests generally within 1 mile (1.6 km) of a lake, reservoir, stream, or the ocean.	Nesting: No Foraging: No	Project area lacks adequate forest and aquatic resources nesting and foraging habitat.
bank swallow *Riparia riparia*	ST	Reside along watercourses adjacent to nesting habitat like vertical cliffs and eroded streambanks where they can burrow. Typically forage on flying insects.	Nesting: No Foraging: No	Project area lacks both nesting and freshwater foraging habitat.
Belding's Savanna Sparrow *Passerunculus sandwichensis beldingi*	SE	Resident species that is restricted to coastal marshes dominated by pickleweed.	Nesting: No Foraging: No	Project area lacks marsh habitat type requirement for species.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
Black Skimmer *Rynchops niger*	SSC	Nests on gravel bars and sandy beaches; forages in shallow, calm waters.	Nesting: No Foraging: No	Project area lacks beach areas and shallow coastal areas for foraging opportunities.
Black storm-petrel *Oceanodroma melania*	SSC	Nests in small colonies on islands and forages in open ocean systems for small fish and crustaceans.	Nesting: No Foraging: No	Project area lacks nesting requirements and open ocean marine system for foraging.
Black Swift *Cypseloides niger*	SSC	Nest behind or next to permanent or semipermanent waterfalls or vertical cliffs near water	Nesting: No Foraging: No	Project area lacks aquatic areas for nesting and foraging.
Black tern *Chlidonias niger*	SSC	Forages along fresh marshes and lakes, sometimes coastal waters. Nesting in freshwater marshes and meadows, wintering in tropical coastal regions. Forages on insects and fish.	Nesting: No Foraging: No	Project area lacks aquatic resources required for nesting and foraging.
brant *Branta bernicla*	SSC	Found in estuaries and freshwater lakes. Uncommon in Southern California. Forages on aquatic vegetation in large flocks.	Nesting: No Foraging: No	Project area lacks aquatic resources required for this species.
Bryant's savannah sparrow *Passerculus sandwichensis alaudinus*	SSC	Prefer grasslands with minimal trees, meadows, pastures wetlands, and cultivated lands. Forage primarily on terrestrial invertebrates.	Nesting: No Foraging: No	Project area is urban and developed and lacks grasslands.
burrowing owl *Athene cunicularia*	SSC	Burrowing owls inhabit grasslands, lowland scrub, desert scrub, agricultural lands, and open developed areas, such as urban parks. They require large open expanses of sparsely vegetated areas on gently rolling or level terrain with an abundance of active small mammal burrows. They use rodent or other burrows for roosting and nesting cover. Will use pipes, culverts, and other man-made burrows where natural burrows are scarce.	Nesting: No Foraging: No	Project area is urban and developed, and lacks necessary burrowing areas and preferred landscape for species.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
California Black Rail *Laterallus jamaicensis coturniculus*	ST, FPS	Species occurs in saline, brackish along the California coast and in fresh emergent wetlands inland.	Nesting: No Foraging: No	Project area lacks aquatic resources required for species.
California Brown Pelican *Pelecanus occidentalis californicus*	FPS	Present along the entire California coastline, Typically in littoral ocean zones, just outside the surf line; nests on offshore islands	Nesting: No Foraging: No	Project area lacks coastal areas for foraging and nesting.
California Condor *Gymnogyps californianus*	FE SE FPS	Requires large blocks of open savanna, grasslands, and foothill chaparral with large trees, cliffs, and snags for roosting and nesting.	Nesting: No Foraging: No	Project area is urban and developed, and lacks large trees for nesting and open landscape for foraging.
CaliforniaLleast Tern *Sterna antillarum browni*	FE SE FPS	Nests on non-vegetated coastal areas and forages in shallow estuaries, lagoons, and along marine shores.	Nesting: No Foraging: No	Project area lacks coastal setting for nesting and marine resource for foraging.
California Ridgeway's rail *Rallus obsoletus obsoletus*	FE SE FPS	Saltwater and brackish marshlands with pickleweed (Salicornia pacifica) and Spartina sp., foraging for mollusks.	Nesting: No Foraging: No	Project area lacks marine resources required for foraging.
California spotted owl *Strix occidentalis occidentalis*	SSC	Large old growth forest with dense canopy cover with individual territories up to 2400 acres. Primary prey are rodents like flying squirrels and woodrats.	Nesting: No Foraging: No	Project area is urban and developed, and lacks mature forests for nesting and foraging.
Clark's Marsh Wren *Cistothorus palustris clarkae*	SSC	Restricted to freshwater and brackish marshes dominated with cattails and bulrushes.	Nesting: No Foraging: No	Project area lacks aquatic resources and wetland vegetation type required for species.
Coastal Cactus Wren *Campylorhynchus brunneicapillus sandiegensis*	SSC	Cactus thickets of Opuntia or Cylindropuntia species, preferably over 3 feet (1m) tall.	Nesting: No Foraging: No	Project area is urban and developed and lacks cactus variety required for species.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
Coastal California Gnatcatcher *Polioptila californica californica*	FT SSC	Prefer open scrubby habitats such as coastal sage scrub and some forms of chaparral.	Nesting: No Foraging: No	Project area is urban and developed and lacks coastal sage scrub and chaparral.
common loon *Gavia immer*	SSC	Require clear water for hunting fish species. In winter, can be found in nearshore coastal areas and bays.	Nesting: No Foraging: No	Project area lacks aquatic resources required for species.
fork-tailed storm-petrel *Oceanodroma furcate*	SSC	Breeds on offshore islands. Winters and forages in nearshore waters feeding on small fish and crustaceans.	Nesting: No Foraging: No	Project area lacks marine resources required for foraging.
Fulvous Whistling-duck *Dendrocygna bicolor*	SSC	Habitat includes shallow freshwater and coastal marshes. Shows a preference for rice fields and tall-grass areas flooded to a depth of <1.5 feet (<0.5 m).	Nesting: No Foraging: No	Project area lacks aquatic resources required for species.
Golden Eagle *Aquila chrysaetos*	FPS	Nest on cliff ledges or large trees in open areas. Forage in grasslands, sage scrub, open chaparral, and open woodlands.	Nesting: No Foraging: No	Project area is urban and developed, and lacks large trees and open landscape required for species.
Grasshopper Sparrow *Ammodramus savannarum perpallidus*	SSC	Occurs in dry, dense grasslands, especially those with a variety of grasses and tall forbs and scattered shrubs for singing perches. Nests in slight depressions in dense grasslands.	Nesting: No Foraging: No	Project area lacks open grasslands required for species.
gray vireo *Vireo vicinior*	SSC	Found in desert scrub, juniper or pinyon pine scrub, and chaparral. Primarily occurring in hot, arid environments.	Nesting: No Foraging: No	Project area is urban and developed, and lacks vegetation requirements for species.
Greater Sandhill Crane *Grus canadensis tabida*	ST FPS	Winter visitors only in the Central Valley. Forages on waste seed and other grains on agricultural fields. Also consumes invertebrates and small vertebrates.	Nesting: No Foraging: No	Project area is urban and developed and lacks open agricultural setting required for foraging.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
large-billed savannah sparrow *Passerculus sandwichensis rostratus*	SSC	Inhabits shoreline areas, salt marshes, beaches with salt marsh vegetation.	Nesting: No Foraging: No	Project area lacks aquatic resources required for species.
Least Bell's Vireo *Vireo bellii pusillus*	FE SE	Most commonly found in riparian thickets either near water or in dry portions of river bottoms; nests along margins of bushes and forages low to the ground; may also be found using mesquite and arrow weed in desert canyons.	Nesting: No Foraging: No	Project area is urban and developed and lacks riparian areas and vegetation types required for species.
Least Bittern *Ixobrychus exilis*	SSC	Occurs in freshwater or brackish marshes with tall emergent vegetation.	Nesting: No Foraging: No	Project area is urban and developed and lacks aquatic resource requirements for species.
Lesser Sandhill Crane *Grus canadensis canadensis*	SSC	Winter visitors only in the Central Valley. Forages on waste seed and other grains on agricultural fields. Also consumes invertebrates and small vertebrates.	Nesting: No Foraging: No	Project area is urban and developed and lacks open agricultural setting required for foraging.
Light-footed Clapper Rail *Rallus longirostris levipes*	FE SE FPS	Species is found in freshwater and brackish emergent wetlands and in coastal wetlands.	Nesting: No Foraging: No	Project area is urban and developed and lacks aquatic resource requirements for species.
Loggerhead Shrike *Lanius ludovicianus*	SSC	Found near grassland, open sage scrub and chaparral, and desert scrub. Nest in dense vegetation adjacent to their open foraging habitats.	Nesting: No Foraging: No	Project area is urban and developed and lacks grassland and open space requirements for species.
Long-eared Owl *Asio otus*	SSC	Scattered breeding populations along the coast and in southeastern California. Winters throughout the Central Valley and southeastern California. Nests in abandoned crow, or hawk nests, usually in dense riparian stands of willows, cottonwoods, live oaks, or conifers	Nesting: No Foraging: No	Project area is urban and developed and lacks dense riparian areas and is unlikely to nest in street trees.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
Marbled Murrelet *Brachyramphuis marmoratus*	FT	Mature, coastal coniferous forests for nesting; nearby coastal water for foraging; nests in conifer stands greater than 150 years old and may be found up to 35 miles (56km) inland; winters on subtidal and pelagic waters often well offshore.	Nesting: No Foraging: No	Project area is urban and developed and lacks forest requirements for nesting and marine resources for foraging.
Mountain Plover *Charadrius montanus*	PT SSC	Does not breed in California; winters in the Central Valley south of Yuba County, along the coast in parts of San Luis Obispo, Santa Barbara, Ventura, and San Diego Counties; parts of Imperial, Riverside, Kern, and Los Angeles Counties.	Nesting: No Foraging: No	Project area is urban and developed and lacks undisturbed area for potential foraging.
Northern Goshawk *Accipiter gentilis*	SSC	Nests and roosts in older stands of red fir, Jeffrey pine, Ponderosa pine, lodgepole pine, Douglas fir, and mixed conifer forests.	Nesting: No Foraging: No	Project area is urban and developed and lacks vegetation requirements for species.
Northern Harrier *Circus cyaneus*	SSC	Grasslands and marshes. Nests are on the ground and typically concealed within a marsh or other dense, low-growing vegetation. Forages in grasslands, wetlands, and other open areas with abundant rodent populations	Nesting: No Foraging: No	Project area is urban and developed and lacks freshwater resource requirements for species.
olive-sided flycatcher *Contopus cooperi*	SSC	Winters in forest clearings with tall trees. Breeds in coniferous forests edges and openings.	Nesting: No Foraging: No	Project area is urban and developed and lacks forested area requirements for species.
Oregon vesper sparrow *Pooecetes gramineus affinis*	SSC	Open grasslands with sporadic trees and shrubs for foraging and nesting.	Nesting: No Foraging: No	Project area is urban and developed and lacks open grassland requirements for species.
Purple Martin *Progne subis*	SSC	Nests in abandoned woodpecker holes in oaks, cottonwoods, and other deciduous trees in a variety of wooded and riparian habitats. Also nests in vertical drainage holes under elevated freeways and highway bridges.	Nesting: Yes Foraging: Yes	Project area is urban and developed and has trees which may provide adequate nesting requirements in larger street trees. Species is also found in urban settings.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
Redhead *Aythya americana*	SSC	Habitat includes shallow freshwater lakes, ponds, and marshes. The body of water needs to be at least 2 feet (0.6m) deep so that they can dive.	Nesting: No Foraging: No:	Project area is urban and developed and lacks freshwater resource requirements for species.
short-tailed albatross *Phoebastria albatrus*	FE SSC	Nests on islands off Japan. Range throughout the Pacific Ocean where they forage for fish and invertebrates.	Nesting: No Foraging: No:	Project area is urban and developed and lacks marine resource requirements for species.
Southwestern Willow Flycatcher *Empidonax trallii extimus*	FE SE	Breeds and forages in riparian woodlands along rivers, streams, or other wetlands. They usually nest within close proximity of water or very saturated soil.	Nesting: No Foraging: No	Project area is urban and developed and lacks freshwater resource requirements for species.
summer tanager *Piranga rubra*	SSC	Breed in low elevation cottonwood and willows. Also found in mesquite and saltcedar. Forage on invertebrates and fruits.	Nesting: No Foraging: No	Project area is urban and developed and lacks vegetation requirements for species.
Swainson's hawk *Buteo swainsoni*	ST	Open prairie and grassland habitats, including pasture and agricultural areas.	Nesting: No Foraging: No	Project area is urban and developed and lacks open grassland and prairie requirements for species.
Tricolored Blackbird *Agelais tricolor*	CT	Breeds near fresh water, preferably in emergent wetland with tall, dense cattails or tules, but also in thickets of willow, blackberry, wild rose, tall herbs. Feeds in grassland and grain fields.	Nesting: No Foraging: No	Project area is urban and developed and lacks freshwater resource requirements for species.
Vaux's Swift *Chaetura vauxi*	SSC	Nests in cavity or a variety of trees and less frequently in artificial structures. Cavities need to be large enough to allow the birds to fly while within the cavity. Shows a strong positive association with old-growth forests. Habitats include redwoods, Douglas fir, and other forest types found further inland. Currently found using chimneys and other man-made structures more than in the past.	Nesting: No Foraging: No	Project area is urban and developed and lacks old growth forest resource requirements for species.

Common Name Scientific name	**Sensitivity Code and Status**	**Habitat Preference/Requirements**	**Potential to Occur**	**Rationale**
vermilion flycatcher *Pyrocephalus rubinus*	SSC	Feeds on insects and terrestrial arthropods. Found in desert scrub, desert, and riparian woodlands.	Nesting: No Foraging: No	Project area is urban and developed and lacks desert, scrub, and riparian area requirements for species.
Western Snowy Plover Charadrius *alexandrinus nivosus*	FT SSC	Requires open, relatively flat areas with little or no vegetation, including undisturbed beaches, salt flats, playas, dredge spoils, levees, and river bars. The species occurs more along the coast during the winter months, and may include sewage treatment ponds and agricultural wastewater sites.	Nesting: No Foraging: No	Project area is urban and developed and lacks undisturbed beach and dune habitat and coastal resource requirements for species.
Western Yellow-billed Cuckoo *Coccyzus americanus occidentalis*	FE SE	Currently only a handful of small populations remaining in California. The species occurs in relatively broad, well-shaded riparian forests.	Nesting: No Foraging: No	Project area is urban and developed and lacks riparian forests.
White-tailed Kite *Elanus leucarus*	FPS	Nests in large trees adjacent to open areas. Forages in grasslands and other open habitats.	Nesting: No Foraging: No	Project area is urban and developed and lacks open landscape requirements for species.
Yellow Rail *Coturnicops noveboracensis*	SSC	Winter records along the coast from Humboldt County to Orange County. Utilizes grassy marshes and wet meadows, building well-concealed firm grass cup nests. Especially secretive and seldom seen.	Nesting: No Foraging: No	Project area is urban and developed and lacks aquatic resources for species.
Yellow Warbler *Setophaga petechial*	SSC	Nests in riparian areas dominated by willows, cottonwoods, sycamores, or alders or in mature chaparral; may also use oaks and urban areas near stream courses.	Nesting: Yes Foraging: Yes	Species can occur in urban settings. Street trees may provide marginal nesting habitat.
Yellow-breasted Chat *Icteria virens*	SSC	Nests in dense riparian thickets of willow and other brushy tangles, including briars and stream thickets near watercourses	Nesting: No Foraging: No	Project area is urban and developed and lacks riparian forest requirement for species.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
Yellow-headed Blackbird *Xanthocephalus xanthocephalus*	SSC	Nest over persistent water in freshwater emergent wetlands with dense vegetation adjacent to deep water, and along borders of lake or ponds.	Nesting: No Foraging: No	Project area is urban and developed and lacks freshwater resource requirement for species.
Yuma Ridgway's rail *Rallus obsoletus yumanensis*	FE ST FPS	Found along the lower Colorado river and nearby freshwater marshes.	Nesting: No Foraging: No	Project area is urban and developed and lacks freshwater resource requirements for species.
Mammals				
American Badger *Taxidea taxus*	SSC	Inhabit a diversity of habitats with principal requirements of sufficient food, friable soils, and relatively open, uncultivated ground. Grasslands, savannas, and mountain meadows and desert scrub.	None	Project area is urban and developed and lacks open landscape requirements for species.
Big free-tailed Bat *Nyctinomops macrotis*	SSC	Inhabits arid, rocky areas; roosts in crevices in cliffs. Species is rare in California.	Roosting: No Foraging: No	Project area is urban and developed and lacks arid rocky roosting habitat. Foraging unlikely.
California leaf-nosed bat *Macrotus californicus*	SSC	Roosts in deep caves, mine tunnels and grottos. Cool temperatures being a primary driver in roosting habitat. Forages for insects very close to the ground.	Roosting: No Foraging: No	Project area is urban and developed and lacks adequate cave and tunnel roosting habitat. Foraging is unlikely.
cave myotis *Myotis velifer*	SSC	Prefers caves for roosting, however, it can also be found using rock outcrops, crevices, and abandoned buildings and beneath bridges.	Roosting: No Foraging: No	Project area is urban and developed and lacks caves and rock outcrops. Species sometimes found in urban settings beneath bridges and abandoned buildings.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
Desert Bighorn Sheep *Ovis canadensis nelsoni*	FPS	Generally occurs in areas with steep slopes with abundant rock outcrops and sparse shrubs for escape terrain. Escarpment chaparral with ceanothus, mtn. mahogany associations for foraging. Range from 3,000 - 10,000 feet (914 – 3,048 m).	None	Project area is urban and developed and lacks steep slopes and is below elevation range for species.
Los Angeles Pocket Mouse *Perognathus longimembris brevinasus*	SSC	Lower elevation grassland and coastal sage communities with sandy soils	None	Project area is urban and developed and lacks grasslands, sage scrub communities, and soil requirements for species.
Pacific Pocket Mouse Perognathus *longimembris pacificus*	FE SSC	Coastal strand, coastal dunes, river alluvium, and coastal sage scrub, favoring less densely vegetated areas.	None	Project area is urban and developed and lacks dune habitat and vegetation requirements for species.
Pallid Bat *Antrozous pallidus*	SSC	Species is found from coast to mixed conifer forest; grasslands, shrublands, woodlands, & forest; most common in open, dry habitats w/ rocky areas for roosting; yearlong resident in most of range. Roosts in rock crevices, caves, mine shafts, under bridges, in buildings and tree hollows.	Roosting: Yes Foraging: Yes	Project area is urban and developed a natural setting, however species is sometimes associated with tree hollows, buildings, and bridges.
Pocketed Free-tailed Bat *Nyctinomops femorosaccus*	SSC	Occurs in desert scrub, desert riparian, chaparral, and pine oak forests. Roosts in rocky crevices.	Roosting: No Foraging: No	Project area is urban and developed and lacks vegetation type and rocky crevice requirements for species
Ringtail *Bassariscus astutus*	FPS	Occurs primarily in riparian habitats but also known from moist forest and shrub habitats from lower to mid elevations. Usually found near water.	None	Project area is urban and developed and lacks riparian areas and vegetation requirements for species.
San Diego Black-tailed Jackrabbit *Lepus californicus bennettii*	SSC	Mostly found on the coastal side of mountains in open habitats, usually avoiding dense stands of chaparral or woodlands.	None	Project area is urban and developed and lacks open space requirements for species.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
San Diego Desert Woodrat *Neotoma lepida intermedia*	SSC	Occurs in a variety of shrub and desert habitats primarily associated with rock outcroppings, boulders, cacti, or areas of dense undergrowth.	None	Project area is urban and developed and lacks desert habitat.
south coast marsh vole *Microtus californicus stephensi*	SSC	Found in grasslands, wet meadows, and coastal wetlands.	None	Project area is urban and developed and lacks grassland and aquatic resource requirements for species.
southern California saltmarsh shrew *Sorex ornatus salicornicus*	SSC	Saltmarsh and wetlands dominated with Salicornia virginica, Salix sp., Scirpus sp., with dense ground cover.	None	Project area is urban and developed and lacks aquatic resource requirements for species.
Southern Grasshopper Mouse *Onychomys torridus ramona*	SSC	Hot and arid scrub desert, with primary forage being arthropods.	None	Project area is urban and developed and lacks arid setting and vegetation requirements for species.
Spotted bat *Euderma maculatum*	SSC	Occurs in wide-range of habitats, including conifer and mixed forests, chaparral, shrub lands, and grasslands	None	Project area is urban and developed and lacks natural vegetation requirements for species.
Townsend's Big-eared Bat *Corynorhinus townsendii*	SSC	The species is found in a variety of habitats throughout California where appropriate roosting habitat exists. Primarily roosts in caves and cavern-like spaces; also include in abandoned buildings, mines, culverts, box-like spaces in bridges and other structures, and large hollows in trees. Very sensitive to human disturbances.	Roosting: No Foraging: No	Project area is urban and developed and likely has too much anthropogenic disturbances to provide habitat, although species can occur in man-made structures.
Western Mastiff Bat *Eumops perotis californicus*	SSC	Primarily a cliff-dwelling species for breeding. Found foraging in a variety of habitats, from dry desert washes, flood plains, chaparral, oak woodland, open ponderosa pine forest, grassland, montane meadows, and agricultural areas.	Roosting: No Foraging: No	Project area is urban and developed and lacks cliff habitat and open setting for foraging.

Common Name Scientific name	Sensitivity Code and Status	Habitat Preference/Requirements	Potential to Occur	Rationale
Western Red Bat *Lasiurus blossevillii*	SSC	Usually among dense foliage, in forests and wooded areas, making long migrations from the northern latitudes to warmer climates for winter, sometimes hibernates in tree hollows or woodpecker holes.	Roosting: Yes Foraging: Yes	Project area is urban and developed a natural setting, however species is sometimes associated with tree hollows.
Western Yellow Bat *Lasiurus xanthinus*	SSC	Roosting habitat mostly associated desert riparian habitats, palm oasis, and urban areas with palm groves.	None	Project area is urban and developed a natural setting and lacks palm areas preferred by species.

Source: CDFW 2015

FE – listed as endangered under the federal Endangered Species Act.

FT – listed as threatened under the federal Endangered Species Act.State

SE - listed as endangered under the California Endangered Species Act.

ST – listed as threatened under the California Endangered Species Act.

FPS – fully protected species in California.

SSC – species of special concern in California.

Appendix C

Inventory of Designated Scenic Highways and Guidelines of the Mobility Plan 2035 Element

Inventory of Designated Scenic Highways

Street Name	Alignment	Scenic Features or Resources/Comment
Adams Blvd	Figueroa to Crenshaw	
Avenue of the Stars	Santa Monica to Pico	Wide landscaped median, fountains
Balboa Blvd	1.Fwy. 5 to Sesnon; 2.Victory to Burbank Blvd	Streets should be designed so as to least disrupt the scenic qualities of the area it traverses. Sepulveda Basin, park access
Barham Blvd	Fwy. 101 to Forest Lawn Dr.	Dramatic pass with northerly Valley views
Beverly Glen Blvd.	Ventura Blvd. to Sunset Blvd.	Winding cross mountain road; valley views
Big Tujunga Canyon Blvd.	Fwy. 210 to northerly City boundary	Canyon road with impressive views of rugged mountains
Brand Blvd	Sepulveda to City boundary	Landscaped median
Broadway	98th St. to 112th St.	Wide landscaped median
Burbank Blvd	Balboa to Fwy. 405	Sepulveda Basin, park access
Burton Way	Le Doux Rd to City boundary with Beverly Hills	Wide landscaped median
Coldwater Canyon Dr	Ventura Blvd to City boundary with Beverly Hills	Winding cross mountain road providing access to the Mulholland Scenic Parkway
Colorado Blvd	Eagledale to Monte Bonito	(Specific Plan Ord. No. 168,046)
Crenshaw Blvd	Fwy. 10 to Slauson	
Culver Blvd	Vista Del Mar to Ballona Creek	Ocean and Marina views, Ballona wetlands
Eagle Rock Blvd	NE'ly Verdugo Rd to Colorado Blvd	Landscaped median
Forest Lawn Dr	Barham to Griffith Park Dr.	Winding road past Hollywood Hills; gateway to Griffith Park
Fwy. 5	Fwy. 210 to N'ly City limit	State Scenic Highway
Fwy. 101	Topanga Canyon Blvd to W'ly City limit	State Scenic Highway
Fwy, 118	DeSoto Ave to W'ly City limit	State Scenic Highway
Fwy. 210	Fwy. 5 to E'ly City limit	State Scenic Highway
Glendale Blvd	LA River Bridge to City Boundary with Glendale	Wide landscaped median
Harbor Blvd	Vincent Thomas Bridge to Crescent Ave + future alignment to Shepard St	Views of historic San Pedro and the Port
Highland Ave	Wilshire to Melrose	Landscaped median, significant palm trees
Huntington Dr N	Monterey Rd to E'ly City limit	Wide landscaped median
John S. Gibson Blvd	Harry Bridges Blvd to Pacific Ave	Views of harbor activities, Vincent Thomas Bridge
La Tuna Canyon Blvd	Sunland Blvd to Fwy. 210	Views of ranches in Verdugo Hills
Laurel Canyon Blvd	Ventura Blvd to Hollywood Blvd	Winding cross mountain road through rustic area

Inventory of Designated Scenic Highways

Street Name	Alignment	Scenic Features or Resources/Comment
Leimert Blvd	MLK to 43rd Place	Landscaped median
Lincoln Blvd (Highway Route 1)	Venice Blvd to City boundary with Santa Monica	State Scenic Highway
Los Feliz Blvd	Riverside Dr to Western Ave	Hillside and city views
Monterey Rd	Hardison Way to Huntington Dr	
Mountaingate Dr	Canyonback Sepulveda	Landscaped median
Mullholland Dr	1.Fwy. 101 westerly to Mulholland Hwy; 2.Mulholland Hwy to Valley Circle Blvd	(Specific Plan Ord. No. 167,943) Panoramic views, "ribbon of park"
Pacific Avenue/Front St	John S. Gibson Blvd to Harbor Blvd	Views of Vincent Thomas Bridge; views of historic San Pedro and Port
Pacific Coast Highway (Highway Rte. 1)	Entire alignment N. of Fwy. 10 (City portion)	State Scenic Highway
Palisades Dr	Sunset Blvd to N'ly terminus	Wide mountain road; good landscaping and ocean views
Paseo del Mar	Western Ave to Gaffey St	Hillside bluff route with ocean views, park access
Plummer St	Valley Circle to Topanga Canyon	(LAMC 17.05-T)
Porter Ranch Streets Corbin Ave Mason Ave Rinaldi St Sesnon Blvd Winnetka Ave	(future streets)	(Specific Ord. No. 166,-068)
Reseda Blvd	1.Portion N. of Rinaldi; 2.Ventura Blvd. to S'ly terminus	Street should be designed so as to least disrupt scenic qualities of the hillside area it traverses
Rinaldi St *	Fwy. 405 to Corbin Ave	Hillside street with good mountain, Valley Views
Riverside Dr	Los Feliz Blvd to Stadium Way	Essential link in "chain of parks" concept
Santa Monica Blvd	Sepulveda to City Boundary with Beverly Hills	
Santa Susana Pass Rd	Entire alignment within City	Dramatic pass; hillside and Valley views
San Vicente Blvd	1.Pico Blvd to Colgate Ave; 2.Goshen Ave to 26th St	Wide street with landscaped median [Specific Plan Ord. No. 161,766]; wide landscaped median
Sepulveda Blvd	1.Fwy 405 to Sunset Blvd; 2.Rayen St. to Devonshire St	Old cross mountain road with tunnel, views of mountains and Valley Wide street with landscaped median

Inventory of Designated Scenic Highways

Street Name	Alignment	Scenic Features or Resources/Comment
Sesnon Blvd *	Winnetka Ave to Balboa Blvd	Street should be designed so as to least disrupt the scenic qualities of the hillside area it traverses
Sherman Way	Variel to Kester	Wide street, landscaped median
Shepard Street	Pacific Ave to Gaffey St	Views of harbor, ocean
Silver Lake Blvd	Duane St to Armstrong Ave	Views to and from Reservoir; landscaped setbacks
Stadium Way	Fwy. 5 to Fwy. 110	Winding drive through Elysian Park
Sunland Blvd	Chivers Ave. to Fwy. 210	Hillside views
Sunset Blvd	PCH to City Boundary with Beverly Hills	Views of mountains, estates, UCLA campus
Tampa Ave	Portion N. of Devonshire St	Street should be designed so as to least disrupt the scenic qualities of the hillside area it traverses
Temescal Canyon Rd	PCH to Sunset Blvd	Broad avenue lined with parks and amenities
Topanga Canyon Blvd (Highway Rte. 27)	PCH to Mulholland Dr (City portion)	State Scenic Highway
Valley Circle Blvd	Mulholland Dr. to Plummer St.	"country road" winding past Chatsworth Reservoir with views of "Twelve Apostles" rock formations (LAMC 17.05-T.)
Venice Blvd	Longwood to Abbot Kinney	Wide street, landscaped median
Ventura Blvd	Valley Circle to Fwy. 405	(Specific Plan Ord. No. 166,650)
Vermont Ave	Gage to Gardena Blvd	Wide street, landscaped median
Vineland Ave	Ventura Blvd to Magnolia	Landscaped median
Vista del Mar	Culver Blvd to Imperial Highway	Sand dunes and ocean views
Wentworth St	Sheldon St to Fwy. 210	Views of hills, Hansen Dam and Tujunga Wash
Western Ave	1.25th St to Paseo del Mar; 2. Franklin Ave to Los Feliz	Hillside and ocean views Hillside and city views
White Oak Ave	Rinaldi to Devonshire	Deodar trees cultural-historic monument
Wilshire Blvd	1.Beverly Hills boundary to Malcom Ave; 2.Sycamore to Fairfax	(Specific Plan Ord. No. 155,044) Miracle Mile; landscaped median
Woodley Ave	Victory to Burbank Blvd	Park access; Sepulveda Basin
25th St	Western Ave to W'ly City boundary	Hillside and ocean views
Avenue 64	York Blvd to N'ly City boundary	

City of Los Angeles Transportation Element 1999 - Appendix E

Appendix D

Air Quality Emissions Calculations

Regional Daily Air Pollutant Emissions

				ROG (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
2018	CS1(CP+UA+TR)+CS2(CP+UR+CR+TR)	P1-5		21.6	126.5	46.2	0.1	3.0	2.6
	CS1x5 (CP+UA+TR)	CS1x5		13.8	85.9	32.6	0.1	2.1	1.8
	CS2 (CP+UR+CR+TR)	CS2x1		7.8	40.6	13.6	0.0	0.9	0.8
2023	CS1(CP+UA+TR)+CS2(CP+UR+CR+TR)	P6-10		24.9	151.5	33.6	0.3	2.7	2.2
	CS1x6 (CP+UA+TR)	CS1x6		17.5	112.9	25.0	0.2	2.0	1.6
	CS2 (CP+UR+CR+TR)	CS2x1		7.4	38.6	8.5	0.1	0.7	0.6
2028	CS1(CP+UA+TR)+CS2(CP+UR+CR+TR)	P11-15		25.0	152.2	35.1	0.3	2.7	2.2
	CS1x7 (CP+UA+TR)	CS1x7		17.5	114.1	27.2	0.2	2.1	1.7
	CS2 (CP+UR+CR+TR)	CS2x1		7.5	38.1	7.9	0.0	0.6	0.5
2033	CS1(CP+UA+TR)+CS2(CP+UR+CR+TR)	P16-20		30.5	185.6	36.4	0.3	3.0	2.4
	CS1x8 (CP+UA+TR)	CS1x8		22.8	147.5	29.6	0.2	2.5	1.9
	CS2 (CP+UR+CR+TR)	CS2x1		7.8	38.1	6.8	0.0	0.6	0.5
2038	CS1(CP+UA+TR)+CS2(CP+UR+CR+TR)	P21-25		36.3	222.9	43.0	0.3	3.6	2.8
	CS1x10 (CP+UA+TR)	CS1x10		28.2	185.0	36.7	0.3	3.1	2.4
	CS2 (CP+UR+CR+TR)	CS2x1		8.1	38.0	6.4	0.0	0.5	0.4
2043	CS1(CP+UA+TR)+CS2(CP+UR+CR+TR)	P26-30		36.6	225.5	45.5	0.3	3.7	2.8
	CS1x11 (CP+UA+TR)	CS1x11		28.3	187.7	39.3	0.3	3.2	2.4
	CS2 (CP+UR+CR+TR)	CS2x1		8.2	37.9	6.2	0.0	0.5	0.4

ProgramYr	Year	Scenario	Event ID	EventName	Emissions Source	ROG (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
1	2018	CS1	1a	Mobilization	Equipment	0.4	1.9	2.5	0.0	0.1	0.1
1	2018	CS1	1a	Mobilization	Worker Trips	0.3	2.5	0.2	0.0	0.1	0.0
1	2018	CS1	1a	Mobilization	Truck Trips	0.0	0.0	0.0	0.0	0.0	0.0
				Mobilization Total		0.6	4.3	2.7	0.0	0.2	0.2
1	2018	CS1	1b	TrafficControl/Demo/Removal	Equipment	0.8	4.6	5.1	0.0	0.3	0.2
1	2018	CS1	1b	TrafficControl/Demo/Removal	Worker Trips	0.3	2.5	0.2	0.0	0.1	0.0
1	2018	CS1	1b	TrafficControl/Demo/Removal	Truck Trips	0.4	1.9	8.3	0.0	0.2	0.2
				TrafficControl/Demo/Removal Total		1.4	9.0	13.6	0.0	0.6	0.4
1	2018	CS1	1c	Grading/Formwork	Equipment	0.3	1.5	1.5	0.0	0.1	0.1
1	2018	CS1	1c	Grading/Formwork	Worker Trips	0.3	3.1	0.3	0.0	0.1	0.0
1	2018	CS1	1c	Grading/Formwork	Truck Trips (Cement)	0.3	1.6	6.9	0.0	0.2	0.1
				Grading/Formwork Total		0.9	6.2	8.7	0.0	0.4	0.3
1	2018	CS1	1d	ConcretePouring	Equipment	0.6	1.8	3.3	0.0	0.2	0.2
1	2018	CS1	1d	ConcretePouring	Worker Trips	0.6	5.5	0.5	0.0	0.1	0.1
1	2018	CS1	1d	ConcretePouring	Truck Trips (Cement)	0.5	2.5	11.0	0.0	0.3	0.2
				ConcretePouring Total		1.6	9.8	14.9	0.0	0.6	0.4
1	2018	CS1	1e	UtilityAdjustment	Equipment	1.3	8.5	8.7	0.0	0.6	0.6
1	2018	CS1	1e	UtilityAdjustment	Worker Trips	0.3	3.1	0.3	0.0	0.1	0.0
1	2018	CS1	1e	UtilityAdjustment	Truck Trips	0.2	1.2	5.5	0.0	0.2	0.1
				UtilityAdjustment Total		1.9	12.8	14.5	0.0	0.8	0.7
1	2018	CS1	1f	TreeRemoval	Equipment	10.1	61.8	2.0	0.0	0.6	0.6
1	2018	CS1	1f	TreeRemoval	Worker Trips	0.1	1.2	0.1	0.0	0.0	0.0
1	2018	CS1	1f	TreeRemoval	Truck Trips	0.0	0.2	1.1	0.0	0.0	0.0
				TreeRemoval Total		10.3	63.2	3.2	0.0	0.7	0.6
1	2018	CS1	1g	TreePlanting	Equipment	0.0	0.3	0.3	0.0	0.0	0.0
1	2018	CS1	1g	TreePlanting	Worker Trips	0.1	0.7	0.1	0.0	0.0	0.0
1	2018	CS1	1g	TreePlanting	Truck Trips	0.0	0.2	1.1	0.0	0.0	0.0
				TreePlanting Total		0.2	1.3	1.4	0.0	0.1	0.0
1	2018	CS1	1h	Cleanup	Worker Trips	0.2	1.8	0.2	0.0	0.0	0.0
1	2018	CS1	1h	Cleanup	Truck Trips	0.1	0.5	2.1	0.0	0.1	0.0
				Cleanup Total		0.3	2.3	2.2	0.0	0.1	0.1

Regional Daily Air Pollutant Emissions

ProgramYr	Year	Scenario	Event ID	EventName	Emissions Source	ROG (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
1	2018	CS2	2a	Mobilization	Equipment	0.1	0.4	0.5	0.0	0.0	0.0
1	2018	CS2	2a	Mobilization	Worker Trips	0.1	0.5	0.0	0.0	0.0	0.0
1	2018	CS2	2a	Mobilization	Truck Trips	0.0	0.0	0.0	0.0	0.0	0.0
				Mobilization Total		0.1	0.9	0.5	0.0	0.0	0.0
1	2018	CS2	2b	TrafficControl/Demo/Removal	Equipment	0.2	0.9	1.0	0.0	0.1	0.0
1	2018	CS2	2b	TrafficControl/Demo/Removal	Worker Trips	0.1	0.5	0.0	0.0	0.0	0.0
1	2018	CS2	2b	TrafficControl/Demo/Removal	Truck Trips	0.1	0.4	1.7	0.0	0.0	0.0
				TrafficControl/Demo/Removal Total		0.3	1.8	2.7	0.0	0.1	0.1
1	2018	CS2	2c	Grading/Formwork	Equipment	0.1	0.3	0.3	0.0	0.0	0.0
1	2018	CS2	2c	Grading/Formwork	Worker Trips	0.1	0.6	0.1	0.0	0.0	0.0
1	2018	CS2	2c	Grading/Formwork	Truck Trips (Cement)	0.1	0.3	1.4	0.0	0.0	0.0
				Grading/Formwork Total		0.2	1.2	1.7	0.0	0.1	0.1
1	2018	CS2	2d	ConcretePouring	Equipment	0.1	0.4	0.7	0.0	0.0	0.0
1	2018	CS2	2d	ConcretePouring	Worker Trips	0.1	1.1	0.1	0.0	0.0	0.0
1	2018	CS2	2d	ConcretePouring	Truck Trips (Cement)	0.1	0.5	2.2	0.0	0.1	0.0
				ConcretePouring Total		0.3	2.0	3.0	0.0	0.1	0.1
1	2018	CS2	2e	UtilitiesRelocation	Equipment	0.7	4.4	6.0	0.0	0.3	0.3
1	2018	CS2	2e	UtilitiesRelocation	Worker Trips	0.1	0.6	0.1	0.0	0.0	0.0
1	2018	CS2	2e	UtilitiesRelocation	Truck Trips	0.0	0.2	1.1	0.0	0.0	0.0
				UtilitiesRelocation Total		0.8	5.3	7.2	0.0	0.3	0.3
1	2018	CS2	2f	CrosswalkRepaving	Equipment	0.3	1.1	1.3	0.0	0.1	0.1
1	2018	CS2	2f	CrosswalkRepaving	Asphalt Paving	1.2					
1	2018	CS2	2f	CrosswalkRepaving	Worker Trips	0.1	0.5	0.0	0.0	0.0	0.0
1	2018	CS2	2f	CrosswalkRepaving	Truck Trips	0.0	0.1	0.6	0.0	0.0	0.0
				CrosswalkRepaving Total		1.5	1.7	1.8	0.0	0.1	0.1
1	2018	CS2	2g	TreeRemoval	Equipment	5.1	30.9	1.0	0.0	0.3	0.3
1	2018	CS2	2g	TreeRemoval	Worker Trips	0.1	0.6	0.1	0.0	0.0	0.0
1	2018	CS2	2g	TreeRemoval	Truck Trips	0.0	0.1	0.6	0.0	0.0	0.0
				TreeRemoval Total		5.1	31.6	1.6	0.0	0.3	0.3
1	2018	CS2	2h	TreePlanting	Equipment	0.0	0.1	0.1	0.0	0.0	0.0
1	2018	CS2	2h	TreePlanting	Worker Trips	0.0	0.4	0.0	0.0	0.0	0.0
1	2018	CS2	2h	TreePlanting	Truck Trips	0.0	0.1	0.6	0.0	0.0	0.0
				TreePlanting Total		0.1	0.6	0.7	0.0	0.0	0.0
1	2018	CS2	2i	Cleanup	Worker Trips	0.1	0.5	0.0	0.0	0.0	0.0
1	2018	CS2	2i	Cleanup	Truck Trips	0.0	0.1	0.4	0.0	0.0	0.0
				Cleanup Total		0.1	0.6	0.5	0.0	0.0	0.0

Regional Daily Air Pollutant Emissions

ProgramYr	Year	Scenario	Event ID	EventName	Emissions Source	ROG (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
6	2023	CS1	1a	Mobilization	Equipment	0.4	2.2	2.7	0.0	0.1	0.1
6	2023	CS1	1a	Mobilization	Worker Trips	0.2	1.9	0.1	0.0	0.1	0.0
6	2023	CS1	1a	Mobilization	Truck Trips	0.0	0.0	0.0	0.0	0.0	0.0
				Mobilization Total		0.6	4.1	2.9	0.0	0.2	0.1
6	2023	CS1	1b	TrafficControl/Demo/Removal	Equipment	0.7	5.3	5.4	0.0	0.2	0.2
6	2023	CS1	1b	TrafficControl/Demo/Removal	Worker Trips	0.2	1.9	0.1	0.0	0.1	0.0
6	2023	CS1	1b	TrafficControl/Demo/Removal	Truck Trips	0.1	1.6	5.4	0.1	0.2	0.1
				TrafficControl/Demo/Removal Total		1.0	8.8	11.0	0.1	0.4	0.3
6	2023	CS1	1c	Grading/Formwork	Equipment	0.2	1.6	1.4	0.0	0.1	0.1
6	2023	CS1	1c	Grading/Formwork	Worker Trips	0.3	2.4	0.2	0.0	0.1	0.0
6	2023	CS1	1c	Grading/Formwork	Truck Trips (Cement)	0.1	1.3	4.5	0.1	0.2	0.1
				Grading/Formwork Total		0.6	5.3	6.1	0.1	0.3	0.2
6	2023	CS1	1d	ConcretePouring	Equipment	0.6	2.1	3.9	0.0	0.2	0.2
6	2023	CS1	1d	ConcretePouring	Worker Trips	0.5	4.2	0.3	0.0	0.2	0.1
6	2023	CS1	1d	ConcretePouring	Truck Trips (Cement)	0.1	2.1	7.2	0.1	0.2	0.1
				ConcretePouring Total		1.2	8.5	11.4	0.1	0.6	0.3
6	2023	CS1	1e	UtilityAdjustment	Equipment	0.8	7.8	6.0	0.0	0.3	0.3
6	2023	CS1	1e	UtilityAdjustment	Worker Trips	0.3	2.4	0.2	0.0	0.1	0.0
6	2023	CS1	1e	UtilityAdjustment	Truck Trips	0.1	1.1	3.6	0.0	0.1	0.1
				UtilityAdjustment Total		1.1	11.2	9.8	0.1	0.5	0.4
6	2023	CS1	1f	TreeRemoval	Equipment	15.0	91.8	2.9	0.0	0.9	0.9
6	2023	CS1	1f	TreeRemoval	Worker Trips	0.1	1.2	0.1	0.0	0.0	0.0
6	2023	CS1	1f	TreeRemoval	Truck Trips	0.0	0.3	0.9	0.0	0.0	0.0
				TreeRemoval Total		15.2	93.2	3.9	0.0	1.0	0.9
6	2023	CS1	1g	TreePlanting	Equipment	0.0	0.4	0.3	0.0	0.0	0.0
6	2023	CS1	1g	TreePlanting	Worker Trips	0.1	0.7	0.1	0.0	0.0	0.0
6	2023	CS1	1g	TreePlanting	Truck Trips	0.0	0.3	0.9	0.0	0.0	0.0
				TreePlanting Total		0.1	1.3	1.3	0.0	0.1	0.0
6	2023	CS1	1h	Cleanup	Worker Trips	0.2	1.4	0.1	0.0	0.1	0.0
6	2023	CS1	1h	Cleanup	Truck Trips	0.0	0.4	1.3	0.0	0.0	0.0
				Cleanup Total		0.2	1.8	1.4	0.0	0.1	0.0

Regional Daily Air Pollutant Emissions

ProgramYr	Year	Scenario	Event ID	EventName	Emissions Source	ROG (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
6	2023	CS2	2a	Mobilization	Equipment	0.1	0.4	0.5	0.0	0.0	0.0
6	2023	CS2	2a	Mobilization	Worker Trips	0.0	0.3	0.0	0.0	0.0	0.0
6	2023	CS2	2a	Mobilization	Truck Trips	0.0	0.0	0.0	0.0	0.0	0.0
				Mobilization Total		0.1	0.7	0.5	0.0	0.0	0.0
6	2023	CS2	2b	TrafficControl/Demo/Removal	Equipment	0.1	0.9	0.9	0.0	0.0	0.0
6	2023	CS2	2b	TrafficControl/Demo/Removal	Worker Trips	0.0	0.3	0.0	0.0	0.0	0.0
6	2023	CS2	2b	TrafficControl/Demo/Removal	Truck Trips	0.0	0.3	0.9	0.0	0.0	0.0
				TrafficControl/Demo/Removal Total		0.2	1.5	1.8	0.0	0.1	0.0
6	2023	CS2	2c	Grading/Formwork	Equipment	0.0	0.3	0.2	0.0	0.0	0.0
6	2023	CS2	2c	Grading/Formwork	Worker Trips	0.0	0.4	0.0	0.0	0.0	0.0
6	2023	CS2	2c	Grading/Formwork	Truck Trips (Cement)	0.0	0.2	0.7	0.0	0.0	0.0
				Grading/Formwork Total		0.1	0.9	1.0	0.0	0.1	0.0
6	2023	CS2	2d	ConcretePouring	Equipment	0.1	0.3	0.6	0.0	0.0	0.0
6	2023	CS2	2d	ConcretePouring	Worker Trips	0.1	0.7	0.1	0.0	0.0	0.0
6	2023	CS2	2d	ConcretePouring	Truck Trips (Cement)	0.0	0.4	1.2	0.0	0.0	0.0
				ConcretePouring Total		0.2	1.4	1.9	0.0	0.1	0.1
6	2023	CS2	2e	UtilitiesRelocation	Equipment	0.5	4.1	3.3	0.0	0.1	0.1
6	2023	CS2	2e	UtilitiesRelocation	Worker Trips	0.0	0.4	0.0	0.0	0.0	0.0
6	2023	CS2	2e	UtilitiesRelocation	Truck Trips	0.0	0.2	0.6	0.0	0.0	0.0
				UtilitiesRelocation Total		0.5	4.7	3.9	0.0	0.2	0.2
6	2023	CS2	2f	CrosswalkRepaving	Equipment	0.2	1.0	1.1	0.0	0.1	0.0
6	2023	CS2	2f	CrosswalkRepaving	Asphalt Paving	1.4					
6	2023	CS2	2f	CrosswalkRepaving	Worker Trips	0.0	0.3	0.0	0.0	0.0	0.0
6	2023	CS2	2f	CrosswalkRepaving	Truck Trips	0.0	0.1	0.3	0.0	0.0	0.0
				CrosswalkRepaving Total		1.6	1.4	1.5	0.0	0.1	0.1
6	2023	CS2	2g	TreeRemoval	Equipment	5.0	30.6	1.0	0.0	0.3	0.3
6	2023	CS2	2g	TreeRemoval	Worker Trips	0.0	0.4	0.0	0.0	0.0	0.0
6	2023	CS2	2g	TreeRemoval	Truck Trips	0.0	0.1	0.3	0.0	0.0	0.0
				TreeRemoval Total		5.1	31.1	1.3	0.0	0.3	0.3
6	2023	CS2	2h	TreePlanting	Equipment	0.0	0.1	0.1	0.0	0.0	0.0
6	2023	CS2	2h	TreePlanting	Worker Trips	0.0	0.2	0.0	0.0	0.0	0.0
6	2023	CS2	2h	TreePlanting	Truck Trips	0.0	0.1	0.3	0.0	0.0	0.0
				TreePlanting Total		0.0	0.4	0.4	0.0	0.0	0.0
6	2023	CS2	2i	Cleanup	Worker Trips	0.0	0.3	0.0	0.0	0.0	0.0
6	2023	CS2	2i	Cleanup	Truck Trips	0.0	0.1	0.2	0.0	0.0	0.0
				Cleanup Total		0.0	0.4	0.2	0.0	0.0	0.0

Regional Daily Air Pollutant Emissions

ProgramYr	Year	Scenario	Event ID	EventName	Emissions Source	ROG (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
11	2028	CS1	1a	Mobilization	Equipment	0.4	2.6	3.1	0.0	0.1	0.1
11	2028	CS1	1a	Mobilization	Worker Trips	0.2	1.7	0.1	0.0	0.1	0.0
11	2028	CS1	1a	Mobilization	Truck Trips	0.0	0.0	0.0	0.0	0.0	0.0
				Mobilization Total		0.6	4.2	3.2	0.0	0.2	0.2
11	2028	CS1	1b	TrafficControl/Demo/Removal	Equipment	0.8	6.1	6.2	0.0	0.2	0.2
11	2028	CS1	1b	TrafficControl/Demo/Removal	Worker Trips	0.2	1.7	0.1	0.0	0.1	0.0
11	2028	CS1	1b	TrafficControl/Demo/Removal	Truck Trips	0.1	2.0	6.1	0.1	0.2	0.1
				TrafficControl/Demo/Removal Total		1.1	9.8	12.4	0.1	0.5	0.3
11	2028	CS1	1c	Grading/Formwork	Equipment	0.2	1.8	1.6	0.0	0.1	0.1
11	2028	CS1	1c	Grading/Formwork	Worker Trips	0.2	2.1	0.1	0.0	0.1	0.0
11	2028	CS1	1c	Grading/Formwork	Truck Trips (Cement)	0.1	1.6	5.1	0.1	0.2	0.1
				Grading/Formwork Total		0.6	5.5	6.8	0.1	0.4	0.2
11	2028	CS1	1d	ConcretePouring	Equipment	0.7	2.4	4.5	0.0	0.2	0.2
11	2028	CS1	1d	ConcretePouring	Worker Trips	0.4	3.8	0.2	0.0	0.2	0.1
11	2028	CS1	1d	ConcretePouring	Truck Trips (Cement)	0.1	2.6	8.1	0.1	0.3	0.1
				ConcretePouring Total		1.3	8.9	12.8	0.1	0.7	0.4
11	2028	CS1	1e	UtilityAdjustment	Equipment	0.8	9.0	6.4	0.0	0.3	0.2
11	2028	CS1	1e	UtilityAdjustment	Worker Trips	0.2	2.1	0.1	0.0	0.1	0.0
11	2028	CS1	1e	UtilityAdjustment	Truck Trips	0.1	1.3	4.0	0.0	0.1	0.1
				UtilityAdjustment Total		1.1	12.4	10.6	0.1	0.5	0.4
11	2028	CS1	1f	TreeRemoval	Equipment	15.0	91.6	2.9	0.0	0.9	0.9
11	2028	CS1	1f	TreeRemoval	Worker Trips	0.1	0.9	0.1	0.0	0.0	0.0
11	2028	CS1	1f	TreeRemoval	Truck Trips	0.0	0.3	0.9	0.0	0.0	0.0
				TreeRemoval Total		15.1	92.8	3.8	0.0	1.0	0.9
11	2028	CS1	1g	TreePlanting	Equipment	0.1	0.5	0.4	0.0	0.0	0.0
11	2028	CS1	1g	TreePlanting	Worker Trips	0.1	0.7	0.0	0.0	0.0	0.0
11	2028	CS1	1g	TreePlanting	Truck Trips	0.0	0.3	0.9	0.0	0.0	0.0
				TreePlanting Total		0.1	1.5	1.4	0.0	0.1	0.0
11	2028	CS1	1h	Cleanup	Worker Trips	0.1	1.3	0.1	0.0	0.1	0.0
11	2028	CS1	1h	Cleanup	Truck Trips	0.0	0.5	1.5	0.0	0.1	0.0
				Cleanup Total		0.2	1.8	1.6	0.0	0.1	0.1

Regional Daily Air Pollutant Emissions

ProgramYr	Year	Scenario	Event ID	EventName	Emissions Source	ROG (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
11	2028	CS2	2a	Mobilization	Equipment	0.1	0.4	0.4	0.0	0.0	0.0
11	2028	CS2	2a	Mobilization	Worker Trips	0.0	0.2	0.0	0.0	0.0	0.0
11	2028	CS2	2a	Mobilization	Truck Trips	0.0	0.0	0.0	0.0	0.0	0.0
				Mobilization Total		0.1	0.6	0.5	0.0	0.0	0.0
11	2028	CS2	2b	TrafficControl/Demo/Removal	Equipment	0.1	0.9	0.9	0.0	0.0	0.0
11	2028	CS2	2b	TrafficControl/Demo/Removal	Worker Trips	0.0	0.2	0.0	0.0	0.0	0.0
11	2028	CS2	2b	TrafficControl/Demo/Removal	Truck Trips	0.0	0.3	0.9	0.0	0.0	0.0
				TrafficControl/Demo/Removal Total		0.2	1.4	1.8	0.0	0.1	0.0
11	2028	CS2	2c	Grading/Formwork	Equipment	0.0	0.3	0.2	0.0	0.0	0.0
11	2028	CS2	2c	Grading/Formwork	Worker Trips	0.0	0.3	0.0	0.0	0.0	0.0
11	2028	CS2	2c	Grading/Formwork	Truck Trips (Cement)	0.0	0.2	0.7	0.0	0.0	0.0
				Grading/Formwork Total		0.1	0.8	1.0	0.0	0.1	0.0
11	2028	CS2	2d	ConcretePouring	Equipment	0.1	0.3	0.6	0.0	0.0	0.0
11	2028	CS2	2d	ConcretePouring	Worker Trips	0.1	0.5	0.0	0.0	0.0	0.0
11	2028	CS2	2d	ConcretePouring	Truck Trips (Cement)	0.0	0.4	1.2	0.0	0.0	0.0
				ConcretePouring Total		0.2	1.3	1.8	0.0	0.1	0.1
11	2028	CS2	2e	UtilitiesRelocation	Equipment	0.4	4.1	2.8	0.0	0.1	0.1
11	2028	CS2	2e	UtilitiesRelocation	Worker Trips	0.0	0.3	0.0	0.0	0.0	0.0
11	2028	CS2	2e	UtilitiesRelocation	Truck Trips	0.0	0.2	0.6	0.0	0.0	0.0
				UtilitiesRelocation Total		0.5	4.6	3.4	0.0	0.2	0.1
11	2028	CS2	2f	CrosswalkRepaving	Equipment	0.2	1.0	1.1	0.0	0.0	0.0
11	2028	CS2	2f	CrosswalkRepaving	Asphalt Paving	1.6					
11	2028	CS2	2f	CrosswalkRepaving	Worker Trips	0.0	0.2	0.0	0.0	0.0	0.0
11	2028	CS2	2f	CrosswalkRepaving	Truck Trips	0.0	0.1	0.3	0.0	0.0	0.0
				CrosswalkRepaving Total		1.8	1.3	1.4	0.0	0.1	0.1
11	2028	CS2	2g	TreeRemoval	Equipment	5.0	30.5	1.0	0.0	0.3	0.3
11	2028	CS2	2g	TreeRemoval	Worker Trips	0.0	0.3	0.0	0.0	0.0	0.0
11	2028	CS2	2g	TreeRemoval	Truck Trips	0.0	0.1	0.3	0.0	0.0	0.0
				TreeRemoval Total		5.0	30.9	1.3	0.0	0.3	0.3
11	2028	CS2	2h	TreePlanting	Equipment	0.0	0.2	0.1	0.0	0.0	0.0
11	2028	CS2	2h	TreePlanting	Worker Trips	0.0	0.2	0.0	0.0	0.0	0.0
11	2028	CS2	2h	TreePlanting	Truck Trips	0.0	0.1	0.3	0.0	0.0	0.0
				TreePlanting Total		0.0	0.5	0.5	0.0	0.0	0.0
11	2028	CS2	2i	Cleanup	Worker Trips	0.0	0.2	0.0	0.0	0.0	0.0
11	2028	CS2	2i	Cleanup	Truck Trips	0.0	0.1	0.2	0.0	0.0	0.0
				Cleanup Total		0.0	0.3	0.2	0.0	0.0	0.0

Regional Daily Air Pollutant Emissions

ProgramYr	Year	Scenario	Event ID	EventName	Emissions Source	ROG (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
16	2033	CS1	1a	Mobilization	Equipment	0.5	2.9	3.5	0.0	0.1	0.1
16	2033	CS1	1a	Mobilization	Worker Trips	0.2	1.6	0.1	0.0	0.1	0.0
16	2033	CS1	1a	Mobilization	Truck Trips	0.0	0.0	0.0	0.0	0.0	0.0
				Mobilization Total		0.6	4.5	3.6	0.0	0.2	0.2
16	2033	CS1	1b	TrafficControl/Demo/Removal	Equipment	1.0	7.3	7.1	0.0	0.1	0.1
16	2033	CS1	1b	TrafficControl/Demo/Removal	Worker Trips	0.2	1.6	0.1	0.0	0.1	0.0
16	2033	CS1	1b	TrafficControl/Demo/Removal	Truck Trips	0.1	2.3	6.6	0.1	0.2	0.1
				TrafficControl/Demo/Removal Total		1.3	11.2	13.8	0.1	0.5	0.3
16	2033	CS1	1c	Grading/Formwork	Equipment	0.3	2.4	1.7	0.0	0.0	0.0
16	2033	CS1	1c	Grading/Formwork	Worker Trips	0.2	2.0	0.1	0.0	0.1	0.0
16	2033	CS1	1c	Grading/Formwork	Truck Trips (Cement)	0.1	1.9	5.5	0.1	0.2	0.1
				Grading/Formwork Total		0.6	6.3	7.3	0.1	0.4	0.2
16	2033	CS1	1d	ConcretePouring	Equipment	0.8	2.8	5.1	0.0	0.2	0.2
16	2033	CS1	1d	ConcretePouring	Worker Trips	0.3	3.7	0.2	0.0	0.2	0.1
16	2033	CS1	1d	ConcretePouring	Truck Trips (Cement)	0.2	3.1	8.8	0.1	0.3	0.1
				ConcretePouring Total		1.3	9.5	14.1	0.1	0.7	0.4
16	2033	CS1	1e	UtilityAdjustment	Equipment	1.0	11.0	6.3	0.0	0.2	0.2
16	2033	CS1	1e	UtilityAdjustment	Worker Trips	0.2	2.0	0.1	0.0	0.1	0.0
16	2033	CS1	1e	UtilityAdjustment	Truck Trips	0.1	1.5	4.4	0.0	0.2	0.1
				UtilityAdjustment Total		1.3	14.5	10.8	0.1	0.5	0.3
16	2033	CS1	1f	TreeRemoval	Equipment	20.0	122.0	3.5	0.0	1.2	1.2
16	2033	CS1	1f	TreeRemoval	Worker Trips	0.1	1.0	0.1	0.0	0.1	0.0
16	2033	CS1	1f	TreeRemoval	Truck Trips	0.0	0.4	1.1	0.0	0.0	0.0
				TreeRemoval Total		20.1	123.4	4.6	0.0	1.3	1.2
16	2033	CS1	1g	TreePlanting	Equipment	0.1	0.4	0.7	0.0	0.0	0.0
16	2033	CS1	1g	TreePlanting	Worker Trips	0.1	0.8	0.0	0.0	0.0	0.0
16	2033	CS1	1g	TreePlanting	Truck Trips	0.0	0.4	1.1	0.0	0.0	0.0
				TreePlanting Total		0.2	1.6	1.9	0.0	0.1	0.1
16	2033	CS1	1h	Cleanup	Worker Trips	0.1	1.2	0.1	0.0	0.1	0.0
16	2033	CS1	1h	Cleanup	Truck Trips	0.0	0.6	1.6	0.0	0.1	0.0
				Cleanup Total		0.1	1.8	1.7	0.0	0.1	0.1

Regional Daily Air Pollutant Emissions

ProgramYr	Year	Scenario	Event ID	EventName	Emissions Source	ROG (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
16	2033	CS2	2a	Mobilization	Equipment	0.1	0.4	0.4	0.0	0.0	0.0
16	2033	CS2	2a	Mobilization	Worker Trips	0.0	0.2	0.0	0.0	0.0	0.0
16	2033	CS2	2a	Mobilization	Truck Trips	0.0	0.0	0.0	0.0	0.0	0.0
				Mobilization Total		0.1	0.6	0.4	0.0	0.0	0.0
16	2033	CS2	2b	TrafficControl/Demo/Removal	Equipment	0.1	0.9	0.9	0.0	0.0	0.0
16	2033	CS2	2b	TrafficControl/Demo/Removal	Worker Trips	0.0	0.2	0.0	0.0	0.0	0.0
16	2033	CS2	2b	TrafficControl/Demo/Removal	Truck Trips	0.0	0.3	0.8	0.0	0.0	0.0
				TrafficControl/Demo/Removal Total		0.2	1.4	1.7	0.0	0.1	0.0
16	2033	CS2	2c	Grading/Formwork	Equipment	0.0	0.3	0.2	0.0	0.0	0.0
16	2033	CS2	2c	Grading/Formwork	Worker Trips	0.0	0.3	0.0	0.0	0.0	0.0
16	2033	CS2	2c	Grading/Formwork	Truck Trips (Cement)	0.0	0.2	0.7	0.0	0.0	0.0
				Grading/Formwork Total		0.1	0.8	0.9	0.0	0.0	0.0
16	2033	CS2	2d	ConcretePouring	Equipment	0.1	0.3	0.6	0.0	0.0	0.0
16	2033	CS2	2d	ConcretePouring	Worker Trips	0.0	0.5	0.0	0.0	0.0	0.0
16	2033	CS2	2d	ConcretePouring	Truck Trips (Cement)	0.0	0.4	1.1	0.0	0.0	0.0
				ConcretePouring Total		0.2	1.2	1.8	0.0	0.1	0.1
16	2033	CS2	2e	UtilitiesRelocation	Equipment	0.6	4.2	2.0	0.0	0.1	0.1
16	2033	CS2	2e	UtilitiesRelocation	Worker Trips	0.0	0.3	0.0	0.0	0.0	0.0
16	2033	CS2	2e	UtilitiesRelocation	Truck Trips	0.0	0.2	0.5	0.0	0.0	0.0
				UtilitiesRelocation Total		0.6	4.7	2.6	0.0	0.1	0.1
16	2033	CS2	2f	CrosswalkRepaving	Equipment	0.2	1.1	1.1	0.0	0.0	0.0
16	2033	CS2	2f	CrosswalkRepaving	Asphalt Paving	1.8					
16	2033	CS2	2f	CrosswalkRepaving	Worker Trips	0.0	0.2	0.0	0.0	0.0	0.0
16	2033	CS2	2f	CrosswalkRepaving	Truck Trips	0.0	0.1	0.3	0.0	0.0	0.0
				CrosswalkRepaving Total		2.0	1.4	1.4	0.0	0.1	0.0
16	2033	CS2	2g	TreeRemoval	Equipment	5.0	30.5	0.9	0.0	0.3	0.3
16	2033	CS2	2g	TreeRemoval	Worker Trips	0.0	0.3	0.0	0.0	0.0	0.0
16	2033	CS2	2g	TreeRemoval	Truck Trips	0.0	0.1	0.3	0.0	0.0	0.0
				TreeRemoval Total		5.0	30.9	1.2	0.0	0.3	0.3
16	2033	CS2	2h	TreePlanting	Equipment	0.0	0.1	0.2	0.0	0.0	0.0
16	2033	CS2	2h	TreePlanting	Worker Trips	0.0	0.2	0.0	0.0	0.0	0.0
16	2033	CS2	2h	TreePlanting	Truck Trips	0.0	0.1	0.3	0.0	0.0	0.0
				TreePlanting Total		0.1	0.4	0.5	0.0	0.0	0.0
16	2033	CS2	2i	Cleanup	Worker Trips	0.0	0.2	0.0	0.0	0.0	0.0
16	2033	CS2	2i	Cleanup	Truck Trips	0.0	0.1	0.2	0.0	0.0	0.0
				Cleanup Total		0.0	0.3	0.2	0.0	0.0	0.0

Regional Daily Air Pollutant Emissions

ProgramYr	Year	Scenario	Event ID	EventName	Emissions Source	ROG (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
21	2038	CS1	1a	Mobilization	Equipment	0.6	3.6	4.3	0.0	0.2	0.2
21	2038	CS1	1a	Mobilization	Worker Trips	0.2	1.9	0.1	0.0	0.1	0.0
21	2038	CS1	1a	Mobilization	Truck Trips	0.0	0.0	0.0	0.0	0.0	0.0
				Mobilization Total		0.8	5.5	4.4	0.0	0.3	0.2
21	2038	CS1	1b	TrafficControl/Demo/Removal	Equipment	1.3	9.1	8.8	0.0	0.2	0.2
21	2038	CS1	1b	TrafficControl/Demo/Removal	Worker Trips	0.2	1.9	0.1	0.0	0.1	0.0
21	2038	CS1	1b	TrafficControl/Demo/Removal	Truck Trips	0.1	2.9	8.0	0.1	0.3	0.1
				TrafficControl/Demo/Removal Total		1.6	13.8	16.9	0.1	0.6	0.4
21	2038	CS1	1c	Grading/Formwork	Equipment	0.3	2.9	2.0	0.0	0.0	0.0
21	2038	CS1	1c	Grading/Formwork	Worker Trips	0.2	2.3	0.1	0.0	0.2	0.1
21	2038	CS1	1c	Grading/Formwork	Truck Trips (Cement)	0.1	2.4	6.6	0.1	0.3	0.1
				Grading/Formwork Total		0.6	7.6	8.8	0.1	0.4	0.2
21	2038	CS1	1d	ConcretePouring	Equipment	1.0	3.5	6.4	0.0	0.2	0.2
21	2038	CS1	1d	ConcretePouring	Worker Trips	0.3	4.2	0.2	0.0	0.3	0.1
21	2038	CS1	1d	ConcretePouring	Truck Trips (Cement)	0.2	3.8	10.6	0.1	0.4	0.2
				ConcretePouring Total		1.6	11.5	17.3	0.1	0.9	0.5
21	2038	CS1	1e	UtilityAdjustment	Equipment	1.1	13.6	7.2	0.0	0.1	0.1
21	2038	CS1	1e	UtilityAdjustment	Worker Trips	0.2	2.3	0.1	0.0	0.2	0.1
21	2038	CS1	1e	UtilityAdjustment	Truck Trips	0.1	1.9	5.3	0.1	0.2	0.1
				UtilityAdjustment Total		1.4	17.8	12.7	0.1	0.5	0.3
21	2038	CS1	1f	TreeRemoval	Equipment	25.0	152.4	4.0	0.0	1.4	1.4
21	2038	CS1	1f	TreeRemoval	Worker Trips	0.2	2.3	0.1	0.0	0.2	0.1
21	2038	CS1	1f	TreeRemoval	Truck Trips	0.0	1.0	2.7	0.0	0.1	0.0
				TreeRemoval Total		25.2	155.7	6.7	0.1	1.7	1.5
21	2038	CS1	1g	TreePlanting	Equipment	0.1	0.5	0.9	0.0	0.0	0.0
21	2038	CS1	1g	TreePlanting	Worker Trips	0.1	0.9	0.1	0.0	0.1	0.0
21	2038	CS1	1g	TreePlanting	Truck Trips	0.0	0.5	1.3	0.0	0.1	0.0
				TreePlanting Total		0.2	1.9	2.3	0.0	0.1	0.1
21	2038	CS1	1h	Cleanup	Worker Trips	0.1	1.4	0.1	0.0	0.1	0.0
21	2038	CS1	1h	Cleanup	Truck Trips	0.0	0.7	2.0	0.0	0.1	0.0
				Cleanup Total		0.2	2.1	2.1	0.0	0.2	0.1

Regional Daily Air Pollutant Emissions

ProgramYr	Year	Scenario	Event ID	EventName	Emissions Source	ROG (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
21	2038	CS2	2a	Mobilization	Equipment	0.1	0.4	0.4	0.0	0.0	0.0
21	2038	CS2	2a	Mobilization	Worker Trips	0.0	0.2	0.0	0.0	0.0	0.0
21	2038	CS2	2a	Mobilization	Truck Trips	0.0	0.0	0.0	0.0	0.0	0.0
				Mobilization Total		0.1	0.5	0.4	0.0	0.0	0.0
21	2038	CS2	2b	TrafficControl/Demo/Removal	Equipment	0.1	0.9	0.9	0.0	0.0	0.0
21	2038	CS2	2b	TrafficControl/Demo/Removal	Worker Trips	0.0	0.2	0.0	0.0	0.0	0.0
21	2038	CS2	2b	TrafficControl/Demo/Removal	Truck Trips	0.0	0.3	0.8	0.0	0.0	0.0
				TrafficControl/Demo/Removal Total		0.2	1.4	1.7	0.0	0.1	0.0
21	2038	CS2	2c	Grading/Formwork	Equipment	0.0	0.3	0.2	0.0	0.0	0.0
21	2038	CS2	2c	Grading/Formwork	Worker Trips	0.0	0.2	0.0	0.0	0.0	0.0
21	2038	CS2	2c	Grading/Formwork	Truck Trips (Cement)	0.0	0.2	0.7	0.0	0.0	0.0
				Grading/Formwork Total		0.1	0.8	0.9	0.0	0.0	0.0
21	2038	CS2	2d	ConcretePouring	Equipment	0.1	0.3	0.6	0.0	0.0	0.0
21	2038	CS2	2d	ConcretePouring	Worker Trips	0.0	0.4	0.0	0.0	0.0	0.0
21	2038	CS2	2d	ConcretePouring	Truck Trips (Cement)	0.0	0.4	1.1	0.0	0.0	0.0
				ConcretePouring Total		0.2	1.1	1.7	0.0	0.1	0.1
21	2038	CS2	2e	UtilitiesRelocation	Equipment	0.5	4.2	1.7	0.0	0.0	0.0
21	2038	CS2	2e	UtilitiesRelocation	Worker Trips	0.0	0.2	0.0	0.0	0.0	0.0
21	2038	CS2	2e	UtilitiesRelocation	Truck Trips	0.0	0.2	0.5	0.0	0.0	0.0
				UtilitiesRelocation Total		0.5	4.6	2.3	0.0	0.1	0.1
21	2038	CS2	2f	CrosswalkRepaving	Equipment	0.2	1.1	1.0	0.0	0.0	0.0
21	2038	CS2	2f	CrosswalkRepaving	Asphalt Paving	2.2					
21	2038	CS2	2f	CrosswalkRepaving	Worker Trips	0.0	0.2	0.0	0.0	0.0	0.0
21	2038	CS2	2f	CrosswalkRepaving	Truck Trips	0.0	0.1	0.3	0.0	0.0	0.0
				CrosswalkRepaving Total		2.4	1.4	1.3	0.0	0.0	0.0
21	2038	CS2	2g	TreeRemoval	Equipment	5.0	30.5	0.8	0.0	0.3	0.3
21	2038	CS2	2g	TreeRemoval	Worker Trips	0.0	0.2	0.0	0.0	0.0	0.0
21	2038	CS2	2g	TreeRemoval	Truck Trips	0.0	0.1	0.3	0.0	0.0	0.0
				TreeRemoval Total		5.0	30.8	1.1	0.0	0.3	0.3
21	2038	CS2	2h	TreePlanting	Equipment	0.0	0.1	0.2	0.0	0.0	0.0
21	2038	CS2	2h	TreePlanting	Worker Trips	0.0	0.2	0.0	0.0	0.0	0.0
21	2038	CS2	2h	TreePlanting	Truck Trips	0.0	0.1	0.3	0.0	0.0	0.0
				TreePlanting Total		0.0	0.4	0.5	0.0	0.0	0.0
21	2038	CS2	2i	Cleanup	Worker Trips	0.0	0.2	0.0	0.0	0.0	0.0
21	2038	CS2	2i	Cleanup	Truck Trips	0.0	0.1	0.2	0.0	0.0	0.0
				Cleanup Total		0.0	0.3	0.2	0.0	0.0	0.0

Regional Daily Air Pollutant Emissions

ProgramYr	Year	Scenario	Event ID	EventName	Emissions Source	ROG (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
26	2043	CS1	1a	Mobilization	Equipment	0.7	4.0	4.8	0.0	0.2	0.2
26	2043	CS1	1a	Mobilization	Worker Trips	0.1	1.9	0.1	0.0	0.1	0.1
26	2043	CS1	1a	Mobilization	Truck Trips	0.0	0.0	0.0	0.0	0.0	0.0
				Mobilization Total		0.8	5.9	4.9	0.0	0.3	0.2
26	2043	CS1	1b	TrafficControl/Demo/Removal	Equipment	1.4	10.0	9.7	0.0	0.2	0.2
26	2043	CS1	1b	TrafficControl/Demo/Removal	Worker Trips	0.1	1.9	0.1	0.0	0.1	0.1
26	2043	CS1	1b	TrafficControl/Demo/Removal	Truck Trips	0.2	3.2	8.7	0.1	0.3	0.1
				TrafficControl/Demo/Removal Total		1.7	15.1	18.5	0.1	0.6	0.4
26	2043	CS1	1c	Grading/Formwork	Equipment	0.3	3.2	2.2	0.0	0.0	0.0
26	2043	CS1	1c	Grading/Formwork	Worker Trips	0.2	2.4	0.1	0.0	0.2	0.1
26	2043	CS1	1c	Grading/Formwork	Truck Trips (Cement)	0.1	2.6	7.2	0.1	0.3	0.1
				Grading/Formwork Total		0.6	8.2	9.5	0.1	0.5	0.2
26	2043	CS1	1d	ConcretePouring	Equipment	1.1	3.8	7.1	0.0	0.3	0.3
26	2043	CS1	1d	ConcretePouring	Worker Trips	0.3	4.4	0.2	0.0	0.3	0.1
26	2043	CS1	1d	ConcretePouring	Truck Trips (Cement)	0.2	4.2	11.6	0.1	0.4	0.2
				ConcretePouring Total		1.7	12.4	18.9	0.1	1.0	0.6
26	2043	CS1	1e	UtilityAdjustment	Equipment	1.2	14.9	7.7	0.0	0.1	0.1
26	2043	CS1	1e	UtilityAdjustment	Worker Trips	0.2	2.4	0.1	0.0	0.2	0.1
26	2043	CS1	1e	UtilityAdjustment	Truck Trips	0.1	2.1	5.8	0.1	0.2	0.1
				UtilityAdjustment Total		1.5	19.5	13.6	0.1	0.5	0.3
26	2043	CS1	1f	TreeRemoval	Equipment	25.0	152.3	3.8	0.0	1.4	1.4
26	2043	CS1	1f	TreeRemoval	Worker Trips	0.2	2.4	0.1	0.0	0.2	0.1
26	2043	CS1	1f	TreeRemoval	Truck Trips	0.1	1.1	2.9	0.0	0.1	0.0
				TreeRemoval Total		25.2	155.8	6.9	0.1	1.7	1.5
26	2043	CS1	1g	TreePlanting	Equipment	0.1	0.3	0.6	0.0	0.0	0.0
26	2043	CS1	1g	TreePlanting	Worker Trips	0.0	0.7	0.0	0.0	0.0	0.0
26	2043	CS1	1g	TreePlanting	Truck Trips	0.0	0.5	1.3	0.0	0.1	0.0
				TreePlanting Total		0.2	1.5	2.0	0.0	0.1	0.1
26	2043	CS1	1h	Cleanup	Worker Trips	0.1	1.5	0.1	0.0	0.1	0.0
26	2043	CS1	1h	Cleanup	Truck Trips	0.0	0.8	2.2	0.0	0.1	0.0
				Cleanup Total		0.1	2.2	2.3	0.0	0.2	0.1

Regional Daily Air Pollutant Emissions

ProgramYr	Year	Scenario	Event ID	EventName	Emissions Source	ROG (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
26	2043	CS2	2a	Mobilization	Equipment	0.1	0.4	0.4	0.0	0.0	0.0
26	2043	CS2	2a	Mobilization	Worker Trips	0.0	0.2	0.0	0.0	0.0	0.0
26	2043	CS2	2a	Mobilization	Truck Trips	0.0	0.0	0.0	0.0	0.0	0.0
				Mobilization Total		0.1	0.5	0.4	0.0	0.0	0.0
26	2043	CS2	2b	TrafficControl/Demo/Removal	Equipment	0.1	0.9	0.9	0.0	0.0	0.0
26	2043	CS2	2b	TrafficControl/Demo/Removal	Worker Trips	0.0	0.2	0.0	0.0	0.0	0.0
26	2043	CS2	2b	TrafficControl/Demo/Removal	Truck Trips	0.0	0.3	0.8	0.0	0.0	0.0
				TrafficControl/Demo/Removal Total		0.2	1.4	1.7	0.0	0.1	0.0
26	2043	CS2	2c	Grading/Formwork	Equipment	0.0	0.3	0.2	0.0	0.0	0.0
26	2043	CS2	2c	Grading/Formwork	Worker Trips	0.0	0.2	0.0	0.0	0.0	0.0
26	2043	CS2	2c	Grading/Formwork	Truck Trips (Cement)	0.0	0.2	0.7	0.0	0.0	0.0
				Grading/Formwork Total		0.1	0.7	0.9	0.0	0.0	0.0
26	2043	CS2	2d	ConcretePouring	Equipment	0.1	0.3	0.6	0.0	0.0	0.0
26	2043	CS2	2d	ConcretePouring	Worker Trips	0.0	0.4	0.0	0.0	0.0	0.0
26	2043	CS2	2d	ConcretePouring	Truck Trips (Cement)	0.0	0.4	1.1	0.0	0.0	0.0
				ConcretePouring Total		0.2	1.1	1.7	0.0	0.1	0.1
26	2043	CS2	2e	UtilitiesRelocation	Equipment	0.5	4.2	1.6	0.0	0.0	0.0
26	2043	CS2	2e	UtilitiesRelocation	Worker Trips	0.0	0.2	0.0	0.0	0.0	0.0
26	2043	CS2	2e	UtilitiesRelocation	Truck Trips	0.0	0.2	0.5	0.0	0.0	0.0
				UtilitiesRelocation Total		0.5	4.6	2.2	0.0	0.1	0.0
26	2043	CS2	2f	CrosswalkRepaving	Equipment	0.2	1.1	1.0	0.0	0.0	0.0
26	2043	CS2	2f	CrosswalkRepaving	Asphalt Paving	2.4					
26	2043	CS2	2f	CrosswalkRepaving	Worker Trips	0.0	0.2	0.0	0.0	0.0	0.0
26	2043	CS2	2f	CrosswalkRepaving	Truck Trips	0.0	0.1	0.3	0.0	0.0	0.0
				CrosswalkRepaving Total		2.6	1.4	1.3	0.0	0.0	0.0
26	2043	CS2	2g	TreeRemoval	Equipment	5.0	30.5	0.8	0.0	0.3	0.3
26	2043	CS2	2g	TreeRemoval	Worker Trips	0.0	0.2	0.0	0.0	0.0	0.0
26	2043	CS2	2g	TreeRemoval	Truck Trips	0.0	0.1	0.3	0.0	0.0	0.0
				TreeRemoval Total		5.0	30.8	1.0	0.0	0.3	0.3
26	2043	CS2	2h	TreePlanting	Equipment	0.0	0.0	0.0	0.0	0.0	0.0
26	2043	CS2	2h	TreePlanting	Worker Trips	0.0	0.1	0.0	0.0	0.0	0.0
26	2043	CS2	2h	TreePlanting	Truck Trips	0.0	0.1	0.3	0.0	0.0	0.0
				TreePlanting Total		0.0	0.2	0.3	0.0	0.0	0.0
26	2043	CS2	2i	Cleanup	Worker Trips	0.0	0.2	0.0	0.0	0.0	0.0
26	2043	CS2	2i	Cleanup	Truck Trips	0.0	0.1	0.2	0.0	0.0	0.0
				Cleanup Total		0.0	0.2	0.2	0.0	0.0	0.0

Construction Equipment Emissions - Daily Air Pollutants

ProgramYear	Scenario	Phase ID	Phase Name	Equipment	Fuel	Count	HP	LF	Hours/day	Days/Event	Sites/Day	Repairs/Year
2018	1	1A	Mobilization	Compressor	Electric	1	5	0.48	2	5	5	286
2018	1	1A	Mobilization	Small Generator	Diesel	1	8	0.74	8	5	5	286
2018	1	1A	**MobilizationTotal**									
2018	1	1B	TrafficControl/Demo/Removal	Pneumatic Jackhammer	Air	2	N/A		4	1	5	286
2018	1	1B	TrafficControl/Demo/Removal	Concrete Saw	Diesel	2	16	0.73	1	1	5	286
2018	1	1B	TrafficControl/Demo/Removal	Skid-Steer Loader	Diesel	1	49	0.37	4	1	5	286
2018	1	1B	TrafficControl/Demo/Removal	Tractor	Diesel	1	23	0.37	2	1	5	286
2018	1	1B	**TrafficControl/Demo/RemovalTotal**									
2018	1	1C	Grading/Formwork	Roller	Diesel	1	49	0.38	1.5	1	5	286
2018	1	1C	**Grading/FormworkTotal**									
2018	1	1D	ConcretePouring	Concrete Mixer	Diesel	1	20	0.56	6	1	5	286
2018	1	1D	ConcretePouring	Concrete Vibrator	Electric	2	N/A		2	1	5	286
2018	1	1D	**ConcretePouringTotal**									
2018	1	1E	UtilityAdjustment	Manhole Cutter	Diesel	1	49	0.36	2	2	5	286
2018	1	1E	UtilityAdjustment	Concrete Saw	Diesel	1	81	0.73	2	2	5	286
2018	1	1E	UtilityAdjustment	Concrete Mixer	Diesel	1	6	0.56	2	2	5	286
2018	1	1E	**UtilityAdjustmentTotal**									
2018	1	1F	TreeRemoval	Bucket Truck	Diesel	1	360	0.31	2	1	2	286
2018	1	1F	TreeRemoval	Saw	Diesel	1	6	0.31	1.5	1	2	286
2018	1	1F	TreeRemoval	Wood Chipper	Gas	1	8	0.31	1	1	2	286
2018	1	1F	TreeRemoval	Stump Grinder	Gas	1	23	0.31	2	1	2	286
2018	1	1F	TreeRemoval	Skid-Steer Loader	Diesel	1	46	0.37	2	1	2	286
2018	1	1F	**TreeRemovalTotal**									
2018	1	1G	TreePlanting	Mini Excavator	Diesel	1	17	0.38	2	1	2	286
2018	1	1G	**TreePlantingTotal**									
2018	2	2A	Mobilization	Compressor	Electric	1	5	0.48	2	5	1	12
2018	2	2A	Mobilization	Small Generator	Diesel	1	8	0.74	8	5	1	12
2018	2	2A	**MobilizationTotal**									
2018	2	2B	TrafficControl/Demo/Removal	Pneumatic Jackhammer	Air	2	N/A		4	1	1	12
2018	2	2B	TrafficControl/Demo/Removal	Concrete Saw	Diesel	2	16	0.73	1	1	1	12
2018	2	2B	TrafficControl/Demo/Removal	Skid-Steer Loader	Diesel	1	49	0.37	4	1	1	12
2018	2	2B	TrafficControl/Demo/Removal	Tractor	Diesel	1	23	0.37	2	1	1	12
2018	2	2B	**TrafficControl/Demo/RemovalTotal**									
2018	2	2C	Grading/Formwork	Roller	Diesel	1	49	0.38	1.5	1	1	12
2018	2	2C	**Grading/FormworkTotal**									
2018	2	2D	ConcretePouring	Concrete Mixer	Diesel	1	20	0.56	6	1	1	12
2018	2	2D	ConcretePouring	Concrete Vibrator	Electric	2	N/A		2	1	1	12
2018	2	2D	**ConcretePouringTotal**									
2018	2	2E	UtilitiesRelocation	Concrete Saw	Diesel	1	81	0.73	4	20	1	12
2018	2	2E	UtilitiesRelocation	Excavator	Diesel	1	350	0.38	6	20	1	12
2018	2	2E	UtilitiesRelocation	Plate Compactor	Gas	1	6	0.43	2	20	1	12
2018	2	2E	UtilitiesRelocation	Asphalt Paver	Diesel	1	46	0.42	2	20	1	12
2018	2	2E	**UtilitiesRelocationTotal**									
2018	2	2F	CrosswalkRepaving	Concrete Saw	Diesel	1	16	0.73	4	2	1	12
2018	2	2F	CrosswalkRepaving	Skid-Steer Loader	Diesel	1	49	0.37	2	2	1	12
2018	2	2F	CrosswalkRepaving	Asphalt Paver	Diesel	1	46	0.42	2	1	1	12
2018	2	2F	CrosswalkRepaving	Line Striper	Diesel	1	6	0.48	2	1	1	12
2018	2	2F	**CrosswalkRepavingTotal**									

Construction Equipment Emissions - Daily Air Pollutants

				Daily Emissions (All Sites)					
ProgramYear	Scenario	Phase ID	Phase Name	ROG (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
2018	1	1A	Mobilization	0.000	0.000	0.000	0.000	0.000	0.000
2018	1	1A	Mobilization	0.354	1.869	2.468	0.004	0.124	0.124
2018	1	1A	**MobilizationTotal**	0.354	1.869	2.468	0.004	0.124	0.124
2018	1	1B	TrafficControl/Demo/Removal	0.000	0.000	0.000	0.000	0.000	0.000
2018	1	1B	TrafficControl/Demo/Removal	0.176	0.602	1.115	0.002	0.041	0.041
2018	1	1B	TrafficControl/Demo/Removal	0.389	3.028	3.109	0.004	0.142	0.131
2018	1	1B	TrafficControl/Demo/Removal	0.186	0.996	0.894	0.001	0.068	0.063
2018	1	1B	**TrafficControl/Demo/RemovalTotal**	0.752	4.626	5.119	0.007	0.252	0.235
2018	1	1C	Grading/Formwork	0.328	1.516	1.491	0.002	0.119	0.110
2018	1	1C	**Grading/FormworkTotal**	0.328	1.516	1.491	0.002	0.119	0.110
2018	1	1D	ConcretePouring	0.555	1.807	3.336	0.005	0.152	0.152
2018	1	1D	ConcretePouring	0.000	0.000	0.000	0.000	0.000	0.000
2018	1	1D	**ConcretePouringTotal**	0.555	1.807	3.336	0.005	0.152	0.152
2018	1	1E	UtilityAdjustment	0.647	3.586	3.516	0.004	0.251	0.231
2018	1	1E	UtilityAdjustment	0.649	4.655	4.894	0.008	0.334	0.334
2018	1	1E	UtilityAdjustment	0.049	0.257	0.307	0.001	0.012	0.012
2018	1	1E	**UtilityAdjustmentTotal**	1.345	8.498	8.716	0.012	0.597	0.576
2018	1	1F	TreeRemoval	0.061	0.922	0.624	0.005	0.009	0.008
2018	1	1F	TreeRemoval	8.981	19.413	0.172	0.002	0.034	0.034
2018	1	1F	TreeRemoval	0.143	5.780	0.097	0.000	0.077	0.077
2018	1	1F	TreeRemoval	0.850	35.073	0.514	0.001	0.445	0.445
2018	1	1F	TreeRemoval	0.073	0.568	0.584	0.001	0.027	0.025
2018	1	1F	**TreeRemovalTotal**	10.108	61.756	1.990	0.009	0.592	0.589
2018	1	1G	TreePlanting	0.039	0.268	0.250	0.000	0.016	0.015
2018	1	1G	**TreePlantingTotal**	0.039	0.268	0.250	0.000	0.016	0.015
2018	2	2A	Mobilization	0.000	0.000	0.000	0.000	0.000	0.000
2018	2	2A	Mobilization	0.071	0.374	0.494	0.001	0.025	0.025
2018	2	2A	**MobilizationTotal**	0.071	0.374	0.494	0.001	0.025	0.025
2018	2	2B	TrafficControl/Demo/Removal	0.000	0.000	0.000	0.000	0.000	0.000
2018	2	2B	TrafficControl/Demo/Removal	0.035	0.120	0.223	0.000	0.008	0.008
2018	2	2B	TrafficControl/Demo/Removal	0.078	0.606	0.622	0.001	0.028	0.026
2018	2	2B	TrafficControl/Demo/Removal	0.037	0.199	0.179	0.000	0.014	0.013
2018	2	2B	**TrafficControl/Demo/RemovalTotal**	0.150	0.925	1.024	0.001	0.050	0.047
2018	2	2C	Grading/Formwork	0.066	0.303	0.298	0.000	0.024	0.022
2018	2	2C	**Grading/FormworkTotal**	0.066	0.303	0.298	0.000	0.024	0.022
2018	2	2D	ConcretePouring	0.111	0.361	0.667	0.001	0.030	0.030
2018	2	2D	ConcretePouring	0.000	0.000	0.000	0.000	0.000	0.000
2018	2	2D	**ConcretePouringTotal**	0.111	0.361	0.667	0.001	0.030	0.030
2018	2	2E	UtilitiesRelocation	0.260	1.862	1.957	0.003	0.133	0.133
2018	2	2E	UtilitiesRelocation	0.308	2.005	3.607	0.009	0.116	0.107
2018	2	2E	UtilitiesRelocation	0.008	0.039	0.047	0.000	0.002	0.002
2018	2	2E	UtilitiesRelocation	0.131	0.498	0.436	0.000	0.041	0.037
2018	2	2E	**UtilitiesRelocationTotal**	0.706	4.405	6.048	0.012	0.292	0.280
2018	2	2F	CrosswalkRepaving	0.071	0.241	0.446	0.001	0.017	0.017
2018	2	2F	CrosswalkRepaving	0.039	0.303	0.311	0.000	0.014	0.013
2018	2	2F	CrosswalkRepaving	0.131	0.498	0.436	0.000	0.041	0.037
2018	2	2F	CrosswalkRepaving	0.010	0.045	0.060	0.000	0.003	0.003
2018	2	2F	**CrosswalkRepavingTotal**	0.250	1.087	1.254	0.002	0.075	0.070

Construction Equipment Emissions - Daily Air Pollutants

ProgramYear	Scenario	Phase ID	Phase Name	Equipment	Fuel	Count	HP	LF	Hours/day	Days/Event	Sites/Day	Repairs/Year
2018	2	2G	TreeRemoval	Bucket Truck	Diesel	1	360	0.31	2	1	1	12
2018	2	2G	TreeRemoval	Saw	Diesel	1	6	0.31	1.5	1	1	12
2018	2	2G	TreeRemoval	Wood Chipper	Gas	1	8	0.31	1	1	1	12
2018	2	2G	TreeRemoval	Stump Grinder	Gas	1	23	0.31	2	1	1	12
2018	2	2G	TreeRemoval	Skid-Steer Loader	Diesel	1	46	0.37	2	1	1	12
2018	2	2G	**TreeRemovalTotal**									
2018	2	2H	TreePlanting	Mini Excavator	Diesel	1	17	0.38	2	1	1	12
2018	2	2H	**TreePlantingTotal**									
2023	1	1A	Mobilization	Compressor	Electric	1	5	0.48	2	5	6	332
2023	1	1A	Mobilization	Small Generator	Diesel	1	8	0.74	8	5	6	332
2023	1	1A	**MobilizationTotal**									
2023	1	1B	TrafficControl/Demo/Removal	Pneumatic Jackhammer	Air	2	N/A		4	1	6	332
2023	1	1B	TrafficControl/Demo/Removal	Concrete Saw	Diesel	2	16	0.73	1	1	6	332
2023	1	1B	TrafficControl/Demo/Removal	Skid-Steer Loader	Diesel	1	49	0.37	4	1	6	332
2023	1	1B	TrafficControl/Demo/Removal	Tractor	Diesel	1	23	0.37	2	1	6	332
2023	1	1B	**TrafficControl/Demo/RemovalTotal**									
2023	1	1C	Grading/Formwork	Roller	Diesel	1	49	0.38	1.5	1	6	332
2023	1	1C	**Grading/FormworkTotal**									
2023	1	1D	ConcretePouring	Concrete Mixer	Diesel	1	20	0.56	6	1	6	332
2023	1	1D	ConcretePouring	Concrete Vibrator	Electric	2	N/A		2	1	6	332
2023	1	1D	**ConcretePouringTotal**									
2023	1	1E	UtilityAdjustment	Manhole Cutter	Diesel	1	49	0.36	2	2	6	332
2023	1	1E	UtilityAdjustment	Concrete Saw	Diesel	1	81	0.73	2	2	6	332
2023	1	1E	UtilityAdjustment	Concrete Mixer	Diesel	1	6	0.56	2	2	6	332
2023	1	1E	**UtilityAdjustmentTotal**									
2023	1	1F	TreeRemoval	Bucket Truck	Diesel	1	360	0.31	2	1	3	332
2023	1	1F	TreeRemoval	Saw	Diesel	1	6	0.31	1.5	1	3	332
2023	1	1F	TreeRemoval	Wood Chipper	Gas	1	8	0.31	1	1	3	332
2023	1	1F	TreeRemoval	Stump Grinder	Gas	1	23	0.31	2	1	3	332
2023	1	1F	TreeRemoval	Skid-Steer Loader	Diesel	1	46	0.37	2	1	3	332
2023	1	1F	**TreeRemovalTotal**									
2023	1	1G	TreePlanting	Mini Excavator	Diesel	1	17	0.38	2	1	3	332
2023	1	1G	**TreePlantingTotal**									
2023	2	2A	Mobilization	Compressor	Electric	1	5	0.48	2	5	1	12
2023	2	2A	Mobilization	Small Generator	Diesel	1	8	0.74	8	5	1	12
2023	2	2A	**MobilizationTotal**									
2023	2	2B	TrafficControl/Demo/Removal	Pneumatic Jackhammer	Air	2	N/A		4	1	1	12
2023	2	2B	TrafficControl/Demo/Removal	Concrete Saw	Diesel	2	16	0.73	1	1	1	12
2023	2	2B	TrafficControl/Demo/Removal	Skid-Steer Loader	Diesel	1	49	0.37	4	1	1	12
2023	2	2B	TrafficControl/Demo/Removal	Tractor	Diesel	1	23	0.37	2	1	1	12
2023	2	2B	**TrafficControl/Demo/RemovalTotal**									
2023	2	2C	Grading/Formwork	Roller	Diesel	1	49	0.38	1.5	1	1	12
2023	2	2C	**Grading/FormworkTotal**									
2023	2	2D	ConcretePouring	Concrete Mixer	Diesel	1	20	0.56	6	1	1	12
2023	2	2D	ConcretePouring	Concrete Vibrator	Electric	2	N/A		2	1	1	12
2023	2	2D	**ConcretePouringTotal**									

Construction Equipment Emissions - Daily Air Pollutants

				Daily Emissions (All Sites)					
ProgramYear	Scenario	Phase ID	Phase Name	ROG (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
2018	2	2G	TreeRemoval	0.031	0.461	0.312	0.002	0.004	0.004
2018	2	2G	TreeRemoval	4.490	9.706	0.086	0.001	0.017	0.017
2018	2	2G	TreeRemoval	0.071	2.890	0.048	0.000	0.039	0.039
2018	2	2G	TreeRemoval	0.425	17.536	0.257	0.001	0.223	0.223
2018	2	2G	TreeRemoval	0.037	0.284	0.292	0.000	0.013	0.012
2018	2	2G	**TreeRemovalTotal**	5.054	30.878	0.995	0.005	0.296	0.295
2018	2	2H	TreePlanting	0.020	0.134	0.125	0.000	0.008	0.007
2018	2	2H	**TreePlantingTotal**	0.020	0.134	0.125	0.000	0.008	0.007
2023	1	1A	Mobilization	0.000	0.000	0.000	0.000	0.000	0.000
2023	1	1A	Mobilization	0.387	2.198	2.722	0.005	0.117	0.117
2023	1	1A	**MobilizationTotal**	0.387	2.198	2.722	0.005	0.117	0.117
2023	1	1B	TrafficControl/Demo/Removal	0.000	0.000	0.000	0.000	0.000	0.000
2023	1	1B	TrafficControl/Demo/Removal	0.212	0.723	1.339	0.002	0.050	0.050
2023	1	1B	TrafficControl/Demo/Removal	0.339	3.505	3.233	0.005	0.089	0.082
2023	1	1B	TrafficControl/Demo/Removal	0.140	1.042	0.868	0.001	0.042	0.038
2023	1	1B	**TrafficControl/Demo/RemovalTotal**	0.690	5.270	5.440	0.008	0.181	0.171
2023	1	1C	Grading/Formwork	0.244	1.571	1.449	0.002	0.078	0.072
2023	1	1C	**Grading/FormworkTotal**	0.244	1.571	1.449	0.002	0.078	0.072
2023	1	1D	ConcretePouring	0.620	2.094	3.895	0.006	0.153	0.153
2023	1	1D	ConcretePouring	0.000	0.000	0.000	0.000	0.000	0.000
2023	1	1D	**ConcretePouringTotal**	0.620	2.094	3.895	0.006	0.153	0.153
2023	1	1E	UtilityAdjustment	0.252	1.979	1.761	0.002	0.081	0.074
2023	1	1E	UtilityAdjustment	0.501	5.486	3.876	0.009	0.192	0.192
2023	1	1E	UtilityAdjustment	0.059	0.308	0.368	0.001	0.014	0.014
2023	1	1E	**UtilityAdjustmentTotal**	0.812	7.774	6.006	0.012	0.287	0.281
2023	1	1F	TreeRemoval	0.117	1.418	0.952	0.007	0.013	0.012
2023	1	1F	TreeRemoval	13.364	28.944	0.257	0.003	0.047	0.047
2023	1	1F	TreeRemoval	0.207	8.551	0.146	0.000	0.118	0.118
2023	1	1F	TreeRemoval	1.244	52.052	0.778	0.002	0.677	0.677
2023	1	1F	TreeRemoval	0.079	0.823	0.759	0.001	0.021	0.019
2023	1	1F	**TreeRemovalTotal**	15.012	91.788	2.891	0.014	0.876	0.873
2023	1	1G	TreePlanting	0.038	0.362	0.307	0.000	0.012	0.011
2023	1	1G	**TreePlantingTotal**	0.038	0.362	0.307	0.000	0.012	0.011
2023	2	2A	Mobilization	0.000	0.000	0.000	0.000	0.000	0.000
2023	2	2A	Mobilization	0.065	0.366	0.454	0.001	0.019	0.019
2023	2	2A	**MobilizationTotal**	0.065	0.366	0.454	0.001	0.019	0.019
2023	2	2B	TrafficControl/Demo/Removal	0.000	0.000	0.000	0.000	0.000	0.000
2023	2	2B	TrafficControl/Demo/Removal	0.035	0.121	0.223	0.000	0.008	0.008
2023	2	2B	TrafficControl/Demo/Removal	0.056	0.584	0.539	0.001	0.015	0.014
2023	2	2B	TrafficControl/Demo/Removal	0.023	0.174	0.145	0.000	0.007	0.006
2023	2	2B	**TrafficControl/Demo/RemovalTotal**	0.115	0.878	0.907	0.001	0.030	0.028
2023	2	2C	Grading/Formwork	0.041	0.262	0.241	0.000	0.013	0.012
2023	2	2C	**Grading/FormworkTotal**	0.041	0.262	0.241	0.000	0.013	0.012
2023	2	2D	ConcretePouring	0.103	0.349	0.649	0.001	0.025	0.025
2023	2	2D	ConcretePouring	0.000	0.000	0.000	0.000	0.000	0.000
2023	2	2D	**ConcretePouringTotal**	0.103	0.349	0.649	0.001	0.025	0.025

Construction Equipment Emissions - Daily Air Pollutants

ProgramYear	Scenario	Phase ID	Phase Name	Equipment	Fuel	Count	HP	LF	Hours/day	Days/Event	Sites/Day	Repairs/Year
2023	2	2E	UtilitiesRelocation	Concrete Saw	Diesel	1	81	0.73	4	20	1	12
2023	2	2E	UtilitiesRelocation	Excavator	Diesel	1	350	0.38	6	20	1	12
2023	2	2E	UtilitiesRelocation	Plate Compactor	Gas	1	6	0.43	2	20	1	12
2023	2	2E	UtilitiesRelocation	Asphalt Paver	Diesel	1	46	0.42	2	20	1	12
2023	2	2E	**UtilitiesRelocationTotal**									
2023	2	2F	CrosswalkRepaving	Concrete Saw	Diesel	1	16	0.73	4	2	1	12
2023	2	2F	CrosswalkRepaving	Skid-Steer Loader	Diesel	1	49	0.37	2	2	1	12
2023	2	2F	CrosswalkRepaving	Asphalt Paver	Diesel	1	46	0.42	2	1	1	12
2023	2	2F	CrosswalkRepaving	Line Striper	Diesel	1	6	0.48	2	1	1	12
2023	2	2F	**CrosswalkRepavingTotal**									
2023	2	2G	TreeRemoval	Bucket Truck	Diesel	1	360	0.31	2	1	1	12
2023	2	2G	TreeRemoval	Saw	Diesel	1	6	0.31	1.5	1	1	12
2023	2	2G	TreeRemoval	Wood Chipper	Gas	1	8	0.31	1	1	1	12
2023	2	2G	TreeRemoval	Stump Grinder	Gas	1	23	0.31	2	1	1	12
2023	2	2G	TreeRemoval	Skid-Steer Loader	Diesel	1	46	0.37	2	1	1	12
2023	2	2G	**TreeRemovalTotal**									
2023	2	2H	TreePlanting	Mini Excavator	Diesel	1	17	0.38	2	1	1	12
2023	2	2H	**TreePlantingTotal**									
2028	1	1A	Mobilization	Compressor	Electric	1	5	0.48	2	5	7	384
2028	1	1A	Mobilization	Small Generator	Diesel	1	8	0.74	8	5	7	384
2028	1	1A	**MobilizationTotal**									
2028	1	1B	TrafficControl/Demo/Removal	Pneumatic Jackhammer	Air	2	N/A		4	1	7	384
2028	1	1B	TrafficControl/Demo/Removal	Concrete Saw	Diesel	2	16	0.73	1	1	7	384
2028	1	1B	TrafficControl/Demo/Removal	Skid-Steer Loader	Diesel	1	49	0.37	4	1	7	384
2028	1	1B	TrafficControl/Demo/Removal	Tractor	Diesel	1	23	0.37	2	1	7	384
2028	1	1B	**TrafficControl/Demo/RemovalTotal**									
2028	1	1C	Grading/Formwork	Roller	Diesel	1	49	0.38	1.5	1	7	384
2028	1	1C	**Grading/FormworkTotal**									
2028	1	1D	ConcretePouring	Concrete Mixer	Diesel	1	20	0.56	6	1	7	384
2028	1	1D	ConcretePouring	Concrete Vibrator	Electric	2	N/A		2	1	7	384
2028	1	1D	**ConcretePouringTotal**									
2028	1	1E	UtilityAdjustment	Manhole Cutter	Diesel	1	49	0.36	2	2	7	384
2028	1	1E	UtilityAdjustment	Concrete Saw	Diesel	1	81	0.73	2	2	7	384
2028	1	1E	UtilityAdjustment	Concrete Mixer	Diesel	1	6	0.56	2	2	7	384
2028	1	1E	**UtilityAdjustmentTotal**									
2028	1	1F	TreeRemoval	Bucket Truck	Diesel	1	360	0.31	2	1	3	384
2028	1	1F	TreeRemoval	Saw	Diesel	1	6	0.31	1.5	1	3	384
2028	1	1F	TreeRemoval	Wood Chipper	Gas	1	8	0.31	1	1	3	384
2028	1	1F	TreeRemoval	Stump Grinder	Gas	1	23	0.31	2	1	3	384
2028	1	1F	TreeRemoval	Skid-Steer Loader	Diesel	1	46	0.37	2	1	3	384
2028	1	1F	**TreeRemovalTotal**									
2028	1	1G	TreePlanting	Mini Excavator	Diesel	1	17	0.38	3	1	3	384
2028	1	1G	**TreePlantingTotal**									
2028	2	2A	Mobilization	Compressor	Electric	1	5	0.48	2	5	1	12
2028	2	2A	Mobilization	Small Generator	Diesel	1	8	0.74	8	5	1	12
2028	2	2A	**MobilizationTotal**									

Construction Equipment Emissions - Daily Air Pollutants

				Daily Emissions (All Sites)					
ProgramYear	Scenario	Phase ID	Phase Name	ROG (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
2023	2	2E	UtilitiesRelocation	0.167	1.829	1.292	0.003	0.064	0.064
2023	2	2E	UtilitiesRelocation	0.215	1.849	1.571	0.009	0.053	0.049
2023	2	2E	UtilitiesRelocation	0.008	0.039	0.047	0.000	0.002	0.002
2023	2	2E	UtilitiesRelocation	0.086	0.427	0.365	0.000	0.025	0.023
2023	2	2E	**UtilitiesRelocationTotal**	0.475	4.144	3.275	0.012	0.144	0.139
2023	2	2F	CrosswalkRepaving	0.071	0.241	0.446	0.001	0.017	0.017
2023	2	2F	CrosswalkRepaving	0.028	0.292	0.269	0.000	0.007	0.007
2023	2	2F	CrosswalkRepaving	0.086	0.427	0.365	0.000	0.025	0.023
2023	2	2F	CrosswalkRepaving	0.009	0.045	0.055	0.000	0.002	0.002
2023	2	2F	**CrosswalkRepavingTotal**	0.193	1.004	1.136	0.002	0.052	0.049
2023	2	2G	TreeRemoval	0.039	0.473	0.317	0.002	0.004	0.004
2023	2	2G	TreeRemoval	4.455	9.648	0.086	0.001	0.016	0.016
2023	2	2G	TreeRemoval	0.069	2.850	0.049	0.000	0.039	0.039
2023	2	2G	TreeRemoval	0.415	17.351	0.259	0.001	0.226	0.226
2023	2	2G	TreeRemoval	0.026	0.274	0.253	0.000	0.007	0.006
2023	2	2G	**TreeRemovalTotal**	5.004	30.596	0.964	0.005	0.292	0.291
2023	2	2H	TreePlanting	0.013	0.121	0.102	0.000	0.004	0.004
2023	2	2H	**TreePlantingTotal**	0.013	0.121	0.102	0.000	0.004	0.004
2028	1	1A	Mobilization	0.000	0.000	0.000	0.000	0.000	0.000
2028	1	1A	Mobilization	0.444	2.551	3.120	0.006	0.130	0.130
2028	1	1A	**MobilizationTotal**	0.444	2.551	3.120	0.006	0.130	0.130
2028	1	1B	TrafficControl/Demo/Removal	0.000	0.000	0.000	0.000	0.000	0.000
2028	1	1B	TrafficControl/Demo/Removal	0.247	0.843	1.562	0.003	0.058	0.058
2028	1	1B	TrafficControl/Demo/Removal	0.382	4.096	3.704	0.006	0.094	0.086
2028	1	1B	TrafficControl/Demo/Removal	0.144	1.198	0.962	0.001	0.038	0.035
2028	1	1B	**TrafficControl/Demo/RemovalTotal**	0.773	6.137	6.227	0.009	0.190	0.179
2028	1	1C	Grading/Formwork	0.245	1.778	1.590	0.002	0.072	0.066
2028	1	1C	**Grading/FormworkTotal**	0.245	1.778	1.590	0.002	0.072	0.066
2028	1	1D	ConcretePouring	0.715	2.431	4.518	0.007	0.174	0.174
2028	1	1D	ConcretePouring	0.000	0.000	0.000	0.000	0.000	0.000
2028	1	1D	**ConcretePouringTotal**	0.715	2.431	4.518	0.007	0.174	0.174
2028	1	1E	UtilityAdjustment	0.259	2.289	1.975	0.003	0.077	0.071
2028	1	1E	UtilityAdjustment	0.516	6.378	3.971	0.011	0.162	0.162
2028	1	1E	UtilityAdjustment	0.069	0.360	0.430	0.001	0.017	0.017
2028	1	1E	**UtilityAdjustmentTotal**	0.844	9.027	6.375	0.015	0.256	0.250
2028	1	1F	TreeRemoval	0.125	1.433	0.958	0.007	0.013	0.013
2028	1	1F	TreeRemoval	13.342	28.908	0.257	0.003	0.046	0.046
2028	1	1F	TreeRemoval	0.205	8.522	0.147	0.000	0.118	0.118
2028	1	1F	TreeRemoval	1.236	51.918	0.780	0.002	0.678	0.678
2028	1	1F	TreeRemoval	0.077	0.824	0.745	0.001	0.019	0.017
2028	1	1F	**TreeRemovalTotal**	14.985	91.605	2.886	0.014	0.875	0.873
2028	1	1G	TreePlanting	0.052	0.541	0.443	0.001	0.014	0.013
2028	1	1G	**TreePlantingTotal**	0.052	0.541	0.443	0.001	0.014	0.013
2028	2	2A	Mobilization	0.000	0.000	0.000	0.000	0.000	0.000
2028	2	2A	Mobilization	0.063	0.364	0.446	0.001	0.019	0.019
2028	2	2A	**MobilizationTotal**	0.063	0.364	0.446	0.001	0.019	0.019

Construction Equipment Emissions - Daily Air Pollutants

ProgramYear	Scenario	Phase ID	Phase Name	Equipment	Fuel	Count	HP	LF	Hours/day	Days/Event	Sites/Day	Repairs/Year
2028	2	2B	TrafficControl/Demo/Removal	Pneumatic Jackhammer	Air	2	N/A		4	1	1	12
2028	2	2B	TrafficControl/Demo/Removal	Concrete Saw	Diesel	2	16	0.73	1	1	1	12
2028	2	2B	TrafficControl/Demo/Removal	Skid-Steer Loader	Diesel	1	49	0.37	4	1	1	12
2028	2	2B	TrafficControl/Demo/Removal	Tractor	Diesel	1	23	0.37	2	1	1	12
2028	2	2B	**TrafficControl/Demo/RemovalTotal**									
2028	2	2C	Grading/Formwork	Roller	Diesel	1	49	0.38	1.5	1	1	12
2028	2	2C	**Grading/FormworkTotal**									
2028	2	2D	ConcretePouring	Concrete Mixer	Diesel	1	20	0.56	6	1	1	12
2028	2	2D	ConcretePouring	Concrete Vibrator	Electric	2	N/A		2	1	1	12
2028	2	2D	**ConcretePouringTotal**									
2028	2	2E	UtilitiesRelocation	Concrete Saw	Diesel	1	81	0.73	4	20	1	12
2028	2	2E	UtilitiesRelocation	Excavator	Diesel	1	350	0.38	6	20	1	12
2028	2	2E	UtilitiesRelocation	Plate Compactor	Gas	1	6	0.43	2	20	1	12
2028	2	2E	UtilitiesRelocation	Asphalt Paver	Diesel	1	46	0.42	2	20	1	12
2028	2	2E	**UtilitiesRelocationTotal**									
2028	2	2F	CrosswalkRepaving	Concrete Saw	Diesel	1	16	0.73	4	2	1	12
2028	2	2F	CrosswalkRepaving	Skid-Steer Loader	Diesel	1	49	0.37	2	2	1	12
2028	2	2F	CrosswalkRepaving	Asphalt Paver	Diesel	1	46	0.42	2	1	1	12
2028	2	2F	CrosswalkRepaving	Line Striper	Diesel	1	6	0.48	2	1	1	12
2028	2	2F	**CrosswalkRepavingTotal**									
2028	2	2G	TreeRemoval	Bucket Truck	Diesel	1	360	0.31	2	1	1	12
2028	2	2G	TreeRemoval	Saw	Diesel	1	6	0.31	1.5	1	1	12
2028	2	2G	TreeRemoval	Wood Chipper	Gas	1	8	0.31	1	1	1	12
2028	2	2G	TreeRemoval	Stump Grinder	Gas	1	23	0.31	2	1	1	12
2028	2	2G	TreeRemoval	Skid-Steer Loader	Diesel	1	46	0.37	2	1	1	12
2028	2	2G	**TreeRemovalTotal**									
2028	2	2H	TreePlanting	Mini Excavator	Diesel	1	17	0.38	3	1	1	12
2028	2	2H	**TreePlantingTotal**									
2033	1	1A	Mobilization	Compressor	Electric	1	5	0.48	2	5	8	445
2033	1	1A	Mobilization	Small Generator	Diesel	1	8	0.74	8	5	8	445
2033	1	1A	**MobilizationTotal**									
2033	1	1B	TrafficControl/Demo/Removal	Pneumatic Jackhammer	Air	2	N/A		4	1	8	445
2033	1	1B	TrafficControl/Demo/Removal	Concrete Saw	Diesel	2	16	0.73	1	1	8	445
2033	1	1B	TrafficControl/Demo/Removal	Skid-Steer Loader	Diesel	1	49	0.37	4	1	8	445
2033	1	1B	TrafficControl/Demo/Removal	Tractor	Diesel	1	23	0.37	2	1	8	445
2033	1	1B	**TrafficControl/Demo/RemovalTotal**									
2033	1	1C	Grading/Formwork	Roller	Diesel	1	49	0.38	1.5	1	8	445
2033	1	1C	**Grading/FormworkTotal**									
2033	1	1D	ConcretePouring	Concrete Mixer	Diesel	1	20	0.56	6	1	8	445
2033	1	1D	ConcretePouring	Concrete Vibrator	Electric	2	N/A		2	1	8	445
2033	1	1D	**ConcretePouringTotal**									
2033	1	1E	UtilityAdjustment	Manhole Cutter	Diesel	1	49	0.36	2	2	8	445
2033	1	1E	UtilityAdjustment	Concrete Saw	Diesel	1	81	0.73	2	2	8	445
2033	1	1E	UtilityAdjustment	Concrete Mixer	Diesel	1	6	0.56	2	2	8	445
2033	1	1E	**UtilityAdjustmentTotal**									

Construction Equipment Emissions - Daily Air Pollutants

				Daily Emissions (All Sites)					
ProgramYear	Scenario	Phase ID	Phase Name	ROG (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
2028	2	2B	TrafficControl/Demo/Removal	0.000	0.000	0.000	0.000	0.000	0.000
2028	2	2B	TrafficControl/Demo/Removal	0.035	0.120	0.223	0.000	0.008	0.008
2028	2	2B	TrafficControl/Demo/Removal	0.055	0.585	0.529	0.001	0.013	0.012
2028	2	2B	TrafficControl/Demo/Removal	0.021	0.171	0.137	0.000	0.005	0.005
2028	2	2B	**TrafficControl/Demo/RemovalTotal**	0.110	0.877	0.890	0.001	0.027	0.026
2028	2	2C	Grading/Formwork	0.035	0.254	0.227	0.000	0.010	0.009
2028	2	2C	**Grading/FormworkTotal**	0.035	0.254	0.227	0.000	0.010	0.009
2028	2	2D	ConcretePouring	0.102	0.347	0.645	0.001	0.025	0.025
2028	2	2D	ConcretePouring	0.000	0.000	0.000	0.000	0.000	0.000
2028	2	2D	**ConcretePouringTotal**	0.102	0.347	0.645	0.001	0.025	0.025
2028	2	2E	UtilitiesRelocation	0.148	1.822	1.135	0.003	0.046	0.046
2028	2	2E	UtilitiesRelocation	0.202	1.849	1.278	0.009	0.046	0.042
2028	2	2E	UtilitiesRelocation	0.008	0.039	0.047	0.000	0.002	0.002
2028	2	2E	UtilitiesRelocation	0.078	0.421	0.352	0.000	0.023	0.021
2028	2	2E	**UtilitiesRelocationTotal**	0.436	4.132	2.812	0.012	0.117	0.111
2028	2	2F	CrosswalkRepaving	0.071	0.241	0.446	0.001	0.017	0.017
2028	2	2F	CrosswalkRepaving	0.027	0.293	0.265	0.000	0.007	0.006
2028	2	2F	CrosswalkRepaving	0.078	0.421	0.352	0.000	0.023	0.021
2028	2	2F	CrosswalkRepaving	0.009	0.044	0.054	0.000	0.002	0.002
2028	2	2F	**CrosswalkRepavingTotal**	0.185	0.999	1.117	0.002	0.048	0.046
2028	2	2G	TreeRemoval	0.042	0.478	0.319	0.002	0.004	0.004
2028	2	2G	TreeRemoval	4.447	9.636	0.086	0.001	0.015	0.015
2028	2	2G	TreeRemoval	0.068	2.841	0.049	0.000	0.039	0.039
2028	2	2G	TreeRemoval	0.412	17.306	0.260	0.001	0.226	0.226
2028	2	2G	TreeRemoval	0.026	0.275	0.248	0.000	0.006	0.006
2028	2	2G	**TreeRemovalTotal**	4.995	30.535	0.962	0.005	0.292	0.291
2028	2	2H	TreePlanting	0.017	0.180	0.148	0.000	0.005	0.004
2028	2	2H	**TreePlantingTotal**	0.017	0.180	0.148	0.000	0.005	0.004
2033	1	1A	Mobilization	0.000	0.000	0.000	0.000	0.000	0.000
2033	1	1A	Mobilization	0.494	2.898	3.478	0.007	0.139	0.139
2033	1	1A	**MobilizationTotal**	0.494	2.898	3.478	0.007	0.139	0.139
2033	1	1B	TrafficControl/Demo/Removal	0.000	0.000	0.000	0.000	0.000	0.000
2033	1	1B	TrafficControl/Demo/Removal	0.282	0.964	1.785	0.003	0.066	0.066
2033	1	1B	TrafficControl/Demo/Removal	0.526	5.610	4.001	0.009	0.023	0.023
2033	1	1B	TrafficControl/Demo/Removal	0.206	0.702	1.300	0.002	0.048	0.048
2033	1	1B	**TrafficControl/Demo/RemovalTotal**	1.014	7.276	7.086	0.014	0.138	0.138
2033	1	1C	Grading/Formwork	0.289	2.357	1.714	0.003	0.036	0.036
2033	1	1C	**Grading/FormworkTotal**	0.289	2.357	1.714	0.003	0.036	0.036
2033	1	1D	ConcretePouring	0.812	2.772	5.135	0.008	0.192	0.192
2033	1	1D	ConcretePouring	0.000	0.000	0.000	0.000	0.000	0.000
2033	1	1D	**ConcretePouringTotal**	0.812	2.772	5.135	0.008	0.192	0.192
2033	1	1E	UtilityAdjustment	0.499	3.303	2.370	0.004	0.078	0.078
2033	1	1E	UtilityAdjustment	0.461	7.258	3.477	0.013	0.075	0.075
2033	1	1E	UtilityAdjustment	0.078	0.411	0.491	0.001	0.019	0.019
2033	1	1E	**UtilityAdjustmentTotal**	1.038	10.973	6.338	0.018	0.173	0.173

Construction Equipment Emissions - Daily Air Pollutants

ProgramYear	Scenario	Phase ID	Phase Name	Equipment	Fuel	Count	HP	LF	Hours/day	Days/Event	Sites/Day	Repairs/Year
2033	1	1F	TreeRemoval	Bucket Truck	Diesel	1	360	0.31	2	1	4	445
2033	1	1F	TreeRemoval	Saw	Diesel	1	6	0.31	1.5	1	4	445
2033	1	1F	TreeRemoval	Wood Chipper	Gas	1	8	0.31	1	1	4	445
2033	1	1F	TreeRemoval	Stump Grinder	Gas	1	23	0.31	2	1	4	445
2033	1	1F	TreeRemoval	Skid-Steer Loader	Diesel	1	46	0.37	2	1	4	445
2033	1	1F	**TreeRemovalTotal**									
2033	1	1G	TreePlanting	Mini Excavator	Diesel	1	17	0.38	3	1	4	445
2033	1	1G	**TreePlantingTotal**									
2033	2	2A	Mobilization	Compressor	Electric	1	5	0.48	2	5	1	12
2033	2	2A	Mobilization	Small Generator	Diesel	1	8	0.74	8	5	1	12
2033	2	2A	**MobilizationTotal**									
2033	2	2B	TrafficControl/Demo/Removal	Pneumatic Jackhammer	Air	2	N/A		4	1	1	12
2033	2	2B	TrafficControl/Demo/Removal	Concrete Saw	Diesel	2	16	0.73	1	1	1	12
2033	2	2B	TrafficControl/Demo/Removal	Skid-Steer Loader	Diesel	1	49	0.37	4	1	1	12
2033	2	2B	TrafficControl/Demo/Removal	Tractor	Diesel	1	23	0.37	2	1	1	12
2033	2	2B	**TrafficControl/Demo/RemovalTotal**									
2033	2	2C	Grading/Formwork	Roller	Diesel	1	49	0.38	1.5	1	1	12
2033	2	2C	**Grading/FormworkTotal**									
2033	2	2D	ConcretePouring	Concrete Mixer	Diesel	1	20	0.56	6	1	1	12
2033	2	2D	ConcretePouring	Concrete Vibrator	Electric	2	N/A		2	1	1	12
2033	2	2D	**ConcretePouringTotal**									
2033	2	2E	UtilitiesRelocation	Concrete Saw	Diesel	1	81	0.73	4	20	1	12
2033	2	2E	UtilitiesRelocation	Excavator	Diesel	1	350	0.38	6	20	1	12
2033	2	2E	UtilitiesRelocation	Plate Compactor	Gas	1	6	0.43	2	20	1	12
2033	2	2E	UtilitiesRelocation	Asphalt Paver	Diesel	1	46	0.42	2	20	1	12
2033	2	2E	**UtilitiesRelocationTotal**									
2033	2	2F	CrosswalkRepaving	Concrete Saw	Diesel	1	16	0.73	4	2	1	12
2033	2	2F	CrosswalkRepaving	Skid-Steer Loader	Diesel	1	49	0.37	2	2	1	12
2033	2	2F	CrosswalkRepaving	Asphalt Paver	Diesel	1	46	0.42	2	1	1	12
2033	2	2F	CrosswalkRepaving	Line Striper	Diesel	1	6	0.48	2	1	1	12
2033	2	2F	**CrosswalkRepavingTotal**									
2033	2	2G	TreeRemoval	Bucket Truck	Diesel	1	360	0.31	2	1	1	12
2033	2	2G	TreeRemoval	Saw	Diesel	1	6	0.31	1.5	1	1	12
2033	2	2G	TreeRemoval	Wood Chipper	Gas	1	8	0.31	1	1	1	12
2033	2	2G	TreeRemoval	Stump Grinder	Gas	1	23	0.31	2	1	1	12
2033	2	2G	TreeRemoval	Skid-Steer Loader	Diesel	1	46	0.37	2	1	1	12
2033	2	2G	**TreeRemovalTotal**									
2033	2	2H	TreePlanting	Mini Excavator	Diesel	1	17	0.38	3	1	1	12
2033	2	2H	**TreePlantingTotal**									
2038	1	1A	Mobilization	Compressor	Electric	1	5	0.48	2	5	10	515
2038	1	1A	Mobilization	Small Generator	Diesel	1	8	0.74	8	5	10	515
2038	1	1A	**MobilizationTotal**									
2038	1	1B	TrafficControl/Demo/Removal	Pneumatic Jackhammer	Air	2	N/A		4	1	10	515
2038	1	1B	TrafficControl/Demo/Removal	Concrete Saw	Diesel	2	16	0.73	1	1	10	515
2038	1	1B	TrafficControl/Demo/Removal	Skid-Steer Loader	Diesel	1	49	0.37	4	1	10	515
2038	1	1B	TrafficControl/Demo/Removal	Tractor	Diesel	1	23	0.37	2	1	10	515
2038	1	1B	**TrafficControl/Demo/RemovalTotal**									
2038	1	1C	Grading/Formwork	Roller	Diesel	1	49	0.38	1.5	1	10	515
2038	1	1C	**Grading/FormworkTotal**									

Construction Equipment Emissions - Daily Air Pollutants

				Daily Emissions (All Sites)					
ProgramYear	Scenario	Phase ID	Phase Name	ROG (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
2033	1	1F	TreeRemoval	0.248	1.941	0.943	0.010	0.031	0.031
2033	1	1F	TreeRemoval	17.756	38.505	0.342	0.004	0.061	0.061
2033	1	1F	TreeRemoval	0.269	11.304	0.196	0.001	0.157	0.157
2033	1	1F	TreeRemoval	1.629	68.967	1.043	0.003	0.905	0.905
2033	1	1F	TreeRemoval	0.123	1.317	0.939	0.002	0.005	0.005
2033	1	1F	**TreeRemovalTotal**	20.026	122.033	3.463	0.019	1.160	1.160
2033	1	1G	TreePlanting	0.117	0.400	0.740	0.001	0.028	0.028
2033	1	1G	**TreePlantingTotal**	0.117	0.400	0.740	0.001	0.028	0.028
2033	2	2A	Mobilization	0.000	0.000	0.000	0.000	0.000	0.000
2033	2	2A	Mobilization	0.062	0.362	0.435	0.001	0.017	0.017
2033	2	2A	**MobilizationTotal**	0.062	0.362	0.435	0.001	0.017	0.017
2033	2	2B	TrafficControl/Demo/Removal	0.000	0.000	0.000	0.000	0.000	0.000
2033	2	2B	TrafficControl/Demo/Removal	0.035	0.120	0.223	0.000	0.008	0.008
2033	2	2B	TrafficControl/Demo/Removal	0.066	0.701	0.500	0.001	0.003	0.003
2033	2	2B	TrafficControl/Demo/Removal	0.026	0.088	0.163	0.000	0.006	0.006
2033	2	2B	**TrafficControl/Demo/RemovalTotal**	0.127	0.909	0.886	0.002	0.017	0.017
2033	2	2C	Grading/Formwork	0.036	0.295	0.214	0.000	0.004	0.004
2033	2	2C	**Grading/FormworkTotal**	0.036	0.295	0.214	0.000	0.004	0.004
2033	2	2D	ConcretePouring	0.101	0.347	0.642	0.001	0.024	0.024
2033	2	2D	ConcretePouring	0.000	0.000	0.000	0.000	0.000	0.000
2033	2	2D	**ConcretePouringTotal**	0.101	0.347	0.642	0.001	0.024	0.024
2033	2	2E	UtilitiesRelocation	0.115	1.815	0.869	0.003	0.019	0.019
2033	2	2E	UtilitiesRelocation	0.355	1.914	0.762	0.009	0.028	0.028
2033	2	2E	UtilitiesRelocation	0.008	0.039	0.047	0.000	0.002	0.002
2033	2	2E	UtilitiesRelocation	0.072	0.460	0.327	0.001	0.011	0.011
2033	2	2E	**UtilitiesRelocationTotal**	0.550	4.228	2.005	0.013	0.060	0.060
2033	2	2F	CrosswalkRepaving	0.071	0.241	0.446	0.001	0.017	0.017
2033	2	2F	CrosswalkRepaving	0.033	0.351	0.250	0.001	0.001	0.001
2033	2	2F	CrosswalkRepaving	0.072	0.460	0.327	0.001	0.011	0.011
2033	2	2F	CrosswalkRepaving	0.008	0.044	0.053	0.000	0.002	0.002
2033	2	2F	**CrosswalkRepavingTotal**	0.184	1.095	1.076	0.002	0.032	0.032
2033	2	2G	TreeRemoval	0.062	0.485	0.236	0.002	0.008	0.008
2033	2	2G	TreeRemoval	4.439	9.626	0.085	0.001	0.015	0.015
2033	2	2G	TreeRemoval	0.067	2.826	0.049	0.000	0.039	0.039
2033	2	2G	TreeRemoval	0.407	17.242	0.261	0.001	0.226	0.226
2033	2	2G	TreeRemoval	0.031	0.329	0.235	0.001	0.001	0.001
2033	2	2G	**TreeRemovalTotal**	5.006	30.508	0.866	0.005	0.290	0.290
2033	2	2H	TreePlanting	0.029	0.100	0.185	0.000	0.007	0.007
2033	2	2H	**TreePlantingTotal**	0.029	0.100	0.185	0.000	0.007	0.007
2038	1	1A	Mobilization	0.000	0.000	0.000	0.000	0.000	0.000
2038	1	1A	Mobilization	0.615	3.623	4.326	0.008	0.169	0.169
2038	1	1A	**MobilizationTotal**	0.615	3.623	4.326	0.008	0.169	0.169
2038	1	1B	TrafficControl/Demo/Removal	0.000	0.000	0.000	0.000	0.000	0.000
2038	1	1B	TrafficControl/Demo/Removal	0.353	1.205	2.231	0.004	0.083	0.083
2038	1	1B	TrafficControl/Demo/Removal	0.657	7.019	4.951	0.011	0.024	0.024
2038	1	1B	TrafficControl/Demo/Removal	0.257	0.878	1.625	0.003	0.060	0.060
2038	1	1B	**TrafficControl/Demo/RemovalTotal**	1.267	9.101	8.808	0.017	0.167	0.167
2038	1	1C	Grading/Formwork	0.312	2.901	2.020	0.004	0.023	0.023
2038	1	1C	**Grading/FormworkTotal**	0.312	2.901	2.020	0.004	0.023	0.023

Construction Equipment Emissions - Daily Air Pollutants

ProgramYear	Scenario	Phase ID	Phase Name	Equipment	Fuel	Count	HP	LF	Hours/day	Days/Event	Sites/Day	Repairs/Year
2038	1	1D	ConcretePouring	Concrete Mixer	Diesel	1	20	0.56	6	1	10	515
2038	1	1D	ConcretePouring	Concrete Vibrator	Electric	2	N/A		2	1	10	515
2038	1	1D	**ConcretePouringTotal**									
2038	1	1E	UtilityAdjustment	Manhole Cutter	Diesel	1	49	0.36	2	2	10	515
2038	1	1E	UtilityAdjustment	Concrete Saw	Diesel	1	81	0.73	2	2	10	515
2038	1	1E	UtilityAdjustment	Concrete Mixer	Diesel	1	6	0.56	2	2	10	515
2038	1	1E	**UtilityAdjustmentTotal**									
2038	1	1F	TreeRemoval	Bucket Truck	Diesel	1	360	0.31	2	1	5	515
2038	1	1F	TreeRemoval	Saw	Diesel	1	6	0.31	1.5	1	5	515
2038	1	1F	TreeRemoval	Wood Chipper	Gas	1	8	0.31	1	1	5	515
2038	1	1F	TreeRemoval	Stump Grinder	Gas	1	23	0.31	2	1	5	515
2038	1	1F	TreeRemoval	Skid-Steer Loader	Diesel	1	46	0.37	2	1	5	515
2038	1	1F	**TreeRemovalTotal**									
2038	1	1G	TreePlanting	Mini Excavator	Diesel	1	17	0.38	3	1	5	515
2038	1	1G	**TreePlantingTotal**									
2038	2	2A	Mobilization	Compressor	Electric	1	5	0.48	2	5	1	12
2038	2	2A	Mobilization	Small Generator	Diesel	1	8	0.74	8	5	1	12
2038	2	2A	**MobilizationTotal**									
2038	2	2B	TrafficControl/Demo/Removal	Pneumatic Jackhammer	Air	2	N/A		4	1	1	12
2038	2	2B	TrafficControl/Demo/Removal	Concrete Saw	Diesel	2	16	0.73	1	1	1	12
2038	2	2B	TrafficControl/Demo/Removal	Skid-Steer Loader	Diesel	1	49	0.37	4	1	1	12
2038	2	2B	TrafficControl/Demo/Removal	Tractor	Diesel	1	23	0.37	2	1	1	12
2038	2	2B	**TrafficControl/Demo/RemovalTotal**									
2038	2	2C	Grading/Formwork	Roller	Diesel	1	49	0.38	1.5	1	1	12
2038	2	2C	**Grading/FormworkTotal**									
2038	2	2D	ConcretePouring	Concrete Mixer	Diesel	1	20	0.56	6	1	1	12
2038	2	2D	ConcretePouring	Concrete Vibrator	Electric	2	N/A		2	1	1	12
2038	2	2D	**ConcretePouringTotal**									
2038	2	2E	UtilitiesRelocation	Concrete Saw	Diesel	1	81	0.73	4	20	1	12
2038	2	2E	UtilitiesRelocation	Excavator	Diesel	1	350	0.38	6	20	1	12
2038	2	2E	UtilitiesRelocation	Plate Compactor	Gas	1	6	0.43	2	20	1	12
2038	2	2E	UtilitiesRelocation	Asphalt Paver	Diesel	1	46	0.42	2	20	1	12
2038	2	2E	**UtilitiesRelocationTotal**									
2038	2	2F	CrosswalkRepaving	Concrete Saw	Diesel	1	16	0.73	4	2	1	12
2038	2	2F	CrosswalkRepaving	Skid-Steer Loader	Diesel	1	49	0.37	2	2	1	12
2038	2	2F	CrosswalkRepaving	Asphalt Paver	Diesel	1	46	0.42	2	1	1	12
2038	2	2F	CrosswalkRepaving	Line Striper	Diesel	1	6	0.48	2	1	1	12
2038	2	2F	**CrosswalkRepavingTotal**									
2038	2	2G	TreeRemoval	Bucket Truck	Diesel	1	360	0.31	2	1	1	12
2038	2	2G	TreeRemoval	Saw	Diesel	1	6	0.31	1.5	1	1	12
2038	2	2G	TreeRemoval	Wood Chipper	Gas	1	8	0.31	1	1	1	12
2038	2	2G	TreeRemoval	Stump Grinder	Gas	1	23	0.31	2	1	1	12
2038	2	2G	TreeRemoval	Skid-Steer Loader	Diesel	1	46	0.37	2	1	1	12
2038	2	2G	**TreeRemovalTotal**									
2038	2	2H	TreePlanting	Mini Excavator	Diesel	1	17	0.38	3	1	1	12
2038	2	2H	**TreePlantingTotal**									
2043	1	1A	Mobilization	Compressor	Electric	1	5	0.48	2	5	11	595
2043	1	1A	Mobilization	Small Generator	Diesel	1	8	0.74	8	5	11	595
2043	1	1A	**MobilizationTotal**									

Construction Equipment Emissions - Daily Air Pollutants

				Daily Emissions (All Sites)					
ProgramYear	Scenario	Phase ID	Phase Name	ROG (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
2038	1	1D	ConcretePouring	1.015	3.465	6.418	0.010	0.239	0.239
2038	1	1D	ConcretePouring	0.000	0.000	0.000	0.000	0.000	0.000
2038	1	1D	**ConcretePouringTotal**	1.015	3.465	6.418	0.010	0.239	0.239
2038	1	1E	UtilityAdjustment	0.516	4.030	2.731	0.005	0.054	0.054
2038	1	1E	UtilityAdjustment	0.521	9.063	3.887	0.016	0.047	0.047
2038	1	1E	UtilityAdjustment	0.098	0.514	0.614	0.001	0.024	0.024
2038	1	1E	**UtilityAdjustmentTotal**	1.136	13.606	7.232	0.022	0.125	0.125
2038	1	1F	TreeRemoval	0.285	2.426	0.812	0.012	0.027	0.027
2038	1	1F	TreeRemoval	22.193	48.130	0.427	0.005	0.076	0.076
2038	1	1F	TreeRemoval	0.334	14.106	0.246	0.001	0.197	0.197
2038	1	1F	TreeRemoval	2.031	86.094	1.305	0.003	1.132	1.132
2038	1	1F	TreeRemoval	0.154	1.647	1.162	0.003	0.006	0.006
2038	1	1F	**TreeRemovalTotal**	24.998	152.403	3.952	0.024	1.437	1.437
2038	1	1G	TreePlanting	0.146	0.500	0.925	0.001	0.034	0.034
2038	1	1G	**TreePlantingTotal**	0.146	0.500	0.925	0.001	0.034	0.034
2038	2	2A	Mobilization	0.000	0.000	0.000	0.000	0.000	0.000
2038	2	2A	Mobilization	0.061	0.362	0.433	0.001	0.017	0.017
2038	2	2A	**MobilizationTotal**	0.061	0.362	0.433	0.001	0.017	0.017
2038	2	2B	TrafficControl/Demo/Removal	0.000	0.000	0.000	0.000	0.000	0.000
2038	2	2B	TrafficControl/Demo/Removal	0.035	0.120	0.223	0.000	0.008	0.008
2038	2	2B	TrafficControl/Demo/Removal	0.066	0.702	0.495	0.001	0.002	0.002
2038	2	2B	TrafficControl/Demo/Removal	0.026	0.088	0.163	0.000	0.006	0.006
2038	2	2B	**TrafficControl/Demo/RemovalTotal**	0.127	0.910	0.881	0.002	0.017	0.017
2038	2	2C	Grading/Formwork	0.031	0.290	0.202	0.000	0.002	0.002
2038	2	2C	**Grading/FormworkTotal**	0.031	0.290	0.202	0.000	0.002	0.002
2038	2	2D	ConcretePouring	0.101	0.347	0.642	0.001	0.024	0.024
2038	2	2D	ConcretePouring	0.000	0.000	0.000	0.000	0.000	0.000
2038	2	2D	**ConcretePouringTotal**	0.101	0.347	0.642	0.001	0.024	0.024
2038	2	2E	UtilitiesRelocation	0.104	1.813	0.777	0.003	0.009	0.009
2038	2	2E	UtilitiesRelocation	0.343	1.916	0.593	0.009	0.023	0.023
2038	2	2E	UtilitiesRelocation	0.008	0.039	0.047	0.000	0.002	0.002
2038	2	2E	UtilitiesRelocation	0.059	0.448	0.303	0.001	0.006	0.006
2038	2	2E	**UtilitiesRelocationTotal**	0.514	4.216	1.720	0.013	0.041	0.041
2038	2	2F	CrosswalkRepaving	0.071	0.241	0.446	0.001	0.017	0.017
2038	2	2F	CrosswalkRepaving	0.033	0.351	0.248	0.001	0.001	0.001
2038	2	2F	CrosswalkRepaving	0.059	0.448	0.303	0.001	0.006	0.006
2038	2	2F	CrosswalkRepaving	0.008	0.044	0.053	0.000	0.002	0.002
2038	2	2F	**CrosswalkRepavingTotal**	0.171	1.084	1.049	0.002	0.026	0.026
2038	2	2G	TreeRemoval	0.057	0.485	0.162	0.002	0.005	0.005
2038	2	2G	TreeRemoval	4.439	9.626	0.085	0.001	0.015	0.015
2038	2	2G	TreeRemoval	0.067	2.821	0.049	0.000	0.039	0.039
2038	2	2G	TreeRemoval	0.406	17.219	0.261	0.001	0.226	0.226
2038	2	2G	TreeRemoval	0.031	0.329	0.232	0.001	0.001	0.001
2038	2	2G	**TreeRemovalTotal**	5.000	30.481	0.790	0.005	0.287	0.287
2038	2	2H	TreePlanting	0.029	0.100	0.185	0.000	0.007	0.007
2038	2	2H	**TreePlantingTotal**	0.029	0.100	0.185	0.000	0.007	0.007
2043	1	1A	Mobilization	0.000	0.000	0.000	0.000	0.000	0.000
2043	1	1A	Mobilization	0.676	3.984	4.757	0.009	0.185	0.185
2043	1	1A	**MobilizationTotal**	0.676	3.984	4.757	0.009	0.185	0.185

Construction Equipment Emissions - Daily Air Pollutants

ProgramYear	Scenario	Phase ID	Phase Name	Equipment	Fuel	Count	HP	LF	Hours/day	Days/Event	Sites/Day	Repairs/Year
2043	1	1B	TrafficControl/Demo/Removal	Pneumatic Jackhammer	Air	2	N/A		4	1	11	595
2043	1	1B	TrafficControl/Demo/Removal	Concrete Saw	Diesel	2	16	0.73	1	1	11	595
2043	1	1B	TrafficControl/Demo/Removal	Skid-Steer Loader	Diesel	1	49	0.37	4	1	11	595
2043	1	1B	TrafficControl/Demo/Removal	Tractor	Diesel	1	23	0.37	2	1	11	595
2043	1	1B	**TrafficControl/Demo/RemovalTotal**									
2043	1	1C	Grading/Formwork	Roller	Diesel	1	49	0.38	1.5	1	11	595
2043	1	1C	**Grading/FormworkTotal**									
2043	1	1D	ConcretePouring	Concrete Mixer	Diesel	1	20	0.56	6	1	11	595
2043	1	1D	ConcretePouring	Concrete Vibrator	Electric	2	N/A		2	1	11	595
2043	1	1D	**ConcretePouringTotal**									
2043	1	1E	UtilityAdjustment	Manhole Cutter	Diesel	1	49	0.36	2	2	11	595
2043	1	1E	UtilityAdjustment	Concrete Saw	Diesel	1	81	0.73	2	2	11	595
2043	1	1E	UtilityAdjustment	Concrete Mixer	Diesel	1	6	0.56	2	2	11	595
2043	1	1E	**UtilityAdjustmentTotal**									
2043	1	1F	TreeRemoval	Bucket Truck	Diesel	1	360	0.31	2	1	5	595
2043	1	1F	TreeRemoval	Saw	Diesel	1	6	0.31	1.5	1	5	595
2043	1	1F	TreeRemoval	Wood Chipper	Gas	1	8	0.31	1	1	5	595
2043	1	1F	TreeRemoval	Stump Grinder	Gas	1	23	0.31	2	1	5	595
2043	1	1F	TreeRemoval	Skid-Steer Loader	Diesel	1	46	0.37	2	1	5	595
2043	1	1F	**TreeRemovalTotal**									
2043	1	1G	TreePlanting	Mini Excavator	Diesel	1	17	0.38	2	1	5	595
2043	1	1G	**TreePlantingTotal**									
2043	2	2A	Mobilization	Compressor	Electric	1	5	0.48	2	5	1	12
2043	2	2A	Mobilization	Small Generator	Diesel	1	8	0.74	8	5	1	12
2043	2	2A	**MobilizationTotal**									
2043	2	2B	TrafficControl/Demo/Removal	Pneumatic Jackhammer	Air	2	N/A		4	1	1	12
2043	2	2B	TrafficControl/Demo/Removal	Concrete Saw	Diesel	2	16	0.73	1	1	1	12
2043	2	2B	TrafficControl/Demo/Removal	Skid-Steer Loader	Diesel	1	49	0.37	4	1	1	12
2043	2	2B	TrafficControl/Demo/Removal	Tractor	Diesel	1	23	0.37	2	1	1	12
2043	2	2B	**TrafficControl/Demo/RemovalTotal**									
2043	2	2C	Grading/Formwork	Roller	Diesel	1	49	0.38	1.5	1	1	12
2043	2	2C	**Grading/FormworkTotal**									
2043	2	2D	ConcretePouring	Concrete Mixer	Diesel	1	20	0.56	6	1	1	12
2043	2	2D	ConcretePouring	Concrete Vibrator	Electric	2	N/A		2	1	1	12
2043	2	2D	**ConcretePouringTotal**									
2043	2	2E	UtilitiesRelocation	Concrete Saw	Diesel	1	81	0.73	4	20	1	12
2043	2	2E	UtilitiesRelocation	Excavator	Diesel	1	350	0.38	6	20	1	12
2043	2	2E	UtilitiesRelocation	Plate Compactor	Gas	1	6	0.43	2	20	1	12
2043	2	2E	UtilitiesRelocation	Asphalt Paver	Diesel	1	46	0.42	2	20	1	12
2043	2	2E	**UtilitiesRelocationTotal**									
2043	2	2F	CrosswalkRepaving	Concrete Saw	Diesel	1	16	0.73	4	2	1	12
2043	2	2F	CrosswalkRepaving	Skid-Steer Loader	Diesel	1	49	0.37	2	2	1	12
2043	2	2F	CrosswalkRepaving	Asphalt Paver	Diesel	1	46	0.42	2	1	1	12
2043	2	2F	CrosswalkRepaving	Line Striper	Diesel	1	6	0.48	2	1	1	12
2043	2	2F	**CrosswalkRepavingTotal**									
2043	2	2G	TreeRemoval	Bucket Truck	Diesel	1	360	0.31	2	1	1	12
2043	2	2G	TreeRemoval	Saw	Diesel	1	6	0.31	1.5	1	1	12
2043	2	2G	TreeRemoval	Wood Chipper	Gas	1	8	0.31	1	1	1	12
2043	2	2G	TreeRemoval	Stump Grinder	Gas	1	23	0.31	2	1	1	12
2043	2	2G	TreeRemoval	Skid-Steer Loader	Diesel	1	46	0.37	2	1	1	12
2043	2	2G	**TreeRemovalTotal**									
2043	2	2H	TreePlanting	Mini Excavator	Diesel	1	17	0.38	2	1	1	12
2043	2	2H	**TreePlantingTotal**									

Construction Equipment Emissions - Daily Air Pollutants

				Daily Emissions (All Sites)					
ProgramYear	Scenario	Phase ID	Phase Name	ROG (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
2043	1	1B	TrafficControl/Demo/Removal	0.000	0.000	0.000	0.000	0.000	0.000
2043	1	1B	TrafficControl/Demo/Removal	0.388	1.325	2.454	0.004	0.091	0.091
2043	1	1B	TrafficControl/Demo/Removal	0.723	7.724	5.440	0.012	0.025	0.025
2043	1	1B	TrafficControl/Demo/Removal	0.283	0.965	1.788	0.003	0.066	0.066
2043	1	1B	**TrafficControl/Demo/RemovalTotal**	1.394	10.015	9.682	0.019	0.182	0.182
2043	1	1C	Grading/Formwork	0.318	3.171	2.172	0.005	0.016	0.016
2043	1	1C	**Grading/FormworkTotal**	0.318	3.171	2.172	0.005	0.016	0.016
2043	1	1D	ConcretePouring	1.116	3.812	7.060	0.011	0.262	0.262
2043	1	1D	ConcretePouring	0.000	0.000	0.000	0.000	0.000	0.000
2043	1	1D	**ConcretePouringTotal**	1.116	3.812	7.060	0.011	0.262	0.262
2043	1	1E	UtilityAdjustment	0.504	4.373	2.876	0.006	0.036	0.036
2043	1	1E	UtilityAdjustment	0.559	9.972	4.113	0.017	0.037	0.037
2043	1	1E	UtilityAdjustment	0.108	0.565	0.675	0.001	0.026	0.026
2043	1	1E	**UtilityAdjustmentTotal**	1.171	14.910	7.663	0.025	0.099	0.099
2043	1	1F	TreeRemoval	0.276	2.426	0.686	0.012	0.022	0.022
2043	1	1F	TreeRemoval	22.192	48.130	0.427	0.005	0.076	0.076
2043	1	1F	TreeRemoval	0.334	14.094	0.245	0.001	0.197	0.197
2043	1	1F	TreeRemoval	2.030	86.021	1.305	0.003	1.132	1.132
2043	1	1F	TreeRemoval	0.154	1.648	1.161	0.003	0.005	0.005
2043	1	1F	**TreeRemovalTotal**	24.986	152.319	3.824	0.024	1.432	1.432
2043	1	1G	TreePlanting	0.098	0.333	0.617	0.001	0.023	0.023
2043	1	1G	**TreePlantingTotal**	0.098	0.333	0.617	0.001	0.023	0.023
2043	2	2A	Mobilization	0.000	0.000	0.000	0.000	0.000	0.000
2043	2	2A	Mobilization	0.061	0.362	0.432	0.001	0.017	0.017
2043	2	2A	**MobilizationTotal**	0.061	0.362	0.432	0.001	0.017	0.017
2043	2	2B	TrafficControl/Demo/Removal	0.000	0.000	0.000	0.000	0.000	0.000
2043	2	2B	TrafficControl/Demo/Removal	0.035	0.120	0.223	0.000	0.008	0.008
2043	2	2B	TrafficControl/Demo/Removal	0.066	0.702	0.495	0.001	0.002	0.002
2043	2	2B	TrafficControl/Demo/Removal	0.026	0.088	0.163	0.000	0.006	0.006
2043	2	2B	**TrafficControl/Demo/RemovalTotal**	0.127	0.910	0.880	0.002	0.017	0.017
2043	2	2C	Grading/Formwork	0.029	0.288	0.197	0.000	0.001	0.001
2043	2	2C	**Grading/FormworkTotal**	0.029	0.288	0.197	0.000	0.001	0.001
2043	2	2D	ConcretePouring	0.101	0.347	0.642	0.001	0.024	0.024
2043	2	2D	ConcretePouring	0.000	0.000	0.000	0.000	0.000	0.000
2043	2	2D	**ConcretePouringTotal**	0.101	0.347	0.642	0.001	0.024	0.024
2043	2	2E	UtilitiesRelocation	0.102	1.813	0.748	0.003	0.007	0.007
2043	2	2E	UtilitiesRelocation	0.338	1.916	0.528	0.009	0.019	0.019
2043	2	2E	UtilitiesRelocation	0.008	0.039	0.047	0.000	0.002	0.002
2043	2	2E	UtilitiesRelocation	0.053	0.442	0.289	0.001	0.004	0.004
2043	2	2E	**UtilitiesRelocationTotal**	0.500	4.210	1.612	0.013	0.032	0.032
2043	2	2F	CrosswalkRepaving	0.071	0.241	0.446	0.001	0.017	0.017
2043	2	2F	CrosswalkRepaving	0.033	0.351	0.247	0.001	0.001	0.001
2043	2	2F	CrosswalkRepaving	0.053	0.442	0.289	0.001	0.004	0.004
2043	2	2F	CrosswalkRepaving	0.008	0.044	0.053	0.000	0.002	0.002
2043	2	2F	**CrosswalkRepavingTotal**	0.164	1.078	1.035	0.002	0.024	0.024
2043	2	2G	TreeRemoval	0.055	0.485	0.137	0.002	0.004	0.004
2043	2	2G	TreeRemoval	4.438	9.626	0.085	0.001	0.015	0.015
2043	2	2G	TreeRemoval	0.067	2.819	0.049	0.000	0.039	0.039
2043	2	2G	TreeRemoval	0.406	17.204	0.261	0.001	0.226	0.226
2043	2	2G	TreeRemoval	0.031	0.330	0.232	0.001	0.001	0.001
2043	2	2G	**TreeRemovalTotal**	4.997	30.464	0.765	0.005	0.286	0.286
2043	2	2H	TreePlanting	0.020	0.067	0.123	0.000	0.005	0.005
2043	2	2H	**TreePlantingTotal**	0.020	0.067	0.123	0.000	0.005	0.005

Construction Worker and Truck Trips - Daily Air Pollutant Emissions

		Activity Summary		Event Duration & Frequency		
Year	Scenario	Event ID	Event Name	Event Length (Days)	Avg Crews/Day	Avg Scenarios/Year
2018	1	1a	Mobilization	5	5	286
2018	1	1b	Traffic Control/Demo/Removal	1	5	286
2018	1	1c	Grading/Formwork	1	5	286
2018	1	1d	Concrete Pouring	1	5	286
2018	1	1e	Utility Adjustment	2	5	286
2018	1	1f	Tree Removal	1	2	286
2018	1	1g	Tree Planting	1	2	286
2018	1	1h	Cleanup	1	5	286
2018	2	2a	Mobilization	5	1	12
2018	2	2b	Traffic Control/Demo/Removal	1	1	12
2018	2	2c	Grading/Formwork	1	1	12
2018	2	2d	Concrete Pouring	1	1	12
2018	2	2e	Utilities Relocation	20	1	12
2018	2	2f	Crosswalk Repaving	5	1	12
2018	2	2g	Tree Removal	1	1	12
2018	2	2h	Tree Planting	1	1	12
2018	2	2i	Cleanup	1	1	12
2023	1	1a	Mobilization	5	6	332
2023	1	1b	Traffic Control/Demo/Removal	1	6	332
2023	1	1c	Grading/Formwork	1	6	332
2023	1	1d	Concrete Pouring	1	6	332
2023	1	1e	Utility Adjustment	2	6	332
2023	1	1f	Tree Removal	1	3	332
2023	1	1g	Tree Planting	1	3	332
2023	1	1h	Cleanup	1	6	332
2023	2	2a	Mobilization	5	1	12
2023	2	2b	Traffic Control/Demo/Removal	1	1	12
2023	2	2c	Grading/Formwork	1	1	12
2023	2	2d	Concrete Pouring	1	1	12
2023	2	2e	Utilities Relocation	20	1	12
2023	2	2f	Crosswalk Repaving	5	1	12
2023	2	2g	Tree Removal	1	1	12
2023	2	2h	Tree Planting	1	1	12
2023	2	2i	Cleanup	1	1	12
2028	1	1a	Mobilization	5	7	384
2028	1	1b	Traffic Control/Demo/Removal	1	7	384
2028	1	1c	Grading/Formwork	1	7	384
2028	1	1d	Concrete Pouring	1	7	384
2028	1	1e	Utility Adjustment	2	7	384
2028	1	1f	Tree Removal	1	3	384
2028	1	1g	Tree Planting	2	3	384
2028	1	1h	Cleanup	1	7	384
2028	2	2a	Mobilization	5	1	12
2028	2	2b	Traffic Control/Demo/Removal	1	1	12
2028	2	2c	Grading/Formwork	1	1	12
2028	2	2d	Concrete Pouring	1	1	12
2028	2	2e	Utilities Relocation	20	1	12
2028	2	2f	Crosswalk Repaving	5	1	12
2028	2	2g	Tree Removal	1	1	12
2028	2	2h	Tree Planting	2	1	12
2028	2	2i	Cleanup	1	1	12

Construction Worker and Truck Trips - Daily Air Pollutant Emissions

		Activity Summary		Workers								
Year	Scenario	Event ID	Event Name	Workers/Site	Miles/Worker* (RT)	Worker Miles/Day	Worker Miles/Year	ROG (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
2018	1	1a	Mobilization	4	30	600	171600	0.26	2.46	0.23	0.00	0.06	0.03
2018	1	1b	Traffic Control/Demo/Removal	4	30	600	34320	0.26	2.46	0.23	0.00	0.06	0.03
2018	1	1c	Grading/Formwork	5	30	750	42900	0.32	3.08	0.28	0.01	0.08	0.03
2018	1	1d	Concrete Pouring	9	30	1350	77220	0.57	5.54	0.51	0.01	0.14	0.06
2018	1	1e	Utility Adjustment	5	30	750	85800	0.32	3.08	0.28	0.01	0.08	0.03
2018	1	1f	Tree Removal	5	30	300	42900	0.13	1.23	0.11	0.00	0.03	0.01
2018	1	1g	Tree Planting	3	30	180	25740	0.08	0.74	0.07	0.00	0.02	0.01
2018	1	1h	Cleanup	3	30	450	25740	0.19	1.85	0.17	0.00	0.05	0.02
2018	2	2a	Mobilization	4	30	120	7200	0.05	0.49	0.05	0.00	0.01	0.01
2018	2	2b	Traffic Control/Demo/Removal	4	30	120	1440	0.05	0.49	0.05	0.00	0.01	0.01
2018	2	2c	Grading/Formwork	5	30	150	1800	0.06	0.62	0.06	0.00	0.02	0.01
2018	2	2d	Concrete Pouring	9	30	270	3240	0.11	1.11	0.10	0.00	0.03	0.01
2018	2	2e	Utilities Relocation	5	30	150	36000	0.06	0.62	0.06	0.00	0.02	0.01
2018	2	2f	Crosswalk Repaving	4	30	120	7200	0.05	0.49	0.05	0.00	0.01	0.01
2018	2	2g	Tree Removal	5	30	150	1800	0.06	0.62	0.06	0.00	0.02	0.01
2018	2	2h	Tree Planting	3	30	90	1080	0.04	0.37	0.03	0.00	0.01	0.00
2018	2	2i	Cleanup	4	30	120	1440	0.05	0.49	0.05	0.00	0.01	0.01
2023	1	1a	Mobilization	4	30	720	199200	0.20	1.89	0.14	0.00	0.07	0.03
2023	1	1b	Traffic Control/Demo/Removal	4	30	720	39840	0.20	1.89	0.14	0.00	0.07	0.03
2023	1	1c	Grading/Formwork	5	30	900	49800	0.25	2.36	0.18	0.01	0.09	0.04
2023	1	1d	Concrete Pouring	9	30	1620	89640	0.45	4.24	0.32	0.01	0.17	0.07
2023	1	1e	Utility Adjustment	5	30	900	99600	0.25	2.36	0.18	0.01	0.09	0.04
2023	1	1f	Tree Removal	5	30	450	49800	0.13	1.18	0.09	0.00	0.05	0.02
2023	1	1g	Tree Planting	3	30	270	29880	0.08	0.71	0.05	0.00	0.03	0.01
2023	1	1h	Cleanup	3	30	540	29880	0.15	1.41	0.11	0.00	0.06	0.02
2023	2	2a	Mobilization	4	30	120	7200	0.03	0.31	0.02	0.00	0.01	0.01
2023	2	2b	Traffic Control/Demo/Removal	4	30	120	1440	0.03	0.31	0.02	0.00	0.01	0.01
2023	2	2c	Grading/Formwork	5	30	150	1800	0.04	0.39	0.03	0.00	0.02	0.01
2023	2	2d	Concrete Pouring	9	30	270	3240	0.08	0.71	0.05	0.00	0.03	0.01
2023	2	2e	Utilities Relocation	5	30	150	36000	0.04	0.39	0.03	0.00	0.02	0.01
2023	2	2f	Crosswalk Repaving	4	30	120	7200	0.03	0.31	0.02	0.00	0.01	0.01
2023	2	2g	Tree Removal	5	30	150	1800	0.04	0.39	0.03	0.00	0.02	0.01
2023	2	2h	Tree Planting	3	30	90	1080	0.03	0.24	0.02	0.00	0.01	0.00
2023	2	2i	Cleanup	4	30	120	1440	0.03	0.31	0.02	0.00	0.01	0.01
2028	1	1a	Mobilization	4	30	840	230400	0.18	1.68	0.11	0.00	0.09	0.04
2028	1	1b	Traffic Control/Demo/Removal	4	30	840	46080	0.18	1.68	0.11	0.00	0.09	0.04
2028	1	1c	Grading/Formwork	5	30	1050	57600	0.22	2.10	0.14	0.01	0.11	0.04
2028	1	1d	Concrete Pouring	9	30	1890	103680	0.39	3.79	0.24	0.01	0.19	0.08
2028	1	1e	Utility Adjustment	5	30	1050	115200	0.22	2.10	0.14	0.01	0.11	0.04
2028	1	1f	Tree Removal	5	30	450	57600	0.09	0.90	0.06	0.00	0.05	0.02
2028	1	1g	Tree Planting	4	30	360	92160	0.08	0.72	0.05	0.00	0.04	0.02
2028	1	1h	Cleanup	3	30	630	34560	0.13	1.26	0.08	0.00	0.06	0.03
2028	2	2a	Mobilization	4	30	120	7200	0.03	0.24	0.02	0.00	0.01	0.01
2028	2	2b	Traffic Control/Demo/Removal	4	30	120	1440	0.03	0.24	0.02	0.00	0.01	0.01
2028	2	2c	Grading/Formwork	5	30	150	1800	0.03	0.30	0.02	0.00	0.02	0.01
2028	2	2d	Concrete Pouring	9	30	270	3240	0.06	0.54	0.03	0.00	0.03	0.01
2028	2	2e	Utilities Relocation	5	30	150	36000	0.03	0.30	0.02	0.00	0.02	0.01
2028	2	2f	Crosswalk Repaving	4	30	120	7200	0.03	0.24	0.02	0.00	0.01	0.01
2028	2	2g	Tree Removal	5	30	150	1800	0.03	0.30	0.02	0.00	0.02	0.01
2028	2	2h	Tree Planting	4	30	120	2880	0.03	0.24	0.02	0.00	0.01	0.01
2028	2	2i	Cleanup	4	30	120	1440	0.03	0.24	0.02	0.00	0.01	0.01

Construction Worker and Truck Trips - Daily Air Pollutant Emissions

		Activity Summary		Trucks											
Year	Scenario	Event ID	Event Name	Haul Trucks/Site	Miles/Haul (RT)	Water Trucks/Site	Miles/Water (RT)	Truck Miles/Day	Truck Miles/Year	ROG (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
2018	1	1a	Mobilization	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00
2018	1	1b	Traffic Control/Demo/Removal	4	20	1	40	600	34320	0.35	1.87	8.26	0.02	0.25	0.16
2018	1	1c	Grading/Formwork	3	20	1	40	500	28600	0.29	1.56	6.89	0.02	0.21	0.14
2018	1	1d	Concrete Pouring	4	40	0	0	800	45760	0.47	2.49	11.02	0.03	0.33	0.22
2018	1	1e	Utility Adjustment	2	40	0	0	400	45760	0.23	1.25	5.51	0.01	0.17	0.11
2018	1	1f	Tree Removal	2	20	0	0	80	11440	0.05	0.25	1.10	0.00	0.03	0.02
2018	1	1g	Tree Planting	2	20	0	0	80	11440	0.05	0.25	1.10	0.00	0.03	0.02
2018	1	1h	Cleanup	3	10	0	0	150	8580	0.09	0.47	2.07	0.01	0.06	0.04
2018	2	2a	Mobilization	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00
2018	2	2b	Traffic Control/Demo/Removal	4	20	1	40	120	1440	0.07	0.37	1.65	0.00	0.05	0.03
2018	2	2c	Grading/Formwork	3	20	1	40	100	1200	0.06	0.31	1.38	0.00	0.04	0.03
2018	2	2d	Concrete Pouring	4	40	0	0	160	1920	0.09	0.50	2.20	0.01	0.07	0.04
2018	2	2e	Utilities Relocation	2	40	0	0	80	19200	0.05	0.25	1.10	0.00	0.03	0.02
2018	2	2f	Crosswalk Repaving	1	40	0	0	40	2400	0.02	0.12	0.55	0.00	0.02	0.01
2018	2	2g	Tree Removal	2	20	0	0	40	480	0.02	0.12	0.55	0.00	0.02	0.01
2018	2	2h	Tree Planting	2	20	0	0	40	480	0.02	0.12	0.55	0.00	0.02	0.01
2018	2	2i	Cleanup	3	10	0	0	30	360	0.02	0.09	0.41	0.00	0.01	0.01
2023	1	1a	Mobilization	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00
2023	1	1b	Traffic Control/Demo/Removal	4	20	1	40	720	39840	0.10	1.61	5.37	0.07	0.18	0.08
2023	1	1c	Grading/Formwork	3	20	1	40	600	33200	0.08	1.34	4.47	0.06	0.15	0.07
2023	1	1d	Concrete Pouring	4	40	0	0	960	53120	0.13	2.15	7.16	0.10	0.24	0.11
2023	1	1e	Utility Adjustment	2	40	0	0	480	53120	0.07	1.07	3.58	0.05	0.12	0.06
2023	1	1f	Tree Removal	2	20	0	0	120	13280	0.02	0.27	0.89	0.01	0.03	0.01
2023	1	1g	Tree Planting	2	20	0	0	120	13280	0.02	0.27	0.89	0.01	0.03	0.01
2023	1	1h	Cleanup	3	10	0	0	180	9960	0.02	0.40	1.34	0.02	0.05	0.02
2023	2	2a	Mobilization	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00
2023	2	2b	Traffic Control/Demo/Removal	4	20	1	40	120	1440	0.02	0.27	0.89	0.01	0.03	0.01
2023	2	2c	Grading/Formwork	3	20	1	40	100	1200	0.01	0.22	0.75	0.01	0.03	0.01
2023	2	2d	Concrete Pouring	4	40	0	0	160	1920	0.02	0.36	1.19	0.02	0.04	0.02
2023	2	2e	Utilities Relocation	2	40	0	0	80	19200	0.01	0.18	0.60	0.01	0.02	0.01
2023	2	2f	Crosswalk Repaving	1	40	0	0	40	2400	0.01	0.09	0.30	0.00	0.01	0.00
2023	2	2g	Tree Removal	2	20	0	0	40	480	0.01	0.09	0.30	0.00	0.01	0.00
2023	2	2h	Tree Planting	2	20	0	0	40	480	0.01	0.09	0.30	0.00	0.01	0.00
2023	2	2i	Cleanup	3	10	0	0	30	360	0.00	0.07	0.22	0.00	0.01	0.00
2028	1	1a	Mobilization	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00
2028	1	1b	Traffic Control/Demo/Removal	4	20	1	40	840	46080	0.11	1.98	6.06	0.07	0.21	0.10
2028	1	1c	Grading/Formwork	3	20	1	40	700	38400	0.09	1.65	5.05	0.06	0.18	0.08
2028	1	1d	Concrete Pouring	4	40	0	0	1120	61440	0.15	2.64	8.08	0.09	0.28	0.13
2028	1	1e	Utility Adjustment	2	40	0	0	560	61440	0.07	1.32	4.04	0.05	0.14	0.07
2028	1	1f	Tree Removal	2	20	0	0	120	15360	0.02	0.28	0.87	0.01	0.03	0.01
2028	1	1g	Tree Planting	2	20	0	0	120	30720	0.02	0.28	0.87	0.01	0.03	0.01
2028	1	1h	Cleanup	3	10	0	0	210	11520	0.03	0.49	1.52	0.02	0.05	0.02
2028	2	2a	Mobilization	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00
2028	2	2b	Traffic Control/Demo/Removal	4	20	1	40	120	1440	0.02	0.28	0.87	0.01	0.03	0.01
2028	2	2c	Grading/Formwork	3	20	1	40	100	1200	0.01	0.24	0.72	0.01	0.03	0.01
2028	2	2d	Concrete Pouring	4	40	0	0	160	1920	0.02	0.38	1.15	0.01	0.04	0.02
2028	2	2e	Utilities Relocation	2	40	0	0	80	19200	0.01	0.19	0.58	0.01	0.02	0.01
2028	2	2f	Crosswalk Repaving	1	40	0	0	40	2400	0.01	0.09	0.29	0.00	0.01	0.00
2028	2	2g	Tree Removal	2	20	0	0	40	480	0.01	0.09	0.29	0.00	0.01	0.00
2028	2	2h	Tree Planting	2	20	0	0	40	960	0.01	0.09	0.29	0.00	0.01	0.00
2028	2	2i	Cleanup	3	10	0	0	30	360	0.00	0.07	0.22	0.00	0.01	0.00

Construction Worker and Truck Trips - Daily Air Pollutant Emissions

		Activity Summary		Event Duration & Frequency		
Year	Scenario	Event ID	Event Name	Event Length (Days)	Avg Crews/Day	Avg Scenarios/Year
2033	1	1a	Mobilization	5	8	445
2033	1	1b	Traffic Control/Demo/Removal	1	8	445
2033	1	1c	Grading/Formwork	1	8	445
2033	1	1d	Concrete Pouring	1	8	445
2033	1	1e	Utility Adjustment	2	8	445
2033	1	1f	Tree Removal	1	4	445
2033	1	1g	Tree Planting	2	4	445
2033	1	1h	Cleanup	1	8	445
2033	2	2a	Mobilization	5	1	12
2033	2	2b	Traffic Control/Demo/Removal	1	1	12
2033	2	2c	Grading/Formwork	1	1	12
2033	2	2d	Concrete Pouring	1	1	12
2033	2	2e	Utilities Relocation	20	1	12
2033	2	2f	Crosswalk Repaving	5	1	12
2033	2	2g	Tree Removal	1	1	12
2033	2	2h	Tree Planting	2	1	12
2033	2	2i	Cleanup	1	1	12
2038	1	1a	Mobilization	5	10	515
2038	1	1b	Traffic Control/Demo/Removal	1	10	515
2038	1	1c	Grading/Formwork	1	10	515
2038	1	1d	Concrete Pouring	1	10	515
2038	1	1e	Utility Adjustment	2	10	515
2038	1	1f	Tree Removal	1	10	515
2038	1	1g	Tree Planting	2	5	515
2038	1	1h	Cleanup	1	10	515
2038	2	2a	Mobilization	5	1	12
2038	2	2b	Traffic Control/Demo/Removal	1	1	12
2038	2	2c	Grading/Formwork	1	1	12
2038	2	2d	Concrete Pouring	1	1	12
2038	2	2e	Utilities Relocation	20	1	12
2038	2	2f	Crosswalk Repaving	5	1	12
2038	2	2g	Tree Removal	1	1	12
2038	2	2h	Tree Planting	2	1	12
2038	2	2i	Cleanup	1	1	12
2043	1	1a	Mobilization	5	11	595
2043	1	1b	Traffic Control/Demo/Removal	1	11	595
2043	1	1c	Grading/Formwork	1	11	595
2043	1	1d	Concrete Pouring	1	11	595
2043	1	1e	Utility Adjustment	2	11	595
2043	1	1f	Tree Removal	1	11	595
2043	1	1g	Tree Planting	1	5	595
2043	1	1h	Cleanup	1	11	595
2043	2	2a	Mobilization	5	1	12
2043	2	2b	Traffic Control/Demo/Removal	1	1	12
2043	2	2c	Grading/Formwork	1	1	12
2043	2	2d	Concrete Pouring	1	1	12
2043	2	2e	Utilities Relocation	20	1	12
2043	2	2f	Crosswalk Repaving	5	1	12
2043	2	2g	Tree Removal	1	1	12
2043	2	2h	Tree Planting	1	1	12
2043	2	2i	Cleanup	1	1	12

Construction Worker and Truck Trips - Daily Air Pollutant Emissions

		Activity Summary				Workers							
Year	Scenario	Event ID	Event Name	Workers/Site	Miles/Worker* (RT)	Worker Miles/Day	Worker Miles/Year	ROG (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
2033	1	1a	Mobilization	4	30	960	267000	0.15	1.64	0.09	0.01	0.10	0.04
2033	1	1b	Traffic Control/Demo/Removal	4	30	960	53400	0.15	1.64	0.09	0.01	0.10	0.04
2033	1	1c	Grading/Formwork	5	30	1200	66750	0.19	2.04	0.12	0.01	0.12	0.05
2033	1	1d	Concrete Pouring	9	30	2160	120150	0.34	3.68	0.21	0.01	0.22	0.09
2033	1	1e	Utility Adjustment	5	30	1200	133500	0.19	2.04	0.12	0.01	0.12	0.05
2033	1	1f	Tree Removal	5	30	600	66750	0.09	1.02	0.06	0.00	0.06	0.02
2033	1	1g	Tree Planting	4	30	480	106800	0.08	0.82	0.05	0.00	0.05	0.02
2033	1	1h	Cleanup	3	30	720	40050	0.11	1.23	0.07	0.00	0.07	0.03
2033	2	2a	Mobilization	4	30	120	7200	0.02	0.20	0.01	0.00	0.01	0.00
2033	2	2b	Traffic Control/Demo/Removal	4	30	120	1440	0.02	0.20	0.01	0.00	0.01	0.00
2033	2	2c	Grading/Formwork	5	30	150	1800	0.02	0.26	0.01	0.00	0.02	0.01
2033	2	2d	Concrete Pouring	9	30	270	3240	0.04	0.46	0.03	0.00	0.03	0.01
2033	2	2e	Utilities Relocation	5	30	150	36000	0.02	0.26	0.01	0.00	0.02	0.01
2033	2	2f	Crosswalk Repaving	4	30	120	7200	0.02	0.20	0.01	0.00	0.01	0.00
2033	2	2g	Tree Removal	5	30	150	1800	0.02	0.26	0.01	0.00	0.02	0.01
2033	2	2h	Tree Planting	4	30	120	2880	0.02	0.20	0.01	0.00	0.01	0.00
2033	2	2i	Cleanup	4	30	120	1440	0.02	0.20	0.01	0.00	0.01	0.00
2038	1	1a	Mobilization	4	30	1200	309000	0.15	1.85	0.10	0.01	0.12	0.05
2038	1	1b	Traffic Control/Demo/Removal	4	30	1200	61800	0.15	1.85	0.10	0.01	0.12	0.05
2038	1	1c	Grading/Formwork	5	30	1500	77250	0.19	2.32	0.13	0.01	0.15	0.06
2038	1	1d	Concrete Pouring	9	30	2700	139050	0.34	4.17	0.23	0.01	0.27	0.11
2038	1	1e	Utility Adjustment	5	30	1500	154500	0.19	2.32	0.13	0.01	0.15	0.06
2038	1	1f	Tree Removal	5	30	1500	77250	0.19	2.32	0.13	0.01	0.15	0.06
2038	1	1g	Tree Planting	4	30	600	123600	0.08	0.93	0.05	0.00	0.06	0.02
2038	1	1h	Cleanup	3	30	900	46350	0.11	1.39	0.08	0.00	0.09	0.04
2038	2	2a	Mobilization	4	30	120	7200	0.02	0.19	0.01	0.00	0.01	0.00
2038	2	2b	Traffic Control/Demo/Removal	4	30	120	1440	0.02	0.19	0.01	0.00	0.01	0.00
2038	2	2c	Grading/Formwork	5	30	150	1800	0.02	0.23	0.01	0.00	0.02	0.01
2038	2	2d	Concrete Pouring	9	30	270	3240	0.03	0.42	0.02	0.00	0.03	0.01
2038	2	2e	Utilities Relocation	5	30	150	36000	0.02	0.23	0.01	0.00	0.02	0.01
2038	2	2f	Crosswalk Repaving	4	30	120	7200	0.02	0.19	0.01	0.00	0.01	0.00
2038	2	2g	Tree Removal	5	30	150	1800	0.02	0.23	0.01	0.00	0.02	0.01
2038	2	2h	Tree Planting	4	30	120	2880	0.02	0.19	0.01	0.00	0.01	0.00
2038	2	2i	Cleanup	4	30	120	1440	0.02	0.19	0.01	0.00	0.01	0.00
2043	1	1a	Mobilization	4	30	1320	357000	0.14	1.94	0.10	0.01	0.13	0.05
2043	1	1b	Traffic Control/Demo/Removal	4	30	1320	71400	0.14	1.94	0.10	0.01	0.13	0.05
2043	1	1c	Grading/Formwork	5	30	1650	89250	0.18	2.42	0.13	0.01	0.17	0.07
2043	1	1d	Concrete Pouring	9	30	2970	160650	0.32	4.36	0.23	0.01	0.30	0.12
2043	1	1e	Utility Adjustment	5	30	1650	178500	0.18	2.42	0.13	0.01	0.17	0.07
2043	1	1f	Tree Removal	5	30	1650	89250	0.18	2.42	0.13	0.01	0.17	0.07
2043	1	1g	Tree Planting	3	30	450	53550	0.05	0.66	0.04	0.00	0.05	0.02
2043	1	1h	Cleanup	3	30	990	53550	0.11	1.45	0.08	0.00	0.10	0.04
2043	2	2a	Mobilization	4	30	120	7200	0.01	0.18	0.01	0.00	0.01	0.00
2043	2	2b	Traffic Control/Demo/Removal	4	30	120	1440	0.01	0.18	0.01	0.00	0.01	0.00
2043	2	2c	Grading/Formwork	5	30	150	1800	0.02	0.22	0.01	0.00	0.02	0.01
2043	2	2d	Concrete Pouring	9	30	270	3240	0.03	0.40	0.02	0.00	0.03	0.01
2043	2	2e	Utilities Relocation	5	30	150	36000	0.02	0.22	0.01	0.00	0.02	0.01
2043	2	2f	Crosswalk Repaving	4	30	120	7200	0.01	0.18	0.01	0.00	0.01	0.00
2043	2	2g	Tree Removal	5	30	150	1800	0.02	0.22	0.01	0.00	0.02	0.01
2043	2	2h	Tree Planting	3	30	90	1080	0.01	0.13	0.01	0.00	0.01	0.00
2043	2	2i	Cleanup	4	30	120	1440	0.01	0.18	0.01	0.00	0.01	0.00

Construction Worker and Truck Trips - Daily Air Pollutant Emissions

		Activity Summary		Trucks											
Year	Scenario	Event ID	Event Name	Haul Trucks/Site	Miles/Haul (RT)	Water Trucks/Site	Miles/Water (RT)	Truck Miles/Day	Truck Miles/Year	ROG (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
2033	1	1a	Mobilization	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00
2033	1	1b	Traffic Control/Demo/Removal	4	20	1	40	960	53400	0.12	2.29	6.58	0.07	0.24	0.11
2033	1	1c	Grading/Formwork	3	20	1	40	800	44500	0.10	1.91	5.48	0.06	0.20	0.09
2033	1	1d	Concrete Pouring	4	40	0	0	1280	71200	0.16	3.05	8.77	0.09	0.32	0.15
2033	1	1e	Utility Adjustment	2	40	0	0	640	71200	0.08	1.53	4.39	0.04	0.16	0.07
2033	1	1f	Tree Removal	2	20	0	0	160	17800	0.02	0.38	1.10	0.01	0.04	0.02
2033	1	1g	Tree Planting	2	20	0	0	160	35600	0.02	0.38	1.10	0.01	0.04	0.02
2033	1	1h	Cleanup	3	10	0	0	240	13350	0.03	0.57	1.64	0.02	0.06	0.03
2033	2	2a	Mobilization	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00
2033	2	2b	Traffic Control/Demo/Removal	4	20	1	40	120	1440	0.02	0.29	0.82	0.01	0.03	0.01
2033	2	2c	Grading/Formwork	3	20	1	40	100	1200	0.01	0.24	0.69	0.01	0.03	0.01
2033	2	2d	Concrete Pouring	4	40	0	0	160	1920	0.02	0.38	1.10	0.01	0.04	0.02
2033	2	2e	Utilities Relocation	2	40	0	0	80	19200	0.01	0.19	0.55	0.01	0.02	0.01
2033	2	2f	Crosswalk Repaving	1	40	0	0	40	2400	0.01	0.10	0.27	0.00	0.01	0.00
2033	2	2g	Tree Removal	2	20	0	0	40	480	0.01	0.10	0.27	0.00	0.01	0.00
2033	2	2h	Tree Planting	2	20	0	0	40	960	0.01	0.10	0.27	0.00	0.01	0.00
2033	2	2i	Cleanup	3	10	0	0	30	360	0.00	0.07	0.21	0.00	0.01	0.00
2038	1	1a	Mobilization	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00
2038	1	1b	Traffic Control/Demo/Removal	4	20	1	40	1200	61800	0.15	2.87	7.96	0.08	0.30	0.14
2038	1	1c	Grading/Formwork	3	20	1	40	1000	51500	0.12	2.39	6.64	0.06	0.25	0.11
2038	1	1d	Concrete Pouring	4	40	0	0	1600	82400	0.20	3.83	10.62	0.10	0.40	0.18
2038	1	1e	Utility Adjustment	2	40	0	0	800	82400	0.10	1.92	5.31	0.05	0.20	0.09
2038	1	1f	Tree Removal	2	20	0	0	400	20600	0.05	0.96	2.65	0.03	0.10	0.05
2038	1	1g	Tree Planting	2	20	0	0	200	41200	0.02	0.48	1.33	0.01	0.05	0.02
2038	1	1h	Cleanup	3	10	0	0	300	15450	0.04	0.72	1.99	0.02	0.08	0.03
2038	2	2a	Mobilization	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00
2038	2	2b	Traffic Control/Demo/Removal	4	20	1	40	120	1440	0.01	0.29	0.80	0.01	0.03	0.01
2038	2	2c	Grading/Formwork	3	20	1	40	100	1200	0.01	0.24	0.66	0.01	0.03	0.01
2038	2	2d	Concrete Pouring	4	40	0	0	160	1920	0.02	0.38	1.06	0.01	0.04	0.02
2038	2	2e	Utilities Relocation	2	40	0	0	80	19200	0.01	0.19	0.53	0.01	0.02	0.01
2038	2	2f	Crosswalk Repaving	1	40	0	0	40	2400	0.00	0.10	0.27	0.00	0.01	0.00
2038	2	2g	Tree Removal	2	20	0	0	40	480	0.00	0.10	0.27	0.00	0.01	0.00
2038	2	2h	Tree Planting	2	20	0	0	40	960	0.00	0.10	0.27	0.00	0.01	0.00
2038	2	2i	Cleanup	3	10	0	0	30	360	0.00	0.07	0.20	0.00	0.01	0.00
2043	1	1a	Mobilization	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00
2043	1	1b	Traffic Control/Demo/Removal	4	20	1	40	1320	71400	0.16	3.17	8.69	0.08	0.33	0.15
2043	1	1c	Grading/Formwork	3	20	1	40	1100	59500	0.14	2.64	7.24	0.07	0.28	0.12
2043	1	1d	Concrete Pouring	4	40	0	0	1760	95200	0.22	4.23	11.59	0.11	0.44	0.20
2043	1	1e	Utility Adjustment	2	40	0	0	880	95200	0.11	2.12	5.79	0.05	0.22	0.10
2043	1	1f	Tree Removal	2	20	0	0	440	23800	0.05	1.06	2.90	0.03	0.11	0.05
2043	1	1g	Tree Planting	2	20	0	0	200	23800	0.02	0.48	1.32	0.01	0.05	0.02
2043	1	1h	Cleanup	3	10	0	0	330	17850	0.04	0.79	2.17	0.02	0.08	0.04
2043	2	2a	Mobilization	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00
2043	2	2b	Traffic Control/Demo/Removal	4	20	1	40	120	1440	0.01	0.29	0.79	0.01	0.03	0.01
2043	2	2c	Grading/Formwork	3	20	1	40	100	1200	0.01	0.24	0.66	0.01	0.03	0.01
2043	2	2d	Concrete Pouring	4	40	0	0	160	1920	0.02	0.38	1.05	0.01	0.04	0.02
2043	2	2e	Utilities Relocation	2	40	0	0	80	19200	0.01	0.19	0.53	0.00	0.02	0.01
2043	2	2f	Crosswalk Repaving	1	40	0	0	40	2400	0.00	0.10	0.26	0.00	0.01	0.00
2043	2	2g	Tree Removal	2	20	0	0	40	480	0.00	0.10	0.26	0.00	0.01	0.00
2043	2	2h	Tree Planting	2	20	0	0	40	480	0.00	0.10	0.26	0.00	0.01	0.00
2043	2	2i	Cleanup	3	10	0	0	30	360	0.00	0.07	0.20	0.00	0.01	0.00

Localized Air Pollutant Emissions

Single Sites

Scenario	ProgramYr	CO (lb/day)	NOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
CS1 Total	1-5	32.9	3.4	0.4	0.4
CS1 Total	6-10	32.2	2.6	0.4	0.4
CS1 Total	11-15	32.2	2.5	0.4	0.4
CS1 Total	16-20	32.2	2.3	0.3	0.3
CS1 Total	21-25	32.2	2.2	0.3	0.3
CS1 Total	26-30	32.2	2.1	0.3	0.3
CS2 Total	1-5	36.7	9.0	0.7	0.7
CS2 Total	6-10	36.1	6.0	0.5	0.5
CS2 Total	11-15	36.0	5.5	0.5	0.5
CS2 Total	16-20	36.2	4.6	0.4	0.4
CS2 Total	21-25	36.1	4.2	0.4	0.4
CS2 Total	26-30	36.1	4.1	0.4	0.4

Single Sites

ProgramYr	Year	Scenario	Event ID	EventName	ROG (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
1	2018	CS1	1d	ConcretePouring	0.111	0.361	0.667	0.001	0.030	0.030
1	2018	CS1	1e	UtilityAdjustment	0.269	1.700	1.743	0.002	0.119	0.115
1	2018	CS1	1f	TreeRemoval	5.054	30.878	0.995	0.005	0.296	0.295
1-5		**CS1 Total**			5.434	32.939	3.406	0.008	0.446	0.440
1	2018	CS2	2d	ConcretePouring	0.111	0.361	0.667	0.001	0.030	0.030
1	2018	CS2	2e	UtilitiesRelocation	0.706	4.405	6.048	0.012	0.292	0.280
1	2018	CS2	2f	CrosswalkRepaving	0.250	1.087	1.254	0.002	0.075	0.070
1	2018	CS2	2g	TreeRemoval	5.054	30.878	0.995	0.005	0.296	0.295
1-5		**CS2 Total**			6.121	36.731	8.964	0.020	0.693	0.675
6	2023	CS1	1d	ConcretePouring	0.103	0.349	0.649	0.001	0.025	0.025
6	2023	CS1	1e	UtilityAdjustment	0.135	1.296	1.001	0.002	0.048	0.047
6	2023	CS1	1f	TreeRemoval	5.004	30.596	0.964	0.005	0.292	0.291
6-10		**CS1 Total**			5.242	32.241	2.614	0.008	0.365	0.363
6	2023	CS2	2d	ConcretePouring	0.103	0.349	0.649	0.001	0.025	0.025
6	2023	CS2	2e	UtilitiesRelocation	0.475	4.144	3.275	0.012	0.144	0.139
6	2023	CS2	2f	CrosswalkRepaving	0.193	1.004	1.136	0.002	0.052	0.049
6	2023	CS2	2g	TreeRemoval	5.004	30.596	0.964	0.005	0.292	0.291
6-10		**CS2 Total**			5.775	36.093	6.024	0.020	0.514	0.504
11	2028	CS1	1d	ConcretePouring	0.102	0.347	0.645	0.001	0.025	0.025
11	2028	CS1	1e	UtilityAdjustment	0.121	1.290	0.911	0.002	0.037	0.036
11	2028	CS1	1f	TreeRemoval	4.995	30.535	0.962	0.005	0.292	0.291
11-15		**CS1 Total**			5.218	32.172	2.518	0.008	0.353	0.352

Localized Air Pollutant Emissions

ProgramYr	Year	Scenario	Event ID	EventName	ROG (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
11	2028	CS2	2d	ConcretePouring	0.102	0.347	0.645	0.001	0.025	0.025
11	2028	CS2	2e	UtilitiesRelocation	0.436	4.132	2.812	0.012	0.117	0.111
11	2028	CS2	2f	CrosswalkRepaving	0.185	0.999	1.117	0.002	0.048	0.046
11	2028	CS2	2g	TreeRemoval	4.995	30.535	0.962	0.005	0.292	0.291
11-15		**CS2 Total**			5.717	36.013	5.536	0.020	0.481	0.473
16	2033	CS1	1d	ConcretePouring	0.101	0.347	0.642	0.001	0.024	0.024
16	2033	CS1	1e	UtilityAdjustment	0.130	1.372	0.792	0.002	0.022	0.022
16	2033	CS1	1f	TreeRemoval	5.006	30.508	0.866	0.005	0.290	0.290
16-20		**CS1 Total**			5.238	32.226	2.300	0.008	0.336	0.336
16	2033	CS2	2d	ConcretePouring	0.101	0.347	0.642	0.001	0.024	0.024
16	2033	CS2	2e	UtilitiesRelocation	0.550	4.228	2.005	0.013	0.060	0.060
16	2033	CS2	2f	CrosswalkRepaving	0.184	1.095	1.076	0.002	0.032	0.032
16	2033	CS2	2g	TreeRemoval	5.006	30.508	0.866	0.005	0.290	0.290
16-20		**CS2 Total**			5.842	36.178	4.589	0.020	0.406	0.406
21	2038	CS1	1d	ConcretePouring	0.101	0.347	0.642	0.001	0.024	0.024
21	2038	CS1	1e	UtilityAdjustment	0.114	1.361	0.723	0.002	0.013	0.013
21	2038	CS1	1f	TreeRemoval	5.000	30.481	0.790	0.005	0.287	0.287
21-25		**CS1 Total**			5.215	32.188	2.155	0.008	0.324	0.324
21	2038	CS2	2d	ConcretePouring	0.101	0.347	0.642	0.001	0.024	0.024
21	2038	CS2	2e	UtilitiesRelocation	0.514	4.216	1.720	0.013	0.041	0.041
21	2038	CS2	2f	CrosswalkRepaving	0.171	1.084	1.049	0.002	0.026	0.026
21	2038	CS2	2g	TreeRemoval	5.000	30.481	0.790	0.005	0.287	0.287
21-25		**CS2 Total**			5.786	36.127	4.202	0.020	0.378	0.378
26	2043	CS1	1d	ConcretePouring	0.101	0.347	0.642	0.001	0.024	0.024
26	2043	CS1	1e	UtilityAdjustment	0.106	1.355	0.697	0.002	0.009	0.009
26	2043	CS1	1f	TreeRemoval	4.997	30.464	0.765	0.005	0.286	0.286
26-30		**CS1 Total**			5.205	32.166	2.103	0.008	0.319	0.319
26	2043	CS2	2d	ConcretePouring	0.101	0.347	0.642	0.001	0.024	0.024
26	2043	CS2	2e	UtilitiesRelocation	0.500	4.210	1.612	0.013	0.032	0.032
26	2043	CS2	2f	CrosswalkRepaving	0.164	1.078	1.035	0.002	0.024	0.024
26	2043	CS2	2g	TreeRemoval	4.997	30.464	0.765	0.005	0.286	0.286
26-30		**CS2 Total**			5.763	36.099	4.053	0.020	0.366	0.366

Asphalt Paving - VOC Off-Gassing Emissions

	Asphalt	CS1	CS2		
	SQFT/site	3250.00	3640.00		
	Acre/Site	0.07	0.08		
	lbVOC/acre	2.62	2.62		
	lbVOC/site	0.20	0.22		
2018	sites/day	5.00	1.00	VOC/day	
	lb/day	0.98	0.22		1.2
2023	sites/day	6.00	1.00		
	lb/day	1.17	0.22		1.4
2028	sites/day	7.00	1.00		
		1.37	0.22		1.6
2033	sites/day	8.00	1.00		
	lb/day	1.56	0.22		1.8
2038	sites/day	10.00	1.00		
	lb/day	1.95	0.22		2.2
2043	sites/day	11.00	1.00		
	lb/day	2.15	0.22		2.4

Fugitive Dust Emissions Calculations (Negligible)

	CY/day		Tons per Cubic Yard			
Truck Loading	40		1.2641662			
EF-PM10 (lbPM10/Ton-throughput)	EF-pm2.5 (lb2.5/Ton-throughput)		E=EFxP (tons)	**PM10 (lb/day)**	**PM2.5 (lb/day)**	T/DAY
5.52164E-05	8.36134E-06		0.1	**0.003529687**	**0.000534495**	50.566648
0.35*(0.0032)*((3.4/5)^1.3)/((12/2)^1.4)	0.053*(0.0032)*((3.4/5)^1.3)/((12/2)^1.4)					

	CY/day		Tons per Cubic Yard			
Truck Loading	10		1.2641662			
EF-PM10 (lbPM10/Ton-throughput)	EF-pm2.5 (lb2.5/Ton-throughput)		E=EFxP (tons)	**PM10 (lb/day)**	**PM2.5 (lb/day)**	T/DAY
5.52164E-05	8.36134E-06		0.1	**0.000882422**	**0.000133624**	12.641662
0.35*(0.0032)*((3.4/5)^1.3)/((12/2)^1.4)	0.053*(0.0032)*((3.4/5)^1.3)/((12/2)^1.4)					

	CY/day		Tons per Cubic Yard			
Truck Loading	2		1.2641662			
EF-PM10 (lbPM10/Ton-throughput)	EF-pm2.5 (lb2.5/Ton-throughput)		E=EFxP (tons)	**PM10 (lb/day)**	**PM2.5 (lb/day)**	T/DAY
5.52164E-05	8.36134E-06		0.1	**0.000176484**	**2.67248E-05**	2.5283324
0.35*(0.0032)*((3.4/5)^1.3)/((12/2)^1.4)	0.053*(0.0032)*((3.4/5)^1.3)/((12/2)^1.4)					
				PM10 (lb/day)	**PM2.5 (lb/day)**	
			Total	**0.0046**	**0.0007**	

Operational Trips - Daily Air Pollutant Emissions

Operation Year	Vehicle	Event Name	Miles/Crew/Day	Crews/Day	Miles/Day	Daily ROG (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
2018	LDT2 (gas)	Assessment	20	6	120	0.051	0.516	0.056	0.001	0.013	0.005
2018	LDT2 (gas)	Inspection	20	4	80	0.034	0.344	0.037	0.001	0.008	0.004
2018	LDT2 (gas)	Watering	70	6	420	0.179	1.807	0.195	0.004	0.044	0.019
2018 Total						0.264	2.667	0.288	0.005	0.065	0.027
2023	LDT2 (gas)	Assessment	20	6	120	0.036	0.337	0.029	0.001	0.012	0.005
2023	LDT2 (gas)	Inspection	20	4	80	0.024	0.225	0.019	0.001	0.008	0.003
2023	LDT2 (gas)	Watering	70	6	420	0.126	1.179	0.100	0.003	0.043	0.018
2023 Total						0.186	1.740	0.148	0.005	0.064	0.027
2028	LDT2 (gas)	Assessment	20	6	120	0.029	0.267	0.018	0.001	0.012	0.005
2028	LDT2 (gas)	Inspection	20	4	80	0.019	0.178	0.012	0.001	0.008	0.003
2028	LDT2 (gas)	Watering	70	6	420	0.100	0.936	0.064	0.003	0.043	0.018
2028 Total						0.148	1.381	0.094	0.004	0.063	0.026
2033	LDT2 (gas)	Assessment	20	6	120	0.023	0.235	0.014	0.001	0.012	0.005
2033	LDT2 (gas)	Inspection	20	4	80	0.015	0.156	0.009	0.000	0.008	0.003
2033	LDT2 (gas)	Watering	70	6	420	0.080	0.821	0.048	0.002	0.043	0.018
2033 Total						0.118	1.212	0.070	0.004	0.063	0.026
2038	LDT2 (gas)	Assessment	20	6	120	0.018	0.214	0.011	0.001	0.012	0.005
2038	LDT2 (gas)	Inspection	20	4	80	0.012	0.143	0.007	0.000	0.008	0.003
2038	LDT2 (gas)	Watering	70	6	420	0.064	0.750	0.039	0.002	0.042	0.017
2038 Total						0.094	1.108	0.057	0.003	0.062	0.025
2043	LDT2 (gas)	Assessment	20	6	120	0.015	0.202	0.010	0.001	0.012	0.005
2043	LDT2 (gas)	Inspection	20	4	80	0.010	0.135	0.006	0.000	0.008	0.003
2043	LDT2 (gas)	Watering	70	6	420	0.054	0.708	0.034	0.002	0.042	0.017
2043 Total						0.080	1.045	0.050	0.003	0.062	0.025

CalEEMod Appendix D Default Data - Off-Road Equipment Emission Factors

Year	EquipmentType	Low Hp	High Hp	ROGg/bhp-hr	CO,g/bhp-hr	NOX,g/bhp-hr	SO2,g/bhp-hr	PM10,g/bhp-hr	PM2_5,g/bhp-hr	CO2,g/bhp-hr	CH4,g/bhp-hr
2017	AerialLifts	6	15	0.209	3.16913	3.46956	0.005	0.079	0.073	554.2451	0.17
2017	AerialLifts	16	25	0.209	3.16913	3.46956	0.005	0.079	0.073	554.2451	0.17
2017	AerialLifts	26	50	0.209	3.16913	3.46956	0.005	0.079	0.073	554.2451	0.17
2017	AerialLifts	51	120	0.143	3.18429	2.36368	0.005	0.083	0.077	498.3428	0.153
2017	AerialLifts	251	500	0.246	0.99722	4.6577	0.005	0.105	0.096	498.2798	0.153
2017	AerialLifts	501	750	0.239	1.059	2.68	0.005	0.079	0.079	568.299	0.021
2018	AerialLifts	6	15	0.182	3.11639	3.2101	0.005	0.054	0.05	545.4939	0.17
2018	AerialLifts	16	25	0.182	3.11639	3.2101	0.005	0.054	0.05	545.4939	0.17
2018	AerialLifts	26	50	0.182	3.11639	3.2101	0.005	0.054	0.05	545.4939	0.17
2018	AerialLifts	51	120	0.122	3.16685	2.0636	0.005	0.057	0.052	490.4742	0.153
2018	AerialLifts	251	500	0.062	0.93655	0.63368	0.005	0.009	0.008	490.4122	0.153
2018	AerialLifts	501	750	0.225	1.037	2.385	0.005	0.071	0.071	568.299	0.02
2019	AerialLifts	6	15	0.172	3.11451	3.07945	0.005	0.042	0.038	536.7427	0.17
2019	AerialLifts	16	25	0.172	3.11451	3.07945	0.005	0.042	0.038	536.7427	0.17
2019	AerialLifts	26	50	0.172	3.11451	3.07945	0.005	0.042	0.038	536.7427	0.17
2019	AerialLifts	51	120	0.118	3.17254	1.97658	0.005	0.049	0.045	482.6056	0.153
2019	AerialLifts	251	500	0.066	0.94139	0.63586	0.005	0.009	0.008	482.5446	0.153
2019	AerialLifts	501	750	0.212	1.023	2.117	0.005	0.064	0.064	568.299	0.019
2020	AerialLifts	6	15	0.168	3.09942	2.95486	0.005	0.031	0.028	525.0743	0.17
2020	AerialLifts	16	25	0.168	3.09942	2.95486	0.005	0.031	0.028	525.0743	0.17
2020	AerialLifts	26	50	0.168	3.09942	2.95486	0.005	0.031	0.028	525.0743	0.17
2020	AerialLifts	51	120	0.115	3.1768	1.86859	0.005	0.042	0.038	472.1142	0.153
2020	AerialLifts	251	500	0.069	0.94623	0.63803	0.005	0.009	0.008	472.0545	0.153
2020	AerialLifts	501	750	0.2	1.013	1.868	0.005	0.057	0.057	568.299	0.018
2021	AerialLifts	6	15	0.165	3.11369	2.92238	0.005	0.027	0.024	525.0743	0.17
2021	AerialLifts	16	25	0.165	3.11369	2.92238	0.005	0.027	0.024	525.0743	0.17
2021	AerialLifts	26	50	0.165	3.11369	2.92238	0.005	0.027	0.024	525.0743	0.17
2021	AerialLifts	51	120	0.109	3.17624	1.74368	0.005	0.033	0.031	472.1142	0.153
2021	AerialLifts	251	500	0.072	0.95107	0.64021	0.005	0.009	0.008	472.0545	0.153
2021	AerialLifts	501	750	0.187	1.004	1.61	0.005	0.05	0.05	568.299	0.016
2022	AerialLifts	6	15	0.162	3.11231	2.90676	0.005	0.024	0.022	525.0743	0.17
2022	AerialLifts	16	25	0.162	3.11231	2.90676	0.005	0.024	0.022	525.0743	0.17
2022	AerialLifts	26	50	0.162	3.11231	2.90676	0.005	0.024	0.022	525.0743	0.17
2022	AerialLifts	51	120	0.105	3.17602	1.62659	0.005	0.03	0.028	472.1142	0.153
2022	AerialLifts	251	500	0.075	0.95591	0.64238	0.005	0.009	0.008	472.0545	0.153
2022	AerialLifts	501	750	0.177	0.998	1.424	0.005	0.044	0.044	568.299	0.016
2023	AerialLifts	6	15	0.163	3.12196	2.89722	0.005	0.023	0.021	525.0743	0.17
2023	AerialLifts	16	25	0.163	3.12196	2.89722	0.005	0.023	0.021	525.0743	0.17
2023	AerialLifts	26	50	0.163	3.12196	2.89722	0.005	0.023	0.021	525.0743	0.17
2023	AerialLifts	51	120	0.1	3.17029	1.5481	0.005	0.027	0.025	472.1142	0.153
2023	AerialLifts	251	500	0.079	0.96074	0.64456	0.005	0.009	0.008	472.0545	0.153
2023	AerialLifts	501	750	0.169	0.995	1.265	0.005	0.038	0.038	568.299	0.015
2024	AerialLifts	6	15	0.159	3.11285	2.88821	0.005	0.022	0.02	525.0743	0.17
2024	AerialLifts	16	25	0.159	3.11285	2.88821	0.005	0.022	0.02	525.0743	0.17
2024	AerialLifts	26	50	0.159	3.11285	2.88821	0.005	0.022	0.02	525.0743	0.17
2024	AerialLifts	51	120	0.1	3.17255	1.52789	0.005	0.026	0.024	472.1142	0.153
2024	AerialLifts	251	500	0.082	0.96558	0.64674	0.005	0.009	0.009	472.0545	0.153
2024	AerialLifts	501	750	0.161	0.991	1.115	0.005	0.033	0.033	568.299	0.014
2025	AerialLifts	6	15	0.154	3.08837	2.87882	0.005	0.021	0.019	525.0743	0.17
2025	AerialLifts	16	25	0.154	3.08837	2.87882	0.005	0.021	0.019	525.0743	0.17

CalEEMod Appendix D Default Data - Off-Road Equipment Emission Factors

Year	EquipmentType	Low Hp	High Hp	ROGg/bhp-hr	CO,g/bhp-hr	NOX,g/bhp-hr	SO2,g/bhp-hr	PM10,g/bhp-hr	PM2_5,g/bhp-hr	CO2,g/bhp-hr	CH4,g/bhp-hr
2025	AerialLifts	26	50	0.154	3.08837	2.87882	0.005	0.021	0.019	525.0743	0.17
2025	AerialLifts	51	120	0.099	3.16742	1.51077	0.005	0.026	0.024	472.1142	0.153
2025	AerialLifts	251	500	0.085	0.97042	0.64891	0.005	0.009	0.009	472.0545	0.153
2025	AerialLifts	501	750	0.153	0.989	0.974	0.005	0.028	0.028	568.299	0.013
2030	AerialLifts	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2030	AerialLifts	16	25	0.685	2.339	4.332	0.007	0.162	0.162	568.299	0.061
2030	AerialLifts	26	50	0.339	3.764	3.135	0.007	0.04	0.04	568.3	0.03
2030	AerialLifts	51	120	0.188	3.352	1.657	0.006	0.036	0.036	568.299	0.017
2030	AerialLifts	251	500	0.126	0.986	0.479	0.005	0.016	0.016	568.299	0.011
2030	AerialLifts	501	750	0.126	0.986	0.485	0.005	0.016	0.016	568.299	0.011
2035	AerialLifts	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2035	AerialLifts	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2035	AerialLifts	26	50	0.297	3.726	3.017	0.007	0.019	0.019	568.299	0.026
2035	AerialLifts	51	120	0.166	3.345	1.466	0.006	0.017	0.017	568.299	0.014
2035	AerialLifts	251	500	0.116	0.986	0.33	0.005	0.011	0.011	568.299	0.01
2035	AerialLifts	501	750	0.116	0.986	0.33	0.005	0.011	0.011	568.299	0.01
2040	AerialLifts	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2040	AerialLifts	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2040	AerialLifts	26	50	0.295	3.723	2.966	0.007	0.013	0.013	568.299	0.026
2040	AerialLifts	51	120	0.161	3.344	1.407	0.006	0.012	0.012	568.299	0.014
2040	AerialLifts	251	500	0.112	0.986	0.279	0.005	0.009	0.009	568.299	0.01
2040	AerialLifts	501	750	0.112	0.986	0.279	0.005	0.009	0.009	568.299	0.01
2017	AirCompressors	6	15	0.786	3.599	4.887	0.008	0.272	0.272	568.299	0.07
2017	AirCompressors	16	25	0.83	2.564	4.729	0.007	0.243	0.243	568.299	0.074
2017	AirCompressors	26	50	1.481	5.604	4.871	0.007	0.371	0.371	568.299	0.133
2017	AirCompressors	51	120	0.671	3.772	4.412	0.006	0.35	0.35	568.299	0.06
2017	AirCompressors	121	175	0.477	3.207	3.627	0.006	0.194	0.194	568.299	0.043
2017	AirCompressors	176	250	0.339	1.162	3.163	0.006	0.098	0.098	568.299	0.03
2017	AirCompressors	251	500	0.321	1.123	2.755	0.005	0.092	0.092	568.299	0.029
2017	AirCompressors	501	750	0.323	1.123	2.845	0.005	0.094	0.094	568.299	0.029
2017	AirCompressors	751	1000	0.362	1.246	4.583	0.005	0.121	0.121	568.299	0.032
2018	AirCompressors	6	15	0.766	3.58	4.762	0.008	0.256	0.256	568.299	0.069
2018	AirCompressors	16	25	0.807	2.531	4.661	0.007	0.232	0.232	568.3	0.072
2018	AirCompressors	26	50	1.3	5.439	4.707	0.007	0.329	0.329	568.299	0.117
2018	AirCompressors	51	120	0.603	3.744	4.05	0.006	0.304	0.304	568.3	0.054
2018	AirCompressors	121	175	0.435	3.205	3.228	0.006	0.17	0.17	568.299	0.039
2018	AirCompressors	176	250	0.321	1.146	2.797	0.006	0.087	0.087	568.3	0.029
2018	AirCompressors	251	500	0.307	1.101	2.465	0.005	0.083	0.083	568.299	0.027
2018	AirCompressors	501	750	0.309	1.101	2.533	0.005	0.084	0.084	568.299	0.027
2018	AirCompressors	751	1000	0.343	1.21	4.325	0.005	0.111	0.111	568.299	0.03
2019	AirCompressors	6	15	0.748	3.562	4.647	0.008	0.241	0.241	568.299	0.067
2019	AirCompressors	16	25	0.787	2.501	4.596	0.007	0.222	0.222	568.299	0.071
2019	AirCompressors	26	50	1.129	5.283	4.546	0.007	0.287	0.287	568.299	0.101
2019	AirCompressors	51	120	0.538	3.718	3.706	0.006	0.26	0.26	568.299	0.048
2019	AirCompressors	121	175	0.401	3.204	2.874	0.006	0.15	0.15	568.299	0.036
2019	AirCompressors	176	250	0.304	1.132	2.469	0.006	0.078	0.078	568.299	0.027
2019	AirCompressors	251	500	0.293	1.086	2.193	0.005	0.075	0.075	568.299	0.026
2019	AirCompressors	501	750	0.294	1.086	2.247	0.005	0.076	0.076	568.299	0.026
2019	AirCompressors	751	1000	0.324	1.182	4.073	0.005	0.102	0.102	568.299	0.029
2020	AirCompressors	6	15	0.731	3.546	4.542	0.008	0.227	0.227	568.299	0.066

CalEEMod Appendix D Default Data - Off-Road Equipment Emission Factors

Year	EquipmentType	Low Hp	High Hp	ROGg/bhp-hr	CO,g/bhp-hr	NOX,g/bhp-hr	SO2,g/bhp-hr	PM10,g/bhp-hr	PM2_5,g/bhp-hr	CO2,g/bhp-hr	CH4,g/bhp-hr
2020	AirCompressors	16	25	0.769	2.473	4.538	0.007	0.212	0.212	568.3	0.069
2020	AirCompressors	26	50	1.001	5.164	4.397	0.007	0.25	0.25	568.299	0.09
2020	AirCompressors	51	120	0.489	3.698	3.4	0.006	0.224	0.224	568.299	0.044
2020	AirCompressors	121	175	0.374	3.203	2.558	0.006	0.133	0.133	568.299	0.033
2020	AirCompressors	176	250	0.288	1.121	2.172	0.006	0.069	0.069	568.299	0.026
2020	AirCompressors	251	500	0.279	1.076	1.935	0.005	0.067	0.067	568.299	0.025
2020	AirCompressors	501	750	0.28	1.076	1.982	0.005	0.067	0.067	568.299	0.025
2020	AirCompressors	751	1000	0.306	1.158	3.828	0.005	0.093	0.093	568.3	0.027
2021	AirCompressors	6	15	0.717	3.531	4.462	0.008	0.214	0.214	568.299	0.064
2021	AirCompressors	16	25	0.752	2.446	4.497	0.007	0.201	0.201	568.299	0.067
2021	AirCompressors	26	50	0.887	5.021	4.221	0.007	0.212	0.212	568.299	0.08
2021	AirCompressors	51	120	0.442	3.67	3.083	0.006	0.19	0.19	568.299	0.039
2021	AirCompressors	121	175	0.343	3.192	2.218	0.006	0.115	0.115	568.299	0.03
2021	AirCompressors	176	250	0.268	1.108	1.859	0.006	0.06	0.06	568.299	0.024
2021	AirCompressors	251	500	0.261	1.064	1.663	0.005	0.058	0.058	568.299	0.023
2021	AirCompressors	501	750	0.262	1.064	1.699	0.005	0.058	0.058	568.299	0.023
2021	AirCompressors	751	1000	0.284	1.134	3.565	0.005	0.082	0.082	568.3	0.025
2022	AirCompressors	6	15	0.707	3.519	4.408	0.008	0.203	0.203	568.299	0.063
2022	AirCompressors	16	25	0.739	2.426	4.47	0.007	0.193	0.193	568.299	0.066
2022	AirCompressors	26	50	0.814	4.959	4.093	0.007	0.183	0.183	568.299	0.073
2022	AirCompressors	51	120	0.413	3.662	2.844	0.006	0.165	0.165	568.299	0.037
2022	AirCompressors	121	175	0.322	3.194	1.959	0.006	0.101	0.101	568.299	0.029
2022	AirCompressors	176	250	0.255	1.102	1.617	0.006	0.052	0.052	568.3	0.023
2022	AirCompressors	251	500	0.249	1.059	1.472	0.005	0.051	0.051	568.299	0.022
2022	AirCompressors	501	750	0.25	1.059	1.502	0.005	0.051	0.051	568.299	0.022
2022	AirCompressors	751	1000	0.269	1.117	3.378	0.005	0.075	0.075	568.3	0.024
2023	AirCompressors	6	15	0.698	3.508	4.359	0.008	0.194	0.194	568.299	0.063
2023	AirCompressors	16	25	0.728	2.407	4.447	0.007	0.186	0.186	568.299	0.065
2023	AirCompressors	26	50	0.753	4.913	3.975	0.007	0.156	0.156	568.299	0.067
2023	AirCompressors	51	120	0.387	3.657	2.631	0.006	0.143	0.143	568.299	0.034
2023	AirCompressors	121	175	0.303	3.197	1.748	0.006	0.089	0.089	568.299	0.027
2023	AirCompressors	176	250	0.243	1.099	1.42	0.006	0.045	0.045	568.299	0.021
2023	AirCompressors	251	500	0.238	1.055	1.305	0.005	0.044	0.044	568.299	0.021
2023	AirCompressors	501	750	0.239	1.055	1.331	0.005	0.044	0.044	568.299	0.021
2023	AirCompressors	751	1000	0.256	1.102	3.221	0.005	0.068	0.068	568.299	0.023
2024	AirCompressors	6	15	0.69	3.499	4.316	0.008	0.188	0.188	568.3	0.062
2024	AirCompressors	16	25	0.718	2.39	4.426	0.007	0.181	0.181	568.3	0.064
2024	AirCompressors	26	50	0.702	4.88	3.864	0.007	0.135	0.135	568.299	0.063
2024	AirCompressors	51	120	0.365	3.655	2.461	0.006	0.123	0.123	568.299	0.032
2024	AirCompressors	121	175	0.286	3.202	1.561	0.006	0.077	0.077	568.299	0.025
2024	AirCompressors	176	250	0.232	1.096	1.247	0.006	0.039	0.039	568.299	0.02
2024	AirCompressors	251	500	0.228	1.053	1.148	0.005	0.038	0.038	568.299	0.02
2024	AirCompressors	501	750	0.228	1.053	1.171	0.005	0.038	0.038	568.299	0.02
2024	AirCompressors	751	1000	0.243	1.09	3.082	0.005	0.061	0.061	568.299	0.021
2025	AirCompressors	6	15	0.683	3.491	4.278	0.008	0.183	0.183	568.3	0.061
2025	AirCompressors	16	25	0.709	2.376	4.407	0.007	0.177	0.177	568.299	0.064
2025	AirCompressors	26	50	0.659	4.851	3.755	0.007	0.116	0.116	568.299	0.059
2025	AirCompressors	51	120	0.345	3.653	2.313	0.006	0.104	0.104	568.299	0.031
2025	AirCompressors	121	175	0.269	3.205	1.383	0.006	0.065	0.065	568.299	0.024
2025	AirCompressors	176	250	0.22	1.094	1.086	0.006	0.033	0.033	568.299	0.019

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Year	EquipmentType	Low Hp	High Hp	ROGg/bhp-hr	CO,g/bhp-hr	NOX,g/bhp-hr	SO2,g/bhp-hr	PM10,g/bhp-hr	PM2_5,g/bhp-hr	CO2,g/bhp-hr	CH4,g/bhp-hr
2025	AirCompressors	251	500	0.217	1.051	1.001	0.005	0.032	0.032	568.299	0.019
2025	AirCompressors	501	750	0.217	1.051	1.021	0.005	0.032	0.032	568.299	0.019
2025	AirCompressors	751	1000	0.231	1.079	2.954	0.005	0.055	0.055	568.299	0.02
2030	AirCompressors	6	15	0.663	3.47	4.164	0.008	0.166	0.166	568.299	0.059
2030	AirCompressors	16	25	0.687	2.34	4.347	0.007	0.165	0.165	568.299	0.061
2030	AirCompressors	26	50	0.506	4.712	3.34	0.007	0.046	0.046	568.299	0.045
2030	AirCompressors	51	120	0.264	3.63	1.729	0.006	0.041	0.041	568.299	0.023
2030	AirCompressors	121	175	0.193	3.205	0.633	0.006	0.027	0.027	568.299	0.017
2030	AirCompressors	176	250	0.179	1.092	0.529	0.006	0.018	0.018	568.299	0.016
2030	AirCompressors	251	500	0.178	1.048	0.499	0.005	0.017	0.017	568.299	0.016
2030	AirCompressors	501	750	0.178	1.048	0.505	0.005	0.017	0.017	568.3	0.016
2030	AirCompressors	751	1000	0.182	1.049	2.6	0.005	0.033	0.033	568.299	0.016
2035	AirCompressors	6	15	0.661	3.469	4.143	0.008	0.162	0.162	568.3	0.059
2035	AirCompressors	16	25	0.685	2.339	4.332	0.007	0.162	0.162	568.299	0.061
2035	AirCompressors	26	50	0.463	4.674	3.215	0.007	0.023	0.023	568.299	0.041
2035	AirCompressors	51	120	0.238	3.623	1.53	0.006	0.02	0.02	568.299	0.021
2035	AirCompressors	121	175	0.17	3.205	0.391	0.006	0.015	0.015	568.3	0.015
2035	AirCompressors	176	250	0.166	1.091	0.347	0.006	0.012	0.012	568.299	0.014
2035	AirCompressors	251	500	0.166	1.048	0.343	0.005	0.012	0.012	568.299	0.014
2035	AirCompressors	501	750	0.166	1.048	0.344	0.005	0.012	0.012	568.299	0.014
2035	AirCompressors	751	1000	0.167	1.048	2.473	0.005	0.026	0.026	568.299	0.015
2040	AirCompressors	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2040	AirCompressors	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.3	0.061
2040	AirCompressors	26	50	0.458	4.659	3.159	0.007	0.016	0.016	568.3	0.041
2040	AirCompressors	51	120	0.232	3.619	1.468	0.006	0.015	0.015	568.299	0.02
2040	AirCompressors	121	175	0.161	3.201	0.307	0.006	0.012	0.012	568.299	0.014
2040	AirCompressors	176	250	0.16	1.09	0.291	0.006	0.01	0.01	568.299	0.014
2040	AirCompressors	251	500	0.16	1.047	0.291	0.005	0.01	0.01	568.3	0.014
2040	AirCompressors	501	750	0.16	1.047	0.291	0.005	0.01	0.01	568.299	0.014
2040	AirCompressors	751	1000	0.16	1.047	2.439	0.005	0.023	0.023	568.299	0.014
2017	CementandMortarMixers	6	15	0.661	3.469	4.145	0.008	0.165	0.165	568.299	0.059
2017	CementandMortarMixers	16	25	0.767	2.466	4.567	0.007	0.216	0.216	568.299	0.069
2018	CementandMortarMixers	6	15	0.661	3.469	4.142	0.008	0.163	0.163	568.299	0.059
2018	CementandMortarMixers	16	25	0.749	2.44	4.504	0.007	0.205	0.205	568.299	0.067
2019	CementandMortarMixers	6	15	0.661	3.469	4.142	0.008	0.162	0.162	568.299	0.059
2019	CementandMortarMixers	16	25	0.735	2.417	4.469	0.007	0.196	0.196	568.299	0.066
2020	CementandMortarMixers	6	15	0.661	3.47	4.142	0.008	0.161	0.161	568.299	0.059
2020	CementandMortarMixers	16	25	0.723	2.397	4.442	0.007	0.187	0.187	568.299	0.065
2021	CementandMortarMixers	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2021	CementandMortarMixers	16	25	0.712	2.381	4.419	0.007	0.18	0.18	568.299	0.064
2022	CementandMortarMixers	6	15	0.661	3.47	4.142	0.008	0.161	0.161	568.299	0.059
2022	CementandMortarMixers	16	25	0.704	2.367	4.399	0.007	0.175	0.175	568.299	0.063
2023	CementandMortarMixers	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2023	CementandMortarMixers	16	25	0.697	2.356	4.382	0.007	0.172	0.172	568.299	0.062
2024	CementandMortarMixers	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2024	CementandMortarMixers	16	25	0.693	2.349	4.369	0.007	0.17	0.17	568.299	0.062
2025	CementandMortarMixers	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2025	CementandMortarMixers	16	25	0.689	2.344	4.357	0.007	0.168	0.168	568.299	0.062
2030	CementandMortarMixers	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2030	CementandMortarMixers	16	25	0.685	2.339	4.333	0.007	0.162	0.162	568.299	0.061

CalEEMod Appendix D Default Data - Off-Road Equipment Emission Factors

Year	EquipmentType	Low Hp	High Hp	ROGg/bhp-hr	CO,g/bhp-hr	NOX,g/bhp-hr	SO2,g/bhp-hr	PM10,g/bhp-hr	PM2_5,g/bhp-hr	CO2,g/bhp-hr	CH4,g/bhp-hr
2035	CementandMortarMixers	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2035	CementandMortarMixers	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2040	CementandMortarMixers	6	15	0.661	3.47	4.142	0.008	0.161	0.161	568.299	0.059
2040	CementandMortarMixers	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2017	Chainsaws	0	2	127.281	346.187	2.909	0.036	0.785	0.785	884.646	7.911
2017	Chainsaws	6	15	731.828	1580.963	13.963	0.174	2.834	2.834	4229.982	45.486
2018	Chainsaws	0	2	125.383	342.558	2.894	0.036	0.741	0.741	884.646	7.793
2018	Chainsaws	6	15	730.055	1578.05	13.946	0.174	2.775	2.775	4229.982	45.376
2019	Chainsaws	0	2	123.704	339.377	2.879	0.036	0.702	0.702	884.646	7.688
2019	Chainsaws	6	15	728.478	1575.487	13.93	0.174	2.723	2.723	4229.983	45.278
2020	Chainsaws	0	2	122.245	336.69	2.866	0.036	0.667	0.667	884.645	7.598
2020	Chainsaws	6	15	727.09	1573.283	13.915	0.174	2.675	2.675	4229.983	45.192
2021	Chainsaws	0	2	121.003	334.39	2.861	0.036	0.636	0.636	884.646	7.52
2021	Chainsaws	6	15	725.905	1571.385	13.911	0.174	2.633	2.633	4229.982	45.118
2022	Chainsaws	0	2	120.084	332.625	2.86	0.036	0.61	0.61	884.646	7.463
2022	Chainsaws	6	15	725.029	1569.887	13.911	0.174	2.597	2.597	4229.982	45.064
2023	Chainsaws	0	2	119.275	331.06	2.859	0.036	0.587	0.587	884.645	7.413
2023	Chainsaws	6	15	724.255	1568.544	13.911	0.174	2.566	2.566	4229.982	45.015
2024	Chainsaws	0	2	118.594	329.785	2.858	0.036	0.567	0.567	884.646	7.371
2024	Chainsaws	6	15	723.595	1567.432	13.91	0.174	2.538	2.538	4229.983	44.974
2025	Chainsaws	0	2	118.058	328.877	2.857	0.036	0.551	0.551	884.646	7.337
2025	Chainsaws	6	15	723.056	1566.61	13.909	0.174	2.515	2.515	4229.983	44.941
2030	Chainsaws	0	2	116.821	327.327	2.847	0.036	0.515	0.515	884.646	7.261
2030	Chainsaws	6	15	721.699	1565.005	13.9	0.174	2.463	2.463	4229.983	44.857
2035	Chainsaws	0	2	116.745	327.292	2.841	0.036	0.514	0.514	884.646	7.256
2035	Chainsaws	6	15	721.61	1564.967	13.892	0.174	2.462	2.462	4229.983	44.851
2040	Chainsaws	0	2	116.734	327.292	2.841	0.036	0.514	0.514	884.646	7.255
2040	Chainsaws	6	15	721.596	1564.968	13.892	0.174	2.462	2.462	4229.983	44.85
2017	Chippers/StumpGrinders	6	15	13.257	531.934	8.832	0.024	7.049	7.049	858.88	0.738
2017	Chippers/StumpGrinders	16	25	13.666	560.455	8.137	0.021	7.049	7.049	858.879	0.761
2018	Chippers/StumpGrinders	6	15	13.054	528.594	8.866	0.024	7.078	7.078	858.879	0.727
2018	Chippers/StumpGrinders	16	25	13.521	557.812	8.176	0.021	7.078	7.078	858.879	0.753
2019	Chippers/StumpGrinders	6	15	12.927	526.488	8.885	0.024	7.103	7.103	858.879	0.72
2019	Chippers/StumpGrinders	16	25	13.43	556.111	8.197	0.021	7.103	7.103	858.879	0.748
2020	Chippers/StumpGrinders	6	15	12.837	524.97	8.898	0.024	7.126	7.126	858.879	0.715
2020	Chippers/StumpGrinders	16	25	13.364	554.86	8.21	0.021	7.126	7.126	858.879	0.744
2021	Chippers/StumpGrinders	6	15	12.749	523.609	8.907	0.024	7.146	7.146	858.879	0.71
2021	Chippers/StumpGrinders	16	25	13.299	553.749	8.22	0.021	7.146	7.146	858.879	0.741
2022	Chippers/StumpGrinders	6	15	12.676	522.437	8.918	0.024	7.161	7.161	858.879	0.706
2022	Chippers/StumpGrinders	16	25	13.245	552.799	8.232	0.021	7.161	7.161	858.88	0.738
2023	Chippers/StumpGrinders	6	15	12.604	521.328	8.93	0.024	7.173	7.173	858.879	0.702
2023	Chippers/StumpGrinders	16	25	13.193	551.905	8.244	0.021	7.173	7.173	858.879	0.735
2024	Chippers/StumpGrinders	6	15	12.541	520.397	8.94	0.024	7.183	7.183	858.879	0.699
2024	Chippers/StumpGrinders	16	25	13.147	551.168	8.255	0.021	7.183	7.183	858.879	0.733
2025	Chippers/StumpGrinders	6	15	12.482	519.536	8.949	0.024	7.191	7.191	858.879	0.696
2025	Chippers/StumpGrinders	16	25	13.104	550.485	8.265	0.021	7.191	7.191	858.879	0.73
2030	Chippers/StumpGrinders	6	15	12.282	516.861	8.977	0.024	7.199	7.199	858.879	0.685
2030	Chippers/StumpGrinders	16	25	12.957	548.436	8.297	0.021	7.199	7.199	858.879	0.722
2035	Chippers/StumpGrinders	6	15	12.235	516.011	8.982	0.024	7.199	7.199	858.879	0.683
2035	Chippers/StumpGrinders	16	25	12.921	547.707	8.303	0.021	7.199	7.199	858.879	0.721

CalEEMod Appendix D Default Data - Off-Road Equipment Emission Factors

Year	EquipmentType	Low Hp	High Hp	ROGg/bhp-hr	CO,g/bhp-hr	NOX,g/bhp-hr	SO2,g/bhp-hr	PM10,g/bhp-hr	PM2_5,g/bhp-hr	CO2,g/bhp-hr	CH4,g/bhp-hr
2040	Chippers/StumpGrinders	6	15	12.225	515.57	8.979	0.024	7.199	7.199	858.879	0.682
2040	Chippers/StumpGrinders	16	25	12.912	547.24	8.3	0.021	7.199	7.199	858.879	0.721
2017	Concrete/IndustrialSaws	16	25	0.685	2.34	4.332	0.007	0.161	0.161	568.299	0.061
2017	Concrete/IndustrialSaws	26	50	1.175	4.894	4.652	0.007	0.313	0.313	568.299	0.106
2017	Concrete/IndustrialSaws	51	120	0.557	3.595	4.086	0.006	0.294	0.294	568.299	0.05
2017	Concrete/IndustrialSaws	121	175	0.395	3.073	3.316	0.006	0.165	0.165	568.299	0.035
2018	Concrete/IndustrialSaws	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2018	Concrete/IndustrialSaws	26	50	1.032	4.766	4.492	0.007	0.277	0.277	568.299	0.093
2018	Concrete/IndustrialSaws	51	120	0.498	3.571	3.754	0.006	0.256	0.256	568.299	0.044
2018	Concrete/IndustrialSaws	121	175	0.359	3.072	2.945	0.006	0.145	0.145	568.299	0.032
2019	Concrete/IndustrialSaws	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2019	Concrete/IndustrialSaws	26	50	0.899	4.645	4.338	0.007	0.242	0.242	568.299	0.081
2019	Concrete/IndustrialSaws	51	120	0.443	3.55	3.441	0.006	0.22	0.22	568.3	0.04
2019	Concrete/IndustrialSaws	121	175	0.33	3.072	2.618	0.006	0.128	0.128	568.299	0.029
2020	Concrete/IndustrialSaws	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2020	Concrete/IndustrialSaws	26	50	0.798	4.552	4.196	0.007	0.212	0.212	568.299	0.072
2020	Concrete/IndustrialSaws	51	120	0.401	3.535	3.163	0.006	0.19	0.19	568.299	0.036
2020	Concrete/IndustrialSaws	121	175	0.306	3.072	2.324	0.006	0.114	0.114	568.299	0.027
2021	Concrete/IndustrialSaws	16	25	0.685	2.34	4.332	0.007	0.161	0.161	568.299	0.061
2021	Concrete/IndustrialSaws	26	50	0.722	4.481	4.063	0.007	0.184	0.184	568.3	0.065
2021	Concrete/IndustrialSaws	51	120	0.369	3.523	2.913	0.006	0.166	0.166	568.299	0.033
2021	Concrete/IndustrialSaws	121	175	0.286	3.072	2.055	0.006	0.101	0.101	568.299	0.025
2022	Concrete/IndustrialSaws	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2022	Concrete/IndustrialSaws	26	50	0.66	4.422	3.936	0.007	0.158	0.158	568.3	0.059
2022	Concrete/IndustrialSaws	51	120	0.343	3.514	2.686	0.006	0.144	0.144	568.299	0.031
2022	Concrete/IndustrialSaws	121	175	0.267	3.072	1.806	0.006	0.089	0.089	568.3	0.024
2023	Concrete/IndustrialSaws	16	25	0.685	2.34	4.332	0.007	0.161	0.161	568.299	0.061
2023	Concrete/IndustrialSaws	26	50	0.606	4.372	3.815	0.007	0.134	0.134	568.299	0.054
2023	Concrete/IndustrialSaws	51	120	0.32	3.507	2.478	0.006	0.123	0.123	568.3	0.028
2023	Concrete/IndustrialSaws	121	175	0.25	3.072	1.599	0.006	0.077	0.077	568.299	0.022
2024	Concrete/IndustrialSaws	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2024	Concrete/IndustrialSaws	26	50	0.561	4.33	3.701	0.007	0.115	0.115	568.3	0.05
2024	Concrete/IndustrialSaws	51	120	0.3	3.5	2.315	0.006	0.106	0.106	568.299	0.027
2024	Concrete/IndustrialSaws	121	175	0.235	3.072	1.418	0.006	0.067	0.067	568.299	0.021
2025	Concrete/IndustrialSaws	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2025	Concrete/IndustrialSaws	26	50	0.525	4.297	3.592	0.007	0.099	0.099	568.299	0.047
2025	Concrete/IndustrialSaws	51	120	0.283	3.495	2.176	0.006	0.089	0.089	568.3	0.025
2025	Concrete/IndustrialSaws	121	175	0.22	3.073	1.249	0.006	0.056	0.056	568.3	0.019
2030	Concrete/IndustrialSaws	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2030	Concrete/IndustrialSaws	26	50	0.409	4.199	3.222	0.007	0.041	0.041	568.299	0.036
2030	Concrete/IndustrialSaws	51	120	0.221	3.48	1.667	0.006	0.036	0.036	568.299	0.019
2030	Concrete/IndustrialSaws	121	175	0.163	3.074	0.59	0.006	0.025	0.025	568.299	0.014
2035	Concrete/IndustrialSaws	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2035	Concrete/IndustrialSaws	26	50	0.375	4.174	3.107	0.007	0.021	0.021	568.3	0.033
2035	Concrete/IndustrialSaws	51	120	0.2	3.476	1.491	0.006	0.018	0.018	568.299	0.018
2035	Concrete/IndustrialSaws	121	175	0.143	3.075	0.374	0.006	0.014	0.014	568.299	0.012
2040	Concrete/IndustrialSaws	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2040	Concrete/IndustrialSaws	26	50	0.373	4.175	3.058	0.007	0.014	0.014	568.299	0.033
2040	Concrete/IndustrialSaws	51	120	0.195	3.477	1.434	0.006	0.013	0.013	568.299	0.017
2040	Concrete/IndustrialSaws	121	175	0.136	3.076	0.297	0.006	0.011	0.011	568.3	0.012

CalEEMod Appendix D Default Data - Off-Road Equipment Emission Factors

Year	EquipmentType	Low Hp	High Hp	ROGg/bhp-hr	CO,g/bhp-hr	NOX,g/bhp-hr	SO2,g/bhp-hr	PM10,g/bhp-hr	PM2_5,g/bhp-hr	CO2,g/bhp-hr	CH4,g/bhp-hr
2017	Excavators	16	25	0.771	4.88904	4.67818	0.005	0.332	0.305	554.9101	0.17
2017	Excavators	26	50	0.771	4.88904	4.67818	0.005	0.332	0.305	554.9101	0.17
2017	Excavators	51	120	0.44	3.63939	4.37952	0.005	0.31	0.285	493.409	0.151
2017	Excavators	121	175	0.334	3.15091	3.69967	0.005	0.182	0.167	498.5222	0.153
2017	Excavators	176	250	0.247	1.24911	3.31872	0.005	0.105	0.097	498.4364	0.153
2017	Excavators	251	500	0.2	1.19852	2.50715	0.005	0.081	0.075	496.8098	0.152
2017	Excavators	501	750	0.21	1.22803	2.71934	0.005	0.09	0.083	494.5496	0.152
2018	Excavators	16	25	0.687	4.70022	4.39518	0.005	0.284	0.261	545.3468	0.17
2018	Excavators	26	50	0.687	4.70022	4.39518	0.005	0.284	0.261	545.3468	0.17
2018	Excavators	51	120	0.368	3.56214	3.76366	0.005	0.25	0.23	486.056	0.151
2018	Excavators	121	175	0.273	3.09338	2.92361	0.005	0.142	0.13	490.6725	0.153
2018	Excavators	176	250	0.202	1.15209	2.59377	0.005	0.079	0.073	490.2569	0.153
2018	Excavators	251	500	0.175	1.13951	2.05045	0.005	0.066	0.061	489.1025	0.152
2018	Excavators	501	750	0.189	1.22359	2.26567	0.005	0.076	0.07	487.6528	0.152
2019	Excavators	16	25	0.637	4.59698	4.19867	0.005	0.25	0.23	536.9132	0.17
2019	Excavators	26	50	0.637	4.59698	4.19867	0.005	0.25	0.23	536.9132	0.17
2019	Excavators	51	120	0.325	3.52421	3.36874	0.005	0.211	0.194	478.2452	0.151
2019	Excavators	121	175	0.246	3.08163	2.53264	0.005	0.122	0.112	482.6838	0.153
2019	Excavators	176	250	0.186	1.12671	2.24187	0.005	0.068	0.063	482.2503	0.153
2019	Excavators	251	500	0.162	1.1135	1.77986	0.005	0.058	0.053	481.2361	0.152
2019	Excavators	501	750	0.176	1.17289	1.98661	0.005	0.067	0.062	479.2876	0.152
2020	Excavators	16	25	0.593	4.50032	4.03131	0.005	0.222	0.204	525.3675	0.17
2020	Excavators	26	50	0.593	4.50032	4.03131	0.005	0.222	0.204	525.3675	0.17
2020	Excavators	51	120	0.299	3.50495	3.08964	0.005	0.185	0.17	468.0546	0.151
2020	Excavators	121	175	0.231	3.08597	2.27838	0.005	0.11	0.102	472.2891	0.153
2020	Excavators	176	250	0.177	1.11778	2.02738	0.005	0.061	0.056	471.8828	0.153
2020	Excavators	251	500	0.153	1.1016	1.57199	0.005	0.052	0.048	470.2956	0.152
2020	Excavators	501	750	0.17	1.14543	1.79718	0.005	0.061	0.056	468.8706	0.152
2021	Excavators	16	25	0.562	4.46094	3.91866	0.005	0.202	0.186	525.3774	0.17
2021	Excavators	26	50	0.562	4.46094	3.91866	0.005	0.202	0.186	525.3774	0.17
2021	Excavators	51	120	0.275	3.49196	2.84891	0.005	0.161	0.148	467.7906	0.151
2021	Excavators	121	175	0.216	3.08975	2.03357	0.005	0.099	0.091	472.3586	0.153
2021	Excavators	176	250	0.163	1.10324	1.70572	0.005	0.052	0.048	471.7931	0.153
2021	Excavators	251	500	0.143	1.08777	1.33174	0.005	0.045	0.041	469.6156	0.152
2021	Excavators	501	750	0.165	1.14978	1.61856	0.005	0.056	0.052	469.547	0.152
2022	Excavators	16	25	0.478	4.27341	3.70039	0.005	0.16	0.147	525.4468	0.17
2022	Excavators	26	50	0.478	4.27341	3.70039	0.005	0.16	0.147	525.4468	0.17
2022	Excavators	51	120	0.252	3.47329	2.60649	0.005	0.138	0.127	467.6256	0.151
2022	Excavators	121	175	0.191	3.074	1.6781	0.005	0.081	0.075	472.1917	0.153
2022	Excavators	176	250	0.148	1.09157	1.38616	0.005	0.044	0.04	472.0412	0.153
2022	Excavators	251	500	0.128	1.06126	1.03988	0.005	0.035	0.032	469.7105	0.152
2022	Excavators	501	750	0.15	1.144	1.2865	0.005	0.047	0.043	469.2892	0.152
2023	Excavators	16	25	0.45	4.23393	3.59356	0.005	0.139	0.128	525.4286	0.17
2023	Excavators	26	50	0.45	4.23393	3.59356	0.005	0.139	0.128	525.4286	0.17
2023	Excavators	51	120	0.23	3.45367	2.38066	0.005	0.116	0.107	467.1573	0.151
2023	Excavators	121	175	0.178	3.07648	1.46245	0.005	0.072	0.066	472.277	0.153
2023	Excavators	176	250	0.142	1.08965	1.20943	0.005	0.039	0.036	472.2131	0.153
2023	Excavators	251	500	0.122	1.05093	0.89311	0.005	0.03	0.028	469.8892	0.152
2023	Excavators	501	750	0.144	1.13199	1.15865	0.005	0.043	0.04	468.6826	0.152
2024	Excavators	16	25	0.416	4.20529	3.50816	0.005	0.12	0.11	525.979	0.17

CalEEMod Appendix D Default Data - Off-Road Equipment Emission Factors

Year	EquipmentType	Low Hp	High Hp	ROGg/bhp-hr	CO,g/bhp-hr	NOX,g/bhp-hr	SO2,g/bhp-hr	PM10,g/bhp-hr	PM2_5,g/bhp-hr	CO2,g/bhp-hr	CH4,g/bhp-hr
2024	Excavators	26	50	0.416	4.20529	3.50816	0.005	0.12	0.11	525.979	0.17
2024	Excavators	51	120	0.217	3.45322	2.24781	0.005	0.102	0.094	467.3843	0.151
2024	Excavators	121	175	0.17	3.08336	1.32479	0.005	0.065	0.06	472.4279	0.153
2024	Excavators	176	250	0.139	1.0899	1.10808	0.005	0.036	0.033	472.4415	0.153
2024	Excavators	251	500	0.121	1.05369	0.83129	0.005	0.029	0.026	469.7108	0.152
2024	Excavators	501	750	0.142	1.13421	1.10467	0.005	0.041	0.037	468.652	0.152
2025	Excavators	16	25	0.403	4.21941	3.45298	0.005	0.107	0.099	525.7772	0.17
2025	Excavators	26	50	0.403	4.21941	3.45298	0.005	0.107	0.099	525.7772	0.17
2025	Excavators	51	120	0.201	3.43876	2.08246	0.005	0.085	0.078	466.7376	0.151
2025	Excavators	121	175	0.158	3.078	1.15367	0.005	0.057	0.052	472.4964	0.153
2025	Excavators	176	250	0.131	1.08136	0.96211	0.005	0.032	0.029	472.5599	0.153
2025	Excavators	251	500	0.115	1.05072	0.72641	0.005	0.026	0.024	470.2915	0.152
2025	Excavators	501	750	0.139	1.13484	1.02571	0.005	0.038	0.035	468.5582	0.152
2030	Excavators	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2030	Excavators	26	50	0.602	5.309	3.393	0.007	0.038	0.038	568.299	0.054
2030	Excavators	51	120	0.301	3.806	1.676	0.006	0.034	0.034	568.299	0.027
2030	Excavators	121	175	0.213	3.362	0.525	0.006	0.023	0.023	568.299	0.019
2030	Excavators	176	250	0.203	1.145	0.452	0.006	0.016	0.016	568.299	0.018
2030	Excavators	251	500	0.202	1.088	0.433	0.005	0.016	0.016	568.299	0.018
2030	Excavators	501	750	0.202	1.088	0.437	0.005	0.016	0.016	568.299	0.018
2035	Excavators	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2035	Excavators	26	50	0.572	5.287	3.323	0.007	0.024	0.024	568.299	0.051
2035	Excavators	51	120	0.284	3.802	1.551	0.006	0.021	0.021	568.299	0.025
2035	Excavators	121	175	0.197	3.363	0.365	0.006	0.015	0.015	568.299	0.017
2035	Excavators	176	250	0.195	1.145	0.342	0.006	0.013	0.013	568.3	0.017
2035	Excavators	251	500	0.195	1.089	0.337	0.005	0.013	0.013	568.299	0.017
2035	Excavators	501	750	0.195	1.088	0.338	0.005	0.013	0.013	568.299	0.017
2040	Excavators	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.3	0.061
2040	Excavators	26	50	0.567	5.283	3.29	0.007	0.019	0.019	568.299	0.051
2040	Excavators	51	120	0.279	3.802	1.507	0.006	0.017	0.017	568.299	0.025
2040	Excavators	121	175	0.193	3.363	0.311	0.006	0.013	0.013	568.299	0.017
2040	Excavators	176	250	0.192	1.145	0.3	0.006	0.011	0.011	568.299	0.017
2040	Excavators	251	500	0.192	1.089	0.3	0.005	0.011	0.011	568.299	0.017
2040	Excavators	501	750	0.192	1.089	0.3	0.005	0.011	0.011	568.299	0.017
2017	GeneratorSets	6	15	0.699	3.599	4.847	0.008	0.25	0.25	568.299	0.063
2017	GeneratorSets	16	25	0.757	2.564	4.729	0.007	0.233	0.233	568.299	0.068
2017	GeneratorSets	26	50	1.017	4.292	4.522	0.007	0.285	0.285	568.299	0.091
2017	GeneratorSets	51	120	0.52	3.442	4.072	0.006	0.274	0.274	568.299	0.046
2017	GeneratorSets	121	175	0.356	2.931	3.347	0.006	0.151	0.151	568.299	0.032
2017	GeneratorSets	176	250	0.245	1.063	2.91	0.006	0.081	0.081	568.299	0.022
2017	GeneratorSets	251	500	0.224	1.048	2.579	0.005	0.076	0.076	568.299	0.02
2017	GeneratorSets	501	750	0.23	1.048	2.66	0.005	0.077	0.077	568.299	0.02
2017	GeneratorSets	1001	9999	0.301	1.161	4.293	0.005	0.104	0.104	568.299	0.027
2018	GeneratorSets	6	15	0.679	3.58	4.728	0.008	0.237	0.237	568.299	0.061
2018	GeneratorSets	16	25	0.744	2.531	4.661	0.007	0.224	0.224	568.299	0.067
2018	GeneratorSets	26	50	0.895	4.182	4.366	0.007	0.253	0.253	568.299	0.08
2018	GeneratorSets	51	120	0.461	3.418	3.752	0.006	0.239	0.239	568.299	0.041
2018	GeneratorSets	121	175	0.319	2.93	2.989	0.006	0.133	0.133	568.299	0.028
2018	GeneratorSets	176	250	0.226	1.048	2.582	0.006	0.072	0.072	568.299	0.02
2018	GeneratorSets	251	500	0.211	1.028	2.31	0.005	0.069	0.069	568.299	0.019

CalEEMod Appendix D Default Data - Off-Road Equipment Emission Factors

Year	EquipmentType	Low Hp	High Hp	ROGg/bhp-hr	CO,g/bhp-hr	NOX,g/bhp-hr	SO2,g/bhp-hr	PM10,g/bhp-hr	PM2_5,g/bhp-hr	CO2,g/bhp-hr	CH4,g/bhp-hr
2018	GeneratorSets	501	750	0.215	1.028	2.37	0.005	0.07	0.07	568.299	0.019
2018	GeneratorSets	1001	9999	0.28	1.128	4.058	0.005	0.095	0.095	568.299	0.025
2019	GeneratorSets	6	15	0.662	3.562	4.617	0.008	0.224	0.224	568.299	0.059
2019	GeneratorSets	16	25	0.731	2.501	4.596	0.007	0.214	0.214	568.299	0.066
2019	GeneratorSets	26	50	0.779	4.076	4.215	0.007	0.222	0.222	568.299	0.07
2019	GeneratorSets	51	120	0.405	3.396	3.446	0.006	0.206	0.206	568.299	0.036
2019	GeneratorSets	121	175	0.29	2.929	2.669	0.006	0.118	0.118	568.299	0.026
2019	GeneratorSets	176	250	0.211	1.036	2.285	0.006	0.064	0.064	568.299	0.019
2019	GeneratorSets	251	500	0.199	1.015	2.056	0.005	0.062	0.062	568.299	0.018
2019	GeneratorSets	501	750	0.202	1.015	2.104	0.005	0.062	0.062	568.299	0.018
2019	GeneratorSets	1001	9999	0.261	1.103	3.829	0.005	0.087	0.087	568.299	0.023
2020	GeneratorSets	6	15	0.646	3.546	4.516	0.008	0.212	0.212	568.299	0.058
2020	GeneratorSets	16	25	0.721	2.473	4.538	0.007	0.205	0.205	568.299	0.065
2020	GeneratorSets	26	50	0.691	3.995	4.075	0.007	0.194	0.194	568.299	0.062
2020	GeneratorSets	51	120	0.364	3.38	3.173	0.006	0.179	0.179	568.299	0.032
2020	GeneratorSets	121	175	0.267	2.93	2.38	0.006	0.105	0.105	568.299	0.024
2020	GeneratorSets	176	250	0.198	1.026	2.016	0.006	0.057	0.057	568.299	0.017
2020	GeneratorSets	251	500	0.188	1.005	1.816	0.005	0.055	0.055	568.299	0.017
2020	GeneratorSets	501	750	0.191	1.005	1.858	0.005	0.056	0.056	568.299	0.017
2020	GeneratorSets	1001	9999	0.242	1.082	3.608	0.005	0.079	0.079	568.3	0.021
2021	GeneratorSets	6	15	0.634	3.531	4.441	0.008	0.201	0.201	568.299	0.057
2021	GeneratorSets	16	25	0.712	2.446	4.497	0.007	0.196	0.196	568.299	0.064
2021	GeneratorSets	26	50	0.613	3.905	3.916	0.007	0.165	0.165	568.299	0.055
2021	GeneratorSets	51	120	0.326	3.361	2.888	0.006	0.153	0.153	568.299	0.029
2021	GeneratorSets	121	175	0.243	2.925	2.068	0.006	0.091	0.091	568.299	0.021
2021	GeneratorSets	176	250	0.183	1.016	1.73	0.006	0.049	0.049	568.299	0.016
2021	GeneratorSets	251	500	0.175	0.996	1.562	0.005	0.048	0.048	568.299	0.015
2021	GeneratorSets	501	750	0.177	0.996	1.596	0.005	0.048	0.048	568.299	0.016
2021	GeneratorSets	1001	9999	0.22	1.06	3.372	0.005	0.07	0.07	568.3	0.019
2022	GeneratorSets	6	15	0.626	3.519	4.39	0.008	0.193	0.193	568.299	0.056
2022	GeneratorSets	16	25	0.706	2.426	4.47	0.007	0.188	0.188	568.299	0.063
2022	GeneratorSets	26	50	0.56	3.858	3.796	0.007	0.143	0.143	568.299	0.05
2022	GeneratorSets	51	120	0.301	3.353	2.671	0.006	0.134	0.134	568.299	0.027
2022	GeneratorSets	121	175	0.226	2.926	1.83	0.006	0.081	0.081	568.299	0.02
2022	GeneratorSets	176	250	0.173	1.01	1.508	0.006	0.043	0.043	568.299	0.015
2022	GeneratorSets	251	500	0.166	0.99	1.384	0.005	0.042	0.042	568.299	0.015
2022	GeneratorSets	501	750	0.168	0.99	1.412	0.005	0.043	0.043	568.299	0.015
2022	GeneratorSets	1001	9999	0.206	1.045	3.202	0.005	0.063	0.063	568.299	0.018
2023	GeneratorSets	6	15	0.618	3.508	4.345	0.008	0.186	0.186	568.299	0.055
2023	GeneratorSets	16	25	0.701	2.407	4.447	0.007	0.182	0.182	568.299	0.063
2023	GeneratorSets	26	50	0.514	3.819	3.685	0.007	0.124	0.124	568.299	0.046
2023	GeneratorSets	51	120	0.279	3.347	2.477	0.006	0.117	0.117	568.299	0.025
2023	GeneratorSets	121	175	0.211	2.927	1.635	0.006	0.071	0.071	568.299	0.019
2023	GeneratorSets	176	250	0.164	1.006	1.328	0.006	0.038	0.038	568.299	0.014
2023	GeneratorSets	251	500	0.158	0.986	1.228	0.005	0.037	0.037	568.299	0.014
2023	GeneratorSets	501	750	0.16	0.986	1.253	0.005	0.037	0.037	568.299	0.014
2023	GeneratorSets	1001	9999	0.194	1.031	3.058	0.005	0.058	0.058	568.299	0.017
2024	GeneratorSets	6	15	0.612	3.499	4.305	0.008	0.181	0.181	568.299	0.055
2024	GeneratorSets	16	25	0.697	2.39	4.426	0.007	0.178	0.178	568.299	0.062
2024	GeneratorSets	26	50	0.475	3.787	3.582	0.007	0.107	0.107	568.299	0.042

CalEEMod Appendix D Default Data - Off-Road Equipment Emission Factors

Year	EquipmentType	Low Hp	High Hp	ROGg/bhp-hr	CO,g/bhp-hr	NOX,g/bhp-hr	SO2,g/bhp-hr	PM10,g/bhp-hr	PM2_5,g/bhp-hr	CO2,g/bhp-hr	CH4,g/bhp-hr
2024	GeneratorSets	51	120	0.26	3.342	2.321	0.006	0.101	0.101	568.299	0.023
2024	GeneratorSets	121	175	0.197	2.929	1.462	0.006	0.062	0.062	568.299	0.017
2024	GeneratorSets	176	250	0.155	1.003	1.169	0.006	0.033	0.033	568.299	0.014
2024	GeneratorSets	251	500	0.151	0.983	1.082	0.005	0.032	0.032	568.3	0.013
2024	GeneratorSets	501	750	0.152	0.983	1.104	0.005	0.032	0.032	568.299	0.013
2024	GeneratorSets	1001	9999	0.183	1.018	2.929	0.005	0.052	0.052	568.3	0.016
2025	GeneratorSets	6	15	0.607	3.491	4.269	0.008	0.178	0.178	568.299	0.054
2025	GeneratorSets	16	25	0.694	2.376	4.407	0.007	0.175	0.175	568.299	0.062
2025	GeneratorSets	26	50	0.44	3.758	3.481	0.007	0.093	0.093	568.3	0.039
2025	GeneratorSets	51	120	0.243	3.338	2.185	0.006	0.087	0.087	568.299	0.021
2025	GeneratorSets	121	175	0.184	2.93	1.297	0.006	0.053	0.053	568.299	0.016
2025	GeneratorSets	176	250	0.147	1	1.02	0.006	0.028	0.028	568.299	0.013
2025	GeneratorSets	251	500	0.144	0.981	0.945	0.005	0.027	0.027	568.3	0.013
2025	GeneratorSets	501	750	0.145	0.981	0.964	0.005	0.027	0.027	568.299	0.013
2025	GeneratorSets	1001	9999	0.173	1.008	2.812	0.005	0.047	0.047	568.299	0.015
2030	GeneratorSets	6	15	0.592	3.47	4.164	0.008	0.166	0.166	568.299	0.053
2030	GeneratorSets	16	25	0.686	2.34	4.347	0.007	0.165	0.165	568.299	0.061
2030	GeneratorSets	26	50	0.315	3.64	3.107	0.007	0.038	0.038	568.299	0.028
2030	GeneratorSets	51	120	0.178	3.316	1.645	0.006	0.034	0.034	568.299	0.016
2030	GeneratorSets	121	175	0.13	2.929	0.601	0.006	0.023	0.023	568.299	0.011
2030	GeneratorSets	176	250	0.12	0.998	0.504	0.006	0.016	0.016	568.299	0.01
2030	GeneratorSets	251	500	0.119	0.978	0.476	0.005	0.015	0.015	568.299	0.01
2030	GeneratorSets	501	750	0.119	0.978	0.482	0.005	0.015	0.015	568.299	0.01
2030	GeneratorSets	1001	9999	0.128	0.979	2.483	0.005	0.029	0.029	568.299	0.011
2035	GeneratorSets	6	15	0.589	3.47	4.143	0.008	0.162	0.162	568.299	0.053
2035	GeneratorSets	16	25	0.685	2.34	4.332	0.007	0.162	0.162	568.299	0.061
2035	GeneratorSets	26	50	0.276	3.607	2.991	0.007	0.018	0.018	568.299	0.024
2035	GeneratorSets	51	120	0.156	3.31	1.458	0.006	0.016	0.016	568.299	0.014
2035	GeneratorSets	121	175	0.113	2.929	0.373	0.006	0.013	0.013	568.299	0.01
2035	GeneratorSets	176	250	0.11	0.998	0.331	0.006	0.011	0.011	568.299	0.009
2035	GeneratorSets	251	500	0.11	0.978	0.328	0.005	0.011	0.011	568.299	0.009
2035	GeneratorSets	501	750	0.11	0.978	0.328	0.005	0.011	0.011	568.299	0.009
2035	GeneratorSets	1001	9999	0.114	0.978	2.362	0.005	0.022	0.022	568.299	0.01
2040	GeneratorSets	6	15	0.589	3.469	4.142	0.008	0.161	0.161	568.299	0.053
2040	GeneratorSets	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2040	GeneratorSets	26	50	0.273	3.601	2.941	0.007	0.012	0.012	568.3	0.024
2040	GeneratorSets	51	120	0.152	3.308	1.399	0.006	0.012	0.012	568.299	0.013
2040	GeneratorSets	121	175	0.107	2.928	0.293	0.006	0.01	0.01	568.299	0.009
2040	GeneratorSets	176	250	0.106	0.997	0.277	0.006	0.009	0.009	568.299	0.009
2040	GeneratorSets	251	500	0.106	0.978	0.277	0.005	0.009	0.009	568.299	0.009
2040	GeneratorSets	501	750	0.106	0.978	0.277	0.005	0.009	0.009	568.3	0.009
2040	GeneratorSets	1001	9999	0.107	0.978	2.33	0.005	0.02	0.02	568.299	0.009
2017	Pavers	16	25	1.731	6.19932	5.43675	0.005	0.54	0.496	556.4528	0.17
2017	Pavers	26	50	1.731	6.19932	5.43675	0.005	0.54	0.496	556.4528	0.17
2017	Pavers	51	120	0.625	3.75882	5.69243	0.005	0.437	0.402	495.9253	0.152
2017	Pavers	121	175	0.389	3.06282	4.35312	0.005	0.214	0.197	498.967	0.153
2017	Pavers	176	250	0.208	1.03652	3.80866	0.005	0.1	0.092	499.5617	0.153
2017	Pavers	251	500	0.168	0.97942	2.48674	0.005	0.087	0.08	491.7843	0.151
2018	Pavers	16	25	1.539	5.8493	5.12103	0.005	0.478	0.44	547.0785	0.17
2018	Pavers	26	50	1.539	5.8493	5.12103	0.005	0.478	0.44	547.0785	0.17

CalEEMod Appendix D Default Data - Off-Road Equipment Emission Factors

Year	EquipmentType	Low Hp	High Hp	ROGg/bhp-hr	CO,g/bhp-hr	NOX,g/bhp-hr	SO2,g/bhp-hr	PM10,g/bhp-hr	PM2_5,g/bhp-hr	CO2,g/bhp-hr	CH4,g/bhp-hr
2018	Pavers	51	120	0.536	3.66032	5.01936	0.005	0.375	0.345	488.1812	0.152
2018	Pavers	121	175	0.339	3.03913	3.7472	0.005	0.183	0.168	491.322	0.153
2018	Pavers	176	250	0.198	1.03446	3.47438	0.005	0.092	0.085	491.543	0.153
2018	Pavers	251	500	0.164	0.98125	2.32002	0.005	0.083	0.076	484.2774	0.151
2019	Pavers	16	25	1.418	5.65687	4.91634	0.005	0.436	0.401	538.3246	0.17
2019	Pavers	26	50	1.418	5.65687	4.91634	0.005	0.436	0.401	538.3246	0.17
2019	Pavers	51	120	0.496	3.62215	4.67048	0.005	0.345	0.318	480.2509	0.152
2019	Pavers	121	175	0.299	3.01323	3.24473	0.005	0.159	0.146	483.3938	0.153
2019	Pavers	176	250	0.187	1.03181	3.11084	0.005	0.084	0.077	483.5743	0.153
2019	Pavers	251	500	0.166	0.98586	2.26992	0.005	0.081	0.075	476.9707	0.151
2020	Pavers	16	25	1.318	5.52345	4.76401	0.005	0.402	0.37	526.2098	0.17
2020	Pavers	26	50	1.318	5.52345	4.76401	0.005	0.402	0.37	526.2098	0.17
2020	Pavers	51	120	0.47	3.60405	4.42718	0.005	0.325	0.299	469.8815	0.152
2020	Pavers	121	175	0.273	3.0097	2.91833	0.005	0.142	0.131	472.7746	0.153
2020	Pavers	176	250	0.176	1.02834	2.77699	0.005	0.076	0.07	472.8337	0.153
2020	Pavers	251	500	0.165	0.98677	2.13394	0.005	0.077	0.071	466.2059	0.151
2021	Pavers	16	25	1.208	5.30162	4.60183	0.005	0.37	0.34	526.5153	0.17
2021	Pavers	26	50	1.208	5.30162	4.60183	0.005	0.37	0.34	526.5153	0.17
2021	Pavers	51	120	0.42	3.56251	4.02622	0.005	0.285	0.262	469.7736	0.152
2021	Pavers	121	175	0.256	3.01647	2.6948	0.005	0.13	0.12	472.5552	0.153
2021	Pavers	176	250	0.165	1.02422	2.4844	0.005	0.07	0.064	472.4765	0.153
2021	Pavers	251	500	0.164	0.9877	2.05298	0.005	0.074	0.068	465.5908	0.151
2022	Pavers	16	25	1.092	5.11433	4.42092	0.005	0.33	0.303	526.8963	0.17
2022	Pavers	26	50	1.092	5.11433	4.42092	0.005	0.33	0.303	526.8963	0.17
2022	Pavers	51	120	0.373	3.52511	3.65932	0.005	0.248	0.228	470.1854	0.152
2022	Pavers	121	175	0.215	2.99478	2.17958	0.005	0.104	0.095	472.7599	0.153
2022	Pavers	176	250	0.14	1.01231	1.89985	0.005	0.055	0.05	472.3718	0.153
2022	Pavers	251	500	0.15	0.98238	1.81028	0.005	0.063	0.058	466.0042	0.151
2023	Pavers	16	25	1.007	5.00667	4.28484	0.005	0.299	0.275	526.8595	0.17
2023	Pavers	26	50	1.007	5.00667	4.28484	0.005	0.299	0.275	526.8595	0.17
2023	Pavers	51	120	0.349	3.50733	3.42661	0.005	0.226	0.208	470.0839	0.152
2023	Pavers	121	175	0.199	2.99398	1.95517	0.005	0.092	0.085	472.7178	0.153
2023	Pavers	176	250	0.13	1.01018	1.6106	0.005	0.047	0.043	472.6051	0.153
2023	Pavers	251	500	0.152	0.98653	1.77101	0.005	0.062	0.057	466.0038	0.151
2024	Pavers	16	25	0.95	4.95625	4.20308	0.005	0.279	0.257	526.8565	0.17
2024	Pavers	26	50	0.95	4.95625	4.20308	0.005	0.279	0.257	526.8565	0.17
2024	Pavers	51	120	0.337	3.50784	3.2771	0.005	0.213	0.196	470.2262	0.152
2024	Pavers	121	175	0.191	3.0042	1.80882	0.005	0.084	0.078	472.6605	0.153
2024	Pavers	176	250	0.119	1.00872	1.34323	0.005	0.041	0.038	473.2362	0.153
2024	Pavers	251	500	0.143	0.98624	1.54798	0.005	0.054	0.049	467.1711	0.151
2025	Pavers	16	25	0.918	4.94451	4.13112	0.005	0.265	0.243	526.8533	0.17
2025	Pavers	26	50	0.918	4.94451	4.13112	0.005	0.265	0.243	526.8533	0.17
2025	Pavers	51	120	0.314	3.49286	3.06788	0.005	0.19	0.175	469.8988	0.152
2025	Pavers	121	175	0.18	3.0071	1.64396	0.005	0.077	0.071	472.485	0.153
2025	Pavers	176	250	0.107	1.00414	1.03493	0.005	0.034	0.031	473.4832	0.153
2025	Pavers	251	500	0.115	0.96892	1.13351	0.005	0.039	0.036	465.8824	0.151
2030	Pavers	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2030	Pavers	26	50	0.845	5.396	3.841	0.007	0.134	0.134	568.299	0.076
2030	Pavers	51	120	0.408	3.8	2.468	0.006	0.121	0.121	568.3	0.036
2030	Pavers	121	175	0.3	3.326	1.425	0.006	0.074	0.074	568.299	0.027

CalEEMod Appendix D Default Data - Off-Road Equipment Emission Factors

Year	EquipmentType	Low Hp	High Hp	ROGg/bhp-hr	CO,g/bhp-hr	NOX,g/bhp-hr	SO2,g/bhp-hr	PM10,g/bhp-hr	PM2_5,g/bhp-hr	CO2,g/bhp-hr	CH4,g/bhp-hr
2030	Pavers	176	250	0.259	1.192	1.246	0.006	0.045	0.045	568.299	0.023
2030	Pavers	251	500	0.253	1.181	1.141	0.005	0.043	0.043	568.299	0.022
2035	Pavers	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2035	Pavers	26	50	0.694	5.26	3.555	0.007	0.076	0.076	568.299	0.062
2035	Pavers	51	120	0.338	3.774	1.986	0.006	0.069	0.069	568.299	0.03
2035	Pavers	121	175	0.244	3.319	0.889	0.006	0.043	0.043	568.299	0.022
2035	Pavers	176	250	0.221	1.157	0.772	0.006	0.027	0.027	568.3	0.019
2035	Pavers	251	500	0.218	1.111	0.722	0.005	0.026	0.026	568.299	0.019
2040	Pavers	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2040	Pavers	26	50	0.618	5.189	3.393	0.007	0.047	0.047	568.299	0.055
2040	Pavers	51	120	0.302	3.763	1.731	0.006	0.043	0.043	568.299	0.027
2040	Pavers	121	175	0.213	3.319	0.583	0.006	0.027	0.027	568.299	0.019
2040	Pavers	176	250	0.2	1.138	0.525	0.006	0.018	0.018	568.299	0.018
2040	Pavers	251	500	0.198	1.085	0.498	0.005	0.018	0.018	568.299	0.017
2018	PavingEquipment	16	25	0.926	4.80403	4.72756	0.005	0.359	0.33	548.6481	0.168
2018	PavingEquipment	26	50	0.926	4.80403	4.72756	0.005	0.359	0.33	548.6481	0.168
2018	PavingEquipment	51	120	0.563	3.74146	5.20745	0.005	0.391	0.359	500.1649	0.153
2018	PavingEquipment	121	175	0.342	3.07321	3.89633	0.005	0.195	0.179	497.148	0.152
2018	PavingEquipment	176	250	0.288	1.333	4.12109	0.005	0.141	0.13	498.7323	0.153
2018	PavingEquipment	16	25	0.737	4.41578	4.31244	0.005	0.286	0.263	540.6115	0.168
2018	PavingEquipment	26	50	0.737	4.41578	4.31244	0.005	0.286	0.263	540.6115	0.168
2018	PavingEquipment	51	120	0.449	3.60743	4.27034	0.005	0.302	0.278	492.1184	0.153
2018	PavingEquipment	121	175	0.284	3.02602	3.17208	0.005	0.155	0.143	489.2024	0.152
2018	PavingEquipment	176	250	0.258	1.28117	3.58656	0.005	0.123	0.113	490.6833	0.153
2019	PavingEquipment	16	25	0.705	4.40798	4.23779	0.005	0.27	0.248	531.8612	0.168
2019	PavingEquipment	26	50	0.705	4.40798	4.23779	0.005	0.27	0.248	531.8612	0.168
2019	PavingEquipment	51	120	0.425	3.59849	4.04152	0.005	0.281	0.258	484.387	0.153
2019	PavingEquipment	121	175	0.254	3.0109	2.6924	0.005	0.134	0.123	481.2251	0.152
2019	PavingEquipment	176	250	0.241	1.24449	3.25106	0.005	0.112	0.103	482.6441	0.153
2020	PavingEquipment	16	25	0.621	4.22322	3.9519	0.005	0.217	0.2	520.1235	0.168
2020	PavingEquipment	26	50	0.621	4.22322	3.9519	0.005	0.217	0.2	520.1235	0.168
2020	PavingEquipment	51	120	0.397	3.58172	3.78064	0.005	0.256	0.235	473.3249	0.153
2020	PavingEquipment	121	175	0.248	3.02393	2.55498	0.005	0.128	0.118	470.7359	0.152
2020	PavingEquipment	176	250	0.243	1.25215	3.2202	0.005	0.111	0.102	472.1514	0.153
2021	PavingEquipment	16	25	0.587	4.21072	3.88226	0.005	0.2	0.184	520.3965	0.168
2021	PavingEquipment	26	50	0.587	4.21072	3.88226	0.005	0.2	0.184	520.3965	0.168
2021	PavingEquipment	51	120	0.355	3.5537	3.45065	0.005	0.219	0.201	473.2205	0.153
2021	PavingEquipment	121	175	0.229	3.03229	2.31505	0.005	0.114	0.105	470.6495	0.152
2021	PavingEquipment	176	250	0.211	1.20904	2.58202	0.005	0.092	0.085	472.151	0.153
2022	PavingEquipment	16	25	0.571	4.24448	3.83611	0.005	0.188	0.173	520.6594	0.168
2022	PavingEquipment	26	50	0.571	4.24448	3.83611	0.005	0.188	0.173	520.6594	0.168
2022	PavingEquipment	51	120	0.296	3.50075	2.99968	0.005	0.171	0.157	473.4475	0.153
2022	PavingEquipment	121	175	0.213	3.03777	2.07331	0.005	0.101	0.093	470.6646	0.152
2022	PavingEquipment	176	250	0.195	1.20363	2.22813	0.005	0.083	0.076	472.169	0.153
2023	PavingEquipment	16	25	0.541	4.24108	3.77446	0.005	0.173	0.159	521.1138	0.169
2023	PavingEquipment	26	50	0.541	4.24108	3.77446	0.005	0.173	0.159	521.1138	0.169
2023	PavingEquipment	51	120	0.278	3.50331	2.83717	0.005	0.152	0.14	473.427	0.153
2023	PavingEquipment	121	175	0.204	3.05059	1.91255	0.005	0.093	0.086	470.663	0.152
2023	PavingEquipment	176	250	0.175	1.16523	1.88495	0.005	0.07	0.065	472.169	0.153
2024	PavingEquipment	16	25	0.523	4.27468	3.74329	0.005	0.164	0.151	521.0575	0.169

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Year	EquipmentType	Low Hp	High Hp	ROGg/bhp-hr	CO,g/bhp-hr	NOX,g/bhp-hr	SO2,g/bhp-hr	PM10,g/bhp-hr	PM2_5,g/bhp-hr	CO2,g/bhp-hr	CH4,g/bhp-hr
2024	PavingEquipment	26	50	0.523	4.27468	3.74329	0.005	0.164	0.151	521.0575	0.169
2024	PavingEquipment	51	120	0.262	3.50288	2.67309	0.005	0.135	0.125	473.1748	0.153
2024	PavingEquipment	121	175	0.197	3.06623	1.78512	0.005	0.086	0.079	470.6614	0.152
2024	PavingEquipment	176	250	0.138	1.11417	1.29567	0.005	0.048	0.044	472.2124	0.153
2025	PavingEquipment	16	25	0.476	4.20347	3.62672	0.005	0.141	0.13	520.9975	0.169
2025	PavingEquipment	26	50	0.476	4.20347	3.62672	0.005	0.141	0.13	520.9975	0.169
2025	PavingEquipment	51	120	0.241	3.48256	2.49628	0.005	0.118	0.108	473.4239	0.153
2025	PavingEquipment	121	175	0.175	3.03837	1.509	0.005	0.075	0.069	470.4844	0.152
2025	PavingEquipment	176	250	0.133	1.11653	1.10952	0.005	0.043	0.04	472.2341	0.153
2030	PavingEquipment	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2030	PavingEquipment	26	50	0.802	5.309	3.809	0.007	0.126	0.126	568.299	0.072
2030	PavingEquipment	51	120	0.39	3.774	2.393	0.006	0.114	0.114	568.3	0.035
2030	PavingEquipment	121	175	0.29	3.306	1.363	0.006	0.07	0.07	568.299	0.026
2030	PavingEquipment	176	250	0.25	1.171	1.176	0.006	0.042	0.042	568.299	0.022
2035	PavingEquipment	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2035	PavingEquipment	26	50	0.664	5.181	3.511	0.007	0.07	0.07	568.3	0.059
2035	PavingEquipment	51	120	0.326	3.753	1.928	0.006	0.064	0.064	568.299	0.029
2035	PavingEquipment	121	175	0.235	3.303	0.832	0.006	0.04	0.04	568.299	0.021
2035	PavingEquipment	176	250	0.212	1.14	0.714	0.006	0.024	0.024	568.299	0.019
2040	PavingEquipment	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2040	PavingEquipment	26	50	0.589	5.111	3.361	0.007	0.042	0.042	568.3	0.053
2040	PavingEquipment	51	120	0.291	3.744	1.687	0.006	0.039	0.039	568.299	0.026
2040	PavingEquipment	121	175	0.205	3.304	0.536	0.006	0.025	0.025	568.299	0.018
2040	PavingEquipment	176	250	0.193	1.127	0.485	0.006	0.017	0.017	568.299	0.017
2017	PlateCompactors	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2018	PlateCompactors	6	15	0.661	3.47	4.142	0.008	0.161	0.161	568.3	0.059
2019	PlateCompactors	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2020	PlateCompactors	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2021	PlateCompactors	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2022	PlateCompactors	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2023	PlateCompactors	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2024	PlateCompactors	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2025	PlateCompactors	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2030	PlateCompactors	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2035	PlateCompactors	6	15	0.661	3.47	4.142	0.008	0.161	0.161	568.299	0.059
2040	PlateCompactors	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2017	Rollers	6	15	1.198	5.14727	5.09771	0.005	0.436	0.401	555.0199	0.17
2017	Rollers	16	25	1.198	5.14727	5.09771	0.005	0.436	0.401	555.0199	0.17
2017	Rollers	26	50	1.198	5.14727	5.09771	0.005	0.436	0.401	555.0199	0.17
2017	Rollers	51	120	0.58	3.71315	5.4114	0.005	0.392	0.361	500.1525	0.153
2017	Rollers	121	175	0.314	2.98069	3.87384	0.005	0.18	0.166	497.9088	0.153
2017	Rollers	176	250	0.274	1.40849	3.92097	0.005	0.129	0.119	499.7021	0.153
2017	Rollers	251	500	0.297	2.68487	3.84047	0.005	0.15	0.138	505.8318	0.155
2018	Rollers	6	15	1.064	4.92335	4.8416	0.005	0.387	0.356	546.2905	0.17
2018	Rollers	16	25	1.064	4.92335	4.8416	0.005	0.387	0.356	546.2905	0.17
2018	Rollers	26	50	1.064	4.92335	4.8416	0.005	0.387	0.356	546.2905	0.17
2018	Rollers	51	120	0.481	3.60981	4.65049	0.005	0.32	0.294	492.2118	0.153
2018	Rollers	121	175	0.265	2.94895	3.18126	0.005	0.147	0.135	490.1805	0.153
2018	Rollers	176	250	0.211	1.24341	2.99492	0.005	0.094	0.086	491.6643	0.153
2018	Rollers	251	500	0.245	2.23145	3.09814	0.005	0.119	0.11	497.9962	0.155

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Year	EquipmentType	Low Hp	High Hp	ROGg/bhp-hr	CO,g/bhp-hr	NOX,g/bhp-hr	SO2,g/bhp-hr	PM10,g/bhp-hr	PM2_5,g/bhp-hr	CO2,g/bhp-hr	CH4,g/bhp-hr
2019	Rollers	6	15	0.972	4.77841	4.64491	0.005	0.349	0.321	537.546	0.17
2019	Rollers	16	25	0.972	4.77841	4.64491	0.005	0.349	0.321	537.546	0.17
2019	Rollers	26	50	0.972	4.77841	4.64491	0.005	0.349	0.321	537.546	0.17
2019	Rollers	51	120	0.423	3.55726	4.17949	0.005	0.275	0.253	484.3362	0.153
2019	Rollers	121	175	0.231	2.93251	2.69941	0.005	0.124	0.114	482.4531	0.153
2019	Rollers	176	250	0.21	1.24854	2.88327	0.005	0.092	0.084	483.7769	0.153
2019	Rollers	251	500	0.234	2.10142	2.90839	0.005	0.111	0.102	489.9774	0.155
2020	Rollers	6	15	0.926	4.72504	4.53426	0.005	0.329	0.303	525.8798	0.17
2020	Rollers	16	25	0.926	4.72504	4.53426	0.005	0.329	0.303	525.8798	0.17
2020	Rollers	26	50	0.926	4.72504	4.53426	0.005	0.329	0.303	525.8798	0.17
2020	Rollers	51	120	0.388	3.53135	3.88153	0.005	0.247	0.228	473.8594	0.153
2020	Rollers	121	175	0.215	2.93333	2.45176	0.005	0.113	0.104	471.9177	0.153
2020	Rollers	176	250	0.209	1.25343	2.75095	0.005	0.089	0.082	473.3669	0.153
2020	Rollers	251	500	0.235	2.11346	2.82823	0.005	0.109	0.101	479.3254	0.155
2021	Rollers	6	15	0.847	4.59681	4.35097	0.005	0.294	0.27	525.7908	0.17
2021	Rollers	16	25	0.847	4.59681	4.35097	0.005	0.294	0.27	525.7908	0.17
2021	Rollers	26	50	0.847	4.59681	4.35097	0.005	0.294	0.27	525.7908	0.17
2021	Rollers	51	120	0.353	3.50719	3.5889	0.005	0.219	0.202	473.9012	0.153
2021	Rollers	121	175	0.193	2.9256	2.11691	0.005	0.097	0.09	471.9799	0.153
2021	Rollers	176	250	0.196	1.22849	2.49332	0.005	0.081	0.075	473.4704	0.153
2021	Rollers	251	500	0.221	1.94995	2.58936	0.005	0.1	0.092	479.3294	0.155
2022	Rollers	6	15	0.738	4.40241	4.12773	0.005	0.25	0.23	525.691	0.17
2022	Rollers	16	25	0.738	4.40241	4.12773	0.005	0.25	0.23	525.691	0.17
2022	Rollers	26	50	0.738	4.40241	4.12773	0.005	0.25	0.23	525.691	0.17
2022	Rollers	51	120	0.31	3.46973	3.21896	0.005	0.186	0.171	473.9291	0.153
2022	Rollers	121	175	0.164	2.91331	1.71408	0.005	0.079	0.072	471.9475	0.153
2022	Rollers	176	250	0.187	1.22821	2.2116	0.005	0.077	0.071	473.5135	0.153
2022	Rollers	251	500	0.218	1.95495	2.46341	0.005	0.097	0.089	478.9817	0.155
2023	Rollers	6	15	0.661	4.25236	3.9211	0.005	0.212	0.195	525.8616	0.17
2023	Rollers	16	25	0.661	4.25236	3.9211	0.005	0.212	0.195	525.8616	0.17
2023	Rollers	26	50	0.661	4.25236	3.9211	0.005	0.212	0.195	525.8616	0.17
2023	Rollers	51	120	0.287	3.45461	3.00302	0.005	0.165	0.152	473.9363	0.153
2023	Rollers	121	175	0.15	2.90949	1.4833	0.005	0.068	0.062	471.9351	0.153
2023	Rollers	176	250	0.188	1.23448	2.17272	0.005	0.076	0.07	473.5164	0.153
2023	Rollers	251	500	0.211	1.95626	2.29003	0.005	0.093	0.085	478.3028	0.155
2024	Rollers	6	15	0.62	4.20667	3.82449	0.005	0.192	0.177	525.9565	0.17
2024	Rollers	16	25	0.62	4.20667	3.82449	0.005	0.192	0.177	525.9565	0.17
2024	Rollers	26	50	0.62	4.20667	3.82449	0.005	0.192	0.177	525.9565	0.17
2024	Rollers	51	120	0.272	3.45055	2.843	0.005	0.15	0.138	474.0072	0.153
2024	Rollers	121	175	0.141	2.91426	1.32428	0.005	0.061	0.056	472.012	0.153
2024	Rollers	176	250	0.179	1.21417	1.97675	0.005	0.07	0.064	473.512	0.153
2024	Rollers	251	500	0.21	1.96121	2.21612	0.005	0.09	0.083	477.9001	0.155
2025	Rollers	6	15	0.569	4.12543	3.68893	0.005	0.167	0.154	526.1406	0.17
2025	Rollers	16	25	0.569	4.12543	3.68893	0.005	0.167	0.154	526.1406	0.17
2025	Rollers	26	50	0.569	4.12543	3.68893	0.005	0.167	0.154	526.1406	0.17
2025	Rollers	51	120	0.255	3.44432	2.69137	0.005	0.135	0.125	473.851	0.153
2025	Rollers	121	175	0.127	2.90859	1.10088	0.005	0.049	0.045	471.9696	0.153
2025	Rollers	176	250	0.173	1.21477	1.78252	0.005	0.066	0.06	473.6813	0.153
2025	Rollers	251	500	0.212	1.96754	2.19998	0.005	0.09	0.083	477.5732	0.154
2030	Rollers	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059

CalEEMod Appendix D Default Data - Off-Road Equipment Emission Factors

Year	EquipmentType	Low Hp	High Hp	ROGg/bhp-hr	CO,g/bhp-hr	NOX,g/bhp-hr	SO2,g/bhp-hr	PM10,g/bhp-hr	PM2_5,g/bhp-hr	CO2,g/bhp-hr	CH4,g/bhp-hr
2030	Rollers	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2030	Rollers	26	50	0.587	4.784	3.48	0.007	0.073	0.073	568.299	0.053
2030	Rollers	51	120	0.299	3.639	1.95	0.006	0.066	0.066	568.299	0.027
2030	Rollers	121	175	0.223	3.203	0.907	0.006	0.042	0.042	568.299	0.02
2030	Rollers	176	250	0.195	1.099	0.745	0.006	0.024	0.024	568.299	0.017
2030	Rollers	251	500	0.193	1.056	0.697	0.005	0.023	0.023	568.299	0.017
2035	Rollers	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2035	Rollers	16	25	0.685	2.34	4.332	0.007	0.161	0.161	568.3	0.061
2035	Rollers	26	50	0.507	4.711	3.28	0.007	0.038	0.038	568.299	0.045
2035	Rollers	51	120	0.258	3.629	1.65	0.006	0.035	0.035	568.299	0.023
2035	Rollers	121	175	0.184	3.204	0.523	0.006	0.023	0.023	568.299	0.016
2035	Rollers	176	250	0.173	1.091	0.465	0.006	0.016	0.016	568.299	0.015
2035	Rollers	251	500	0.172	1.048	0.442	0.005	0.016	0.016	568.3	0.015
2040	Rollers	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2040	Rollers	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2040	Rollers	26	50	0.469	4.682	3.207	0.007	0.024	0.024	568.299	0.042
2040	Rollers	51	120	0.24	3.625	1.525	0.006	0.021	0.021	568.299	0.021
2040	Rollers	121	175	0.168	3.205	0.373	0.006	0.015	0.015	568.299	0.015
2040	Rollers	176	250	0.165	1.092	0.348	0.006	0.012	0.012	568.299	0.014
2040	Rollers	251	500	0.165	1.048	0.341	0.005	0.012	0.012	568.299	0.014
2017	Shredders	3	5	18.008	458.475	7.477	0.029	0.557	0.557	858.879	1.012
2017	Shredders	6	15	16.635	462.285	6.549	0.035	7.199	7.199	858.879	1.033
2018	Shredders	3	5	17.808	455.299	7.491	0.029	0.504	0.504	858.879	1.001
2018	Shredders	6	15	15.12	459.444	6.576	0.035	7.199	7.199	858.879	0.939
2019	Shredders	3	5	17.638	452.882	7.502	0.029	0.473	0.473	858.879	0.992
2019	Shredders	6	15	13.778	457.456	6.599	0.035	7.199	7.199	858.879	0.856
2020	Shredders	3	5	17.489	450.769	7.511	0.029	0.447	0.447	858.879	0.983
2020	Shredders	6	15	12.601	455.916	6.618	0.035	7.199	7.199	858.879	0.783
2021	Shredders	3	5	17.348	449.038	7.516	0.029	0.422	0.422	858.879	0.975
2021	Shredders	6	15	11.563	454.545	6.635	0.035	7.199	7.199	858.879	0.718
2022	Shredders	3	5	17.25	447.183	7.527	0.029	0.399	0.399	858.879	0.97
2022	Shredders	6	15	10.763	453.447	6.649	0.035	7.199	7.199	858.879	0.668
2023	Shredders	3	5	17.154	445.909	7.53	0.029	0.379	0.379	858.879	0.965
2023	Shredders	6	15	10.088	452.461	6.66	0.035	7.199	7.199	858.879	0.627
2024	Shredders	3	5	17.084	444.654	7.537	0.029	0.36	0.36	858.879	0.961
2024	Shredders	6	15	9.575	451.691	6.669	0.035	7.199	7.199	858.879	0.595
2025	Shredders	3	5	17.02	443.666	7.54	0.029	0.343	0.343	858.879	0.957
2025	Shredders	6	15	9.157	451.013	6.676	0.035	7.2	7.2	858.879	0.569
2030	Shredders	3	5	16.911	441.143	7.547	0.029	0.287	0.287	858.879	0.952
2030	Shredders	6	15	8.653	449.536	6.686	0.035	7.199	7.199	858.879	0.537
2035	Shredders	3	5	16.893	440.552	7.546	0.029	0.279	0.279	858.879	0.952
2035	Shredders	6	15	8.648	449.319	6.686	0.035	7.199	7.199	858.879	0.537
2040	Shredders	3	5	16.881	440.169	7.543	0.029	0.279	0.279	858.879	0.952
2040	Shredders	6	15	8.648	449.319	6.686	0.035	7.199	7.199	858.879	0.537
2017	SkidSteerLoaders	16	25	0.568	3.91907	4.11272	0.005	0.217	0.2	556.7144	0.171
2017	SkidSteerLoaders	26	50	0.568	3.91907	4.11272	0.005	0.217	0.2	556.7144	0.171
2017	SkidSteerLoaders	51	120	0.255	3.31863	3.28618	0.005	0.177	0.162	498.3256	0.153
2018	SkidSteerLoaders	16	25	0.487	3.78725	3.88962	0.005	0.178	0.164	547.5575	0.17
2018	SkidSteerLoaders	26	50	0.487	3.78725	3.88962	0.005	0.178	0.164	547.5575	0.17
2018	SkidSteerLoaders	51	120	0.216	3.28204	2.86	0.005	0.14	0.129	490.0935	0.153

CalEEMod Appendix D Default Data - Off-Road Equipment Emission Factors

Year	EquipmentType	Low Hp	High Hp	ROGg/bhp-hr	CO,g/bhp-hr	NOX,g/bhp-hr	SO2,g/bhp-hr	PM10,g/bhp-hr	PM2_5,g/bhp-hr	CO2,g/bhp-hr	CH4,g/bhp-hr
2019	SkidSteerLoaders	16	25	0.446	3.73957	3.75009	0.005	0.154	0.141	539.2667	0.171
2019	SkidSteerLoaders	26	50	0.446	3.73957	3.75009	0.005	0.154	0.141	539.2667	0.171
2019	SkidSteerLoaders	51	120	0.199	3.27736	2.65586	0.005	0.122	0.112	482.3844	0.153
2020	SkidSteerLoaders	16	25	0.439	3.76397	3.69113	0.005	0.145	0.133	527.7577	0.171
2020	SkidSteerLoaders	26	50	0.439	3.76397	3.69113	0.005	0.145	0.133	527.7577	0.171
2020	SkidSteerLoaders	51	120	0.188	3.2771	2.5046	0.005	0.108	0.1	471.9075	0.153
2021	SkidSteerLoaders	16	25	0.409	3.73158	3.57304	0.005	0.126	0.116	527.4501	0.171
2021	SkidSteerLoaders	26	50	0.409	3.73158	3.57304	0.005	0.126	0.116	527.4501	0.171
2021	SkidSteerLoaders	51	120	0.178	3.27687	2.36588	0.005	0.096	0.089	471.9774	0.153
2022	SkidSteerLoaders	16	25	0.365	3.65597	3.43256	0.005	0.103	0.095	527.2726	0.171
2022	SkidSteerLoaders	26	50	0.365	3.65597	3.43256	0.005	0.103	0.095	527.2726	0.171
2022	SkidSteerLoaders	51	120	0.164	3.27037	2.18922	0.005	0.081	0.075	472.4321	0.153
2023	SkidSteerLoaders	16	25	0.353	3.65358	3.37057	0.005	0.093	0.086	527.4231	0.171
2023	SkidSteerLoaders	26	50	0.353	3.65358	3.37057	0.005	0.093	0.086	527.4231	0.171
2023	SkidSteerLoaders	51	120	0.153	3.26613	2.03854	0.005	0.069	0.063	472.656	0.153
2024	SkidSteerLoaders	16	25	0.349	3.67076	3.34552	0.005	0.089	0.082	527.8005	0.171
2024	SkidSteerLoaders	26	50	0.349	3.67076	3.34552	0.005	0.089	0.082	527.8005	0.171
2024	SkidSteerLoaders	51	120	0.147	3.26403	1.94841	0.005	0.063	0.058	472.847	0.153
2025	SkidSteerLoaders	16	25	0.341	3.6601	3.30934	0.005	0.084	0.077	527.8608	0.171
2025	SkidSteerLoaders	26	50	0.341	3.6601	3.30934	0.005	0.084	0.077	527.8608	0.171
2025	SkidSteerLoaders	51	120	0.14	3.25156	1.86736	0.005	0.057	0.052	472.6295	0.153
2030	SkidSteerLoaders	16	25	0.685	2.34	4.332	0.007	0.162	0.162	568.299	0.061
2030	SkidSteerLoaders	26	50	0.411	4.386	3.128	0.007	0.018	0.018	568.299	0.037
2030	SkidSteerLoaders	51	120	0.214	3.538	1.477	0.006	0.017	0.017	568.299	0.019
2035	SkidSteerLoaders	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2035	SkidSteerLoaders	26	50	0.411	4.39	3.097	0.007	0.015	0.015	568.299	0.037
2035	SkidSteerLoaders	51	120	0.211	3.54	1.442	0.006	0.014	0.014	568.299	0.019
2040	SkidSteerLoaders	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2040	SkidSteerLoaders	26	50	0.411	4.392	3.093	0.007	0.014	0.014	568.299	0.037
2040	SkidSteerLoaders	51	120	0.211	3.54	1.435	0.006	0.013	0.013	568.3	0.019
2017	Tractors/Loaders/Backhoes	16	25	1.194	5.68921	5.10958	0.005	0.433	0.398	544.9286	0.167
2017	Tractors/Loaders/Backhoes	26	50	1.194	5.68921	5.10958	0.005	0.433	0.398	544.9286	0.167
2017	Tractors/Loaders/Backhoes	51	120	0.5	3.7818	4.8087	0.005	0.362	0.333	502.7952	0.154
2017	Tractors/Loaders/Backhoes	121	175	0.354	3.19961	3.87876	0.005	0.197	0.181	493.912	0.151
2017	Tractors/Loaders/Backhoes	176	250	0.291	1.30369	4.04062	0.005	0.132	0.121	496.8449	0.152
2017	Tractors/Loaders/Backhoes	251	500	0.272	1.73851	3.48988	0.005	0.122	0.112	497.1129	0.152
2017	Tractors/Loaders/Backhoes	501	750	0.296	1.64567	3.86196	0.005	0.139	0.128	492.9529	0.151
2018	Tractors/Loaders/Backhoes	16	25	0.992	5.31043	4.76441	0.005	0.363	0.334	536.1115	0.167
2018	Tractors/Loaders/Backhoes	26	50	0.992	5.31043	4.76441	0.005	0.363	0.334	536.1115	0.167
2018	Tractors/Loaders/Backhoes	51	120	0.42	3.69155	4.15444	0.005	0.294	0.271	494.1237	0.154
2018	Tractors/Loaders/Backhoes	121	175	0.297	3.13727	3.16806	0.005	0.16	0.147	485.7754	0.151
2018	Tractors/Loaders/Backhoes	176	250	0.259	1.24197	3.45965	0.005	0.112	0.103	489.4562	0.152
2018	Tractors/Loaders/Backhoes	251	500	0.222	1.44545	2.66877	0.005	0.092	0.085	486.2939	0.151
2018	Tractors/Loaders/Backhoes	501	750	0.271	1.60068	3.40235	0.005	0.124	0.114	485.0099	0.151
2019	Tractors/Loaders/Backhoes	16	25	0.92	5.20327	4.60928	0.005	0.33	0.304	527.6843	0.167
2019	Tractors/Loaders/Backhoes	26	50	0.92	5.20327	4.60928	0.005	0.33	0.304	527.6843	0.167
2019	Tractors/Loaders/Backhoes	51	120	0.368	3.63777	3.69257	0.005	0.247	0.227	485.8548	0.154
2019	Tractors/Loaders/Backhoes	121	175	0.27	3.12158	2.78412	0.005	0.14	0.129	477.9151	0.151
2019	Tractors/Loaders/Backhoes	176	250	0.245	1.22027	3.14683	0.005	0.102	0.094	481.4206	0.152
2019	Tractors/Loaders/Backhoes	251	500	0.206	1.38918	2.34458	0.005	0.082	0.075	479.0826	0.152

CalEEMod Appendix D Default Data - Off-Road Equipment Emission Factors

Year	EquipmentType	Low Hp	High Hp	ROGg/bhp-hr	CO,g/bhp-hr	NOX,g/bhp-hr	SO2,g/bhp-hr	PM10,g/bhp-hr	PM2_5,g/bhp-hr	CO2,g/bhp-hr	CH4,g/bhp-hr
2019	Tractors/Loaders/Backhoes	501	750	0.262	1.6025	3.12046	0.005	0.117	0.107	478.9216	0.152
2020	Tractors/Loaders/Backhoes	16	25	0.83	5.03491	4.39784	0.005	0.288	0.265	515.874	0.167
2020	Tractors/Loaders/Backhoes	26	50	0.83	5.03491	4.39784	0.005	0.288	0.265	515.874	0.167
2020	Tractors/Loaders/Backhoes	51	120	0.331	3.60147	3.32571	0.005	0.21	0.193	475.1543	0.154
2020	Tractors/Loaders/Backhoes	121	175	0.246	3.10518	2.41467	0.005	0.122	0.112	467.5132	0.151
2020	Tractors/Loaders/Backhoes	176	250	0.225	1.19592	2.73794	0.005	0.09	0.083	470.4998	0.152
2020	Tractors/Loaders/Backhoes	251	500	0.194	1.35815	2.07976	0.005	0.073	0.067	468.2447	0.151
2020	Tractors/Loaders/Backhoes	501	750	0.268	1.60984	3.11926	0.005	0.117	0.108	468.6602	0.152
2021	Tractors/Loaders/Backhoes	16	25	0.756	4.90172	4.22643	0.005	0.254	0.234	515.1213	0.167
2021	Tractors/Loaders/Backhoes	26	50	0.756	4.90172	4.22643	0.005	0.254	0.234	515.1213	0.167
2021	Tractors/Loaders/Backhoes	51	120	0.296	3.57072	2.995	0.005	0.177	0.162	475.3621	0.154
2021	Tractors/Loaders/Backhoes	121	175	0.221	3.0907	2.06221	0.005	0.104	0.096	467.5285	0.151
2021	Tractors/Loaders/Backhoes	176	250	0.209	1.18606	2.36922	0.005	0.08	0.074	470.5716	0.152
2021	Tractors/Loaders/Backhoes	251	500	0.179	1.34147	1.776	0.005	0.064	0.059	469.3025	0.152
2021	Tractors/Loaders/Backhoes	501	750	0.247	1.43254	2.75417	0.005	0.104	0.096	466.4564	0.151
2022	Tractors/Loaders/Backhoes	16	25	0.688	4.75954	4.03024	0.005	0.218	0.2	514.4613	0.166
2022	Tractors/Loaders/Backhoes	26	50	0.688	4.75954	4.03024	0.005	0.218	0.2	514.4613	0.166
2022	Tractors/Loaders/Backhoes	51	120	0.26	3.53551	2.64718	0.005	0.142	0.131	475.8975	0.154
2022	Tractors/Loaders/Backhoes	121	175	0.2	3.07944	1.75274	0.005	0.089	0.082	467.8004	0.151
2022	Tractors/Loaders/Backhoes	176	250	0.187	1.16248	1.94251	0.005	0.067	0.062	470.1236	0.152
2022	Tractors/Loaders/Backhoes	251	500	0.16	1.28026	1.43694	0.005	0.053	0.049	469.2562	0.152
2022	Tractors/Loaders/Backhoes	501	750	0.232	1.35272	2.4532	0.005	0.094	0.087	466.6327	0.151
2023	Tractors/Loaders/Backhoes	16	25	0.621	4.62935	3.85698	0.005	0.185	0.17	513.7962	0.166
2023	Tractors/Loaders/Backhoes	26	50	0.621	4.62935	3.85698	0.005	0.185	0.17	513.7962	0.166
2023	Tractors/Loaders/Backhoes	51	120	0.239	3.52504	2.42607	0.005	0.12	0.11	476.4307	0.154
2023	Tractors/Loaders/Backhoes	121	175	0.184	3.0777	1.52095	0.005	0.077	0.07	468.821	0.152
2023	Tractors/Loaders/Backhoes	176	250	0.169	1.14809	1.58768	0.005	0.058	0.053	469.7518	0.152
2023	Tractors/Loaders/Backhoes	251	500	0.152	1.27923	1.24708	0.005	0.047	0.043	469.4652	0.152
2023	Tractors/Loaders/Backhoes	501	750	0.234	1.36081	2.41861	0.005	0.095	0.087	466.6756	0.151
2024	Tractors/Loaders/Backhoes	16	25	0.59	4.60899	3.76811	0.005	0.166	0.153	513.8517	0.166
2024	Tractors/Loaders/Backhoes	26	50	0.59	4.60899	3.76811	0.005	0.166	0.153	513.8517	0.166
2024	Tractors/Loaders/Backhoes	51	120	0.227	3.5318	2.28795	0.005	0.105	0.097	476.7313	0.154
2024	Tractors/Loaders/Backhoes	121	175	0.176	3.08913	1.37643	0.005	0.068	0.063	469.4029	0.152
2024	Tractors/Loaders/Backhoes	176	250	0.168	1.15125	1.49113	0.005	0.054	0.05	469.9143	0.152
2024	Tractors/Loaders/Backhoes	251	500	0.15	1.277	1.16321	0.005	0.044	0.041	470.0841	0.152
2024	Tractors/Loaders/Backhoes	501	750	0.221	1.31051	2.21548	0.005	0.085	0.079	466.6381	0.151
2025	Tractors/Loaders/Backhoes	16	25	0.55	4.55974	3.66186	0.005	0.145	0.133	513.8025	0.166
2025	Tractors/Loaders/Backhoes	26	50	0.55	4.55974	3.66186	0.005	0.145	0.133	513.8025	0.166
2025	Tractors/Loaders/Backhoes	51	120	0.209	3.52242	2.10918	0.005	0.085	0.079	477.188	0.154
2025	Tractors/Loaders/Backhoes	121	175	0.162	3.08323	1.18039	0.005	0.058	0.054	469.3289	0.152
2025	Tractors/Loaders/Backhoes	176	250	0.154	1.14554	1.23458	0.005	0.047	0.044	470.5976	0.152
2025	Tractors/Loaders/Backhoes	251	500	0.144	1.23405	1.04575	0.005	0.039	0.036	470.9102	0.152
2025	Tractors/Loaders/Backhoes	501	750	0.187	1.26139	1.64868	0.005	0.067	0.062	466.4517	0.151
2030	Tractors/Loaders/Backhoes	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2030	Tractors/Loaders/Backhoes	26	50	0.539	4.966	3.299	0.007	0.033	0.033	568.299	0.048
2030	Tractors/Loaders/Backhoes	51	120	0.272	3.705	1.624	0.006	0.03	0.03	568.299	0.024
2030	Tractors/Loaders/Backhoes	121	175	0.193	3.273	0.485	0.006	0.02	0.02	568.299	0.017
2030	Tractors/Loaders/Backhoes	176	250	0.183	1.115	0.418	0.006	0.014	0.014	568.299	0.016
2030	Tractors/Loaders/Backhoes	251	500	0.182	1.066	0.403	0.006	0.014	0.014	568.299	0.016
2030	Tractors/Loaders/Backhoes	501	750	0.182	1.066	0.407	0.006	0.014	0.014	568.299	0.016

CalEEMod Appendix D Default Data - Off-Road Equipment Emission Factors

Year	EquipmentType	Low Hp	High Hp	ROGg/bhp-hr	CO,g/bhp-hr	NOX,g/bhp-hr	SO2,g/bhp-hr	PM10,g/bhp-hr	PM2_5,g/bhp-hr	CO2,g/bhp-hr	CH4,g/bhp-hr
2035	Tractors/Loaders/Backhoes	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2035	Tractors/Loaders/Backhoes	26	50	0.515	4.949	3.244	0.007	0.022	0.022	568.299	0.046
2035	Tractors/Loaders/Backhoes	51	120	0.258	3.703	1.521	0.006	0.02	0.02	568.299	0.023
2035	Tractors/Loaders/Backhoes	121	175	0.179	3.275	0.348	0.006	0.015	0.015	568.299	0.016
2035	Tractors/Loaders/Backhoes	176	250	0.177	1.115	0.331	0.006	0.012	0.012	568.299	0.016
2035	Tractors/Loaders/Backhoes	251	500	0.177	1.066	0.326	0.006	0.012	0.012	568.299	0.015
2035	Tractors/Loaders/Backhoes	501	750	0.177	1.066	0.327	0.006	0.012	0.012	568.299	0.015
2040	Tractors/Loaders/Backhoes	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2040	Tractors/Loaders/Backhoes	26	50	0.508	4.946	3.22	0.007	0.018	0.018	568.299	0.045
2040	Tractors/Loaders/Backhoes	51	120	0.254	3.703	1.485	0.006	0.016	0.016	568.299	0.022
2040	Tractors/Loaders/Backhoes	121	175	0.175	3.276	0.305	0.006	0.012	0.012	568.299	0.015
2040	Tractors/Loaders/Backhoes	176	250	0.174	1.116	0.297	0.006	0.011	0.011	568.3	0.015
2040	Tractors/Loaders/Backhoes	251	500	0.174	1.066	0.297	0.006	0.011	0.011	568.299	0.015
2040	Tractors/Loaders/Backhoes	501	750	0.174	1.066	0.297	0.006	0.011	0.011	568.299	0.015

EMFAC2017 On-Road Vehicle Emission Rate Calculations

calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2018	Annual	Los Angeles (SC)	HHDT	Dsl	CH4	0.0827	6221998.3003	0.0121	
2018	Annual	Los Angeles (SC)	HHDT	Gas	CH4	0.0013	5894.6769	0.1955	
2018	Annual	Los Angeles (SC)	HHDT	NG	CH4	0.5193	77453.0337	6.0823	0.086790
2018	Annual	Los Angeles (SC)	LDA	Dsl	CH4	0.0019	1030226.7312	0.0017	
2018	Annual	Los Angeles (SC)	LDA	Gas	CH4	2.3520	152352408.3387	0.0140	0.013922
2018	Annual	Los Angeles (SC)	LDT1	Dsl	CH4	0.0001	9678.8484	0.0112	
2018	Annual	Los Angeles (SC)	LDT1	Gas	CH4	0.4518	15417610.8716	0.0266	0.026574
2018	Annual	Los Angeles (SC)	LDT2	Dsl	CH4	0.0004	247931.8140	0.0014	
2018	Annual	Los Angeles (SC)	LDT2	Gas	CH4	1.0999	50345385.8197	0.0198	0.019728
2018	Annual	Los Angeles (SC)	LHDT1	Dsl	CH4	0.0098	1981420.1402	0.0045	
2018	Annual	Los Angeles (SC)	LHDT1	Gas	CH4	0.1272	4057201.8898	0.0284	0.020573
2018	Annual	Los Angeles (SC)	LHDT2	Dsl	CH4	0.0037	772852.4144	0.0044	
2018	Annual	Los Angeles (SC)	LHDT2	Gas	CH4	0.0183	620060.9911	0.0267	0.014317
2018	Annual	Los Angeles (SC)	MHDT	Dsl	CH4	0.0448	3646765.8291	0.0111	
2018	Annual	Los Angeles (SC)	MHDT	Gas	CH4	0.0448	791158.0454	0.0513	0.018300
2018	Annual	Los Angeles (SC)	HHDT	Dsl	CO	8.3803	6221998.3003	1.2219	
2018	Annual	Los Angeles (SC)	HHDT	Gas	CO	0.3542	5894.6769	54.5092	
2018	Annual	Los Angeles (SC)	HHDT	NG	CO	1.0960	77453.0337	12.8367	1.414363
2018	Annual	Los Angeles (SC)	LDA	Dsl	CO	0.4187	1030226.7312	0.3687	
2018	Annual	Los Angeles (SC)	LDA	Gas	CO	232.6997	152352408.3387	1.3856	1.378782
2018	Annual	Los Angeles (SC)	LDT1	Dsl	CO	0.0141	9678.8484	1.3214	
2018	Annual	Los Angeles (SC)	LDT1	Gas	CO	46.4257	15417610.8716	2.7317	2.730837
2018	Annual	Los Angeles (SC)	LDT2	Dsl	CO	0.0535	247931.8140	0.1957	
2018	Annual	Los Angeles (SC)	LDT2	Gas	CO	108.7589	50345385.8197	1.9598	1.951106
2018	Annual	Los Angeles (SC)	LHDT1	Dsl	CO	1.1757	1981420.1402	0.5383	
2018	Annual	Los Angeles (SC)	LHDT1	Gas	CO	10.6645	4057201.8898	2.3846	1.778764
2018	Annual	Los Angeles (SC)	LHDT2	Dsl	CO	0.4412	772852.4144	0.5178	
2018	Annual	Los Angeles (SC)	LHDT2	Gas	CO	1.4387	620060.9911	2.1048	1.224292
2018	Annual	Los Angeles (SC)	MHDT	Dsl	CO	3.2476	3646765.8291	0.8079	
2018	Annual	Los Angeles (SC)	MHDT	Gas	CO	5.3777	791158.0454	6.1664	1.763159
2018	Annual	Los Angeles (SC)	HHDT	Dsl	CO2	11569.3749	6221998.3003	1686.8458	
2018	Annual	Los Angeles (SC)	HHDT	Gas	CO2	15.0653	5894.6769	2318.5322	
2018	Annual	Los Angeles (SC)	HHDT	NG	CO2	315.3510	77453.0337	3693.6114	1712.086881
2018	Annual	Los Angeles (SC)	LDA	Dsl	CO2	273.3776	1030226.7312	240.7274	
2018	Annual	Los Angeles (SC)	LDA	Gas	CO2	52673.1988	152352408.3387	313.6431	313.153356
2018	Annual	Los Angeles (SC)	LDT1	Dsl	CO2	5.1701	9678.8484	484.5895	
2018	Annual	Los Angeles (SC)	LDT1	Gas	CO2	6190.9464	15417610.8716	364.2800	364.355495

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calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2018	Annual	Los Angeles (SC)	LDT2	Dsl	CO2	90.0322	247931.8140	329.4283	
2018	Annual	Los Angeles (SC)	LDT2	Gas	CO2	22559.9215	50345385.8197	406.5119	406.134180
2018	Annual	Los Angeles (SC)	LHDT1	Dsl	CO2	1089.3129	1981420.1402	498.7369	
2018	Annual	Los Angeles (SC)	LHDT1	Gas	CO2	3828.1227	4057201.8898	855.9623	738.747831
2018	Annual	Los Angeles (SC)	LHDT2	Dsl	CO2	471.8091	772852.4144	553.8156	
2018	Annual	Los Angeles (SC)	LHDT2	Gas	CO2	672.1270	620060.9911	983.3595	745.028768
2018	Annual	Los Angeles (SC)	MHDT	Dsl	CO2	4281.5979	3646765.8291	1065.1074	
2018	Annual	Los Angeles (SC)	MHDT	Gas	CO2	1560.2206	791158.0454	1789.0322	1194.162962
2018	Annual	Los Angeles (SC)	HHDT	Dsl	N2O	1.8185	6221998.3003	0.2651	
2018	Annual	Los Angeles (SC)	HHDT	Gas	N2O	0.0013	5894.6769	0.2051	
2018	Annual	Los Angeles (SC)	HHDT	NG	N2O	0.0643	77453.0337	0.7530	0.271085
2018	Annual	Los Angeles (SC)	LDA	Dsl	N2O	0.0430	1030226.7312	0.0378	
2018	Annual	Los Angeles (SC)	LDA	Gas	N2O	1.7400	152352408.3387	0.0104	0.010545
2018	Annual	Los Angeles (SC)	LDT1	Dsl	N2O	0.0008	9678.8484	0.0762	
2018	Annual	Los Angeles (SC)	LDT1	Gas	N2O	0.3127	15417610.8716	0.0184	0.018438
2018	Annual	Los Angeles (SC)	LDT2	Dsl	N2O	0.0142	247931.8140	0.0518	
2018	Annual	Los Angeles (SC)	LDT2	Gas	N2O	0.8969	50345385.8197	0.0162	0.016336
2018	Annual	Los Angeles (SC)	LHDT1	Dsl	N2O	0.1712	1981420.1402	0.0784	
2018	Annual	Los Angeles (SC)	LHDT1	Gas	N2O	0.1624	4057201.8898	0.0363	0.050117
2018	Annual	Los Angeles (SC)	LHDT2	Dsl	N2O	0.0742	772852.4144	0.0871	
2018	Annual	Los Angeles (SC)	LHDT2	Gas	N2O	0.0262	620060.9911	0.0383	0.065364
2018	Annual	Los Angeles (SC)	MHDT	Dsl	N2O	0.6730	3646765.8291	0.1674	
2018	Annual	Los Angeles (SC)	MHDT	Gas	N2O	0.0454	791158.0454	0.0520	0.146846
2018	Annual	Los Angeles (SC)	HHDT	Dsl	NOx	42.8522	6221998.3003	6.2480	
2018	Annual	Los Angeles (SC)	HHDT	Gas	NOx	0.0450	5894.6769	6.9246	
2018	Annual	Los Angeles (SC)	HHDT	NG	NOx	0.5246	77453.0337	6.1446	6.247336
2018	Annual	Los Angeles (SC)	LDA	Dsl	NOx	0.1916	1030226.7312	0.1687	
2018	Annual	Los Angeles (SC)	LDA	Gas	NOx	17.4296	152352408.3387	0.1038	0.104221
2018	Annual	Los Angeles (SC)	LDT1	Dsl	NOx	0.0134	9678.8484	1.2538	
2018	Annual	Los Angeles (SC)	LDT1	Gas	NOx	4.4522	15417610.8716	0.2620	0.262590
2018	Annual	Los Angeles (SC)	LDT2	Dsl	NOx	0.0204	247931.8140	0.0745	
2018	Annual	Los Angeles (SC)	LDT2	Gas	NOx	11.7157	50345385.8197	0.2111	0.210438
2018	Annual	Los Angeles (SC)	LHDT1	Dsl	NOx	5.6306	1981420.1402	2.5779	
2018	Annual	Los Angeles (SC)	LHDT1	Gas	NOx	2.4423	4057201.8898	0.5461	1.212783
2018	Annual	Los Angeles (SC)	LHDT2	Dsl	NOx	2.0704	772852.4144	2.4303	
2018	Annual	Los Angeles (SC)	LHDT2	Gas	NOx	0.3919	620060.9911	0.5734	1.603668
2018	Annual	Los Angeles (SC)	MHDT	Dsl	NOx	17.9767	3646765.8291	4.4720	

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calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2018	Annual	Los Angeles (SC)	MHDT	Gas	NOx	0.9384	791158.0454	1.0760	3.866561
2018	Annual	Los Angeles (SC)	HHDT	Dsl	PM10	1.2977	6221998.3003	0.1892	
2018	Annual	Los Angeles (SC)	HHDT	Gas	PM10	0.0006	5894.6769	0.0849	
2018	Annual	Los Angeles (SC)	HHDT	NG	PM10	0.0094	77453.0337	0.1100	0.188139
2018	Annual	Los Angeles (SC)	LDA	Dsl	PM10	0.0736	1030226.7312	0.0648	
2018	Annual	Los Angeles (SC)	LDA	Elec	PM10	0.0793	1607385.5710	0.0447	
2018	Annual	Los Angeles (SC)	LDA	Gas	PM10	7.9025	152352408.3387	0.0471	0.047150
2018	Annual	Los Angeles (SC)	LDT1	Dsl	PM10	0.0024	9678.8484	0.2271	
2018	Annual	Los Angeles (SC)	LDT1	Elec	PM10	0.0015	31333.3981	0.0447	
2018	Annual	Los Angeles (SC)	LDT1	Gas	PM10	0.8299	15417610.8716	0.0488	0.048936
2018	Annual	Los Angeles (SC)	LDT2	Dsl	PM10	0.0153	247931.8140	0.0559	
2018	Annual	Los Angeles (SC)	LDT2	Elec	PM10	0.0085	171904.9306	0.0447	
2018	Annual	Los Angeles (SC)	LDT2	Gas	PM10	2.6206	50345385.8197	0.0472	0.047255
2018	Annual	Los Angeles (SC)	LHDT1	Dsl	PM10	0.2390	1981420.1402	0.1094	
2018	Annual	Los Angeles (SC)	LHDT1	Gas	PM10	0.3857	4057201.8898	0.0862	0.052214
2018	Annual	Los Angeles (SC)	LHDT2	Dsl	PM10	0.1046	772852.4144	0.1228	
2018	Annual	Los Angeles (SC)	LHDT2	Gas	PM10	0.0675	620060.9911	0.0988	0.092854
2018	Annual	Los Angeles (SC)	MHDT	Dsl	PM10	1.1063	3646765.8291	0.2752	
2018	Annual	Los Angeles (SC)	MHDT	Gas	PM10	0.1255	791158.0454	0.1439	0.233024
2018	Annual	Los Angeles (SC)	HHDT	Dsl	PM2_5	0.8481	6221998.3003	0.1237	
2018	Annual	Los Angeles (SC)	HHDT	Gas	PM2_5	0.0002	5894.6769	0.0344	
2018	Annual	Los Angeles (SC)	HHDT	NG	PM2_5	0.0040	77453.0337	0.0472	0.122631
2018	Annual	Los Angeles (SC)	LDA	Dsl	PM2_5	0.0420	1030226.7312	0.0370	
2018	Annual	Los Angeles (SC)	LDA	Elec	PM2_5	0.0315	1607385.5710	0.0177	
2018	Annual	Los Angeles (SC)	LDA	Gas	PM2_5	3.3370	152352408.3387	0.0199	0.019962
2018	Annual	Los Angeles (SC)	LDT1	Dsl	PM2_5	0.0021	9678.8484	0.1922	
2018	Annual	Los Angeles (SC)	LDT1	Elec	PM2_5	0.0006	31333.3981	0.0177	
2018	Annual	Los Angeles (SC)	LDT1	Gas	PM2_5	0.3655	15417610.8716	0.0215	0.021605
2018	Annual	Los Angeles (SC)	LDT2	Dsl	PM2_5	0.0078	247931.8140	0.0284	
2018	Annual	Los Angeles (SC)	LDT2	Elec	PM2_5	0.0034	171904.9306	0.0177	
2018	Annual	Los Angeles (SC)	LDT2	Gas	PM2_5	1.1112	50345385.8197	0.0200	0.020056
2018	Annual	Los Angeles (SC)	LHDT1	Dsl	PM2_5	0.1219	1981420.1402	0.0558	
2018	Annual	Los Angeles (SC)	LHDT1	Gas	PM2_5	0.1629	4057201.8898	0.0364	0.022461
2018	Annual	Los Angeles (SC)	LHDT2	Dsl	PM2_5	0.0527	772852.4144	0.0619	
2018	Annual	Los Angeles (SC)	LHDT2	Gas	PM2_5	0.0285	620060.9911	0.0417	0.040635
2018	Annual	Los Angeles (SC)	MHDT	Dsl	PM2_5	0.7476	3646765.8291	0.1860	
2018	Annual	Los Angeles (SC)	MHDT	Gas	PM2_5	0.0525	791158.0454	0.0603	0.148617

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calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2018	Annual	Los Angeles (SC)	HHDT	Dsl	ROG	1.7799	6221998.3003	0.2595	
2018	Annual	Los Angeles (SC)	HHDT	Gas	ROG	0.0109	5894.6769	1.6743	
2018	Annual	Los Angeles (SC)	HHDT	NG	ROG	0.0500	77453.0337	0.5857	0.264839
2018	Annual	Los Angeles (SC)	LDA	Dsl	ROG	0.0408	1030226.7312	0.0359	
2018	Annual	Los Angeles (SC)	LDA	Elec	ROG	0.0025	1607385.5710	0.0014	
2018	Annual	Los Angeles (SC)	LDA	Gas	ROG	21.6503	152352408.3387	0.1289	0.126977
2018	Annual	Los Angeles (SC)	LDT1	Dsl	ROG	0.0026	9678.8484	0.2416	
2018	Annual	Los Angeles (SC)	LDT1	Elec	ROG	0.0001	31333.3981	0.0017	
2018	Annual	Los Angeles (SC)	LDT1	Gas	ROG	5.5319	15417610.8716	0.3255	0.324790
2018	Annual	Los Angeles (SC)	LDT2	Dsl	ROG	0.0080	247931.8140	0.0293	
2018	Annual	Los Angeles (SC)	LDT2	Elec	ROG	0.0003	171904.9306	0.0015	
2018	Annual	Los Angeles (SC)	LDT2	Gas	ROG	10.7911	50345385.8197	0.1944	0.192987
2018	Annual	Los Angeles (SC)	LHDT1	Dsl	ROG	0.2105	1981420.1402	0.0964	
2018	Annual	Los Angeles (SC)	LHDT1	Gas	ROG	2.6872	4057201.8898	0.6009	0.220245
2018	Annual	Los Angeles (SC)	LHDT2	Dsl	ROG	0.0798	772852.4144	0.0937	
2018	Annual	Los Angeles (SC)	LHDT2	Gas	ROG	0.4132	620060.9911	0.6045	0.529359
2018	Annual	Los Angeles (SC)	MHDT	Dsl	ROG	0.9635	3646765.8291	0.2397	
2018	Annual	Los Angeles (SC)	MHDT	Gas	ROG	0.4661	791158.0454	0.5345	0.330520
2018	Annual	Los Angeles (SC)	HHDT	Dsl	SOx	0.1093	6221998.3003	0.0159	
2018	Annual	Los Angeles (SC)	HHDT	Gas	SOx	0.0001	5894.6769	0.0229	0.015943
2018	Annual	Los Angeles (SC)	LDA	Dsl	SOx	0.0026	1030226.7312	0.0023	
2018	Annual	Los Angeles (SC)	LDA	Gas	SOx	0.5212	152352408.3387	0.0031	0.003098
2018	Annual	Los Angeles (SC)	LDT1	Dsl	SOx	0.0000	9678.8484	0.0046	
2018	Annual	Los Angeles (SC)	LDT1	Gas	SOx	0.0613	15417610.8716	0.0036	0.003605
2018	Annual	Los Angeles (SC)	LDT2	Dsl	SOx	0.0009	247931.8140	0.0031	
2018	Annual	Los Angeles (SC)	LDT2	Gas	SOx	0.2232	50345385.8197	0.0040	0.004018
2018	Annual	Los Angeles (SC)	LHDT1	Dsl	SOx	0.0103	1981420.1402	0.0047	
2018	Annual	Los Angeles (SC)	LHDT1	Gas	SOx	0.0379	4057201.8898	0.0085	0.007238
2018	Annual	Los Angeles (SC)	LHDT2	Dsl	SOx	0.0045	772852.4144	0.0052	
2018	Annual	Los Angeles (SC)	LHDT2	Gas	SOx	0.0067	620060.9911	0.0097	0.007237
2018	Annual	Los Angeles (SC)	MHDT	Dsl	SOx	0.0405	3646765.8291	0.0101	
2018	Annual	Los Angeles (SC)	MHDT	Gas	SOx	0.0154	791158.0454	0.0177	0.011425
2023	Annual	Los Angeles (SC)	HHDT	Dsl	CH4	0.0206	6949256.2028	0.0027	
2023	Annual	Los Angeles (SC)	HHDT	Gas	CH4	0.0006	5904.5109	0.0952	
2023	Annual	Los Angeles (SC)	HHDT	NG	CH4	0.6258	113851.6430	4.9867	0.083040
2023	Annual	Los Angeles (SC)	LDA	Dsl	CH4	0.0014	1426244.8152	0.0009	
2023	Annual	Los Angeles (SC)	LDA	Gas	CH4	1.4350	149418105.5947	0.0087	0.008638

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calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2023	Annual	Los Angeles (SC)	LDT1	Dsl	CH4	0.0001	6132.9220	0.0085	
2023	Annual	Los Angeles (SC)	LDT1	Gas	CH4	0.2872	17372474.5967	0.0150	0.014996
2023	Annual	Los Angeles (SC)	LDT2	Dsl	CH4	0.0005	404272.1374	0.0010	
2023	Annual	Los Angeles (SC)	LDT2	Gas	CH4	0.7187	52162943.3579	0.0125	0.012412
2023	Annual	Los Angeles (SC)	LHDT1	Dsl	CH4	0.0095	2893383.1066	0.0030	
2023	Annual	Los Angeles (SC)	LHDT1	Gas	CH4	0.0811	3800052.4079	0.0194	0.012280
2023	Annual	Los Angeles (SC)	LHDT2	Dsl	CH4	0.0037	1126544.0266	0.0030	
2023	Annual	Los Angeles (SC)	LHDT2	Gas	CH4	0.0126	625878.5235	0.0183	0.008430
2023	Annual	Los Angeles (SC)	MHDT	Dsl	CH4	0.0020	4246866.4962	0.0004	
2023	Annual	Los Angeles (SC)	MHDT	Gas	CH4	0.0267	797300.0842	0.0303	0.005147
2023	Annual	Los Angeles (SC)	HHDT	Dsl	CO	5.9317	6949256.2028	0.7744	
2023	Annual	Los Angeles (SC)	HHDT	Gas	CO	0.2181	5904.5109	33.5164	
2023	Annual	Los Angeles (SC)	HHDT	NG	CO	1.7631	113851.6430	14.0489	1.015498
2023	Annual	Los Angeles (SC)	LDA	Dsl	CO	0.4420	1426244.8152	0.2812	
2023	Annual	Los Angeles (SC)	LDA	Gas	CO	156.5973	149418105.5947	0.9508	0.944441
2023	Annual	Los Angeles (SC)	LDT1	Dsl	CO	0.0073	6132.9220	1.0747	
2023	Annual	Los Angeles (SC)	LDT1	Gas	CO	30.4194	17372474.5967	1.5885	1.588306
2023	Annual	Los Angeles (SC)	LDT2	Dsl	CO	0.0860	404272.1374	0.1931	
2023	Annual	Los Angeles (SC)	LDT2	Gas	CO	73.6860	52162943.3579	1.2815	1.273128
2023	Annual	Los Angeles (SC)	LHDT1	Dsl	CO	1.0450	2893383.1066	0.3277	
2023	Annual	Los Angeles (SC)	LHDT1	Gas	CO	6.5420	3800052.4079	1.5618	1.028300
2023	Annual	Los Angeles (SC)	LHDT2	Dsl	CO	0.4029	1126544.0266	0.3244	
2023	Annual	Los Angeles (SC)	LHDT2	Gas	CO	0.9342	625878.5235	1.3540	0.692166
2023	Annual	Los Angeles (SC)	MHDT	Dsl	CO	0.5330	4246866.4962	0.1139	
2023	Annual	Los Angeles (SC)	MHDT	Gas	CO	2.8370	797300.0842	3.2280	0.606086
2023	Annual	Los Angeles (SC)	HHDT	Dsl	CO2	11176.8921	6949256.2028	1459.0767	
2023	Annual	Los Angeles (SC)	HHDT	Gas	CO2	13.3156	5904.5109	2045.8396	
2023	Annual	Los Angeles (SC)	HHDT	NG	CO2	434.0350	113851.6430	3458.4445	1491.768076
2023	Annual	Los Angeles (SC)	LDA	Dsl	CO2	329.4658	1426244.8152	209.5615	
2023	Annual	Los Angeles (SC)	LDA	Gas	CO2	45485.2571	149418105.5947	276.1613	275.531589
2023	Annual	Los Angeles (SC)	LDT1	Dsl	CO2	3.1168	6132.9220	461.0326	
2023	Annual	Los Angeles (SC)	LDT1	Gas	CO2	6140.8908	17372474.5967	320.6750	320.724509
2023	Annual	Los Angeles (SC)	LDT2	Dsl	CO2	126.9347	404272.1374	284.8406	
2023	Annual	Los Angeles (SC)	LDT2	Gas	CO2	19609.0677	52162943.3579	341.0282	340.596043
2023	Annual	Los Angeles (SC)	LHDT1	Dsl	CO2	1469.0295	2893383.1066	460.5958	
2023	Annual	Los Angeles (SC)	LHDT1	Gas	CO2	3404.7600	3800052.4079	812.8161	660.561220
2023	Annual	Los Angeles (SC)	LHDT2	Dsl	CO2	635.0480	1126544.0266	511.3918	

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calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2023	Annual	Los Angeles (SC)	LHDT2	Gas	CO2	643.7927	625878.5235	933.1499	662.022882
2023	Annual	Los Angeles (SC)	MHDT	Dsl	CO2	4332.3858	4246866.4962	925.4520	
2023	Annual	Los Angeles (SC)	MHDT	Gas	CO2	1476.6739	797300.0842	1680.1892	1044.748605
2023	Annual	Los Angeles (SC)	HHDT	Dsl	N2O	1.7569	6949256.2028	0.2293	
2023	Annual	Los Angeles (SC)	HHDT	Gas	N2O	0.0010	5904.5109	0.1463	
2023	Annual	Los Angeles (SC)	HHDT	NG	N2O	0.0885	113851.6430	0.7050	0.236938
2023	Annual	Los Angeles (SC)	LDA	Dsl	N2O	0.0518	1426244.8152	0.0329	
2023	Annual	Los Angeles (SC)	LDA	Gas	N2O	1.2220	149418105.5947	0.0074	0.007661
2023	Annual	Los Angeles (SC)	LDT1	Dsl	N2O	0.0005	6132.9220	0.0725	
2023	Annual	Los Angeles (SC)	LDT1	Gas	N2O	0.2190	17372474.5967	0.0114	0.011460
2023	Annual	Los Angeles (SC)	LDT2	Dsl	N2O	0.0200	404272.1374	0.0448	
2023	Annual	Los Angeles (SC)	LDT2	Gas	N2O	0.5872	52162943.3579	0.0102	0.010478
2023	Annual	Los Angeles (SC)	LHDT1	Dsl	N2O	0.2309	2893383.1066	0.0724	
2023	Annual	Los Angeles (SC)	LHDT1	Gas	N2O	0.1166	3800052.4079	0.0278	0.047106
2023	Annual	Los Angeles (SC)	LHDT2	Dsl	N2O	0.0998	1126544.0266	0.0804	
2023	Annual	Los Angeles (SC)	LHDT2	Gas	N2O	0.0202	625878.5235	0.0292	0.062121
2023	Annual	Los Angeles (SC)	MHDT	Dsl	N2O	0.6810	4246866.4962	0.1455	
2023	Annual	Los Angeles (SC)	MHDT	Gas	N2O	0.0274	797300.0842	0.0312	0.127407
2023	Annual	Los Angeles (SC)	HHDT	Dsl	NOx	25.8961	6949256.2028	3.3806	
2023	Annual	Los Angeles (SC)	HHDT	Gas	NOx	0.0257	5904.5109	3.9562	
2023	Annual	Los Angeles (SC)	HHDT	NG	NOx	0.4242	113851.6430	3.3800	3.381048
2023	Annual	Los Angeles (SC)	LDA	Dsl	NOx	0.1018	1426244.8152	0.0647	
2023	Annual	Los Angeles (SC)	LDA	Gas	NOx	9.6405	149418105.5947	0.0585	0.058590
2023	Annual	Los Angeles (SC)	LDT1	Dsl	NOx	0.0067	6132.9220	0.9876	
2023	Annual	Los Angeles (SC)	LDT1	Gas	NOx	2.5937	17372474.5967	0.1354	0.135742
2023	Annual	Los Angeles (SC)	LDT2	Dsl	NOx	0.0202	404272.1374	0.0454	
2023	Annual	Los Angeles (SC)	LDT2	Gas	NOx	6.2371	52162943.3579	0.1085	0.107987
2023	Annual	Los Angeles (SC)	LHDT1	Dsl	NOx	3.4333	2893383.1066	1.0765	
2023	Annual	Los Angeles (SC)	LHDT1	Gas	NOx	1.6139	3800052.4079	0.3853	0.684056
2023	Annual	Los Angeles (SC)	LHDT2	Dsl	NOx	1.2940	1126544.0266	1.0420	
2023	Annual	Los Angeles (SC)	LHDT2	Gas	NOx	0.2758	625878.5235	0.3997	0.812623
2023	Annual	Los Angeles (SC)	MHDT	Dsl	NOx	7.5454	4246866.4962	1.6118	
2023	Annual	Los Angeles (SC)	MHDT	Gas	NOx	0.4588	797300.0842	0.5221	1.439539
2023	Annual	Los Angeles (SC)	HHDT	Dsl	PM10	0.8858	6949256.2028	0.1156	
2023	Annual	Los Angeles (SC)	HHDT	Gas	PM10	0.0005	5904.5109	0.0831	
2023	Annual	Los Angeles (SC)	HHDT	NG	PM10	0.0132	113851.6430	0.1049	0.115433
2023	Annual	Los Angeles (SC)	LDA	Dsl	PM10	0.0835	1426244.8152	0.0531	

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2023	Annual	Los Angeles (SC)	LDA	Elec	PM10	0.1878	3806341.9367	0.0447	
2023	Annual	Los Angeles (SC)	LDA	Gas	PM10	7.6856	149418105.5947	0.0467	0.046675
2023	Annual	Los Angeles (SC)	LDT1	Dsl	PM10	0.0012	6132.9220	0.1805	
2023	Annual	Los Angeles (SC)	LDT1	Elec	PM10	0.0097	196781.6242	0.0447	
2023	Annual	Los Angeles (SC)	LDT1	Gas	PM10	0.9103	17372474.5967	0.0475	0.047551
2023	Annual	Los Angeles (SC)	LDT2	Dsl	PM10	0.0226	404272.1374	0.0507	
2023	Annual	Los Angeles (SC)	LDT2	Elec	PM10	0.0288	584568.8418	0.0447	
2023	Annual	Los Angeles (SC)	LDT2	Gas	PM10	2.6903	52162943.3579	0.0468	0.046795
2023	Annual	Los Angeles (SC)	LHDT1	Dsl	PM10	0.3227	2893383.1066	0.1012	
2023	Annual	Los Angeles (SC)	LHDT1	Gas	PM10	0.3601	3800052.4079	0.0860	0.051992
2023	Annual	Los Angeles (SC)	LHDT2	Dsl	PM10	0.1443	1126544.0266	0.1162	
2023	Annual	Los Angeles (SC)	LHDT2	Gas	PM10	0.0680	625878.5235	0.0986	0.093508
2023	Annual	Los Angeles (SC)	MHDT	Dsl	PM10	0.6998	4246866.4962	0.1495	
2023	Annual	Los Angeles (SC)	MHDT	Gas	PM10	0.1262	797300.0842	0.1436	0.143035
2023	Annual	Los Angeles (SC)	HHDT	Dsl	PM2_5	0.4077	6949256.2028	0.0532	
2023	Annual	Los Angeles (SC)	HHDT	Gas	PM2_5	0.0002	5904.5109	0.0328	
2023	Annual	Los Angeles (SC)	HHDT	NG	PM2_5	0.0053	113851.6430	0.0423	0.053031
2023	Annual	Los Angeles (SC)	LDA	Dsl	PM2_5	0.0405	1426244.8152	0.0257	
2023	Annual	Los Angeles (SC)	LDA	Elec	PM2_5	0.0745	3806341.9367	0.0177	
2023	Annual	Los Angeles (SC)	LDA	Gas	PM2_5	3.2132	149418105.5947	0.0195	0.019523
2023	Annual	Los Angeles (SC)	LDT1	Dsl	PM2_5	0.0010	6132.9220	0.1476	
2023	Annual	Los Angeles (SC)	LDT1	Elec	PM2_5	0.0039	196781.6242	0.0177	
2023	Annual	Los Angeles (SC)	LDT1	Gas	PM2_5	0.3890	17372474.5967	0.0203	0.020327
2023	Annual	Los Angeles (SC)	LDT2	Dsl	PM2_5	0.0104	404272.1374	0.0234	
2023	Annual	Los Angeles (SC)	LDT2	Elec	PM2_5	0.0114	584568.8418	0.0177	
2023	Annual	Los Angeles (SC)	LDT2	Gas	PM2_5	1.1284	52162943.3579	0.0196	0.019632
2023	Annual	Los Angeles (SC)	LHDT1	Dsl	PM2_5	0.1529	2893383.1066	0.0480	
2023	Annual	Los Angeles (SC)	LHDT1	Gas	PM2_5	0.1514	3800052.4079	0.0362	0.022084
2023	Annual	Los Angeles (SC)	LHDT2	Dsl	PM2_5	0.0690	1126544.0266	0.0556	
2023	Annual	Los Angeles (SC)	LHDT2	Gas	PM2_5	0.0286	625878.5235	0.0415	0.040694
2023	Annual	Los Angeles (SC)	MHDT	Dsl	PM2_5	0.3075	4246866.4962	0.0657	
2023	Annual	Los Angeles (SC)	MHDT	Gas	PM2_5	0.0528	797300.0842	0.0600	0.062224
2023	Annual	Los Angeles (SC)	HHDT	Dsl	ROG	0.4440	6949256.2028	0.0580	
2023	Annual	Los Angeles (SC)	HHDT	Gas	ROG	0.0040	5904.5109	0.6142	
2023	Annual	Los Angeles (SC)	HHDT	NG	ROG	0.0392	113851.6430	0.3121	0.062513
2023	Annual	Los Angeles (SC)	LDA	Dsl	ROG	0.0295	1426244.8152	0.0188	
2023	Annual	Los Angeles (SC)	LDA	Elec	ROG	0.0055	3806341.9367	0.0013	

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2023	Annual	Los Angeles (SC)	LDA	Gas	ROG	14.5006	149418105.5947	0.0880	0.085266
2023	Annual	Los Angeles (SC)	LDT1	Dsl	ROG	0.0012	6132.9220	0.1826	
2023	Annual	Los Angeles (SC)	LDT1	Elec	ROG	0.0003	196781.6242	0.0013	
2023	Annual	Los Angeles (SC)	LDT1	Gas	ROG	3.8871	17372474.5967	0.2030	0.200716
2023	Annual	Los Angeles (SC)	LDT2	Dsl	ROG	0.0100	404272.1374	0.0225	
2023	Annual	Los Angeles (SC)	LDT2	Elec	ROG	0.0011	584568.8418	0.0017	
2023	Annual	Los Angeles (SC)	LDT2	Gas	ROG	7.9529	52162943.3579	0.1383	0.135928
2023	Annual	Los Angeles (SC)	LHDT1	Dsl	ROG	0.2043	2893383.1066	0.0641	
2023	Annual	Los Angeles (SC)	LHDT1	Gas	ROG	1.9668	3800052.4079	0.4695	0.156046
2023	Annual	Los Angeles (SC)	LHDT2	Dsl	ROG	0.0789	1126544.0266	0.0636	
2023	Annual	Los Angeles (SC)	LHDT2	Gas	ROG	0.3070	625878.5235	0.4450	0.384409
2023	Annual	Los Angeles (SC)	MHDT	Dsl	ROG	0.0421	4246866.4962	0.0090	
2023	Annual	Los Angeles (SC)	MHDT	Gas	ROG	0.2976	797300.0842	0.3386	0.103476
2023	Annual	Los Angeles (SC)	HHDT	Dsl	SOx	0.1056	6949256.2028	0.0138	
2023	Annual	Los Angeles (SC)	HHDT	Gas	SOx	0.0001	5904.5109	0.0202	0.047198
2023	Annual	Los Angeles (SC)	LDA	Dsl	SOx	0.0031	1426244.8152	0.0020	
2023	Annual	Los Angeles (SC)	LDA	Gas	SOx	0.4501	149418105.5947	0.0027	0.002726
2023	Annual	Los Angeles (SC)	LDT1	Dsl	SOx	0.0000	6132.9220	0.0044	
2023	Annual	Los Angeles (SC)	LDT1	Gas	SOx	0.0608	17372474.5967	0.0032	0.003174
2023	Annual	Los Angeles (SC)	LDT2	Dsl	SOx	0.0012	404272.1374	0.0027	
2023	Annual	Los Angeles (SC)	LDT2	Gas	SOx	0.1940	52162943.3579	0.0034	0.003370
2023	Annual	Los Angeles (SC)	LHDT1	Dsl	SOx	0.0139	2893383.1066	0.0044	
2023	Annual	Los Angeles (SC)	LHDT1	Gas	SOx	0.0337	3800052.4079	0.0080	0.006449
2023	Annual	Los Angeles (SC)	LHDT2	Dsl	SOx	0.0060	1126544.0266	0.0048	
2023	Annual	Los Angeles (SC)	LHDT2	Gas	SOx	0.0064	625878.5235	0.0092	0.006406
2023	Annual	Los Angeles (SC)	MHDT	Dsl	SOx	0.0409	4246866.4962	0.0087	
2023	Annual	Los Angeles (SC)	MHDT	Gas	SOx	0.0146	797300.0842	0.0166	0.009989
2028	Annual	Los Angeles (SC)	HHDT	Dsl	CH4	0.0225	7602762.1115	0.0027	
2028	Annual	Los Angeles (SC)	HHDT	Gas	CH4	0.0006	6900.3896	0.0757	
2028	Annual	Los Angeles (SC)	HHDT	NG	CH4	0.7189	145761.8800	4.4745	0.086791
2028	Annual	Los Angeles (SC)	LDA	Dsl	CH4	0.0009	1628613.7736	0.0005	
2028	Annual	Los Angeles (SC)	LDA	Gas	CH4	0.9843	146491484.1051	0.0061	0.006034
2028	Annual	Los Angeles (SC)	LDT1	Dsl	CH4	0.0000	3717.6202	0.0044	
2028	Annual	Los Angeles (SC)	LDT1	Gas	CH4	0.1929	18569860.9744	0.0094	0.009424
2028	Annual	Los Angeles (SC)	LDT2	Dsl	CH4	0.0006	495817.5553	0.0010	
2028	Annual	Los Angeles (SC)	LDT2	Gas	CH4	0.5250	53762862.3362	0.0089	0.008787
2028	Annual	Los Angeles (SC)	LHDT1	Dsl	CH4	0.0095	3465344.1978	0.0025	

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2028	Annual	Los Angeles (SC)	LHDT1	Gas	CH4	0.0562	3691681.4796	0.0138	0.008316
2028	Annual	Los Angeles (SC)	LHDT2	Dsl	CH4	0.0037	1352695.5490	0.0025	
2028	Annual	Los Angeles (SC)	LHDT2	Gas	CH4	0.0092	626221.8181	0.0133	0.005936
2028	Annual	Los Angeles (SC)	MHDT	Dsl	CH4	0.0021	4683919.8002	0.0004	
2028	Annual	Los Angeles (SC)	MHDT	Gas	CH4	0.0210	822297.8140	0.0232	0.003813
2028	Annual	Los Angeles (SC)	HHDT	Dsl	CO	6.5425	7602762.1115	0.7807	
2028	Annual	Los Angeles (SC)	HHDT	Gas	CO	0.2302	6900.3896	30.2670	
2028	Annual	Los Angeles (SC)	HHDT	NG	CO	2.3551	145761.8800	14.6575	1.067717
2028	Annual	Los Angeles (SC)	LDA	Dsl	CO	0.4475	1628613.7736	0.2493	
2028	Annual	Los Angeles (SC)	LDA	Gas	CO	124.3544	146491484.1051	0.7701	0.764368
2028	Annual	Los Angeles (SC)	LDT1	Dsl	CO	0.0029	3717.6202	0.7058	
2028	Annual	Los Angeles (SC)	LDT1	Gas	CO	22.4001	18569860.9744	1.0943	1.094224
2028	Annual	Los Angeles (SC)	LDT2	Dsl	CO	0.1153	495817.5553	0.2110	
2028	Annual	Los Angeles (SC)	LDT2	Gas	CO	60.3326	53762862.3362	1.0180	1.010666
2028	Annual	Los Angeles (SC)	LHDT1	Dsl	CO	0.9996	3465344.1978	0.2617	
2028	Annual	Los Angeles (SC)	LHDT1	Gas	CO	4.8090	3691681.4796	1.1817	0.736262
2028	Annual	Los Angeles (SC)	LHDT2	Dsl	CO	0.3970	1352695.5490	0.2663	
2028	Annual	Los Angeles (SC)	LHDT2	Gas	CO	0.7148	626221.8181	1.0355	0.509678
2028	Annual	Los Angeles (SC)	MHDT	Dsl	CO	0.6214	4683919.8002	0.1204	
2028	Annual	Los Angeles (SC)	MHDT	Gas	CO	1.9515	822297.8140	2.1530	0.423904
2028	Annual	Los Angeles (SC)	HHDT	Dsl	CO2	11115.6549	7602762.1115	1326.3527	
2028	Annual	Los Angeles (SC)	HHDT	Gas	CO2	13.8723	6900.3896	1823.7670	
2028	Annual	Los Angeles (SC)	HHDT	NG	CO2	509.5662	145761.8800	3171.4072	1361.472788
2028	Annual	Los Angeles (SC)	LDA	Dsl	CO2	334.8733	1628613.7736	186.5339	
2028	Annual	Los Angeles (SC)	LDA	Gas	CO2	39330.2866	146491484.1051	243.5623	242.935287
2028	Annual	Los Angeles (SC)	LDT1	Dsl	CO2	1.6944	3717.6202	413.4698	
2028	Annual	Los Angeles (SC)	LDT1	Gas	CO2	5848.1382	18569860.9744	285.6961	285.721705
2028	Annual	Los Angeles (SC)	LDT2	Dsl	CO2	138.4264	495817.5553	253.2750	
2028	Annual	Los Angeles (SC)	LDT2	Gas	CO2	17322.1495	53762862.3362	292.2906	291.934030
2028	Annual	Los Angeles (SC)	LHDT1	Dsl	CO2	1625.9112	3465344.1978	425.6433	
2028	Annual	Los Angeles (SC)	LHDT1	Gas	CO2	3076.9024	3691681.4796	756.1098	596.101989
2028	Annual	Los Angeles (SC)	LHDT2	Dsl	CO2	705.7995	1352695.5490	473.3438	
2028	Annual	Los Angeles (SC)	LHDT2	Gas	CO2	600.3720	626221.8181	869.7363	598.780887
2028	Annual	Los Angeles (SC)	MHDT	Dsl	CO2	4405.7553	4683919.8002	853.3090	
2028	Annual	Los Angeles (SC)	MHDT	Gas	CO2	1399.1527	822297.8140	1543.5879	956.395121
2028	Annual	Los Angeles (SC)	HHDT	Dsl	N2O	1.7472	7602762.1115	0.2085	
2028	Annual	Los Angeles (SC)	HHDT	Gas	N2O	0.0010	6900.3896	0.1301	

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2028	Annual	Los Angeles (SC)	HHDT	NG	N2O	0.1039	145761.8800	0.6465	0.216647
2028	Annual	Los Angeles (SC)	LDA	Dsl	N2O	0.0526	1628613.7736	0.0293	
2028	Annual	Los Angeles (SC)	LDA	Gas	N2O	0.9946	146491484.1051	0.0062	0.006414
2028	Annual	Los Angeles (SC)	LDT1	Dsl	N2O	0.0003	3717.6202	0.0650	
2028	Annual	Los Angeles (SC)	LDT1	Gas	N2O	0.1705	18569860.9744	0.0083	0.008340
2028	Annual	Los Angeles (SC)	LDT2	Dsl	N2O	0.0218	495817.5553	0.0398	
2028	Annual	Los Angeles (SC)	LDT2	Gas	N2O	0.4558	53762862.3362	0.0077	0.007985
2028	Annual	Los Angeles (SC)	LHDT1	Dsl	N2O	0.2556	3465344.1978	0.0669	
2028	Annual	Los Angeles (SC)	LHDT1	Gas	N2O	0.0896	3691681.4796	0.0220	0.043750
2028	Annual	Los Angeles (SC)	LHDT2	Dsl	N2O	0.1109	1352695.5490	0.0744	
2028	Annual	Los Angeles (SC)	LHDT2	Gas	N2O	0.0160	626221.8181	0.0232	0.058193
2028	Annual	Los Angeles (SC)	MHDT	Dsl	N2O	0.6925	4683919.8002	0.1341	
2028	Annual	Los Angeles (SC)	MHDT	Gas	N2O	0.0213	822297.8140	0.0235	0.117606
2028	Annual	Los Angeles (SC)	HHDT	Dsl	NOx	27.6343	7602762.1115	3.2974	
2028	Annual	Los Angeles (SC)	HHDT	Gas	NOx	0.0233	6900.3896	3.0637	
2028	Annual	Los Angeles (SC)	HHDT	NG	NOx	0.3295	145761.8800	2.0508	3.273763
2028	Annual	Los Angeles (SC)	LDA	Dsl	NOx	0.0461	1628613.7736	0.0257	
2028	Annual	Los Angeles (SC)	LDA	Gas	NOx	6.8181	146491484.1051	0.0422	0.042041
2028	Annual	Los Angeles (SC)	LDT1	Dsl	NOx	0.0021	3717.6202	0.5162	
2028	Annual	Los Angeles (SC)	LDT1	Gas	NOx	1.6653	18569860.9744	0.0814	0.081440
2028	Annual	Los Angeles (SC)	LDT2	Dsl	NOx	0.0205	495817.5553	0.0374	
2028	Annual	Los Angeles (SC)	LDT2	Gas	NOx	4.0970	53762862.3362	0.0691	0.068843
2028	Annual	Los Angeles (SC)	LHDT1	Dsl	NOx	1.9713	3465344.1978	0.5161	
2028	Annual	Los Angeles (SC)	LHDT1	Gas	NOx	1.1178	3691681.4796	0.2747	0.391550
2028	Annual	Los Angeles (SC)	LHDT2	Dsl	NOx	0.7908	1352695.5490	0.5304	
2028	Annual	Los Angeles (SC)	LHDT2	Gas	NOx	0.1980	626221.8181	0.2869	0.453332
2028	Annual	Los Angeles (SC)	MHDT	Dsl	NOx	8.6311	4683919.8002	1.6717	
2028	Annual	Los Angeles (SC)	MHDT	Gas	NOx	0.2807	822297.8140	0.3097	1.468270
2028	Annual	Los Angeles (SC)	HHDT	Dsl	PM10	0.9680	7602762.1115	0.1155	
2028	Annual	Los Angeles (SC)	HHDT	Gas	PM10	0.0006	6900.3896	0.0830	
2028	Annual	Los Angeles (SC)	HHDT	NG	PM10	0.0165	145761.8800	0.1028	0.115242
2028	Annual	Los Angeles (SC)	LDA	Dsl	PM10	0.0859	1628613.7736	0.0478	
2028	Annual	Los Angeles (SC)	LDA	Elec	PM10	0.3353	6797709.6158	0.0447	
2028	Annual	Los Angeles (SC)	LDA	Gas	PM10	7.4778	146491484.1051	0.0463	0.046256
2028	Annual	Los Angeles (SC)	LDT1	Dsl	PM10	0.0004	3717.6202	0.0993	
2028	Annual	Los Angeles (SC)	LDT1	Elec	PM10	0.0228	462505.0388	0.0447	
2028	Annual	Los Angeles (SC)	LDT1	Gas	PM10	0.9569	18569860.9744	0.0467	0.046707

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calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2028	Annual	Los Angeles (SC)	LDT2	Dsl	PM10	0.0270	495817.5553	0.0495	
2028	Annual	Los Angeles (SC)	LDT2	Elec	PM10	0.0569	1152885.1585	0.0447	
2028	Annual	Los Angeles (SC)	LDT2	Gas	PM10	2.7507	53762862.3362	0.0464	0.046407
2028	Annual	Los Angeles (SC)	LHDT1	Dsl	PM10	0.3741	3465344.1978	0.0979	
2028	Annual	Los Angeles (SC)	LHDT1	Gas	PM10	0.3496	3691681.4796	0.0859	0.051738
2028	Annual	Los Angeles (SC)	LHDT2	Dsl	PM10	0.1715	1352695.5490	0.1150	
2028	Annual	Los Angeles (SC)	LHDT2	Gas	PM10	0.0680	626221.8181	0.0985	0.094237
2028	Annual	Los Angeles (SC)	MHDT	Dsl	PM10	0.7723	4683919.8002	0.1496	
2028	Annual	Los Angeles (SC)	MHDT	Gas	PM10	0.1302	822297.8140	0.1437	0.143574
2028	Annual	Los Angeles (SC)	HHDT	Dsl	PM2_5	0.4448	7602762.1115	0.0531	
2028	Annual	Los Angeles (SC)	HHDT	Gas	PM2_5	0.0002	6900.3896	0.0327	
2028	Annual	Los Angeles (SC)	HHDT	NG	PM2_5	0.0065	145761.8800	0.0403	0.052820
2028	Annual	Los Angeles (SC)	LDA	Dsl	PM2_5	0.0372	1628613.7736	0.0207	
2028	Annual	Los Angeles (SC)	LDA	Elec	PM2_5	0.1330	6797709.6158	0.0177	
2028	Annual	Los Angeles (SC)	LDA	Gas	PM2_5	3.0976	146491484.1051	0.0192	0.019136
2028	Annual	Los Angeles (SC)	LDT1	Dsl	PM2_5	0.0003	3717.6202	0.0700	
2028	Annual	Los Angeles (SC)	LDT1	Elec	PM2_5	0.0090	462505.0388	0.0177	
2028	Annual	Los Angeles (SC)	LDT1	Gas	PM2_5	0.4009	18569860.9744	0.0196	0.019549
2028	Annual	Los Angeles (SC)	LDT2	Dsl	PM2_5	0.0122	495817.5553	0.0223	
2028	Annual	Los Angeles (SC)	LDT2	Elec	PM2_5	0.0226	1152885.1585	0.0177	
2028	Annual	Los Angeles (SC)	LDT2	Gas	PM2_5	1.1426	53762862.3362	0.0193	0.019275
2028	Annual	Los Angeles (SC)	LHDT1	Dsl	PM2_5	0.1713	3465344.1978	0.0448	
2028	Annual	Los Angeles (SC)	LHDT1	Gas	PM2_5	0.1469	3691681.4796	0.0361	0.021754
2028	Annual	Los Angeles (SC)	LHDT2	Dsl	PM2_5	0.0812	1352695.5490	0.0544	
2028	Annual	Los Angeles (SC)	LHDT2	Gas	PM2_5	0.0286	626221.8181	0.0415	0.041070
2028	Annual	Los Angeles (SC)	MHDT	Dsl	PM2_5	0.3397	4683919.8002	0.0658	
2028	Annual	Los Angeles (SC)	MHDT	Gas	PM2_5	0.0545	822297.8140	0.0601	0.062538
2028	Annual	Los Angeles (SC)	HHDT	Dsl	ROG	0.4835	7602762.1115	0.0577	
2028	Annual	Los Angeles (SC)	HHDT	Gas	ROG	0.0031	6900.3896	0.4053	
2028	Annual	Los Angeles (SC)	HHDT	NG	ROG	0.0288	145761.8800	0.1795	0.060297
2028	Annual	Los Angeles (SC)	LDA	Dsl	ROG	0.0201	1628613.7736	0.0112	
2028	Annual	Los Angeles (SC)	LDA	Elec	ROG	0.0100	6797709.6158	0.0013	
2028	Annual	Los Angeles (SC)	LDA	Gas	ROG	11.2150	146491484.1051	0.0695	0.065850
2028	Annual	Los Angeles (SC)	LDT1	Dsl	ROG	0.0004	3717.6202	0.0947	
2028	Annual	Los Angeles (SC)	LDT1	Elec	ROG	0.0007	462505.0388	0.0013	
2028	Annual	Los Angeles (SC)	LDT1	Gas	ROG	2.9091	18569860.9744	0.1421	0.138687
2028	Annual	Los Angeles (SC)	LDT2	Dsl	ROG	0.0119	495817.5553	0.0218	

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calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2028	Annual	Los Angeles (SC)	LDT2	Elec	ROG	0.0024	1152885.1585	0.0019	
2028	Annual	Los Angeles (SC)	LDT2	Gas	ROG	6.5823	53762862.3362	0.1111	0.107998
2028	Annual	Los Angeles (SC)	LHDT1	Dsl	ROG	0.2035	3465344.1978	0.0533	
2028	Annual	Los Angeles (SC)	LHDT1	Gas	ROG	1.6232	3691681.4796	0.3989	0.125223
2028	Annual	Los Angeles (SC)	LHDT2	Dsl	ROG	0.0805	1352695.5490	0.0540	
2028	Annual	Los Angeles (SC)	LHDT2	Gas	ROG	0.2235	626221.8181	0.3238	0.308325
2028	Annual	Los Angeles (SC)	MHDT	Dsl	ROG	0.0457	4683919.8002	0.0088	
2028	Annual	Los Angeles (SC)	MHDT	Gas	ROG	0.2345	822297.8140	0.2587	0.074508
2028	Annual	Los Angeles (SC)	HHDT	Dsl	SOx	0.1050	7602762.1115	0.0125	
2028	Annual	Los Angeles (SC)	HHDT	Gas	SOx	0.0001	6900.3896	0.0180	0.036541
2028	Annual	Los Angeles (SC)	LDA	Dsl	SOx	0.0032	1628613.7736	0.0018	
2028	Annual	Los Angeles (SC)	LDA	Gas	SOx	0.3892	146491484.1051	0.0024	0.002403
2028	Annual	Los Angeles (SC)	LDT1	Dsl	SOx	0.0000	3717.6202	0.0039	
2028	Annual	Los Angeles (SC)	LDT1	Gas	SOx	0.0579	18569860.9744	0.0028	0.002827
2028	Annual	Los Angeles (SC)	LDT2	Dsl	SOx	0.0013	495817.5553	0.0024	
2028	Annual	Los Angeles (SC)	LDT2	Gas	SOx	0.1714	53762862.3362	0.0029	0.002888
2028	Annual	Los Angeles (SC)	LHDT1	Dsl	SOx	0.0154	3465344.1978	0.0040	
2028	Annual	Los Angeles (SC)	LHDT1	Gas	SOx	0.0304	3691681.4796	0.0075	0.005808
2028	Annual	Los Angeles (SC)	LHDT2	Dsl	SOx	0.0067	1352695.5490	0.0045	
2028	Annual	Los Angeles (SC)	LHDT2	Gas	SOx	0.0059	626221.8181	0.0086	0.005782
2028	Annual	Los Angeles (SC)	MHDT	Dsl	SOx	0.0416	4683919.8002	0.0081	
2028	Annual	Los Angeles (SC)	MHDT	Gas	SOx	0.0138	822297.8140	0.0153	0.009139
2033	Annual	Los Angeles (SC)	HHDT	Dsl	CH4	0.0233	8139884.4474	0.0026	
2033	Annual	Los Angeles (SC)	HHDT	Gas	CH4	0.0006	7638.6406	0.0746	
2033	Annual	Los Angeles (SC)	HHDT	NG	CH4	0.8045	171673.1890	4.2512	0.090334
2033	Annual	Los Angeles (SC)	LDA	Dsl	CH4	0.0007	1734692.0749	0.0004	
2033	Annual	Los Angeles (SC)	LDA	Gas	CH4	0.7530	145368419.8802	0.0047	0.004648
2033	Annual	Los Angeles (SC)	LDT1	Dsl	CH4	0.0000	3012.0570	0.0017	
2033	Annual	Los Angeles (SC)	LDT1	Gas	CH4	0.1346	19369391.8594	0.0063	0.006304
2033	Annual	Los Angeles (SC)	LDT2	Dsl	CH4	0.0006	544244.0431	0.0010	
2033	Annual	Los Angeles (SC)	LDT2	Gas	CH4	0.4129	55051434.3756	0.0068	0.006747
2033	Annual	Los Angeles (SC)	LHDT1	Dsl	CH4	0.0096	3862319.2420	0.0023	
2033	Annual	Los Angeles (SC)	LHDT1	Gas	CH4	0.0419	3685925.9339	0.0103	0.006192
2033	Annual	Los Angeles (SC)	LHDT2	Dsl	CH4	0.0039	1508341.5176	0.0023	
2033	Annual	Los Angeles (SC)	LHDT2	Gas	CH4	0.0073	634799.7321	0.0105	0.004739
2033	Annual	Los Angeles (SC)	MHDT	Dsl	CH4	0.0022	4973128.9809	0.0004	
2033	Annual	Los Angeles (SC)	MHDT	Gas	CH4	0.0199	847102.4609	0.0213	0.003443

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calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2033	Annual	Los Angeles (SC)	HHDT	Dsl	CO	6.8373	8139884.4474	0.7620	
2033	Annual	Los Angeles (SC)	HHDT	Gas	CO	0.2611	7638.6406	31.0107	
2033	Annual	Los Angeles (SC)	HHDT	NG	CO	2.8258	171673.1890	14.9325	1.082202
2033	Annual	Los Angeles (SC)	LDA	Dsl	CO	0.4425	1734692.0749	0.2314	
2033	Annual	Los Angeles (SC)	LDA	Gas	CO	110.7387	145368419.8802	0.6911	0.685654
2033	Annual	Los Angeles (SC)	LDT1	Dsl	CO	0.0012	3012.0570	0.3587	
2033	Annual	Los Angeles (SC)	LDT1	Gas	CO	17.7938	19369391.8594	0.8334	0.833316
2033	Annual	Los Angeles (SC)	LDT2	Dsl	CO	0.1333	544244.0431	0.2223	
2033	Annual	Los Angeles (SC)	LDT2	Gas	CO	54.2195	55051434.3756	0.8935	0.886904
2033	Annual	Los Angeles (SC)	LHDT1	Dsl	CO	1.0130	3862319.2420	0.2379	
2033	Annual	Los Angeles (SC)	LHDT1	Gas	CO	3.7906	3685925.9339	0.9330	0.577319
2033	Annual	Los Angeles (SC)	LHDT2	Dsl	CO	0.4093	1508341.5176	0.2462	
2033	Annual	Los Angeles (SC)	LHDT2	Gas	CO	0.6396	634799.7321	0.9140	0.444000
2033	Annual	Los Angeles (SC)	MHDT	Dsl	CO	0.6765	4973128.9809	0.1234	
2033	Annual	Los Angeles (SC)	MHDT	Gas	CO	1.6714	847102.4609	1.7900	0.365962
2033	Annual	Los Angeles (SC)	HHDT	Dsl	CO2	10718.2214	8139884.4474	1194.5377	
2033	Annual	Los Angeles (SC)	HHDT	Gas	CO2	14.1627	7638.6406	1681.9989	
2033	Annual	Los Angeles (SC)	HHDT	NG	CO2	557.0943	171673.1890	2943.8904	1231.084574
2033	Annual	Los Angeles (SC)	LDA	Dsl	CO2	333.9959	1734692.0749	174.6683	
2033	Annual	Los Angeles (SC)	LDA	Gas	CO2	35955.3121	145368419.8802	224.3822	223.795943
2033	Annual	Los Angeles (SC)	LDT1	Dsl	CO2	1.2259	3012.0570	369.2067	
2033	Annual	Los Angeles (SC)	LDT1	Gas	CO2	5643.3959	19369391.8594	264.3138	264.330155
2033	Annual	Los Angeles (SC)	LDT2	Dsl	CO2	141.2429	544244.0431	235.4336	
2033	Annual	Los Angeles (SC)	LDT2	Gas	CO2	16038.1399	55051434.3756	264.2900	264.007521
2033	Annual	Los Angeles (SC)	LHDT1	Dsl	CO2	1719.8199	3862319.2420	403.9524	
2033	Annual	Los Angeles (SC)	LHDT1	Gas	CO2	2895.0123	3685925.9339	712.5235	554.632482
2033	Annual	Los Angeles (SC)	LHDT2	Dsl	CO2	746.9263	1508341.5176	449.2348	
2033	Annual	Los Angeles (SC)	LHDT2	Gas	CO2	574.2577	634799.7321	820.6642	559.252452
2033	Annual	Los Angeles (SC)	MHDT	Dsl	CO2	4377.5644	4973128.9809	798.5428	
2033	Annual	Los Angeles (SC)	MHDT	Gas	CO2	1348.6224	847102.4609	1444.2747	892.525500
2033	Annual	Los Angeles (SC)	HHDT	Dsl	N2O	1.6848	8139884.4474	0.1878	
2033	Annual	Los Angeles (SC)	HHDT	Gas	N2O	0.0011	7638.6406	0.1307	
2033	Annual	Los Angeles (SC)	HHDT	NG	N2O	0.1136	171673.1890	0.6001	0.196222
2033	Annual	Los Angeles (SC)	LDA	Dsl	N2O	0.0525	1734692.0749	0.0275	
2033	Annual	Los Angeles (SC)	LDA	Gas	N2O	0.9190	145368419.8802	0.0057	0.005991
2033	Annual	Los Angeles (SC)	LDT1	Dsl	N2O	0.0002	3012.0570	0.0580	
2033	Annual	Los Angeles (SC)	LDT1	Gas	N2O	0.1449	19369391.8594	0.0068	0.006795

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calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2033	Annual	Los Angeles (SC)	LDT2	Dsl	N2O	0.0222	544244.0431	0.0370	
2033	Annual	Los Angeles (SC)	LDT2	Gas	N2O	0.4020	55051434.3756	0.0066	0.006923
2033	Annual	Los Angeles (SC)	LHDT1	Dsl	N2O	0.2703	3862319.2420	0.0635	
2033	Annual	Los Angeles (SC)	LHDT1	Gas	N2O	0.0762	3685925.9339	0.0188	0.041647
2033	Annual	Los Angeles (SC)	LHDT2	Dsl	N2O	0.1174	1508341.5176	0.0706	
2033	Annual	Los Angeles (SC)	LHDT2	Gas	N2O	0.0139	634799.7321	0.0199	0.055579
2033	Annual	Los Angeles (SC)	MHDT	Dsl	N2O	0.6881	4973128.9809	0.1255	
2033	Annual	Los Angeles (SC)	MHDT	Gas	N2O	0.0200	847102.4609	0.0214	0.110367
2033	Annual	Los Angeles (SC)	HHDT	Dsl	NOx	28.1993	8139884.4474	3.1428	
2033	Annual	Los Angeles (SC)	HHDT	Gas	NOx	0.0252	7638.6406	2.9877	
2033	Annual	Los Angeles (SC)	HHDT	NG	NOx	0.2769	171673.1890	1.4633	3.107989
2033	Annual	Los Angeles (SC)	LDA	Dsl	NOx	0.0281	1734692.0749	0.0147	
2033	Annual	Los Angeles (SC)	LDA	Gas	NOx	5.8328	145368419.8802	0.0364	0.036144
2033	Annual	Los Angeles (SC)	LDT1	Dsl	NOx	0.0008	3012.0570	0.2369	
2033	Annual	Los Angeles (SC)	LDT1	Gas	NOx	1.0970	19369391.8594	0.0514	0.051406
2033	Annual	Los Angeles (SC)	LDT2	Dsl	NOx	0.0219	544244.0431	0.0366	
2033	Annual	Los Angeles (SC)	LDT2	Gas	NOx	3.1254	55051434.3756	0.0515	0.051357
2033	Annual	Los Angeles (SC)	LHDT1	Dsl	NOx	1.1369	3862319.2420	0.2670	
2033	Annual	Los Angeles (SC)	LHDT1	Gas	NOx	0.8444	3685925.9339	0.2078	0.238124
2033	Annual	Los Angeles (SC)	LHDT2	Dsl	NOx	0.5107	1508341.5176	0.3071	
2033	Annual	Los Angeles (SC)	LHDT2	Gas	NOx	0.1556	634799.7321	0.2224	0.282024
2033	Annual	Los Angeles (SC)	MHDT	Dsl	NOx	9.2765	4973128.9809	1.6922	
2033	Annual	Los Angeles (SC)	MHDT	Gas	NOx	0.2267	847102.4609	0.2427	1.481238
2033	Annual	Los Angeles (SC)	HHDT	Dsl	PM10	1.0281	8139884.4474	0.1146	
2033	Annual	Los Angeles (SC)	HHDT	Gas	PM10	0.0007	7638.6406	0.0830	
2033	Annual	Los Angeles (SC)	HHDT	NG	PM10	0.0193	171673.1890	0.1019	0.114292
2033	Annual	Los Angeles (SC)	LDA	Dsl	PM10	0.0885	1734692.0749	0.0463	
2033	Annual	Los Angeles (SC)	LDA	Elec	PM10	0.4158	8429344.4772	0.0447	
2033	Annual	Los Angeles (SC)	LDA	Gas	PM10	7.3575	145368419.8802	0.0459	0.045856
2033	Annual	Los Angeles (SC)	LDT1	Dsl	PM10	0.0002	3012.0570	0.0603	
2033	Annual	Los Angeles (SC)	LDT1	Elec	PM10	0.0313	634616.8868	0.0447	
2033	Annual	Los Angeles (SC)	LDT1	Gas	PM10	0.9849	19369391.8594	0.0461	0.046088
2033	Annual	Los Angeles (SC)	LDT2	Dsl	PM10	0.0297	544244.0431	0.0495	
2033	Annual	Los Angeles (SC)	LDT2	Elec	PM10	0.0752	1524213.6743	0.0447	
2033	Annual	Los Angeles (SC)	LDT2	Gas	PM10	2.7914	55051434.3756	0.0460	0.045999
2033	Annual	Los Angeles (SC)	LHDT1	Dsl	PM10	0.4100	3862319.2420	0.0963	
2033	Annual	Los Angeles (SC)	LHDT1	Gas	PM10	0.3489	3685925.9339	0.0859	0.051450

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calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2033	Annual	Los Angeles (SC)	LHDT2	Dsl	PM10	0.1907	1508341.5176	0.1147	
2033	Annual	Los Angeles (SC)	LHDT2	Gas	PM10	0.0690	634799.7321	0.0985	0.094709
2033	Annual	Los Angeles (SC)	MHDT	Dsl	PM10	0.8196	4973128.9809	0.1495	
2033	Annual	Los Angeles (SC)	MHDT	Gas	PM10	0.1342	847102.4609	0.1437	0.143739
2033	Annual	Los Angeles (SC)	HHDT	Dsl	PM2_5	0.4681	8139884.4474	0.0522	
2033	Annual	Los Angeles (SC)	HHDT	Gas	PM2_5	0.0003	7638.6406	0.0327	
2033	Annual	Los Angeles (SC)	HHDT	NG	PM2_5	0.0075	171673.1890	0.0395	0.051892
2033	Annual	Los Angeles (SC)	LDA	Dsl	PM2_5	0.0367	1734692.0749	0.0192	
2033	Annual	Los Angeles (SC)	LDA	Elec	PM2_5	0.1649	8429344.4772	0.0177	
2033	Annual	Los Angeles (SC)	LDA	Gas	PM2_5	3.0160	145368419.8802	0.0188	0.018768
2033	Annual	Los Angeles (SC)	LDT1	Dsl	PM2_5	0.0001	3012.0570	0.0327	
2033	Annual	Los Angeles (SC)	LDT1	Elec	PM2_5	0.0124	634616.8868	0.0177	
2033	Annual	Los Angeles (SC)	LDT1	Gas	PM2_5	0.4061	19369391.8594	0.0190	0.018981
2033	Annual	Los Angeles (SC)	LDT2	Dsl	PM2_5	0.0134	544244.0431	0.0223	
2033	Annual	Los Angeles (SC)	LDT2	Elec	PM2_5	0.0298	1524213.6743	0.0177	
2033	Annual	Los Angeles (SC)	LDT2	Gas	PM2_5	1.1468	55051434.3756	0.0189	0.018900
2033	Annual	Los Angeles (SC)	LHDT1	Dsl	PM2_5	0.1843	3862319.2420	0.0433	
2033	Annual	Los Angeles (SC)	LHDT1	Gas	PM2_5	0.1465	3685925.9339	0.0361	0.021414
2033	Annual	Los Angeles (SC)	LHDT2	Dsl	PM2_5	0.0901	1508341.5176	0.0542	
2033	Annual	Los Angeles (SC)	LHDT2	Gas	PM2_5	0.0290	634799.7321	0.0415	0.041341
2033	Annual	Los Angeles (SC)	MHDT	Dsl	PM2_5	0.3603	4973128.9809	0.0657	
2033	Annual	Los Angeles (SC)	MHDT	Gas	PM2_5	0.0561	847102.4609	0.0601	0.062603
2033	Annual	Los Angeles (SC)	HHDT	Dsl	ROG	0.5010	8139884.4474	0.0558	
2033	Annual	Los Angeles (SC)	HHDT	Gas	ROG	0.0032	7638.6406	0.3759	
2033	Annual	Los Angeles (SC)	HHDT	NG	ROG	0.0228	171673.1890	0.1207	0.057467
2033	Annual	Los Angeles (SC)	LDA	Dsl	ROG	0.0157	1734692.0749	0.0082	
2033	Annual	Los Angeles (SC)	LDA	Elec	ROG	0.0134	8429344.4772	0.0014	
2033	Annual	Los Angeles (SC)	LDA	Gas	ROG	9.1638	145368419.8802	0.0572	0.053620
2033	Annual	Los Angeles (SC)	LDT1	Dsl	ROG	0.0001	3012.0570	0.0375	
2033	Annual	Los Angeles (SC)	LDT1	Elec	ROG	0.0010	634616.8868	0.0014	
2033	Annual	Los Angeles (SC)	LDT1	Gas	ROG	2.0447	19369391.8594	0.0958	0.092765
2033	Annual	Los Angeles (SC)	LDT2	Dsl	ROG	0.0132	544244.0431	0.0220	
2033	Annual	Los Angeles (SC)	LDT2	Elec	ROG	0.0035	1524213.6743	0.0021	
2033	Annual	Los Angeles (SC)	LDT2	Gas	ROG	5.4366	55051434.3756	0.0896	0.086610
2033	Annual	Los Angeles (SC)	LHDT1	Dsl	ROG	0.2074	3862319.2420	0.0487	
2033	Annual	Los Angeles (SC)	LHDT1	Gas	ROG	1.2220	3685925.9339	0.3008	0.099500
2033	Annual	Los Angeles (SC)	LHDT2	Dsl	ROG	0.0831	1508341.5176	0.0500	

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calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2033	Annual	Los Angeles (SC)	LHDT2	Gas	ROG	0.1655	634799.7321	0.2365	0.228875
2033	Annual	Los Angeles (SC)	MHDT	Dsl	ROG	0.0478	4973128.9809	0.0087	
2033	Annual	Los Angeles (SC)	MHDT	Gas	ROG	0.2114	847102.4609	0.2264	0.059677
2033	Annual	Los Angeles (SC)	HHDT	Dsl	SOx	0.1013	8139884.4474	0.0113	
2033	Annual	Los Angeles (SC)	HHDT	Gas	SOx	0.0001	7638.6406	0.0166	0.031547
2033	Annual	Los Angeles (SC)	LDA	Dsl	SOx	0.0032	1734692.0749	0.0017	
2033	Annual	Los Angeles (SC)	LDA	Gas	SOx	0.3558	145368419.8802	0.0022	0.002214
2033	Annual	Los Angeles (SC)	LDT1	Dsl	SOx	0.0000	3012.0570	0.0035	
2033	Annual	Los Angeles (SC)	LDT1	Gas	SOx	0.0558	19369391.8594	0.0026	0.002616
2033	Annual	Los Angeles (SC)	LDT2	Dsl	SOx	0.0013	544244.0431	0.0022	
2033	Annual	Los Angeles (SC)	LDT2	Gas	SOx	0.1587	55051434.3756	0.0026	0.002612
2033	Annual	Los Angeles (SC)	LHDT1	Dsl	SOx	0.0163	3862319.2420	0.0038	
2033	Annual	Los Angeles (SC)	LHDT1	Gas	SOx	0.0286	3685925.9339	0.0071	0.005397
2033	Annual	Los Angeles (SC)	LHDT2	Dsl	SOx	0.0071	1508341.5176	0.0042	
2033	Annual	Los Angeles (SC)	LHDT2	Gas	SOx	0.0057	634799.7321	0.0081	0.005394
2033	Annual	Los Angeles (SC)	MHDT	Dsl	SOx	0.0414	4973128.9809	0.0075	
2033	Annual	Los Angeles (SC)	MHDT	Gas	SOx	0.0133	847102.4609	0.0143	0.008526
2038	Annual	Los Angeles (SC)	HHDT	Dsl	CH4	0.0245	8707332.6391	0.0026	
2038	Annual	Los Angeles (SC)	HHDT	Gas	CH4	0.0007	7982.4206	0.0760	
2038	Annual	Los Angeles (SC)	HHDT	NG	CH4	0.8731	190240.7560	4.1635	0.091507
2038	Annual	Los Angeles (SC)	LDA	Dsl	CH4	0.0006	1785778.9926	0.0003	
2038	Annual	Los Angeles (SC)	LDA	Gas	CH4	0.6202	145200708.4495	0.0039	0.003832
2038	Annual	Los Angeles (SC)	LDT1	Dsl	CH4	0.0000	2921.3872	0.0013	
2038	Annual	Los Angeles (SC)	LDT1	Gas	CH4	0.1026	19925767.6125	0.0047	0.004673
2038	Annual	Los Angeles (SC)	LDT2	Dsl	CH4	0.0006	566687.6514	0.0010	
2038	Annual	Los Angeles (SC)	LDT2	Gas	CH4	0.3378	55739058.9392	0.0055	0.005453
2038	Annual	Los Angeles (SC)	LHDT1	Dsl	CH4	0.0099	4138479.9757	0.0022	
2038	Annual	Los Angeles (SC)	LHDT1	Gas	CH4	0.0370	3716206.8371	0.0090	0.005420
2038	Annual	Los Angeles (SC)	LHDT2	Dsl	CH4	0.0040	1616892.7907	0.0022	
2038	Annual	Los Angeles (SC)	LHDT2	Gas	CH4	0.0065	647177.5510	0.0091	0.004204
2038	Annual	Los Angeles (SC)	MHDT	Dsl	CH4	0.0023	5241312.0472	0.0004	
2038	Annual	Los Angeles (SC)	MHDT	Gas	CH4	0.0202	864424.5407	0.0212	0.003346
2038	Annual	Los Angeles (SC)	HHDT	Dsl	CO	7.2298	8707332.6391	0.7532	
2038	Annual	Los Angeles (SC)	HHDT	Gas	CO	0.2774	7982.4206	31.5288	
2038	Annual	Los Angeles (SC)	HHDT	NG	CO	3.1549	190240.7560	15.0444	1.086114
2038	Annual	Los Angeles (SC)	LDA	Dsl	CO	0.4382	1785778.9926	0.2226	
2038	Annual	Los Angeles (SC)	LDA	Gas	CO	103.7672	145200708.4495	0.6483	0.643144

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calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2038	Annual	Los Angeles (SC)	LDT1	Dsl	CO	0.0009	2921.3872	0.2839	
2038	Annual	Los Angeles (SC)	LDT1	Gas	CO	15.5466	19925767.6125	0.7078	0.707744
2038	Annual	Los Angeles (SC)	LDT2	Dsl	CO	0.1419	566687.6514	0.2272	
2038	Annual	Los Angeles (SC)	LDT2	Gas	CO	50.1599	55739058.9392	0.8164	0.810451
2038	Annual	Los Angeles (SC)	LHDT1	Dsl	CO	1.0533	4138479.9757	0.2309	
2038	Annual	Los Angeles (SC)	LHDT1	Gas	CO	3.6171	3716206.8371	0.8830	0.539408
2038	Annual	Los Angeles (SC)	LHDT2	Dsl	CO	0.4274	1616892.7907	0.2398	
2038	Annual	Los Angeles (SC)	LHDT2	Gas	CO	0.6403	647177.5510	0.8975	0.427825
2038	Annual	Los Angeles (SC)	MHDT	Dsl	CO	0.7157	5241312.0472	0.1239	
2038	Annual	Los Angeles (SC)	MHDT	Gas	CO	1.6113	864424.5407	1.6910	0.345751
2038	Annual	Los Angeles (SC)	HHDT	Dsl	CO2	10643.0692	8707332.6391	1108.8611	
2038	Annual	Los Angeles (SC)	HHDT	Gas	CO2	14.1265	7982.4206	1605.4502	
2038	Annual	Los Angeles (SC)	HHDT	NG	CO2	585.1572	190240.7560	2790.3864	1145.226968
2038	Annual	Los Angeles (SC)	LDA	Dsl	CO2	332.0494	1785778.9926	168.6826	
2038	Annual	Los Angeles (SC)	LDA	Gas	CO2	34337.5596	145200708.4495	214.5340	213.976911
2038	Annual	Los Angeles (SC)	LDT1	Dsl	CO2	1.1013	2921.3872	341.9784	
2038	Annual	Los Angeles (SC)	LDT1	Gas	CO2	5536.7049	19925767.6125	252.0761	252.089294
2038	Annual	Los Angeles (SC)	LDT2	Dsl	CO2	140.8195	566687.6514	225.4313	
2038	Annual	Los Angeles (SC)	LDT2	Gas	CO2	15311.7571	55739058.9392	249.2073	248.968020
2038	Annual	Los Angeles (SC)	LHDT1	Dsl	CO2	1787.1754	4138479.9757	391.7614	
2038	Annual	Los Angeles (SC)	LHDT1	Gas	CO2	2815.2002	3716206.8371	687.2342	531.555434
2038	Annual	Los Angeles (SC)	LHDT2	Dsl	CO2	776.2846	1616892.7907	435.5471	
2038	Annual	Los Angeles (SC)	LHDT2	Gas	CO2	564.3402	647177.5510	791.0663	537.171193
2038	Annual	Los Angeles (SC)	MHDT	Dsl	CO2	4423.6998	5241312.0472	765.6689	
2038	Annual	Los Angeles (SC)	MHDT	Gas	CO2	1323.4252	864424.5407	1388.8895	853.901853
2038	Annual	Los Angeles (SC)	HHDT	Dsl	N2O	1.6729	8707332.6391	0.1743	
2038	Annual	Los Angeles (SC)	HHDT	Gas	N2O	0.0012	7982.4206	0.1338	
2038	Annual	Los Angeles (SC)	HHDT	NG	N2O	0.1193	190240.7560	0.5688	0.182689
2038	Annual	Los Angeles (SC)	LDA	Dsl	N2O	0.0522	1785778.9926	0.0265	
2038	Annual	Los Angeles (SC)	LDA	Gas	N2O	0.9009	145200708.4495	0.0056	0.005883
2038	Annual	Los Angeles (SC)	LDT1	Dsl	N2O	0.0002	2921.3872	0.0538	
2038	Annual	Los Angeles (SC)	LDT1	Gas	N2O	0.1384	19925767.6125	0.0063	0.006308
2038	Annual	Los Angeles (SC)	LDT2	Dsl	N2O	0.0221	566687.6514	0.0354	
2038	Annual	Los Angeles (SC)	LDT2	Gas	N2O	0.3769	55739058.9392	0.0061	0.006430
2038	Annual	Los Angeles (SC)	LHDT1	Dsl	N2O	0.2809	4138479.9757	0.0616	
2038	Annual	Los Angeles (SC)	LHDT1	Gas	N2O	0.0707	3716206.8371	0.0173	0.040609
2038	Annual	Los Angeles (SC)	LHDT2	Dsl	N2O	0.1220	1616892.7907	0.0685	

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calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2038	Annual	Los Angeles (SC)	LHDT2	Gas	N2O	0.0129	647177.5510	0.0181	0.054069
2038	Annual	Los Angeles (SC)	MHDT	Dsl	N2O	0.6953	5241312.0472	0.1204	
2038	Annual	Los Angeles (SC)	MHDT	Gas	N2O	0.0201	864424.5407	0.0211	0.106306
2038	Annual	Los Angeles (SC)	HHDT	Dsl	NOx	29.2672	8707332.6391	3.0492	
2038	Annual	Los Angeles (SC)	HHDT	Gas	NOx	0.0271	7982.4206	3.0847	
2038	Annual	Los Angeles (SC)	HHDT	NG	NOx	0.2575	190240.7560	1.2281	3.010363
2038	Annual	Los Angeles (SC)	LDA	Dsl	NOx	0.0228	1785778.9926	0.0116	
2038	Annual	Los Angeles (SC)	LDA	Gas	NOx	5.4941	145200708.4495	0.0343	0.034050
2038	Annual	Los Angeles (SC)	LDT1	Dsl	NOx	0.0004	2921.3872	0.1329	
2038	Annual	Los Angeles (SC)	LDT1	Gas	NOx	0.9168	19925767.6125	0.0417	0.041754
2038	Annual	Los Angeles (SC)	LDT2	Dsl	NOx	0.0228	566687.6514	0.0365	
2038	Annual	Los Angeles (SC)	LDT2	Gas	NOx	2.5704	55739058.9392	0.0418	0.041781
2038	Annual	Los Angeles (SC)	LHDT1	Dsl	NOx	0.6981	4138479.9757	0.1530	
2038	Annual	Los Angeles (SC)	LHDT1	Gas	NOx	0.7215	3716206.8371	0.1761	0.163960
2038	Annual	Los Angeles (SC)	LHDT2	Dsl	NOx	0.3538	1616892.7907	0.1985	
2038	Annual	Los Angeles (SC)	LHDT2	Gas	NOx	0.1336	647177.5510	0.1872	0.195290
2038	Annual	Los Angeles (SC)	MHDT	Dsl	NOx	9.7402	5241312.0472	1.6859	
2038	Annual	Los Angeles (SC)	MHDT	Gas	NOx	0.2158	864424.5407	0.2265	1.479250
2038	Annual	Los Angeles (SC)	HHDT	Dsl	PM10	1.0955	8707332.6391	0.1141	
2038	Annual	Los Angeles (SC)	HHDT	Gas	PM10	0.0007	7982.4206	0.0831	
2038	Annual	Los Angeles (SC)	HHDT	NG	PM10	0.0213	190240.7560	0.1016	0.113837
2038	Annual	Los Angeles (SC)	LDA	Dsl	PM10	0.0902	1785778.9926	0.0458	
2038	Annual	Los Angeles (SC)	LDA	Elec	PM10	0.4602	9330033.0600	0.0447	
2038	Annual	Los Angeles (SC)	LDA	Gas	PM10	7.3069	145200708.4495	0.0457	0.045600
2038	Annual	Los Angeles (SC)	LDT1	Dsl	PM10	0.0002	2921.3872	0.0530	
2038	Annual	Los Angeles (SC)	LDT1	Elec	PM10	0.0365	740741.0414	0.0447	
2038	Annual	Los Angeles (SC)	LDT1	Gas	PM10	1.0058	19925767.6125	0.0458	0.045755
2038	Annual	Los Angeles (SC)	LDT2	Dsl	PM10	0.0310	566687.6514	0.0496	
2038	Annual	Los Angeles (SC)	LDT2	Elec	PM10	0.0854	1731075.5461	0.0447	
2038	Annual	Los Angeles (SC)	LDT2	Gas	PM10	2.8081	55739058.9392	0.0457	0.045712
2038	Annual	Los Angeles (SC)	LHDT1	Dsl	PM10	0.4354	4138479.9757	0.0954	
2038	Annual	Los Angeles (SC)	LHDT1	Gas	PM10	0.3517	3716206.8371	0.0858	0.051286
2038	Annual	Los Angeles (SC)	LHDT2	Dsl	PM10	0.2044	1616892.7907	0.1147	
2038	Annual	Los Angeles (SC)	LHDT2	Gas	PM10	0.0703	647177.5510	0.0986	0.095024
2038	Annual	Los Angeles (SC)	MHDT	Dsl	PM10	0.8635	5241312.0472	0.1494	
2038	Annual	Los Angeles (SC)	MHDT	Gas	PM10	0.1370	864424.5407	0.1437	0.143844
2038	Annual	Los Angeles (SC)	HHDT	Dsl	PM2_5	0.4965	8707332.6391	0.0517	

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calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2038	Annual	Los Angeles (SC)	HHDT	Gas	PM2_5	0.0003	7982.4206	0.0327	
2038	Annual	Los Angeles (SC)	HHDT	NG	PM2_5	0.0082	190240.7560	0.0392	0.051439
2038	Annual	Los Angeles (SC)	LDA	Dsl	PM2_5	0.0369	1785778.9926	0.0188	
2038	Annual	Los Angeles (SC)	LDA	Elec	PM2_5	0.1826	9330033.0600	0.0177	
2038	Annual	Los Angeles (SC)	LDA	Gas	PM2_5	2.9737	145200708.4495	0.0186	0.018532
2038	Annual	Los Angeles (SC)	LDT1	Dsl	PM2_5	0.0001	2921.3872	0.0257	
2038	Annual	Los Angeles (SC)	LDT1	Elec	PM2_5	0.0145	740741.0414	0.0177	
2038	Annual	Los Angeles (SC)	LDT1	Gas	PM2_5	0.4109	19925767.6125	0.0187	0.018674
2038	Annual	Los Angeles (SC)	LDT2	Dsl	PM2_5	0.0140	566687.6514	0.0223	
2038	Annual	Los Angeles (SC)	LDT2	Elec	PM2_5	0.0339	1731075.5461	0.0177	
2038	Annual	Los Angeles (SC)	LDT2	Gas	PM2_5	1.1444	55739058.9392	0.0186	0.018637
2038	Annual	Los Angeles (SC)	LHDT1	Dsl	PM2_5	0.1937	4138479.9757	0.0425	
2038	Annual	Los Angeles (SC)	LHDT1	Gas	PM2_5	0.1477	3716206.8371	0.0361	0.021195
2038	Annual	Los Angeles (SC)	LHDT2	Dsl	PM2_5	0.0965	1616892.7907	0.0541	
2038	Annual	Los Angeles (SC)	LHDT2	Gas	PM2_5	0.0296	647177.5510	0.0415	0.041536
2038	Annual	Los Angeles (SC)	MHDT	Dsl	PM2_5	0.3794	5241312.0472	0.0657	
2038	Annual	Los Angeles (SC)	MHDT	Gas	PM2_5	0.0573	864424.5407	0.0602	0.062641
2038	Annual	Los Angeles (SC)	HHDT	Dsl	ROG	0.5277	8707332.6391	0.0550	
2038	Annual	Los Angeles (SC)	HHDT	Gas	ROG	0.0034	7982.4206	0.3875	
2038	Annual	Los Angeles (SC)	HHDT	NG	ROG	0.0204	190240.7560	0.0972	0.056176
2038	Annual	Los Angeles (SC)	LDA	Dsl	ROG	0.0140	1785778.9926	0.0071	
2038	Annual	Los Angeles (SC)	LDA	Elec	ROG	0.0158	9330033.0600	0.0015	
2038	Annual	Los Angeles (SC)	LDA	Gas	ROG	7.7543	145200708.4495	0.0484	0.045175
2038	Annual	Los Angeles (SC)	LDT1	Dsl	ROG	0.0001	2921.3872	0.0270	
2038	Annual	Los Angeles (SC)	LDT1	Elec	ROG	0.0013	740741.0414	0.0016	
2038	Annual	Los Angeles (SC)	LDT1	Gas	ROG	1.5750	19925767.6125	0.0717	0.069187
2038	Annual	Los Angeles (SC)	LDT2	Dsl	ROG	0.0138	566687.6514	0.0222	
2038	Annual	Los Angeles (SC)	LDT2	Elec	ROG	0.0043	1731075.5461	0.0022	
2038	Annual	Los Angeles (SC)	LDT2	Gas	ROG	4.3950	55739058.9392	0.0715	0.068982
2038	Annual	Los Angeles (SC)	LHDT1	Dsl	ROG	0.2137	4138479.9757	0.0469	
2038	Annual	Los Angeles (SC)	LHDT1	Gas	ROG	0.8281	3716206.8371	0.2021	0.077558
2038	Annual	Los Angeles (SC)	LHDT2	Dsl	ROG	0.0859	1616892.7907	0.0482	
2038	Annual	Los Angeles (SC)	LHDT2	Gas	ROG	0.1404	647177.5510	0.1968	0.159937
2038	Annual	Los Angeles (SC)	MHDT	Dsl	ROG	0.0498	5241312.0472	0.0086	
2038	Annual	Los Angeles (SC)	MHDT	Gas	ROG	0.2074	864424.5407	0.2176	0.053409
2038	Annual	Los Angeles (SC)	HHDT	Dsl	SOx	0.1006	8707332.6391	0.0105	
2038	Annual	Los Angeles (SC)	HHDT	Gas	SOx	0.0001	7982.4206	0.0159	0.029173

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calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2038	Annual	Los Angeles (SC)	LDA	Dsl	SOx	0.0031	1785778.9926	0.0016	
2038	Annual	Los Angeles (SC)	LDA	Gas	SOx	0.3398	145200708.4495	0.0021	0.002117
2038	Annual	Los Angeles (SC)	LDT1	Dsl	SOx	0.0000	2921.3872	0.0032	
2038	Annual	Los Angeles (SC)	LDT1	Gas	SOx	0.0548	19925767.6125	0.0025	0.002495
2038	Annual	Los Angeles (SC)	LDT2	Dsl	SOx	0.0013	566687.6514	0.0021	
2038	Annual	Los Angeles (SC)	LDT2	Gas	SOx	0.1515	55739058.9392	0.0025	0.002463
2038	Annual	Los Angeles (SC)	LHDT1	Dsl	SOx	0.0169	4138479.9757	0.0037	
2038	Annual	Los Angeles (SC)	LHDT1	Gas	SOx	0.0279	3716206.8371	0.0068	0.005169
2038	Annual	Los Angeles (SC)	LHDT2	Dsl	SOx	0.0073	1616892.7907	0.0041	
2038	Annual	Los Angeles (SC)	LHDT2	Gas	SOx	0.0056	647177.5510	0.0078	0.005178
2038	Annual	Los Angeles (SC)	MHDT	Dsl	SOx	0.0418	5241312.0472	0.0072	
2038	Annual	Los Angeles (SC)	MHDT	Gas	SOx	0.0131	864424.5407	0.0137	0.008155
2043	Annual	Los Angeles (SC)	HHDT	Dsl	CH4	0.0262	9303767.1296	0.0026	
2043	Annual	Los Angeles (SC)	HHDT	Gas	CH4	0.0007	8121.8675	0.0765	
2043	Annual	Los Angeles (SC)	HHDT	NG	CH4	0.9231	204164.8454	4.1017	0.090567
2043	Annual	Los Angeles (SC)	LDA	Dsl	CH4	0.0006	1807803.2434	0.0003	
2043	Annual	Los Angeles (SC)	LDA	Gas	CH4	0.5577	145530461.3969	0.0035	0.003437
2043	Annual	Los Angeles (SC)	LDT1	Dsl	CH4	0.0000	2894.3023	0.0011	
2043	Annual	Los Angeles (SC)	LDT1	Gas	CH4	0.0863	20276874.9669	0.0039	0.003861
2043	Annual	Los Angeles (SC)	LDT2	Dsl	CH4	0.0007	578191.1561	0.0010	
2043	Annual	Los Angeles (SC)	LDT2	Gas	CH4	0.2940	56145990.6440	0.0048	0.004713
2043	Annual	Los Angeles (SC)	LHDT1	Dsl	CH4	0.0102	4304016.1137	0.0021	
2043	Annual	Los Angeles (SC)	LHDT1	Gas	CH4	0.0348	3745175.4234	0.0084	0.005069
2043	Annual	Los Angeles (SC)	LHDT2	Dsl	CH4	0.0041	1684330.2971	0.0022	
2043	Annual	Los Angeles (SC)	LHDT2	Gas	CH4	0.0061	657887.0092	0.0085	0.003964
2043	Annual	Los Angeles (SC)	MHDT	Dsl	CH4	0.0024	5510451.0780	0.0004	
2043	Annual	Los Angeles (SC)	MHDT	Gas	CH4	0.0207	874226.8199	0.0214	0.003280
2043	Annual	Los Angeles (SC)	HHDT	Dsl	CO	7.7540	9303767.1296	0.7561	
2043	Annual	Los Angeles (SC)	HHDT	Gas	CO	0.2853	8121.8675	31.8636	
2043	Annual	Los Angeles (SC)	HHDT	NG	CO	3.4006	204164.8454	15.1104	1.090591
2043	Annual	Los Angeles (SC)	LDA	Dsl	CO	0.4364	1807803.2434	0.2190	
2043	Annual	Los Angeles (SC)	LDA	Gas	CO	100.8470	145530461.3969	0.6286	0.623618
2043	Annual	Los Angeles (SC)	LDT1	Dsl	CO	0.0008	2894.3023	0.2572	
2043	Annual	Los Angeles (SC)	LDT1	Gas	CO	14.6166	20276874.9669	0.6539	0.653887
2043	Annual	Los Angeles (SC)	LDT2	Dsl	CO	0.1463	578191.1561	0.2296	
2043	Annual	Los Angeles (SC)	LDT2	Gas	CO	47.6674	56145990.6440	0.7702	0.764680
2043	Annual	Los Angeles (SC)	LHDT1	Dsl	CO	1.0871	4304016.1137	0.2291	

EMFAC2017 On-Road Vehicle Emission Rate Calculations

calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2043	Annual	Los Angeles (SC)	LHDT1	Gas	CO	3.6212	3745175.4234	0.8772	0.530648
2043	Annual	Los Angeles (SC)	LHDT2	Dsl	CO	0.4438	1684330.2971	0.2390	
2043	Annual	Los Angeles (SC)	LHDT2	Gas	CO	0.6555	657887.0092	0.9039	0.425801
2043	Annual	Los Angeles (SC)	MHDT	Dsl	CO	0.7534	5510451.0780	0.1240	
2043	Annual	Los Angeles (SC)	MHDT	Gas	CO	1.6140	874226.8199	1.6749	0.336390
2043	Annual	Los Angeles (SC)	HHDT	Dsl	CO2	10950.9151	9303767.1296	1067.7927	
2043	Annual	Los Angeles (SC)	HHDT	Gas	CO2	14.0900	8121.8675	1573.8061	
2043	Annual	Los Angeles (SC)	HHDT	NG	CO2	607.7946	204164.8454	2700.6682	1103.257597
2043	Annual	Los Angeles (SC)	LDA	Dsl	CO2	331.2065	1807803.2434	166.2046	
2043	Annual	Los Angeles (SC)	LDA	Gas	CO2	33787.9254	145530461.3969	210.6216	210.076660
2043	Annual	Los Angeles (SC)	LDT1	Dsl	CO2	1.0381	2894.3023	325.3874	
2043	Annual	Los Angeles (SC)	LDT1	Gas	CO2	5485.9491	20276874.9669	245.4404	245.451859
2043	Annual	Los Angeles (SC)	LDT2	Dsl	CO2	141.0186	578191.1561	221.2587	
2043	Annual	Los Angeles (SC)	LDT2	Gas	CO2	15003.1369	56145990.6440	242.4146	242.198921
2043	Annual	Los Angeles (SC)	LHDT1	Dsl	CO2	1823.9419	4304016.1137	384.4435	
2043	Annual	Los Angeles (SC)	LHDT1	Gas	CO2	2779.6902	3745175.4234	673.3171	518.852283
2043	Annual	Los Angeles (SC)	LHDT2	Dsl	CO2	793.8311	1684330.2971	427.5592	
2043	Annual	Los Angeles (SC)	LHDT2	Gas	CO2	560.9971	657887.0092	773.5791	524.749972
2043	Annual	Los Angeles (SC)	MHDT	Dsl	CO2	4527.4264	5510451.0780	745.3489	
2043	Annual	Los Angeles (SC)	MHDT	Gas	CO2	1312.7452	874226.8199	1362.2340	829.816375
2043	Annual	Los Angeles (SC)	HHDT	Dsl	N2O	1.7213	9303767.1296	0.1678	
2043	Annual	Los Angeles (SC)	HHDT	Gas	N2O	0.0012	8121.8675	0.1335	
2043	Annual	Los Angeles (SC)	HHDT	NG	N2O	0.1239	204164.8454	0.5505	0.176024
2043	Annual	Los Angeles (SC)	LDA	Dsl	N2O	0.0521	1807803.2434	0.0261	
2043	Annual	Los Angeles (SC)	LDA	Gas	N2O	0.9065	145530461.3969	0.0057	0.005902
2043	Annual	Los Angeles (SC)	LDT1	Dsl	N2O	0.0002	2894.3023	0.0511	
2043	Annual	Los Angeles (SC)	LDT1	Gas	N2O	0.1381	20276874.9669	0.0062	0.006184
2043	Annual	Los Angeles (SC)	LDT2	Dsl	N2O	0.0222	578191.1561	0.0348	
2043	Annual	Los Angeles (SC)	LDT2	Gas	N2O	0.3662	56145990.6440	0.0059	0.006211
2043	Annual	Los Angeles (SC)	LHDT1	Dsl	N2O	0.2867	4304016.1137	0.0604	
2043	Annual	Los Angeles (SC)	LHDT1	Gas	N2O	0.0786	3745175.4234	0.0190	0.041173
2043	Annual	Los Angeles (SC)	LHDT2	Dsl	N2O	0.1248	1684330.2971	0.0672	
2043	Annual	Los Angeles (SC)	LHDT2	Gas	N2O	0.0143	657887.0092	0.0198	0.053884
2043	Annual	Los Angeles (SC)	MHDT	Dsl	N2O	0.7116	5510451.0780	0.1172	
2043	Annual	Los Angeles (SC)	MHDT	Gas	N2O	0.0204	874226.8199	0.0211	0.104010
2043	Annual	Los Angeles (SC)	HHDT	Dsl	NOx	31.0582	9303767.1296	3.0284	
2043	Annual	Los Angeles (SC)	HHDT	Gas	NOx	0.0280	8121.8675	3.1300	

EMFAC2017 On-Road Vehicle Emission Rate Calculations

calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2043	Annual	Los Angeles (SC)	HHDT	NG	NOx	0.2416	204164.8454	1.0736	2.986545
2043	Annual	Los Angeles (SC)	LDA	Dsl	NOx	0.0206	1807803.2434	0.0103	
2043	Annual	Los Angeles (SC)	LDA	Gas	NOx	5.4452	145530461.3969	0.0339	0.033654
2043	Annual	Los Angeles (SC)	LDT1	Dsl	NOx	0.0002	2894.3023	0.0731	
2043	Annual	Los Angeles (SC)	LDT1	Gas	NOx	0.8634	20276874.9669	0.0386	0.038634
2043	Annual	Los Angeles (SC)	LDT2	Dsl	NOx	0.0232	578191.1561	0.0364	
2043	Annual	Los Angeles (SC)	LDT2	Gas	NOx	2.2684	56145990.6440	0.0367	0.036650
2043	Annual	Los Angeles (SC)	LHDT1	Dsl	NOx	0.4744	4304016.1137	0.1000	
2043	Annual	Los Angeles (SC)	LHDT1	Gas	NOx	0.8133	3745175.4234	0.1970	0.145129
2043	Annual	Los Angeles (SC)	LHDT2	Dsl	NOx	0.2717	1684330.2971	0.1463	
2043	Annual	Los Angeles (SC)	LHDT2	Gas	NOx	0.1494	657887.0092	0.2060	0.163102
2043	Annual	Los Angeles (SC)	MHDT	Dsl	NOx	10.2140	5510451.0780	1.6815	
2043	Annual	Los Angeles (SC)	MHDT	Gas	NOx	0.2167	874226.8199	0.2249	1.482078
2043	Annual	Los Angeles (SC)	HHDT	Dsl	PM10	1.1702	9303767.1296	0.1141	
2043	Annual	Los Angeles (SC)	HHDT	Gas	PM10	0.0007	8121.8675	0.0831	
2043	Annual	Los Angeles (SC)	HHDT	NG	PM10	0.0228	204164.8454	0.1013	0.113802
2043	Annual	Los Angeles (SC)	LDA	Dsl	PM10	0.0909	1807803.2434	0.0456	
2043	Annual	Los Angeles (SC)	LDA	Elec	PM10	0.4803	9737694.3049	0.0447	
2043	Annual	Los Angeles (SC)	LDA	Gas	PM10	7.3028	145530461.3969	0.0455	0.045476
2043	Annual	Los Angeles (SC)	LDT1	Dsl	PM10	0.0002	2894.3023	0.0510	
2043	Annual	Los Angeles (SC)	LDT1	Elec	PM10	0.0394	798994.1037	0.0447	
2043	Annual	Los Angeles (SC)	LDT1	Gas	PM10	1.0197	20276874.9669	0.0456	0.045588
2043	Annual	Los Angeles (SC)	LDT2	Dsl	PM10	0.0316	578191.1561	0.0496	
2043	Annual	Los Angeles (SC)	LDT2	Elec	PM10	0.0899	1822523.2434	0.0447	
2043	Annual	Los Angeles (SC)	LDT2	Gas	PM10	2.8195	56145990.6440	0.0456	0.045571
2043	Annual	Los Angeles (SC)	LHDT1	Dsl	PM10	0.4503	4304016.1137	0.0949	
2043	Annual	Los Angeles (SC)	LHDT1	Gas	PM10	0.3545	3745175.4234	0.0859	0.051217
2043	Annual	Los Angeles (SC)	LHDT2	Dsl	PM10	0.2133	1684330.2971	0.1149	
2043	Annual	Los Angeles (SC)	LHDT2	Gas	PM10	0.0715	657887.0092	0.0986	0.095270
2043	Annual	Los Angeles (SC)	MHDT	Dsl	PM10	0.9075	5510451.0780	0.1494	
2043	Annual	Los Angeles (SC)	MHDT	Gas	PM10	0.1385	874226.8199	0.1438	0.143952
2043	Annual	Los Angeles (SC)	HHDT	Dsl	PM2_5	0.5301	9303767.1296	0.0517	
2043	Annual	Los Angeles (SC)	HHDT	Gas	PM2_5	0.0003	8121.8675	0.0327	
2043	Annual	Los Angeles (SC)	HHDT	NG	PM2_5	0.0087	204164.8454	0.0389	0.051394
2043	Annual	Los Angeles (SC)	LDA	Dsl	PM2_5	0.0370	1807803.2434	0.0186	
2043	Annual	Los Angeles (SC)	LDA	Elec	PM2_5	0.1905	9737694.3049	0.0177	
2043	Annual	Los Angeles (SC)	LDA	Gas	PM2_5	2.9615	145530461.3969	0.0185	0.018418

EMFAC2017 On-Road Vehicle Emission Rate Calculations

calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2043	Annual	Los Angeles (SC)	LDT1	Dsl	PM2_5	0.0001	2894.3023	0.0237	
2043	Annual	Los Angeles (SC)	LDT1	Elec	PM2_5	0.0156	798994.1037	0.0177	
2043	Annual	Los Angeles (SC)	LDT1	Gas	PM2_5	0.4146	20276874.9669	0.0186	0.018520
2043	Annual	Los Angeles (SC)	LDT2	Dsl	PM2_5	0.0143	578191.1561	0.0224	
2043	Annual	Los Angeles (SC)	LDT2	Elec	PM2_5	0.0357	1822523.2434	0.0177	
2043	Annual	Los Angeles (SC)	LDT2	Gas	PM2_5	1.1444	56145990.6440	0.0185	0.018507
2043	Annual	Los Angeles (SC)	LHDT1	Dsl	PM2_5	0.1991	4304016.1137	0.0420	
2043	Annual	Los Angeles (SC)	LHDT1	Gas	PM2_5	0.1489	3745175.4234	0.0361	0.021090
2043	Annual	Los Angeles (SC)	LHDT2	Dsl	PM2_5	0.1009	1684330.2971	0.0543	
2043	Annual	Los Angeles (SC)	LHDT2	Gas	PM2_5	0.0301	657887.0092	0.0415	0.041712
2043	Annual	Los Angeles (SC)	MHDT	Dsl	PM2_5	0.3985	5510451.0780	0.0656	
2043	Annual	Los Angeles (SC)	MHDT	Gas	PM2_5	0.0580	874226.8199	0.0602	0.062686
2043	Annual	Los Angeles (SC)	HHDT	Dsl	ROG	0.5647	9303767.1296	0.0551	
2043	Annual	Los Angeles (SC)	HHDT	Gas	ROG	0.0035	8121.8675	0.3952	
2043	Annual	Los Angeles (SC)	HHDT	NG	ROG	0.0185	204164.8454	0.0821	0.055928
2043	Annual	Los Angeles (SC)	LDA	Dsl	ROG	0.0133	1807803.2434	0.0067	
2043	Annual	Los Angeles (SC)	LDA	Elec	ROG	0.0173	9737694.3049	0.0016	
2043	Annual	Los Angeles (SC)	LDA	Gas	ROG	7.0328	145530461.3969	0.0438	0.040794
2043	Annual	Los Angeles (SC)	LDT1	Dsl	ROG	0.0001	2894.3023	0.0242	
2043	Annual	Los Angeles (SC)	LDT1	Elec	ROG	0.0015	798994.1037	0.0017	
2043	Annual	Los Angeles (SC)	LDT1	Gas	ROG	1.3139	20276874.9669	0.0588	0.056615
2043	Annual	Los Angeles (SC)	LDT2	Dsl	ROG	0.0142	578191.1561	0.0222	
2043	Annual	Los Angeles (SC)	LDT2	Elec	ROG	0.0047	1822523.2434	0.0024	
2043	Annual	Los Angeles (SC)	LDT2	Gas	ROG	3.7420	56145990.6440	0.0605	0.058275
2043	Annual	Los Angeles (SC)	LHDT1	Dsl	ROG	0.2190	4304016.1137	0.0462	
2043	Annual	Los Angeles (SC)	LHDT1	Gas	ROG	0.7472	3745175.4234	0.1810	0.066533
2043	Annual	Los Angeles (SC)	LHDT2	Dsl	ROG	0.0881	1684330.2971	0.0475	
2043	Annual	Los Angeles (SC)	LHDT2	Gas	ROG	0.1353	657887.0092	0.1865	0.144638
2043	Annual	Los Angeles (SC)	MHDT	Dsl	ROG	0.0520	5510451.0780	0.0086	
2043	Annual	Los Angeles (SC)	MHDT	Gas	ROG	0.2122	874226.8199	0.2201	0.051455
2043	Annual	Los Angeles (SC)	HHDT	Dsl	SOx	0.1035	9303767.1296	0.0101	
2043	Annual	Los Angeles (SC)	HHDT	Gas	SOx	0.0001	8121.8675	0.0156	0.028121
2043	Annual	Los Angeles (SC)	LDA	Dsl	SOx	0.0031	1807803.2434	0.0016	
2043	Annual	Los Angeles (SC)	LDA	Gas	SOx	0.3344	145530461.3969	0.0021	0.002078
2043	Annual	Los Angeles (SC)	LDT1	Dsl	SOx	0.0000	2894.3023	0.0031	
2043	Annual	Los Angeles (SC)	LDT1	Gas	SOx	0.0543	20276874.9669	0.0024	0.002429
2043	Annual	Los Angeles (SC)	LDT2	Dsl	SOx	0.0013	578191.1561	0.0021	

EMFAC2017 On-Road Vehicle Emission Rate Calculations

calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2043	Annual	Los Angeles (SC)	LDT2	Gas	SOx	0.1485	56145990.6440	0.0024	0.002396
2043	Annual	Los Angeles (SC)	LHDT1	Dsl	SOx	0.0172	4304016.1137	0.0036	
2043	Annual	Los Angeles (SC)	LHDT1	Gas	SOx	0.0275	3745175.4234	0.0067	0.005044
2043	Annual	Los Angeles (SC)	LHDT2	Dsl	SOx	0.0075	1684330.2971	0.0040	
2043	Annual	Los Angeles (SC)	LHDT2	Gas	SOx	0.0056	657887.0092	0.0077	0.005057
2043	Annual	Los Angeles (SC)	MHDT	Dsl	SOx	0.0428	5510451.0780	0.0070	
2043	Annual	Los Angeles (SC)	MHDT	Gas	SOx	0.0130	874226.8199	0.0135	0.007923

Appendix E
Hazards and Hazardous Materials Report

Appendix E1 **Hazardous Material Incident Contingency Plan – California**

Appendix E2 **Cortese List**

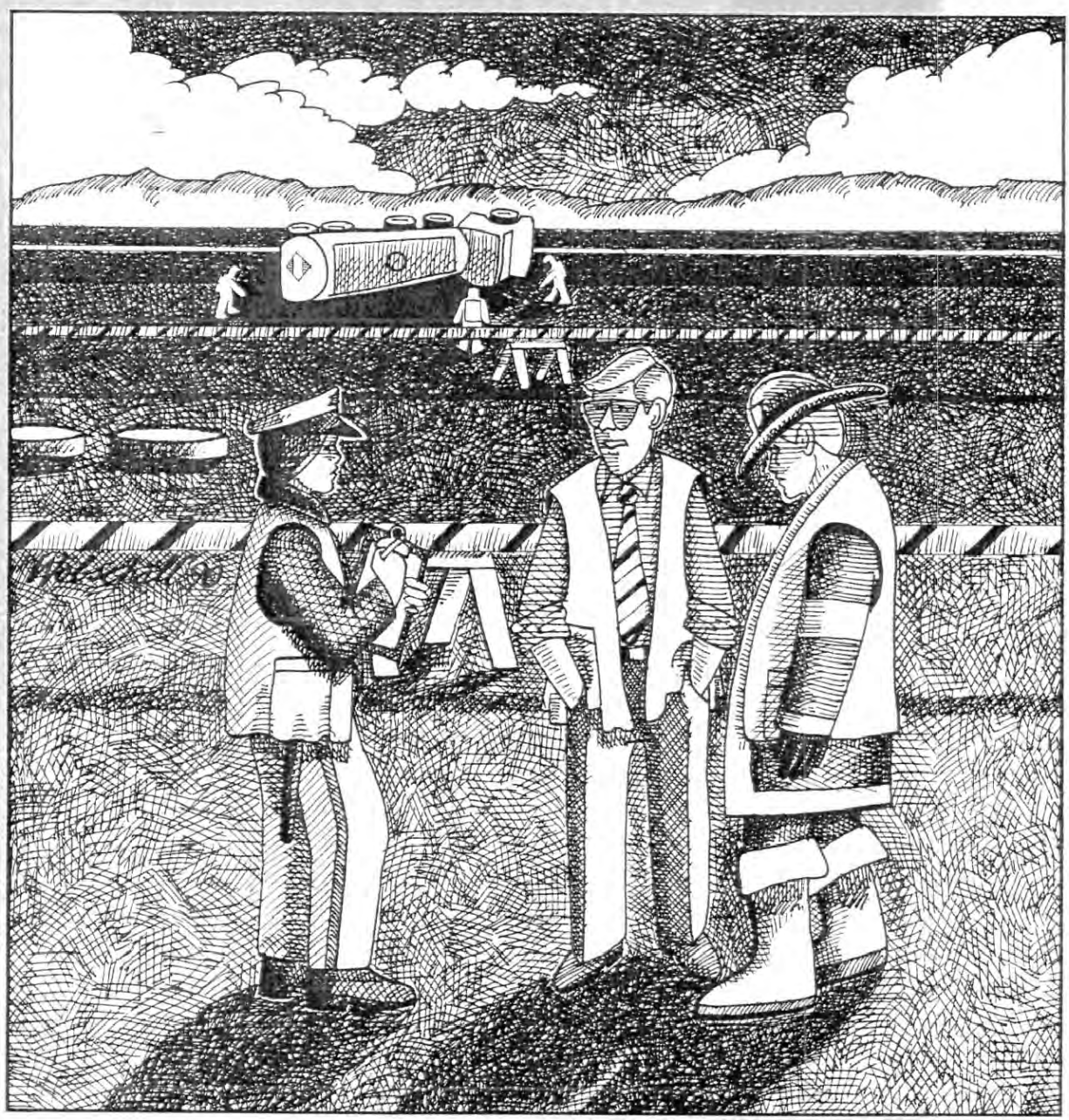
Appendix E1

Hazardous Material Incident Contingency Plan – California

State of California
Office of Emergency Services

Hazardous Material Incident Contingency Plan

CALIFORNIA



January 1991

Pete Wilson
Governor

California Hazardous Material Incident Contingency Plan

revised October 1990

serving as the State Toxic Disaster Plan as required by
Section 8574.17 of the California Government Code.

Prepared by the California Office of Emergency Services
Hazardous Material Division
Gerald R. Schimke, Division Chief

Paul J. Penn, Principal Author

Donald R. Irwin, Director

Publishing Information

California Hazardous Material Incident Contingency Plan, revised October 1990

Produced by the California Governor's Office of Emergency Services (OES), Hazardous Material Division

Paul J. Penn, Principal Author

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Pagemaker 4.0™ desktop publishing performed on a Macintosh® computer by Paul Penn. Contact the OES Hazardous Material Division at 916-427-4287 for information on obtaining a copy of this document on disk.

Much of the information contained in the HMICP was obtained from agency representatives, public sector plans and planning guidances.

November 15, 1990

Dear hazardous material emergency response community:

The California Hazardous Material Incident Contingency Plan (HMICP) was originally published in November of 1982 as mandated in Sections 8574.16-8574.18 (formerly § 8574.7-8574.9) of the California Government Code. That statute required the development of a state toxic disaster plan that would "... provide for an integrated and effective state procedure to respond to the occurrence of toxic disasters within the state. The plan shall provide for specified state agencies to implement the plan, for interagency coordination of the training conducted by state agencies pursuant to the plan, and for on-scene coordination of response actions."

This first revision of the HMICP, October, 1990, reflects the profound changes that have occurred as the various aspects of hazardous material emergency mitigation, preparedness, response and recovery have developed over the past eight years. The recognition of the ubiquitous nature of the threat of hazardous material incidents in our society has brought many players into the process. This plan provides a framework to ensure that the state, local, federal, private sectors and the public at large, work together to reduce the occurrences and severity of chemical accidents. This will best protect the public health and safety and the environment when hazardous material incidents do occur.

The HMICP serves primarily as an umbrella and reference document, not as an operational tool. Unless those who have a role read and understand its contents, and are prepared to fulfill their responsibilities, the intent of improving the overall capabilities within California will not become real and tangible. It is by training, exercising, identifying and addressing capability shortfalls, and communicating and coordinating with all those who have responsibilities in the multi-faceted aspects of hazardous material incidents that the objectives of the plan will be met.

The HMICP incorporates multi-hazard planning concepts in a single hazard contingency plan; and uses the Incident Command System (ICS) as a vehicle to organize the Managing Emergency Operations component of the plan.

While the HMICP is primarily intended for the state infrastructure, the planning process has been proactive in integrating the concerns and comments of all levels of government, the private sector and the public. No one segment of society possesses all of the resources to provide a safe and adequate response to protect the people and environment of California. It is only by making the best use of the resources available that we can all protect and enhance the quality of life that makes California such a special place to live, work and enjoy.

Sincerely,

Donald R. Irwin

DONALD R. IRWIN
Director

HOW TO USE THIS PLAN

I. **Use common sense!**

II. The plan is composed of the following major parts:

- **Basic Plan**- Contains a *First on Scene Checklist*; overall background information; and a description of interagency, state, local, federal and nongovernmental agency roles and responsibilities in hazardous material emergencies **(Sections 1-2)**,
- **Managing Emergency Operations**- Incorporates the Incident Command System and provides information on Command, Operations, Logistics, Planning and Finance to assist those involved in hazardous material emergencies **(Sections 3-7)**,
- **Appendix 1**- Describes training requirements and personal protective equipment,
- **Appendix 2**- Describes position descriptions of a hazardous material group (team) which may be encountered in the field (developed by the FIRESCOPE Hazardous Material Specialist Group),
- **Appendix 3**- HMICP registration form.
- **Appendix 4**- List of Acronyms.
- **Appendix 5**- List of Important Telephone Numbers

III. The organizational charts on the following pages serve as the table of contents to enable a reader to quickly identify where the information is located. A more detailed table of contents can be found preceding each major part of the plan. The acronyms of the agencies are followed by the name from which the commonly used acronym is derived.

IV. The outside margins are named by section to allow the reader to quickly access the information.

V. This document is not copyrighted and users are encouraged to make copies to meet their needs. For information on obtaining a copy of the HMICP on computer disk, contact the OES Hazardous Material Division at 916-427-4287. The HMICP registration form is at the end of the plan. Users are requested to make a copy of the HMICP registration form and send the completed form to the California Office of Emergency Services, Hazardous Material Division, 2800 Meadowview Road, Sacramento, CA 95832. Periodic updates will be appropriately distributed. Any inaccuracies, inconsistencies and/or suggestions to improve the plan should be noted on the form.

VI. **The California Hazardous Material Incident Contingency Plan is a reference document, not an operational tool. It should be used with an agency or jurisdiction specific plan.**

BASIC PLAN

SECTION 1
INTRODUCTION

SECTION 2
AGENCY RESPONSIBILITIES

MANAGING EMERGENCY OPERATIONS

SECTION 3 COMMAND

Who is in charge?

SECTION 4 OPERATIONS

How does it get done?

SECTION 5 LOGISTICS

How do I get help?

SECTION 6 PLANNING

How does this plan relate to other plans?

SECTION 7 FINANCE

How does it get paid?

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SECTION 1

CALIFORNIA HAZARDOUS MATERIAL INCIDENT CONTINGENCY PLAN

BASIC PLAN

INTRODUCTION:

THE **CALIFORNIA HAZARDOUS MATERIAL INCIDENT CONTINGENCY PLAN (HMICP, OR PLAN)** IS INTENDED TO BE READ AND UNDERSTOOD PRIOR TO THE RELEASE OR THREATENED RELEASE OF A HAZARDOUS MATERIAL.

THE **PLAN** DESCRIBES THE STATE'S HAZARDOUS MATERIAL EMERGENCY RESPONSE ORGANIZATION; THE RESPONSIBILITIES OF STATE AGENCIES; THE RELATIONSHIP OF THE STATE WITH LOCAL, FEDERAL, VOLUNTEER AND PRIVATE ORGANIZATIONS; AND THE RELATIONSHIP OF THIS **PLAN** WITH OTHER PLANS RELATING TO THE RELEASE OR THREATENED RELEASE OF ALL HAZARDOUS MATERIALS.

THIS PLAN IS TO BE USED IN CONJUNCTION WITH AN AGENCY OR JURISDICTION SPECIFIC PLAN.

WHO SHOULD READ THIS PLAN?

The HMICP is written primarily for agencies of the State of California to guide them in understanding the state's role in hazardous material emergencies. Secondarily, the HMICP is anticipated to be utilized by local and federal governments, and private organizations to clarify their roles and relationships concerning hazardous material emergencies.

WHEN SHOULD THIS PLAN BE USED?

This Plan should be used for pre-incident planning and during a hazardous material emergency. It should be used for guidance and clarification where a state agency has responsibility (e.g., State Agency Coordinator) or jurisdiction (e.g., on the right-of-way of a state highway). For a catastrophic incident the HMICP will be used in conjunction with the California State Emergency Plan.

FIRST ON SCENE CHECKLIST

IF THERE IS A HAZARDOUS MATERIAL EMERGENCY AND YOU ARE ONE OF THE FIRST PEOPLE ON THE SCENE, USE THE FOLLOWING CHECKLIST AS A GUIDE FOR YOUR INITIAL RESPONSE ACTIONS UNTIL RELIEVED BY A MORE QUALIFIED PERSON.

- **Isolate the scene and deny entry (establish zones)**

THE ORDER OF COMPLETION OF THE FOLLOWING TASKS IS INCIDENT SPECIFIC AND SHOULD BE BASED ON PROTECTING LIFE, THE ENVIRONMENT AND PROPERTY.

- **Identify the product and product characteristics(if identification can be done safely- i.e., from a safe distance)**
- **Establish a command post in the support zone using the Incident Command System**
- **If necessary, rescue victims if rescue can be done safely (i.e., if proper level of protection is available.)**
- **Ensure notification of appropriate agencies**
- **Assess the incident and request appropriate resources**
- **Provide emergency medical care, including decontamination of exposed persons**
- **Determine need for protective actions (e.g., evacuation or sheltering in place)**
- **Conduct evacuation, if appropriate**

PURPOSE

The California Hazardous Material Incident Contingency Plan (HMICP or Plan) establishes the emergency response organization for hazardous material incidents occurring within the State of California. The Plan identifies local, state, and federal responsibilities designed to minimize exposure and/or damage to human health and safety or to the environment caused by the release or threatened release of hazardous material.

This Plan is consistent with the planning efforts of local government, regional plans, and the California Emergency Plan. The HMICP assists state employees and agencies to respond appropriately to a hazardous material incident.

This Plan is established pursuant to Sections 8574.16-8574.17 of the California Government Code and fulfills the requirement for a state toxic disaster plan that,

> ... shall provide for an integrated and effective state procedure to respond to the occurrence of toxic disasters within the state. The plan shall provide for specified state agencies to implement the plan, for interagency coordination of the training conducted by state agencies pursuant to the plan, and for on-scene coordination of response actions.

Section 8574.18 states, "... A 'toxic disaster' means an occurrence where toxic substances are dispersed in the environment in such a manner as to cause, or potentially cause, injury or death to a significant number of persons or significant harm to the natural environment, as determined by the implementing state agency, through direct or indirect contact with such toxic substances."

For the purpose of this document a hazardous material is defined as "a substance or combination of substances which, because of quantity, concentration, physical, chemical or infectious characteristics may: cause, or significantly contribute to an increase in deaths or serious illness; and/or pose a substantial present or potential hazard to humans or the environment."

The HMICP is intended to complement and serve as an "umbrella" document for hazardous material emergency planning and community right-to-know programs. It provides the general planning overview for business plans developed by the private sector, local area plans developed by administering agencies (AAs), and the hazardous material regional plans developed by the Local Emergency Planning Committees (LEPCs).

The HMICP is consistent with the California State Emergency Plan and local disaster plans that follow the MultiHazard Functional Planning Guidance. This Plan takes into account two federal publications: 1. Civil Preparedness Guide (CPG) 1-8 Guide to the Development of State and Local Emergency Plans; and 2. National Response Team (NRT 1) Hazardous Material Planning Guide.

OBJECTIVES

The objectives of the Plan are to:

- Save lives and protect the environment and property;
- Describe the overall emergency response organization within California;
- Delineate the respective responsibilities of local, state and federal agencies;
- Establish lines of authority and coordination for hazardous material incidents; and
- Facilitate mutual aid to supplement local needs.

THREAT OVERVIEW

General

Hazardous material incidents can occur anywhere and at any time within California. Hazardous materials are often found in places where they may not be expected. For instance, cyanides in rural areas en route to mining operations, chemicals associated with illegal drug labs and pesticides stored in highly industrial areas are examples of hazardous material circumstances that may be encountered. The likelihood of encountering a hazardous material incident in a particular locality can be high, depending on the volume and distribution of chemicals in a community. Transportation routes constitute a major threat because of the multitude of various chemicals transported. A more detailed description of various technological hazards (as opposed to natural hazards) can be found in the regional hazardous material plans developed pursuant to the federal Superfund Amendments and Reauthorization Act (SARA) of 1986- Title III; copies of which may be reviewed at the OES regional offices. Local area plans, developed pursuant to Chapter 6.95 of the California Health and Safety Code, local disaster plans, business plans, and risk management and prevention plans (RMPP) also address the local threat of hazardous materials.

Types of incidents addressed in the HMICP

The HMICP is intended to address **acute releases** and threatened releases of hazardous materials, including substances and materials designated as hazardous by the United States Department of Transportation for purposes of Parts 172, 173 and 177 of Title 49 of the Code of Federal Regulations. Acute releases require an immediate response in order to protect human health and safety and/or the environment. Examples of acute releases may range from an unidentified white powder spilled on a road (unless or until identified as non-hazardous) to a catastrophic chemical release causing mass casualties. **This Plan does not address the problems associated with the clean up of non-emergency or long-term hazardous waste sites.**

Oil spills and radiological releases are often separated from hazardous material planning issues because of their technical characteristics and unique policy considerations. California considers both of these categories of chemicals to have potentially adverse impacts on the public health and the environment. Thus, both radiological and oil spills are included in this Plan. **For further detailed information on oil spills refer to the California Oil Spill Contingency Plan,** which is an annex to the HMICP and is published separately.

Most hazardous material incidents are minor in scope and are handled by trained local personnel. The number and severity of larger incidents can be minimized by using techniques which reduce the potential for a release. These techniques include improved safety features in chemical processes and product transfer, improved highway design, improved driver safety, improved worker training, and minimizing the amount of hazardous materials present at a site. Minimization includes source reduction, product substitution, and improved inventory management. These activities are discussed in greater detail in the Risk Management Prevention Program Guidance developed by the California Office of Emergency Services (OES) pursuant to Assembly Bill 3777 (Section 25531 et seq. California Health & Safety Code) and information available through the Alternative Technology Section of the Toxic Substances Control Program of the California Department of Health Services.

CONCEPT OF OPERATIONS:

General Operational Concepts

A hazardous material incident is composed of pre-emergency (mitigation, planning & preparedness), emergency (response), and post-emergency (recovery) periods. In a hazardous material incident, the emergency phase may develop slowly or occur without warning. California has adopted a decen-

tralized approach for responding to hazardous material incidents in which the management of the incident is generally handled by the lowest level of government possible.

While the spiller is usually the responsible party and bears ultimate responsibility for abatement of the release or threatened release of hazardous materials, the protection of the public health and safety, wildlife, and the environment is the responsibility of government. For radiological incidents, the licensee bears the financial responsibility, even if a waste hauler is carrying the material. Hazardous material incidents often involve response from multiple disciplines and require mutual aid. These disciplines include fire, law enforcement, emergency medical services, environmental health and other agencies. Unlike other hazards, such as wildland fires and floods, a hazardous material response is often complicated by the lack of an easily definable impact of the hazardous material on living organisms, the environment and property. Complications can include long-term health and environmental consequences.

Specialized training and equipment is often required for adequate incident response. There are times when a defensive, rather than an offensive, posture is the appropriate response to a hazardous material incident. An offensive posture usually entails immediate aggressive action in a situation where the consequences of abating the hazard are known and the means to respond appropriately are available (e.g., an oil spill.) A defensive posture is appropriate when the ramifications of the responders' actions are not clearly understood. In a hazardous material incident the material may be colorless, odorless and flammable, while also having unknown health risks. Isolating the scene and denying entry while assessing the characteristics of the hazardous material and accessing appropriate resources would be a defensive posture. A "go-slow, no heroes" approach would be recommended until adequate information is obtained and an "incident action plan" is developed.

PRE-EMERGENCY PERIOD

Agencies having emergency responsibilities assigned in this Plan should prepare and share supporting plans, Standard Operating Procedures (SOPs), and checklists detailing the disposition of their resources in an emergency. Such plans and procedures will provide for coordination and communication channels with counterpart agencies and organizations of other jurisdictions.

Planning

A plan to respond to hazardous material incidents should clearly define roles and responsibilities of the emergency response organization. Within any area, there may be many plans that address hazardous material emergency response including those prepared by the private sector, local, regional, state, and federal governments. Some are operationally oriented while others are planning, preparedness, overview and/or compliance documents. An illustration of the interrelation of such plans is presented in the Planning Section of Managing Emergency Operations of this Plan.

While no one plan may adequately cover every issue, it is imperative that all plans be consistent and integrated with each other, and use commonly understood terminology and clearly identified organizational structures. In California, the Incident Command System (ICS) is the preferred organizational structure when multiple agencies are involved in a response.

Resource Development

Resources are the tools and expertise used for abating a hazardous material emergency. To respond to hazardous material incidents, specialized equipment and supplies are often necessary. Sometimes, equipment and supplies that have other applications are used, such as dump trucks, sand, self-contained breathing apparatus, and foam. People must be adequately trained to use specialized equipment and to apply conventional resources

to hazardous material incidents. Equipment and supplies should be appropriate for anticipated hazards and consistent with the responsibilities of the agency and the level of trained personnel.

Training

Safe, effective and coordinated response to a hazardous material incident requires the application of specialized techniques and organizational concepts, ranging from basic awareness to highly technical skills. In general, individual organizations are responsible to provide tactical training related to their missions.

The California Specialized Training Institute (CSTI), the training organization of OES, provides training for First Responder Awareness and Operations, Incident Command/Scene Manager, Executive Management, in addition to advanced training of emergency responders for hazardous material emergencies. Refer to Appendix 1 of this Plan for more training information. The California State Fire Marshal's Office, through its academy, provides hazardous material training for fire fighters. The California Highway Patrol provide training for their own personnel and can provide first responder and on-scene manager training throughout the state upon request of allied emergency response agencies. They also provide training in the area of enforcement and investigations related to hazardous material and hazardous waste crimes for allied law enforcement agency personnel. The University of California Extension, other academic institutions, and the private sector also provide training for emergency medical, first responder, and other hazardous material emergencies.

Federal and state regulations address training requirements for hazardous material emergency responders. Federal worker safety standards are contained in Title 29, Code of Federal Regulations (CFR) part 1910.120, entitled Hazardous Waste Operations and Emergency Response (March 6, 1989, Federal Register). State, local, and private responders are regulated by the analogous proposed Title 8, Section 5192 of the California Code of Regulations (CCR), which is enforced by Cal/OSHA. Both codes require the use of the Incident Command System, including the appointment of a safety official, and both mandate training for workers who may be called upon to respond to an actual or threatened hazardous material release. The training must include, at a minimum, recognition of hazards, selection, care and use of personal protective equipment, and safe operating procedures to be used at the incident scene. The training should be appropriate for the individual's job responsibilities and the situations that may be encountered as part of the worker's employment.

Minimum training provisions for local governments and businesses that handle hazardous materials are contained in Chapter 6.95 of the Health and Safety Code and Section 2720, et seq. of Title 19 CCR.

It is critical that responders never perform a function for which they are not adequately trained and equipped.

EMERGENCY PERIOD (Response)

Levels of Response:

Levels of response are difficult to determine because perceptions will differ depending on experience, training, capability, and local public policy. In addition, the **characteristics of the material, the nature of its release and the vulnerability of the receptors (i.e., populations, ecosystems) may influence the level of response.** Therefore a smaller amount of an extremely hazardous substance that has been released may require a higher level of response than a less hazardous material that is contained. For the purpose of this Plan, the following general guidelines are suggested for determining levels of response **(oil spill quantities are given in parentheses):**

Incident Classifications

- **minor**-an incident that can be handled easily using local resources. Significant human health and safety and/or environmental issues do not arise (inland less than [<]1,000 gallons, coastal <10,000 gallons).
- **moderate**-an incident that may require the use of routine mutual aid, either for operational assistance or logistical support. Human health and safety and/or the environment may be affected (inland 1,000-10,000 gallons, coastal 10,000-100,000 gallons).
- **major**-an incident that is beyond the capabilities of a local jurisdiction. Human health and safety and/or the environment are affected. A declaration of local emergency may be issued, a Governor's Proclamation may be issued and the local Emergency Operations Center (EOC) may be partially or fully activated (inland greater than [>]10,000 gallons, coastal >100,000 gallons).
- **catastrophic**-an incident that significantly e x - ceeds local capabilities. Considerable environmental and/or public health impacts have occurred or are expected. A local emergency is usually declared, a Governor's Proclamation is generally issued along with a request for a Presidential Declaration. The local EOC and the State Operations Center (SOC) are activated.

Note: Additional factors, such as a spill in a sensitive area may increase the level of response as determined by the incident commander.

POST EMERGENCY PHASE (Recovery)

Activities will concentrate on returning the affected area to a pre-incident condition by reuniting families, cleaning up contaminated areas, reentering evacuated areas, mitigating hazards, etc.

While many incidents can be terminated shortly following the response phase, some incidents require considerable time and expense to return the area to a pre-incident condition. Agencies that have a responsibility to determine the adequacy of mitigation (clean up) and remediation actions (e.g., "How clean is clean?") should be involved in the decision-making process as soon as is appropriate. If proper site safety and security are established after abatement actions have reduced the acute aspects of the incident, the emergency phase can shift into remedial action. If appropriate, response personnel and equipment may then be released.

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SECTION 2.1

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AGENCY RESPONSIBILITIES

Proper overall management of the release or threatened release of a hazardous material is better when each agency with an abatement responsibility is able to adequately perform its function within the framework of the HMICP and other plans. More than most emergencies, hazardous material incidents often involve a response from multiple agencies having different capabilities, responsibilities and functions. In some circumstances, the activities of several agencies may overlap. In other circumstances, specific components may be unnecessary. This portion of the Plan sets forth the roles, resources, responsibilities, and limitations of government and non-government agencies in hazardous material incidents.

Interagency Organizations

In California there are several organizations that assist in the coordination of hazardous material emergency planning and response. Some are multi-purpose (e.g., hazardous waste, toxics advisory, disaster councils), while others are solely devoted to hazardous materials. This portion of the Plan summarizes several specific statewide organizations in California in which state agencies actively participate.

Chemical Emergency Planning and Response Commission (CEPRC) 916-427-4380 (ATSS 466)

The CEPRC was established as a State Emergency Response Commission (SERC) pursuant to the Federal Superfund Amendments and Reauthorization Act of 1986 (SARA). The CEPRC is responsible for the implementation, within California, of federal hazardous material emergency planning and community right-to-know (EPCRA) programs embodied in SARA Title III. The CEPRC is also involved in the coordination of the Title III program with similar state laws and has established subcommittees to address different aspects of emergency planning and response activities. The CEPRC has designated the six OES mutual aid regions as the Local Emergency Planning Committee (LEPC) jurisdictions for the purposes of developing hazardous material regional plans and improving the coordination and capabilities of local government to mitigate the effects of, and to respond to, hazardous material incidents.

Hazardous Waste Strike Force (HWSF) 916-323-4910 (ATSS 473)

The HWSF, chaired by a representative of the Department of Health Services Toxic Substances Control Program, is intended to coordinate the activities of state agencies in the enforcement of hazardous substance laws. The Strike Force may be involved in a post-incident enforcement action where state or federal agencies are involved, or when the enforcement action is beyond the capabilities of local government. The HWSF can be reached by calling the "Toxics Hot-Line" at 800-258-6942.

Federal Regional Response Team (RRT) 415-744-7100 (FTS 484) [EPA] OR 213-499-5330 (FTS 984) [COAST GUARD]

The RRT, consisting of representatives from selected federal and state agencies, is the regional body responsible for planning and preparedness functions prior to an oil discharge or hazardous substance release and provides advice and assistance to the Federal On-Scene Coordinator (OSC) during and following such discharges and/or releases. The Federal Region IX-Mainland (California, Arizona, and Nevada) RRT consists of a Standing Team responsible on a regionwide basis for communications, planning, coordination, training, evaluation, and preparedness. The RRT is able to provide an Incident-Specific Team responsible for providing specific advice and assistance to the OSC during an actual incident. (Note: Membership of the Incident-Specific Team will vary depending on the characteristics and location of the given incident.) The Coast Guard and EPA provide the co-chairs of the RRT. California is co-represented on the RRT by representatives of the Department of Fish and Game and the Office of Emergency Services. The RRT periodically updates the Federal Region IX-Mainland Oil and Hazardous Substance Pollution Contingency Plan (RCP), the Colorado River Contingency Plan, and participates in revisions to the U.S./Mexico Inland Joint Contingency Plan.

State Interagency Oil Spill Committee (SIOSC) 916-324-7245 (ATSS 492)

Pursuant to Sections 8574.1 et. seq., SIOSC addresses the need for a specific response to land and water releases of oil and petroleum products within California. SIOSC is composed of representatives of state agencies and is chaired by a representative of the Department of Fish and Game. Federal agencies (i.e., EPA and Coast Guard) and oil spill cooperatives are invited to attend SIOSC meetings.

SIOSC:

- establishes and maintains liaison with federal and local agencies, and public and private organizations engaged in oil pollution prevention and control;
- coordinates day-to-day procedures and practices between state agencies and other organizations relative to the prevention and mitigation of oil pollution from oil discharges;
- recommends necessary research, development, and testing by appropriate organizations of materials, equipment and methods related to oil spill prevention and control; and
- prepares and updates the California Oil Spill Contingency Plan, an annex to the HMICP.
- provides guidance and state agency input to the RRT, federal on-scene coordinator and state agency coordinator in an oil spill emergency.

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SECTION 2.2

STATE GOVERNMENT 2

STATE GOVERNMENT

State agencies may be contacted in an emergency by calling the State OES Warning Center (800-852-7550). A matrix of state agency responsibilities can be found on page 2.2-16.

The State Warning Center will contact the appropriate state agencies (and specific federal and local agencies) upon notification. OES does not provide an operational response in most circumstances. State agencies with an operational role should use an agency and/or jurisdiction specific plan to assist in their response.

Air Resources Board (ARB)

Responsibilities: The Air Resources Board is mandated to protect and enhance the ambient air quality of the State. The ARB fulfills this responsibility through local and regional air pollution control authorities.

Notification Requirements: Immediate verbal notification to the ARB is required for hazardous material incidents that threaten to adversely affect air quality, and if agency air monitoring/modeling services are requested. Local Air Pollution Control Officers should be notified immediately in the event of airborne releases.

After Action Report: None

Capabilities and Limitations: The ARB has personnel available for technical advice and for operation of ARB air monitoring equipment, and impact modeling development. This support function may be accessed through direct contact with agency emergency response personnel. Local and regional air pollution control districts and air quality management districts are usually contacted through local government emergency dispatch.

Emergency Financial Assistance Available: None

Coastal Commission

Note: The Oil Spill, Prevention, Abatement and Removal Act of 1990 may impact the role of the Coastal Commission as this legislation is implemented.

Responsibilities: The Coastal Commission is a regulatory agency concerned with land uses in the coastal zone. The Commission has additional authority under the Coastal Zone Management Act to review facilities outside the coastal zone which may affect coastal zone resources. Major environmental concerns include protection of the coastal zone from adverse impacts due to releases of oil or hazardous materials. Authorities include utilization of environmental release data to develop methods to prevent future occurrences of spills.

Notification Requirements: The Coastal Commission must be notified of any oil spill in marine waters.

After Action Report: None, however written follow-up reports for major spills are desired to assist in the coordination of information and in determining necessary action to prevent or mitigate future incidents.

Capabilities and Limitations: The Commission will assist in the review of oil and hazardous substance spill contingency plans upon request.

Emergency Financial Assistance Available: None

Conservation, Department of/ Division of Oil and Gas (DOG)

Responsibilities: The Division of Oil and Gas (Division), through its statutory authority, is the lead State agency responsible for the supervision and regulation of all oil and gas production and

drilling operations within the territorial boundaries of California, including the authority to require and approve oil spill contingency plans that provide prevention, containment, and cleanup procedures.

In the event of a pollution incident related to a drilling or producing petroleum facility, DOG and the State Lands Commission share primary responsibility for determining appropriate action to control and secure the source and providing that information to the Incident Commander.

Notification Requirements: Immediate verbal notification is required for a hazardous material incident related to the drilling, operation, maintenance, and abandonment of oil and gas wells, onshore and offshore facilities, and pipelines.

After Action Report: None

Capabilities and Limitations: The Division has emergency permitting authority if a relief well needs to be drilled for an oil well blowout.

Emergency Financial Assistance Available: The agency maintains a small internal fund that can be accessed by the agency during an emergency for the purpose of mitigating the impact of an environmental release related to oil and gas production, drilling, maintenance, or abandonment.

Conservation Corps, California (CCC)

Responsibilities: Crews of the CCC provide approximately 3,000,000 hours of public services conservation work every year. In addition, CCC's legislative mandate requires the agency to provide crew labor to assist in emergency operations and disaster relief. This may include trained CCC crews responding to such events as fires, floods, earthquakes or oil spills as well as providing support functions at emergency feeding operations or mass care centers.

Notification Requirements: None

After Action Report: None

Capabilities and Limitations: CCC can dispatch a trained and disciplined work force in excess of 1200 corpsmembers or as little as one crew when and where requested. CCC can also dispatch cooks, clerks and overhead staff to provide for staging area support of corpsmembers dispatched outside their normal service area.

Presently CCC is seeking funding to establish a program which will develop an OSHA approved training curriculum for oil spill clean up. If funded, CCC will be able to maintain 200 pre-trained corpsmembers year round. Funding is the only current limitation.

Emergency Financial Assistance Available: None.

Emergency Medical Services Authority (EMSA)

Responsibilities:

- In conjunction with the affected medical associations, EMSA develops general guidelines for the triage and handling of contaminated/exposed patients.
- Assist with the development and promotion of training for personnel involved in a hazardous materials emergency medical response including personal safety at the site of an incident, triage and medical management of patients, and limiting the contamination of transport vehicles and hospital emergency departments.
- Activation of Regional Disaster Medical Health Coordinators.
- Identify medical facilities outside the affected county capable of handling injured and contaminated persons.
- Arrange for emergency procurement, storage, distribution, and handling of supplementary medical supplies and equipment in support of local government response.
- Identify and coordinate procurement of medical assistance from other state departments, hospitals, and ambulance providers.

- Coordinate the evacuation of casualties from the affected area to definitive care facilities throughout and outside of the state.

Notification Requirements: Immediate verbal notification is requested when a significant number of human exposures, evacuation of more than 1000 people, or evacuation of a hospital has occurred or is expected to occur.

After Action Report: None

Capabilities and Limitations: Provides funding and management for the State Regional Poison Control Centers. In coordination with local EMS agencies, helps mobilize medical mutual aid, notifies regional disaster medical/health coordinator for regional medical mutual aid.

Emergency Financial Assistance Available: None

Emergency Services (OES) [Office of Emergency Services]

Responsibilities: OES is responsible for coordinating the mitigation, preparedness, response and recovery activities related to disasters in California. For major events, OES is responsible for activating the State Operations Center, preparation of situation reports for distribution to the Governor's Office, Legislature and other interests/agencies.

The state is divided into six mutual aid regions, and OES maintains an office in each region. The regional offices are responsible for carrying out OES programs at the local level, and for maintaining a day-to-day working relationship with local emergency management organizations. In addition to emergency managers, staff members from Law Enforcement, Fire and Rescue, Telecommunications and Hazardous Material Divisions are assigned to the regions. During an emergency (i.e., a major hazardous material incident) the regional offices are responsible for staffing their Emergency Operations Centers, collecting damage assessment information from their jurisdictions and working with the affected areas in response and recovery efforts.

For overall emergency management (including hazardous material emergencies), OES provides the following:

- Operation of the State Warning Center, including notification of emergencies, including hazardous material, incidents to federal, state, and (upon request) local agencies.
- Coordination of statewide Mutual Aid Radio Communication Systems (described in the Logistics Section of this Plan)
- Assistance to local jurisdictions in preparing emergency plans which follow multi-hazard (including hazardous materials) functional planning formats.
- Preparation (including planning and training) and response to radiological incidents, including overseeing state and local preparedness for nuclear power plant accidents.
- Distribution, maintenance and repair of radiation detection and measurement instruments.
- Development of the California State Emergency Plan which addresses the state's response to extraordinary situations associated with natural disasters, technological incidents (including hazardous materials), and war emergency operations.
- Development of procedures for the State Operations Center.
- Maintenance of the Statewide Fire and Rescue Mutual Aid System and the California Law Enforcement Mutual Aid System, and assists and coordinates mutual aid planning and operations.
- Coordination of Firefighting Resources of California Organized for Potential Emergencies (FIRESCOPE), a cooperative effort involving development and promotion of the incident command system (ICS), multi-agency coordination system (MACS) and related activities.
- Assistance to local jurisdictions through training and planning guidance in emergency preparedness.

In addition to OES's overall emergency managements activity, the Hazardous Material Division and the California Specialized Training Institute are involved in:

Hazardous Material Division:

- Implemention of the state and federal hazardous material emergency planning and community right-to-know programs,
- Review of Administering Agency area plans,
- Providing staff to the Chemical Emergency Planning and Response Commission and the Local Emergency Planning Committees for development of regional hazardous material response plans, and implementation of Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III,
- Updating this Plan, the HMICP,
- Providing support to the Administering Agencies, the public, the private sector, and other state agencies for hazardous material emergency response planning,
- Compilation and analysis of the California Hazardous Material Incident Reporting System (CHMIRS) reports and publication of annual reports of data,
- Publishing the Risk Management and Prevention Program (RMPP) guidance,
- Co-representing California (along with the Department of Fish and Game) on the Federal Region IX-Regional Response Team,
- Serving as functional branch leader of Hazardous Material Branch in the State Operations Center, and
- Serving as a member of the State Interagency Oil Spill Committee and the Hazardous Waste Strike Force.

California Specialized Training Institute (CSTI):

- CSTI is an OES operated institute in San Luis Obispo providing specialized training in all aspects of emergency management, including basic planning techniques, earthquake, hazardous material response, use of computers in emergency management, and emergency public information, and other courses applicable to public safety agencies. CSTI manages FEMA-sponsored emergency management training and federal Title III (hazardous material) training. CSTI is mandated by Assembly Bill 2702 to develop and deliver hazardous material training programs. Refer to Appendix 1 of this Plan for more information on training.

Notification Requirements: Immediate verbal notification by the spiller to the State Warning Center of any significant release, or threatened release of a hazardous material is required. State and local agencies are requested to notify the State Warning Center when they become aware of a reportable incident.

After Action Reports: Pursuant to Section 304 of Title III, the spiller must provide a follow-up report to the CEPRC and the LEPC by sending one copy to 2800 Meadowview Road, Sacramento, CA 95832. The report form is contained in Title 19 California Code of Regulations.

The local Administering Agencies must ensure the submittal of the CHMIRS reports to OES, at least once a month.

Refer to pages 6-6 through 6-13 of this Plan for more information on CHMIRS and §304 reporting.

Capabilities and Limitations: Regional OES personnel can be requested to support local emergency officials (i.e., public information and emergency management personnel). OES can provide Command support working with the State Agency Coordinator/Liaison, and by providing communications and mutual aid Mobile Command Posts to support Incident Command. OES can assist local government in accessing mutual aid resources (i.e., fire, law, coroner, etc.) and coordination of requests for other state and federal resources, as needed. Access is through the normal Regional response channels. OES will not directly provide hazardous material technical/field responders.

Emergency Financial Assistance Available: In the event of a Presidential or Gubernatorial Disaster declaration, federal, and some state (i.e., Natural Disaster Assistance Act), disaster funds are channeled through OES.

Energy Resources and Conservation Commission (CEC) [California Energy Commission]

Responsibilities: This agency oversees cleanup and remedial action at California Energy Commission licensed facilities (>50 MW) and ensures that the responsible party complies with the applicable laws, ordinances, regulations, and standards.

In addition, the Commission, shares responsibility with the Department of Health Services, the Office of Emergency Services, and the California Highway Patrol, for incorporating radioactive materials shipments into the state's nuclear threat emergency response plan.

Notification Requirements: Immediate verbal notification is required for all hazardous material incidents related to the operation or construction of an electric power plant which has been licensed by the Commission. This includes transportation of hazardous materials and hazardous wastes to or from the facility site.

The Chair of the CEC is California's State Liaison Officer to the Nuclear Regulatory Commission and should be notified of any incident involving nuclear materials.

After Action Report: Written follow-up reports are necessary if the incidents meet the reporting requirements of another legislative mandate, such as SARA Title III or Proposition 65.

Capabilities and Limitations: The CEC has the capability to assess potential public health, environmental and safety hazards associated with the release of hazardous materials from energy facilities. The CEC is also responsible for developing specific state "actions to be taken in the event of an impending serious shortage of energy, or a clear threat to public health, safety or welfare." As a result, the CEC responds to events that have the potential of disrupting energy supplies in the state.

In addition, the CEC participates on advisory boards of western state associations (Western Interstate Energy Board, Western Governor's Association) in planning for nuclear waste shipments. This includes federal and state emergency response procedures for accidents involving nuclear waste shipments.

Emergency Financial Assistance Available: None

Fire Marshal (CSFM) [California State Fire Marshal]

Responsibilities: The California State Fire Marshal is responsible for the promotion and development of "ways and means of protecting life and property against fire and panic." The CSFM develops fire and life safety standards, codes, and regulations, and enforces these regulations in various occupancies, including all state-owned or state-occupied buildings. The CSFM also delivers statewide standardized fire training and fire safety and prevention information.

The State Fire Marshal's Arson and Bomb Division investigates all fires in state-owned or state-occupied buildings and, upon request, will assist local jurisdictions with their investigations. Explosive ordnance disposal (EOD) technicians also are available through this Division, and are located throughout the state.

In the event of large fires of suspicious origin, the local agency may activate the Governor's Special Arson Task Force, a group of local, state and federal experts formed to assist local authorities whose resources may be strained by the shear size of the incident.

The CSFM has primary responsibility for the safety of all interstate and intrastate hazardous liquid

pipelines in California. The Pipeline Safety Division is responsible for enforcing state and federal pipeline safety standards, pipeline failure investigation, and is the lead agency for all hazardous liquid pipeline safety incidents.

For hazardous material incidents, the CSFM would:

- When notified, dispatch appropriate personnel to the State Operations Center and/or Regional Command Center, as requested;
- Provide technical assistance and advice on fire and life safety impacts, as requested;
- Operate as a knowledgeable, experienced member of the Incident Command System, as requested;
- In the event of a declared emergency, cooperate with other state and/or local agencies in providing requested communications and law enforcement/code enforcement support.

Notification Requirements: Immediate verbal notification is required for any hazardous liquid pipeline break, spill, leak, rupture or collapse in California. The CSFM will coordinate and notify OES, federal agencies (if applicable) and affected agencies, as appropriate. Note: Greater than 90% of all hazardous liquid pipelines in California are situated under the surface and are frequently located near transportation arteries, such as railroad tracks and interstate highways. Significant railroad incidents, therefore, should also be reported to CSFM Pipeline Safety Division.

After Action Report: CSFM Pipeline Safety Division must submit reports to the federal Office of Pipeline Safety after investigating the explosion, rupture or leak of an interstate pipeline.

Capabilities and Limitations: CSFM Pipeline Safety Division engineers will respond to all pipeline-related incidents. These engineers are strategically located in northern and southern California.

The CSFM provides various emergency response training programs, including Hazardous Material Specialist and Technician, but can only certify fire personnel.

Special note: The CSFM maintains six certified Explosive Ordnance Disposal (EOD) technicians in locations around the state. These persons, assigned to the Arson and Bomb Investigations Division, are available as needed for state and local assistance with suspected explosive devices.

Emergency Financial Assistance Available: None.

Fish and Game (DFG) [Department of Fish and Game]

Note: The Oil Spill Prevention, Abatement, and Removal Act of 1990 requires the Governor to appoint an administrator for oil spill response who shall be a deputy director of the Department of Fish and Game. DFG's responsibilities will change as this legislation is implemented.

Responsibilities: The Department of Fish and Game has public trust responsibilities for the state's fish, wildlife, and their habitats. To fulfill these responsibilities, the department responds to the scene of a hazardous material incident in order to:

- Take action necessary to protect or minimize the impact to fish and wildlife. If wildlife is injured, the department arranges for, and oversees, their care and rehabilitation.
- Provide technical advice on the impact the proposed containment and cleanup operation will have on fish, wildlife, and their habitat. The department also supervise or provide recommendations, establish guidelines and approve methods for, containment and cleanup.
- Fulfill the role of lead agency in determining the completion of cleanup when natural resources are threatened.
- Conduct investigations, including the collection of evidence and the assessment of impacts to living resources and their habitats, to establish criminal and civil liability and responsibility.
- Approve the use of Oil Spill Cleanup Agents.

In addition to their public trust responsibilities, the Department of Fish and Game has the following responsibilities:

- The Director is the State Operating Authority for oil spills and represents the state (along with OES) on the Federal Regional Response Team.
- Functions as the State Agency Coordinator for off-highway hazardous material incidents.
- In the event of a declared emergency, the department will cooperate with other state agencies in providing requested communications and law enforcement support.
- Chairs the State Interagency Oil Spill Committee.

Notification Requirements: Immediate verbal notification is required for off-highway incidents and for incidents which impact or threaten state waters.

After Action Report: None required

Capabilities and Limitations: The department has the capability to assist in the assessment of a hazardous material incident pertaining to its impact on wildlife. When natural resources are threatened, the department serves as the lead state agency in determining the completion of cleanup. The department provides damage assessment, criminal and civil investigation, and technical advice on resource recovery. Coordinates state agencies, as needed, at off-highway incidents.

Emergency Financial Assistance Available: The Department of Fish and Game maintains the Fish and Wildlife Pollution Cleanup and Abatement Account. The account may be accessed by department employees for expenditures related to control and recovery actions related to a hazardous material incident in which the department is involved and not fundable by the Department of Health Services .

Food and Agriculture (CDFA) [California Department of Food and Agriculture]

Responsibilities: Designated state agency responsible for regulating the registration, sale and use of agricultural chemicals (including pesticides, fertilizers and livestock drugs) prior to entering a waste stream, but no regulatory responsibility during hazardous material emergencies. CDFA and County Agricultural Commissioners have the responsibility to investigate any complaint or incident concerning pesticide exposure, and may take regulatory and enforcement action.

Notification Requirements: Licensed pest control operators "shall report to the Commissioner (County Agricultural Commissioner) as soon as practicable..., any forced landing, or emergency or accidental release of pesticides. Such report shall include the location, the pesticide and estimated amount." (Title 3, Section 6634 California Code of Regulations)

After Action Report: None

Capabilities and Limitations: CDFA and County Agricultural Commissioners can provide technical assistance or expertise for incidents involving pesticides and pest control operations. CDFA is not an emergency response agency. County Agricultural Commissioners may respond to agricultural chemical incidents, if requested.

- CDFA Chemistry Laboratory Services, accessed through the CDFA Pesticide Enforcement Branch, may be utilized for emergency hazardous material identification purposes if pesticides or fertilizers are suspected.
- Environmental Monitoring and Pest Management Branch can provide information regarding the environmental fate of pesticides in water, air, and soil.
- Medical Toxicology Branch can provide medical and toxicological risk assessment regarding active pesticide ingredients.

- Worker Health and Safety Branch can provide information regarding: pesticide exposure assessment; exposure monitoring and evaluation; industrial hygiene and safety; and, medical management and illness investigation.
- Pesticide Registration Branch can provide registration, labeling and ingredients data for pesticide products.

Emergency Financial Assistance Available: None

Forestry and Fire Protection (CDF) [California Department of Forestry]

Responsibilities: CDF performs fire suppression and prevention duties for about 30 million acres of land in the state. In addition to their state responsibility areas, CDF may provide fire service to some local jurisdictions under contract. In such cases, CDF carries out responsibilities of local fire suppression agencies as they relate to hazardous material incidents. In the event of a significant hazardous material incident, the department will:

- Support emergency feeding operations of other state agencies.
- Provide communications and logistics support as requested by the State Agency Coordinator or the Scene Manager.
- Monitor environmental contamination as requested by the State Agency Coordinator.
- Support local fire fighting in accordance with fire mutual aid agreements.
- Coordinate and manage the use of inmate, ward and CCC Corps-member personnel under their control in combating hazardous material incidents.

Notification Requirements: None

After Action Report: None

Capabilities and Limitations: Support capabilities include communications capabilities and environmental contamination monitoring. Riverside, Merced, and Butte Counties provide hazardous material response teams staffed by CDF personnel.

Emergency Financial Assistance Available: None

Health Services (DHS) [Department of Health Services]

Responsibilities: DHS is responsible for regulating the treatment, storage, transportation, and disposal of hazardous waste and for protecting the public health from hazardous materials, including radioactive materials. Responsibilities include protecting food and water supplies from the effects of hazardous materials incidents. DHS (with concurrence of the State Water Resources Control Board) is responsible for designating locations for the disposal of hazardous waste. DHS provides guidelines and will provide assistance to local public health personnel when an incident could affect public health.

DHS Toxic Substance Control Program (TSCP)
TSCP will:

- Provide or facilitate access to technical advice regarding the safe handling or suitable disposal of toxic materials.
- Respond to incidents involving facilities or activities, upon request, where the division has enforcement responsibilities to ensure compliance with regulations.
- Assess and provide financial support for emergency response pre-incident needs in the form of equipment and general preparedness.
- Evaluate requests for financial assistance for off-highway emergency response incidents.
- Issue emergency Environmental Protection Agency (EPA) identification numbers for non-responsible party incidents.

Department of Health Services, Environmental Management Branch (EMB)

This branch has responsibility for the public health emergency response to all accidents involving radioactive materials in California, and will:

- Be responsible for monitoring radioactive contamination in the environment, personnel and equipment.
- Establish and direct activities to mitigate the radiological impact on public health (the Department of Food and Agriculture and local Agricultural Commission may assist in prevention of consumption of unacceptably contaminated food and fodder).
- Direct or assist local jurisdictions in defining and establishing areas contaminated with radiation.
- Identify laboratories capable of providing radiological support.
- Direct and assist in collection of ingestion pathway samples.
- Participate in local emergency response training programs.
- Request federal (DOE) radiological assistance when deemed necessary.
- Assist the local health officer in assessing the impact on the public's health due to radiation exposure.
- Coordinate the state public health support for the Nuclear Power Plant Emergency Response Plan.

Notification Requirements: Require immediate verbal notification for major hazardous material releases affecting large populations, radiation incidents, and incidents concerning releases at permitted treatment, storage and disposal facilities. Notification should be to the DHS duty officer who will contact the appropriate Section, Branch, Program or Division. (Usually accomplished through contact with State Warning Center.)

After Action Report: Written after action reports are required in accordance with standards outlined in Title 17, California Code of Regulations.

Capabilities and Limitations: The Department can provide assistance in the assessment, evaluation, and control phases of a hazardous material incident. The cleanup of small sites may also be accomplished, but site restoration is not a functional responsibility of the Department.

Emergency Financial Assistance Available: The Department maintains the Emergency Reserve Account for Hazardous Material Incidents to assist local governments and public agencies. Refer to the Finance Section of this plan for a further discussion of this major funding source.

Highway Patrol (CHP) [California Highway Patrol]

Responsibilities: CHP responsibilities include the following:

- The CHP has primary responsibility for traffic supervision and control on all highways constructed as freeways, all state-owned vehicular crossings, (toll bridges), and on most highways and roadways (state or county) within the unincorporated areas of the state.
- The CHP will function as the Incident Commander/Scene Manager for a hazardous material incident which occurs on a highway or highway right-of-way within CHP jurisdiction. In situations where another agency first becomes aware of an incident within CHP jurisdiction, the CHP must be notified and provided with emergency information to ensure a safe response.
- The CHP will function as the State Agency Coordinator (SAC) for all hazardous material incidents occurring on California highways.
- The CHP will serve as statewide information, assistance and notification coordinator for all on-highway hazardous material incidents occurring on highways within California.
- CHP officers have statewide peace officer powers with authority to enforce all California criminal statutes. Additionally, they have authority to enforce specified Health and Safety Code sections relating to hazardous waste, its transportation and its disposal pursuant to Section 2401.1 of the California Vehicle Code and Section 25180 of the Health and Safety Code. These authorities allow the CHP to conduct hazardous material/waste investigations statewide and to collect the necessary evidence to seek criminal and/or civil prosecution.

- If highway traffic on routes within CHP jurisdiction is, or is likely to be, adversely affected by a hazardous material incident originating in, and extending from, a local jurisdiction, the Commander of the Area office wherein the occurrence is located is to be notified by the Incident Commander/Scene Manager. The Area Commander shall be requested to send a staff member to the Incident Command Post (ICP) as a liaison. The staff member shall be advised of the situation and actions being taken to control and mitigate the incident.

Notification Requirements: Immediate verbal notification is required for any hazardous material incident that occurs within the jurisdictional boundaries of the CHP. The CHP will subsequently notify OES and CALTRANS, or local highway departments, as appropriate. If the CHP cannot be contacted, notification can be conducted by calling the State Warning Center.

After Action Report: For hazardous material incidents where the CHP is the Incident Commander/ Scene Manager, the CHP will prepare a hazardous material incident report which will be submitted to the Office of Emergency Services for entry into the California Hazardous Material Incident Reporting System (CHMIRS). Depending on the magnitude of the incident, an after action report may also be submitted in accordance with CHP policy and procedures.

Capabilities and Limitations:

- The CHP will, upon request, provide technical support and expertise concerning commercial vehicle equipment regulations and/or hazardous material transportation provisions.
- For hazardous material incidents occurring within cities, the CHP will, upon request, assist the Incident Commander/Scene Manager in obtaining state assistance.

The CHP will:

- Evaluate and report road conditions to OES and the Incident Commander/Scene Manager.
- Provide traffic control in support of evacuation and/or relocation.
- Reroute traffic under CHP jurisdiction in coordination with local authorities.
- Prevent unauthorized entry into contaminated areas as requested by authorities.
- Assist local authorities in maintaining law and order.

- The CHP will not normally provide incident coordination/scene management support for hazardous material incidents which occur outside its jurisdiction. Occasionally, however, should the magnitude of an incident be completely beyond the capabilities of the local jurisdiction to handle, the CHP Commander may provide incident coordination/scene management services upon request by the affected jurisdiction.
- Should CHP assistance be requested under authority of the California Law Enforcement Mutual Aid Plan, CHP law enforcement functions will be carried out in cooperation with the Operational Area Coordinator (County Sheriff) in the county where the incident has occurred. CHP personnel committed to the support of local authorities will remain under the command and control of the CHP.

Emergency Financial Assistance Available: None

Industrial Relations/Division of Occupational Safety and Health (Cal OSHA) [California Occupational Safety and Health Administration]

Responsibilities: The primary responsibility of this agency, as it relates to hazardous material incidents, is to prevent and regulate occupational exposures to hazardous materials.

Notification Requirements: Immediate telephone notification is required of employers when there is an exposure to a regulated carcinogen or serious injury, illness or death of an employee during any work activity, including those associated with hazardous material incidents.

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After Action Report: None

Capabilities and Limitations: The agency has the capability to evaluate the adequacy of health and safety plans designed to protect employees from exposure to hazardous material during hazardous material response and recovery operations.

Emergency Financial Assistance Available: None

Justice- Office of the Attorney General (AG) [Attorney General]

Responsibilities: The Attorney General's Office represents state agencies in civil litigation arising from hazardous material incidents, and has general supervisory and enforcement powers under criminal laws. The Attorney General's Office may provide legal advice to state agencies as necessary during responses to hazardous material incidents.

Notification Requirements: None, unless a state agency requests the immediate involvement of the Attorney General's Office.

After Action Report: None

Capabilities and Limitations: The Attorney General's Office may represent state agencies in civil litigation arising from hazardous material incidents and has general supervisory and enforcement powers.

Emergency Financial Assistance Available: The Clandestine Lab Clean-up Fund is available to state and local law enforcement agencies in counties with populations of less than 1,250,000. Refer to the Finance Section of this Plan.

Military (CNG) [California National Guard]

Responsibilities: The California National Guard is a back-up agency in the event of a significant release of hazardous material. It provides outside support functions only in the event of a major disaster.

Notification Requirements: None

After Action Report: None

Capabilities and Limitations: Can provide limited support operations in the event of a large hazardous material release. The agency has limited resources to apply to hazardous material incidents. The resources are not employed until tasked by the State Office of Emergency Services to assist in the mitigation of a hazardous material incident.

Emergency Financial Assistance Available: An internal funding source is maintained for hazardous material incident response required for management and control of internal California National Guard incidents.

Parks and Recreation (DPR) [Department of Parks and Recreation]

Responsibilities: DPR is responsible for the safety and well being of the public and employees using the state parks.

Notification Requirements: State Park facilities must be notified if a hazardous material incident would impact that facility.

After Action Report: None

Capabilities and Limitations: DPR can respond to local law enforcement requests for mutual aid with rangers who have peace officer powers.

Emergency Financial Assistance Available: None

Public Utilities Commission (PUC)

Responsibilities: The Railroad Operations and Safety Branch has responsibility and authority for investigation of railroad accidents. This includes those incidents involving hazardous materials. It performs railroad safety oversight of daily operations and inspections of new and existing facilities for compliance with the PUC General Orders and with Title 49 of the Code of Federal Regulations.

Notification Requirements: Immediate verbal notification is required via the Office of Emergency Services Warning Center for any and all railroad accidents.

After Action Report: Internal staff investigation reports are required. These reports can result in a formal Commission investigation under the Public Utilities Code, Section 315.

Capabilities and Limitations: The headquarters office and field offices throughout the state provide field investigators to conduct on-site investigations of transportation incidents.

Emergency Financial Assistance Available: None

State Lands Commission (SLC)

Note: The Oil Spill, Prevention, Abatement and Removal Act of 1990 may impact the role of the State Lands Commission as this legislation is implemented.

Responsibilities: This agency manages and supervises all statutory lands which the state has received from the Federal Government. This includes beds of naturally navigable waterways such as major rivers, streams, and lakes; tide and submerged lands in the Pacific Ocean (out to three nautical miles); swamp and overflow lands; and vacant school lands. It also exercises oversight authority on granted lands. The State Lands Commission also regulates operations conducted on or into state lands.

Notification Requirements: Immediate verbal notification is required if a release is greater than one barrel of oil. For spills less than one barrel, a telecopied notification is adequate.

After Action Report: A written report is required of all lessees shortly after the termination of the spill incident. This report should include, as a minimum, the source, cause, size of spill, and action taken.

Capabilities and Limitations: SLC requires oil spill contingency plans for State oil and gas leases, and marine terminal operation. Lessees are required to maintain clean-up equipment on-site, and to provide for proper training of personnel. SLC staff will assist in the assessment of damage to state lands from hazardous material spills. Staff includes a variety of engineering, environmental, geological, biological, boundary determination, and legal professionals. Support functions include assistance in the identification and analyses of substances and technical assistance in regard to offshore oil facilities and mining properties. SLC also provides damage assessment for lands impacted by releases of hazardous materials. The State Lands Commission may also request legal action and would support the Attorney General's office in legal action against responsible parties.

Emergency Financial Assistance Available: The State Lands Commission may make demand on oil and gas lease, and structure (bonds) for compliance with terms of the lease. Lessees may be required, under certain circumstances, to establish offices for claims in the area of an incident to promptly settle damage claims of third parties.

Transportation - Division of Highway Maintenance (CALTRANS)[California Department of Transportation]

Responsibilities: CALTRANS is responsible for planning, designing, constructing, operating, and maintaining the state highway system. Within state highway right-of-way, CALTRANS will:

- Ensure, in cooperation with other public and private agencies, the identification and containment of hazardous materials and restoration of the orderly flow of traffic.
- Assist California Highway Patrol with traffic control and routing requirements.
- Restore contaminated highways and other transportation facilities under its jurisdiction.
- Contract with cleanup companies to assist with highway cleanup.

- Spill teams may provide radiological monitoring.

CALTRANS is not legally or financially responsible for contamination or cleanup outside the state right-of-way even though the incident commences from within the right-of-way.

Notification Requirements: Immediate verbal notification to the local district is required of any hazardous material incident affecting a state highway.

After Action Report: None

Capabilities and Limitations: Response capabilities are available for state highway cleanup. Response is limited to the area of right-of-way only.

Emergency Financial Assistance Available: Internal funding for state highway cleanup only.

Water Resources (DWR) [Department of Water Resources]

Responsibilities:
The Department of Water Resources has primary responsibility to protect the water quality of the State Water Project. This includes providing water of a quality that can be used for agricultural, recreational, municipal, and industrial purposes. Activities supporting this responsibility include protection of state water project facilities and flood control facilities.

Notification Requirements: Immediate verbal notification to DWR is required when an incident threatens to contaminate or otherwise disrupt the operation of the state water project, its man-made and natural conveyance facilities, or delivery of water.

After Action Report: None

Capabilities and Limitations: DWR can isolate and/or drain specific sections to assist with contamination control.

Emergency Financial Assistance Available: Funding and resources only exist for minor self-generated hazardous material incidents.

Water Resources Control Board (SWRCB) [State Water Resources Control Board]

Responsibilities: The primary responsibility of this agency is to protect the state's surface, coastal and ground water resources. This involves a proactive role in providing technical assistance to the State Agency Coordinator and the State Department of Health Services in evaluating the potential impact of hazardous material spills to water resources. Also, the agency issues cleanup and abatement or cease and desist orders to responsible parties, assesses fines, and pursues recovery of costs for abatement, mitigation, or contract cleanup.

There are nine Regional Water Quality Control Boards, one located in each of the nine major watersheds of the State. Regional Water Quality Control Boards develop basin plans, issue waste discharge requirements, take enforcement action against violators and monitor water quality. They carry out State and federal law and are guided by policies established by the State and Regional Water Resources Control Board.

Notification Requirements: Immediate verbal notification to the Regional Board is required of all hazardous material spills that enter or threaten to impact any waters of the state .

After Action Report: Damage Assessment Reports or Remedial Action Plans may be required of the responsible party.

Capabilities and Limitations: Support functions include the following:

- Conduct water sampling, analysis, and monitoring activities to assist in hazardous material release evaluation and mitigation.
- In cooperation with the Department of Health Services, designate sites for disposal of hazardous materials.

STATE

- Assist DHS in advising water users of potential adverse impacts of a spill.
- License Oil Spill Cleanup Agents (OSCA)

Emergency Financial Assistance Available: This agency administers the Water Pollution Cleanup and Abatement Account. This account is available to public agencies to cleanup oil and hazardous material releases which pose a substantial threat to surface and ground waters and to abate actual damage to surface and ground waters. Approval for use of these funds must be obtained prior to any expenditure. Assistance is not provided on a retro-active basis.

STATE

Figure 2.1 STATE AGENCY RESPONSIBILITIES

HAZARDOUS MATERIAL EMERGENCY RESPONSE

AGENCY NAME	PAGE 2.2-	INCIDENT CMD SCENE MGMT*	OPS	LOGISTICS	PLANS	FINANCE
Air Resources Board(ARB)	2			X	X	
Coastal Commission	2				X	
Conservation/Div Oil & Gas(DOG)	2			X	X	I
Conservation Corps(CCC)	3		OIL	X		
Emerg Med Serv Auth(EMSA)	3			X	X	
Emerg Svcs(OES)	4	PIO	LE	X	X	D
Energy Comm(CEC)	6			X	X	
Fire Marshal(CSFM)	6		LE	X	X	
Fish & Game(DFG)	7	Off Hwy SAC	LE	X	X	I
Food & Agriculture(CDFA)	8			X	X	
Forestry(CDF)	9		LE/FP	X	X	
Health Services(DHS)	9		RAD	X	X	E
Highway Patrol(CHP)	10	On Hwy IC/SM/SAC	LE	X	X	
Industrial Relations/ CAL OSHA	11			X	X	
Justice(DOJ/AG)	12		LE	X	X	E
National Guard(CNG)	12			X	X	
Parks & Recreation(DPR)	12		LE	X	X	
Public Utilities(PUC)	12			X	X	
State Lands Commission(SLC)	13			X	X	I
CALTRANS	13		X	X	X	I
Water Res Control Bd(SWRCB)	14			X	X	E
Water Resorces(DWR)	14			X	X	I

LEGEND

D - CHANNELS STATE & FEDERAL DISASTER FUNDS
E - AVAILABLE TO EXTERNAL AGENCIES
FP - FIRE PROTECTION
I - AVAILABLE INTERNALLY
IC/SM - INCIDENT COMMAND/SCENE MANAGEMENT
L -LIASION
LE - LAW ENFORCEMENT
OIL - OIL SPILL CLEANUP
PIO - PUBLIC INFORMATION OFFICER
R - RADIOLOGICAL
SAC - STATE AGENCY COORDINATOR
X - PROVIDES FUNCTIONAL SUPPORT

* ALL STATE AGENCIES MAY HAVE A LIAISON FUNCTION, IF AN INCIDENT IMPACTS THE AGENCY'S MANDATE

Contents

SECTION 2.3

LOCAL GOVERNMENT 2

LOCAL GOVERNMENT

Local government has an important responsibility to participate in pre-incident planning through its local hazardous material Administering Agency and other local planning activities related to hazardous materials. Through this mechanism, local area plans can be developed, local agencies can clearly delineate responsibilities with respect to each other and with participating agencies at the state and federal levels, and liaisons between agencies can be established. The local government *descriptions contained in this plan are typical of many jurisdictions throughout the state.* However, responsibilities, organization, and authorities may vary, depending on the specific jurisdiction. Therefore, the importance to exercise, revise, and update local plans on a regular and realistic basis cannot be overemphasized.

For most hazardous material emergencies, local government will be the first to respond to incidents within its jurisdiction. If not present on scene, local government should be brought into the management of the incident. The primary contact to receive notification of an incident from the general public should be local government (generally by calling 911) and then the OES State Warning Center (off highway) or the CHP (on highway). Local government should provide first response capability (including notification of local agencies) for incidents within its jurisdiction.

Administering Agencies

All counties and approximately 70 cities within California have been designated to implement the state and federal hazardous material emergency planning and community right-to-know programs. The Administering Agencies are often fire departments, environmental health departments or emergency services departments. These Administering Agencies (AA) are responsible for:

- Developing and updating the local hazardous material Area Plan.
- Collecting and managing local hazardous material business plans and inventory information according to local, state and federal requirements.
- Ensuring that the business plan and inventory information is available to local emergency responders on a 24 hour basis.
- Providing business plan and inventory information to the CEPRC and LEPC, upon request.
- Inspecting businesses which handle hazardous materials in excess of threshold planning quantities.
- Ensuring that CHMIRS reports are forwarded to OES at least once a month.
- Requiring Risk Management and Prevention Program plans from appropriate facilities.
- Responding to community right-to-know requests.

Emergency Services Direction and Control

The County/City Emergency Services Coordinator is usually responsible for the development and maintenance of the local emergency plan and acts as local disaster response coordinator of various emergency organizations for multi-agency or multi-jurisdictional operations. This may include activation of the county/city Emergency Operations Center (EOC). This may also include coordination of quasi-governmental agencies.

Local Disaster Councils and similar organizations are encouraged to participate in local planning activities related to hazardous materials, to work with the appropriate agency in formulating plans prior to the occurrence of an incident.

Fire Protection

Fire prevention, fire suppression, and rescue are the responsibility of the fire service agency which has jurisdiction or has accepted responsibility for the area involved. Agencies which may be involved include municipal fire departments, local special district fire departments (paid or volunteer), county fire departments, California Department of Forestry and Fire Protection, or the U. S. Forest Service. The fire service agency may be responsible (in the absence of a responsible party) for containment of off-highway hazardous material releases, and is frequently considered to be the best local source of expert opinion and specialized response capabilities for hazardous material control.

When lives and property may be adversely affected by a hazardous material incident in which fire prevention, fire suppression, or rescue services are needed, the appropriate fire service agency must be notified. Often the responsibility for decontamination of exposed victims will fall to the local fire department. Many local plans designate the fire department as the hazardous material response Incident Commander.

The Operational Area Fire and Rescue Coordinator is responsible for mobilization of fire and rescue mutual aid resources requested by the responsible fire service agency.

Law Enforcement

City police departments are responsible for law enforcement including traffic control and supervision (except on state highways constructed as freeways) within the limits of their respective cities pursuant to Section 2454 CVC. In the absence of local codes, ordinances or previously written agreements to the contrary, local law enforcement will perform the function of Scene Manager/Incident Commander for hazardous material incidents occurring on roadways within their jurisdiction.

County sheriff departments are responsible for law enforcement (except traffic control and supervision) in the unincorporated areas of their respective counties. Some cities have contracted with their local sheriff's department for law enforcement and traffic control rather than establish a police department. For hazardous material incidents occurring on the roadways of such cities, the sheriff will function as Incident Commander in absence of local codes or ordinances to the contrary.

For law enforcement mutual aid purposes, the sheriff is the Operational Area Coordinator for the county (The Chief of Police has that responsibility in San Francisco).

Public and Environmental Health

Local health agencies are responsible for protecting the public and environmental health and often coordinate local emergency medical services. They should be actively involved in situations where the public and/or environmental health is threatened.

Sections 458 and 505 of the Health and Safety Code give county and city health officers authority within their jurisdictions to:

> ...take any preventive measure which may be necessary to protect and preserve the public from any health hazard during any "state of war emergency," "state of emergency," or "local emergency," as defined by Section 8558 of the Government Code.

In Section 471 of the California Health and Safety Code, the State Director of Health Services and local health officers are granted authority to declare hazardous waste-related "health emergencies" in any area within their respective jurisdictions if there is an immediate threat to human health. Sections 472-474 empower health officers to require knowledgeable private parties to provide information "...relating to the properties, reactions, and identity..." of released material during a "health emergency." Thus, health officers can be very

important information resources to the Scene Manager/Incident Commander. In addition, Section 1158 puts "... all environmental health and sanitation programs and personnel employed by the county or district. . ." under the supervision and control of the health officer during a health emergency.

Local public health agencies should participate in the work of the Planning Advisory Committees and support the Scene Manager/Incident Commander during hazardous material incidents.

County Agricultural Commissioner

The County Agricultural Commissioner is responsible for enforcement of all state and federal regulations relating to the use of herbicides, insecticides, pesticides and rodenticides. The Commissioner provides technical advice at the scene and may assist in clean-up.

County Air Pollution Control Officer (APCO)

Air Pollution Control Districts (APCD) and the regional Air Quality Management Districts (AQMD) are responsible for the control of air pollution from stationary sources. The APCO, as the executive head of an APCD, can provide valuable expert advice regarding current and predicted patterns of airborne pollutants originating from a hazardous material incident. Some districts may be able to provide laboratory support to help identify the substance involved in the incident and/or may be able to provide for the ambient monitoring of certain airborne pollutants, depending upon the incident.

Through air quality modeling, many of the APCDs have developed extensive experience in predicting dispersion patterns for airborne pollutants. This experience should be used by local hazardous materials planning advisory committees and Administering Agencies.

Public Works

Local highway departments are responsible for maintaining highways in their jurisdiction and may assist in necessary road closures, cleanup, or decontamination.

Local water supply agencies (which may be public works or another agency) are responsible for maintenance of community water systems. They will provide for remedial actions in coordination with the Regional Water Quality Control Boards (RWQCBs) and the Department of Water Resources when a hazardous material incident may affect water sources such as treatment plants and pumping stations.

Emergency Medical Services

Local emergency medical care providers (public and private sectors) have the responsibility to provide care and/or transportation to the sick and injured, including victims of contamination. No patient contact should be made without adequate decontamination, as determined by local medical protocols. Section 1058 of the California Health and Safety Code vests the authority for patient care management in the most qualified emergency medical care provider.

Poison Control Centers:

There are seven Regional Poison Control Centers in California. Each center:

- Provides human poison exposure and medical/health related hazardous material information, for designated counties, to first responders, hospitals, and the public.
- Has a toll-free (800) 24 hour answering service.
- Is staffed by specially trained Poison Information Specialists.
- Has a medical director trained in toxicology available 24 hours a day.
- Has an extensive toxicology library and immediate access to expert consultants.
- Has a FAX machine.
- Has access to and is well prepared to pull together, numerous toxicological resource recommendations for evaluating, assessing and medi-

cally managing health exposures associated with hazardous material spills.
- Knows the capability of each hospital in its region for handling hazardous material victims.
- Serves as a public information source.

Poison Control Centers in California are:

University of California (UC) Davis Medical Center- Regional Poison Control Center
Phone: 800-342-9293
Counties served: Butte, Siskiyou, Modoc, Trinity, Shasta, Lassen, Tehama, Plumas, Glenn, Sierra, Yuba, Lake, Colusa, Sutter, Nevada, Yolo, Placer, Solano, Sacramento, El Dorado, Amador, Alpine, Calaveras, San Joaquin, Stanislaus, Tuolumne

UC San Diego Medical Center- Regional Poison Control Center
Phone: 800-876-4766
Counties served: San Diego, Imperial

San Francisco General Hospital- San Francisco Bay Area Regional Poison Control Center
Phone: 800-523-2222
Counties served: Del Norte, Alameda, Contra Costa, Humboldt, Marin, Mendocino, Napa, San Francisco, San Mateo, Sonoma

Fresno Community Hospital- Fresno Regional Poison Control Center
Phone: 800-346-5922
Counties served: Merced, Mariposa, Madera, Fresno, Kings, Tulare, Kern

Los Angeles County Medical Association- Regional Poison Control Center
Phone: 800-825-2722 (doctors and hospitals); 800-777-6476 (public)
Counties served: Los Angeles, Ventura, Santa Barbara

Santa Clara Valley Medical Center- Regional Poison Control Center
Phone: 800-662-9886
Counties served: Santa Clara, Santa Cruz, San Benito, Monterey, San Luis Obispo

UC Irvine Medical Center- Regional Poison Control Center
Phone: 800-544-4404
Counties served: Orange, San Bernardino, Riverside, Inyo, Mono

Other

Other local government entities having responsibilities related to hazardous material incidents (e.g. flood control districts, sanitation districts, parks and recreation departments, port authorities, city harbor departments) should participate in pre-incident planning with the local planning advisory committees and Administering Agencies. Resources and responsibilities should be identified and integrated into the local action plans which should be exercised prior to an actual incident.

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FEDERAL GOVERNMENT 2

FEDERAL GOVERNMENT

Federal response to a hazardous material incident will vary according to the nature of the incident. Many different agencies may be involved, and the agency responsible for coordinating federal activities depends on the circumstances and location of the incident. The two federal agencies with primary hazardous material emergency response responsibilities are the U.S. Environmental Protection Agency and the U.S. Coast Guard. Federal agencies can be accessed during a hazardous material emergency by calling the National Response Center at 800-424-8802.

***Pollution incidents involving oil and hazardous materials are covered by the National Contingency* Plan (NCP). The NCP is found in 40 CFR Part 300 (March 8, 1990 Federal Register). The NCP specifies the Federal On-Scene Coordinator (OSC) for incidents in Coastal Areas as the Coast Guard, and for Inland Areas as the EPA (except hazardous material incidents at DOD or DOE facilities and vessels.) For major pollution incidents, either agency may activate the federal response system described in the National Contingency Plan. In such cases, federal assistance in handling the emergency will be coordinated with the State Agency Coordinator and the Incident Commander/Scene Manager.**

United States Coast Guard (Department of Transportation, USCG)

Responsibilities: The Coast Guard ensures that timely and effective response action is taken to control and remove discharges of oil and releases of hazardous substances, including threats of substantial discharges and releases into the coastal zones, (except hazardous material incidents at DOD or DOE vessels or facilities) including monitoring removal actions which are being conducted by the responsible party. (See federal On-scene Coordinator description in the Command-Liaison portion of this Plan.)

Notification Requirements: "Notice of an oil discharge or release of a hazardous substance in an amount equal to or greater than the reportable quantity must be made ...to the NRC [National Response Center] Duty Officer, HQ USCG Washington DC, telephone (800) 424-8802 or (202) 267-2675. All notices of discharges or releases received at the NRC will be relayed immediately by telephone to the [predesignated federal] OSC" (40 CFR 300.125)

"If direct reporting to the NRC is not practicable, reports may be made to the United States Coast Guard (USCG) on-scene coordinator (OSC) for the geographical area where the release occurs. The EPA predesignated OSC may also be contacted through the regional 24-hour emergency response telephone number. All such reports shall be promptly relayed to the NRC. If it is not possible to notify the NRC or predesignated OSC immediately, reports may be made immediately to the nearest USCG unit. In any event, such person in charge of the vessel or facility shall notify the NRC as soon as possible ." (40 CFR parts 300.300 and 300.405)

After Action Report: "Within one year after the completion of removal activities at a major discharge of oil, a major release of a hazardous substance, pollutant, or contaminant, or when requested by the RRT [Federal Regional Response Team], the OSC/RPM [Remedial Project Manager] shall submit to the RRT a complete report on the removal operation and the actions taken. The OSC/RPM shall at the same time send a copy of the report to the Secretary of the NRT [National Re-

sponse Team]. The RRT shall review the OSC report and send to the NRT a copy of the OSC report with its comments or recommendations within 30 days after the RRT has received the OSC report" (40 CFR Part 300.165).

Capabilities and Limitations: The Coast Guard operates the National Response Center and maintains some capability to contain and clean up polluting substances in waters and on shores within their jurisdiction through the Pacific Strike Team. The Coast Guard will provide the federal On Scene Coordinator for incidents within their jurisdiction and can access federal funding for abating and mitigating releases. Responsibility for long term removal actions may be transferred to the EPA. In California, the On Scene Coordinator for the Coast Guard is provided by the Captain of the Port of the Marine Safety Office (MSO) for the jurisdiction in which the incident occurs. The Marine Safety Offices in California are located in the San Francisco Area (Santa Maria to the Oregon Border), Los Angeles/Long Beach and San Diego. The Coast Guard also operates the Pacific Strike Team to support the OSCs. The OSC shall use appropriate legislative and regulatory authorities, the National Contingency Plan, regional and local contingency plans, and other circumstances unique to each incident to ensure that response to an incident is carried out expeditiously and aggressively.

Emergency Financial Assistance Available: Federal On Scene Coordinators may access the Oil Spill Liability Trust Fund (formerly Section 311 [k] of the Clean Water Act) and the Hazardous Substances Response Trust Fund (Superfund) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA).

Environmental Protection Agency (EPA)

Responsibilities: The EPA ensures that timely and effective response action is taken to control and remove discharges of oil and releases of hazardous substances, including substantial threats of discharges and releases into the inland zones, (except hazardous material incidents at DOD or DOE vessels or facilities) unless such removal actions are being conducted properly by the responsible party. (See federal On-scene Coordinator description in the Command-Liaison portion of this Plan.)

Notification Requirements: "Notice of an oil discharge or release of a hazardous substance in an amount equal to or greater than the reportable quantity must be made ...to the NRC [National Response Center] Duty Officer, HQ USCG Washington DC, telephone (800) 424-8802 or (202) 267-2675. All notices of discharges or releases received at the NRC will be relayed immediately by telephone to the [predesignated federal] OSC" (40 CFR 300.125)

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Capabilities and Limitations: The EPA will provide the federal On Scene Coordinator for incidents within their jurisdiction and can access federal funding for abating and mitigating releases. In California, the EPA regional headquarters is located in San Francisco. The EPA chairs the U.S. Oil and Hazardous Substances National Response Team (NRT) and co-chairs (with the Coast Guard) the federal Regional Response Teams. EPA also operates the Environmental Response Team to support the OSCs. The OSC shall use appropriate legislative and regulatory authorities, the National Contingency Plan, regional and local contingency plans, and other circumstances unique to each incident to ensure that pollution response is carried out expeditiously and aggressively.

The EPA has access to the Technical Assistance Team (TAT). The TAT is a private contractor who provides technical assistance in the form of engineering, scientific, technical, managerial, administrative and information management support for EPA's emergency response, removal and prevention program. The TAT supports the EPA's capability to adequately respond to environmental emergencies caused by the discharge or release of oil petroleum or hazardous substances to any media (air, land, surface water or ground water) and perform spill prevention compliance inspections, process inspections, contingency planning, simulations and training.

Emergency Financial Assistance Available: Federal On Scene Coordinators may access the Hazardous Substances Response Trust Fund (Superfund) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Oil Spill Liability Trust Fund (formerly Section 311 [k] of the Clean Water Act).

Other Federal Agencies

The following agencies may provide services and support to the federal On Scene Coordinators:

Department of Agriculture (USDA)

USDA shall provide assistance in investigations to evaluate the magnitude and severity of discharges or releases occurring on or affecting resources under the jurisdiction of those agencies, and in documentation of damage to natural resources, for which they have trustee responsibilities. USDA shall provide advice to the OSC when response operations are being performed that affect natural resources under their management authority. USDA shall provide primary wildland fire suppression support and technical expertise in the suppression of wildland fires resulting from hazardous spill incidents. USDA may provide, through the Soil Conservation Service, predictions of the effects of pollutants on soil and pollutant movement over and through soil.

National Oceanic and Atmospheric Administration (Department of Commerce, NOAA)

NOAA provides scientific support to responses for the federal On Scene Coordinator and contingency planning in coastal and marine areas. This includes assessment of the hazards that may be involved, prediction of the movement and dispersion of oil and hazardous substances through trajectory modeling, and information on the sensitivity of coastal environments to oil and hazardous substances. NOAA may, when requested by EPA, provide scientific support for responses to inland areas.

The NOAA Hazardous Materials Response Branch (HAZMAT) also provides:

- Scientific support and advice to the U. S. Coast guard and the Environmental Protection Agency to minimize the effects of spills and hazardous waste sites affecting the nation's coastal zone; and,
- Planning assistance to the U.S. Coast Guard, EPA, fire departments, and Local Emergency Planning Committees in dealing with chemical emergencies.

HAZMAT's regional Scientific Support Coordinators (SSCs) work with the scientific community to develop technical recommendations for the U.S.

Coast Guard in minimizing the environmental and economic impacts of oil and chemical spills. HAZMAT's 24-hour spill response network researches the technical queries from the U.S. Coast Guard during spills. HAZMAT's microcomputer trajectory models are used to analyze the movement and spreading of pollutants in both the atmosphere and the marine environment, displaying the predicted path of the pollutant in a graphic format. These predictions help the federal On-Scene Coordinator make crucial informed decisions during spill responses. HAZMAT recommends methods to protect the environment from oil and hazardous materials, based on trajectory predictions and Environmental Sensitivity Index atlases that identify wildlife and socioeconomic resources that may be threatened.

HAZMAT's regional Coastal Resource Coordinators work with the EPA to lessen the environmental impact of chemical releases from hazardous waste sites, and to ensure the protection of NOAA trust resources. HAZMAT works with EPA to identify the adverse effects of hazardous waste sites on coastal resources and their supporting ecosystems, and assists in developing means to minimize these impacts.

Two divisions of NOAA that serve as trustees of specific natural resources are the National Marine Fisheries Service and the National Marine Sanctuary Program .

NOAA has developed the Computer-Aided Management of Emergency Operations (CAMEO), microcomputer program that assists emergency responders, planners and Local Emergency Planning Committees in the management of hazardous materials.

Department of Defense (DOD)

The DOD shall provide assistance in investigations to evaluate the magnitude and severity of discharges or releases on or adjacent to resources under the jurisdictions of DOD. DOD also documents damage to natural resources under their management authority. The DOD shall provide a federal On Scene Coordinator for releases of hazardous substances, pollutants, or contaminants from DOD facilities and vessels. The EPA or USCG will act as OSC for oil discharges from DOD facilities or vessels. The DOD is still responsible, as is any federal agency, for cleanup of oil discharges from its vessels and facilities. Response actions for incidents involving nuclear weapons shall be conducted in accordance with the Nuclear Waepons Accident Response Procedures Manual. The DOD may also provide through different DOD branches:

- US Army Corps of Engineers shall provide assistance in processing Section 404 (Clean Water Act) emergency permits when required. The Corps shall, to the extent possible, alter the channel flow volumes of water courses from control structures under their management authority, to reduce the negative environmental effects of a pollution incident, or assist in spill response operations.
- US Army shall provide assistance in activation of Explosive Ordnance Detachments when required by the OSC.
- US Navy shall provide assistance in procuring pollution response equipment from Navy stockpiles when required by the OSC.
- All branches shall provide transportation for personnel, supplies, and equipment when determined by the OSC to be the most expedient method of transportation.

Federal Emergency Management Agency (FEMA)

FEMA is responsible for administering the Federal Disaster Assistance Program. This program encourages the development and maintenance of federal, state and local all hazard disaster plans and mitigation measures. FEMA serves as the lead agency in the management of the Disaster Assistance Program in affected areas after an emergency or a major disaster if requested by the Governor and declared by the President under the authority of Public Law 93-288. (A hazardous

material incident could cause sufficient injury and uninsured damage to merit a Presidential Declaration.)

After the declaration of an emergency, the President may direct any federal agency to utilize its authorities and resources in support of local and state emergency assistance efforts to save lives, protect property and public health and safety, and lessen or avert the threat of catastrophe. This includes; personnel, equipment, supplies, facilities, and managerial, technical and advisory services. FEMA will also; coordinate all disaster relief assistance, provide technical or advisory assistance, remove debris, provide temporary housing assistance, assist with distribution of supplies and provide general assistance.

All requests for Presidential emergency declarations shall be made by the Governor of the affected state. The request must include:

- Findings to show the event is beyond the capabilities of local and state government,
- Documentation of appropriate actions to be taken under state law and appropriate use of the state's emergency plan,
- Information describing local and state efforts and resources to alleviate the emergency; and
- Definition of the type and extent of federal aid that is necessary.

FEMA also provides hazardous material and related training through the National Emergency Training Center's resident and non-resident programs and through its administration of SARA Title III training grant contracts with the states. Regional hazardous material programs include planning, training, exercising and serving as a member of the federal Regional Response Team.

The **Hazardous Material Information Exchange (HMIX)** is a joint project with USDOT Research and Special Programs Administration. HMIX is a free computer bulletin board providing valuable hazardous material information. Call 708-972-3275 to access HMIX or 800-PLANFOR for assistance.

Department of Energy (DOE)

DOE has responsibility and capability to provide assistance in incidents involving radioactive materials (including special nuclear materials). They can provide this assistance to state and local agencies in accordance with the Inter-agency Radiological Assistance Plan, provide radiological assistance to state and local agencies. The Department of Health Services, Radiological Health Branch, triggers DOE response. DOE shall provide assistance in identifying the source and extent of radioactive contamination, and in the removal and disposal of radioactive discharges. DOE shall also coordinate with the OSC in implementing the Federal Radiological Emergency Response Plan. The DOE will provide the OSC for non oil emergency incidents at DOE facilities.

Department of Transportation (DOT)

DOT has a responsibility to regulate the transportation of hazardous substances as authorized by the Hazardous Material Transportation Act. The Coast Guard (addressed separately) is the DOT agency most involved in response to emergencies. Other agencies within the Department of Transportation with hazardous material responsibilities include:

- **Research and Special Programs Administration (RSPA).** RSPA is the lead agency for developing hazardous material regulations for all forms of transportation. RSPA publishes the **Emergency Response Guidebook (ERG)** to assist first responders at a hazardous material incident and operates, in a joint project with FEMA, the **Hazardous Material Information Exchange (HMIX).**
- **Office of Hazardous Material Transportation (OHMT)** issues regulations that cover the designation and classification of hazardous materials, container specifications and requirements for testing, packaging, labeling, marking, placarding, handling, and shipping papers. These regulations are codified in Title 49, Transportation,

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Parts 100 to 179 of the Code of Federal Regulations.

- **Federal Railroad Administration (FRA)** is responsible for enforcing the federal hazardous material provisions of Title 49 for rail and intermodal (truck trailers and containers on railcars) forms of transportation. Investigators are located in the Sacramento, San Francisco, and Los Angeles areas.
- **Federal Aviation Administration (FAA)** carries out enforcement of hazardous material regulation for air transportation.
- **Federal Highway Administration (FHA)** has the responsibility for inspecting highway shipments by interstate motor carriers and enforcing the federal hazardous materials regulations in cooperation with the states under its **Motor Carrier Safety Assistance Program.**
- **U.S. Coast Guard** enforces DOT hazardous materials regulations for the water transportation of nonbulk and bulk shipments.

Department of Health and Human Services (HHS)

The Department of Health and Human Services provides information and advice when chemical discharges violate or may violate Public Laws administered by the Food and Drug Administration (FDA). HHS makes determinations that illness, disease, or complaints thereof may be attributable to exposure to a hazardous substance, pollutant, or contaminant and shall provide expert advice and assistance on actual or potential discharges or releases that pose a threat to public safety and health. This activity includes arranging for assistance by the **Agency for Toxic Substances and Disease Registry (ATSDR)** when such assistance is deemed necessary by the OSC or RRT. ATSDR assistance is available to the public by telephoning 404-639-0615.

Department of the Interior (DOI)

DOI provides assistance in investigations to evaluate the magnitude and severity of discharges on or affecting facilities or resources under their bureaus' jurisdiction and in documentation of damage to natural resources for which they have trustee responsibilities. DOI bureaus include:

- **U.S. Fish and Wildlife Service (USFWS)** which provides advice on migratory birds, anadromous fish, and endangered and threatened species; coordinates with the California Department of Fish and Game in establishing bird and marine mammal collection, cleaning and recovery centers.
- **U.S. Geological Survey (USGS)** which may provide expertise in geology and hydrology, sample collection and measurements.
- **Bureau of Mines (BOM)** which may provide analytical facilities which could aid in identifying inorganic hazardous substances and may provide technical expertise during response operations involving hazardous substance releases from mining operations.
- **Bureau of Reclamation** which shall provide information on current and predicted channel flow volumes, where water courses are controlled by dams, locks, etc. under the management of the Bureau.
- **Bureau of Indian Affairs (BIA)** shall assist in obtaining access to Indian land areas as needed for response actions and shall coordinate with the incident Public Information Office Director to ensure pertinent information is made available to tribal authorities on a timely basis.
- **Bureau of Land Management (BLM)** which may provide expertise in the field of oil and gas drilling, production, handling and transportation by pipeline.
- **Minerals Management Service (MMS)** shall provide expert advice and assistance on actual or potential discharges or releases that pose a threat to public health and safety from offshore oil and gas exploration, production, and transportation facilities and platforms.

Department of Justice (DOJ)

DOJ can provide expert advise on complicated legal questions arising from discharges or releases and federal agency response, and represents the

federal government, including its agencies, in litigation. The **Drug Enforcement Administration (DEA)** is involved in the enforcement of activities associated with clandestine drug laboratories.

Department of Labor (DOL)

DOL shall provide, through the **Occupational Safety and Health Administration (OSHA)** advice, guidance, and assistance regarding hazards to persons involved in removal or control of oil discharges or hazardous substance release.

National Transportation Safety Board (NTSB)

An independent agency that reports to the U.S. Congress, the NTSB investigates all major transportation accidents with loss of life, property damage or special circumstances and determines probable cause.

Nuclear Regulatory Commission

The Nuclear Regulatory Commission is responsible for licensing and regulating nuclear facilities and materials, and for conducting research in support of the licensing and regulatory process.

These responsibilities include protecting the public health and safety, protecting the environment, protecting and safeguarding materials and plants in the interest of national security, and assuring conformity with antitrust laws.

Federal Strike Forces or Teams Available to Federal On Scene Coordinators

The OSC may obtain support from numerous private, commercial, and governmental organizations. However, four groups were created solely to support the national response mechanism by augmenting the OSC's staff and providing specialized pollution response expertise. They are the **National Strike Force (NSF)**, the **Environmental Response Team (ERT)**, the **Scientific Support Coordinator (SSC)**, and the **Public Information Assistance Team (PIAT)**. In addition, the **Agency for Toxic Substances and Disease Registry (ATSDR)** has assigned Public Health Advisors to most EPA regional offices.

National Strike Force (NSF).

OSC's are encouraged to use the NSF whenever necessary, or to augment the OSC's staff when it is overburdened by a response to a given incident. The strike teams that comprise the NSF can provide communications support; oil and hazardous substance removal expertise; ship's damage control; support to monitor removal operations, document costs, and coordinate logistics. The NSF should be used by the OSC when:

- A medium or major discharge has occurred;
- Control of the discharge requires the special knowledge or special equipment of the NSF;
- Response will require in excess of 2 days to complete removal operations, and augmentation by NSF personnel will release local forces to return to normal operations; or
- In the judgment of the OSC, NSF capabilities are necessary.

The NSF is also available to assist state and local governments, provided that such assistance does not interfere with supporting federal OSC's or other federal agencies.

The **Pacific Strike Team (PST)**, based at Hamilton AFB in Marin County, is the NSF pollution control team equipped and trained to assist in the response to oil or chemical incidents occurring in the western area of the United States. Services available from the PST include:

- Technical expertise
- Supervisory assistance
- Cost documentation
- Response to, and assistance with, spill response
- Deployment of salvage and pollution control equipment
- Training in pollution response techniques

Environmental Response Team (ERT)

The EPA's ERT can provide technical advice and equipment pertaining to the environmental effects of discharges or releases. Among the disciplines of the team are sanitary engineering, environmental engineering, chemical engineering, chemistry, biology, environmental health, risk assessment, and analytical support. Areas of expertise include:

- Determining safety precautions for hazardous chemical removal;
- Evaluating the nature and extent of contamination;
- Identifying hazards of pollutants not found in standard information sources ;
- Assessing degree of mitigation/removal required;
- Identifying critical and sensitive areas that require extraordinary protective efforts;
- Selecting disposal method and appropriate disposal facilities;
- Access to special decontamination equipment; and
- Basic and intermediate level hazardous material training.

In addition, the ERT is responsible for activating the **Environmental Emergency Response Unit (EERU)**, a unit which can provide on-scene equipment capable of removing pollutants from contaminated water, conducting treatment studies, and performing a wide range of analytical capabilities. ERT assistance can be requested from the EPA representative on the RRT.

Scientific Support Coordinators (SSC)

SSCs can augment the OSC's staff by providing scientific advice and arranging for scientific support on-scene. Generally, SSC's are provided by the National Oceanic and Atmospheric Administration (NOAA) in coastal areas, and by the EPA in the inland regions. During a response, the SSC serves under the direction of the OSC with the responsibility to provide scientific support for operational decisions and to coordinate on-scene scientific activity. Depending upon the nature of the incident, the SSC can be expected to work with government agencies, universities, and industry to compile information that would assist the OSC in assessing the hazards and effects of spills and developing response strategies. The SSC concept is to augment, rather than replace, the OSC's local scientific team. Local teams generally have the advantage of minimal response times, familiarity with the area, and a working rapport. On the other hand, oil and hazardous materials response may become extremely complex and require expertise and resources not usually available at the local level. Coast Guard OSC's are encouraged to use the SSC as they would use other special forces available to them. SSC assistance can be requested by contacting the regional SSC, identified in the Regional Contingency Plan. Areas in which the SSC can provide assistance include:

- Assessment Of Adverse Effects/Mitigation Strategies. This assistance is frequently required during the initial phases of an incident when response operations and clean-up strategies are being developed. Activities to protect and mitigate adverse effects on human health and welfare and the environment include:
- Liaison with natural resource and chemical experts;
- Spill trajectory modeling;
- Assessment and advice on the nature, behavior, and fate of oil and hazardous materials under various environmental conditions, and recommendations on how best to deal with them;
- Identifying areas of special biological importance;
- Assistance in public relations efforts on scientific issues; and
- Advice on safety precautions for response personnel.
- Contingency Planning Assistance. Prior to a spill, considerable information can be provided by the SSC in developing regional and local contingency plans. This can include the probability that spills originating from a given location will affect specific areas; the location of environmentally sensitive areas; background data on the

behavior of various pollutants known to be transported in a given area; and the possible environmental impact of various cleanup strategies.

Public Information Assist Team (PIAT)

The PIAT is a team of public affairs specialists knowledgeable in many facets of pollution response (e.g., equipment, clean-up methods, the role of various agencies, and the laws). They can augment the OSC's staff when public interest is high.

Agency For Toxic Substances And Disease Registry (ATSDR) Public Health Advisors

While not specifically listed in the NCP as a special force or team, the Department of Health and Human Services (HHS), through the ATSDR (previously part of the Centers for Disease Control [CDC]), has assigned Public Health Advisors to cover each EPA Region. In California, these individuals work at the EPA Region IX office. The ATSDR Public Health Advisors have a wide range of expertise in health-related problems, and are available to assist OSC's during response actions. They can assist in assessing public health threats posed by an incident, provide advice on the adequacy of personnel protection measures within the response area, investigate health complaints, provide advice on the need to relocate nearby residents, and coordinate the appropriate health response with public health agencies and the private medical community.

ATSDR advisors are also available to assist in developing occupational safety and health considerations for local contingency plans and providing information on the location and availability of laboratory services, expert consultants, hospitals, and other treatment facilities. The above assistance is available from the regional Public Health Advisors or directly from the ATSDR Emergency response Coordination Branch in Atlanta, GA, at 404-639-0615/FTS 236-0615 (24-hour number).

Contents

SECTION 2.5

NON-GOVERNMENTAL AGENCIES 2

NON-GOVERNMENTAL AGENCIES

Federal, state and local response to a hazardous material incident may be augmented by non-governmental agencies and volunteers.

Quasi-governmental Agencies

Support from quasi-governmental agencies may be required to properly assess and handle the situation. Those willing and able to assist in such an emergency include the **American Red Cross (ARC), Civil Air Patrol (CAP), Salvation Army** and the **Radio Amateur Civil Emergency Service (RACES).**

The American Red Cross provides relief for persons affected by disaster including providing food, clothing, and lodging; supplemental medical and nursing assistance; various family services; and rehabilitation. During disasters the Red Cross operates independently of, but coordinates with, local government. Recognizing that warning, rescue, and protective actions (evacuation or shelter in place) are governmental responsibilities, the Red Cross may, within its capabilities, assist in these functions.

The Civil Air Patrol will provide air transportation for emergency personnel, and air reconnaissance for monitoring purposes.

The Salvation Army is one of the principal agencies involved in disaster relief. To better augment this service it has entered into agreements with governmental and private agencies so that, through cooperation, each may better serve in a time of disaster. The Salvation Army can, within the limits of its personnel and fiscal capabilities, provide mobile feeding for disaster victims and emergency workers, emergency housing, medical assistance, referrals to appropriate government and private agencies for special services required by victims, and other services as required.

The RACES operates on radio amateur frequencies by authority of the FCC in support of emergency communications. RACES can augment existing systems, substitute for damaged or inoperable systems, set up portable equipment for communication to and from a disaster site, and establish communications links with areas that are inaccessible through other forms of communication.

Business

It is the responsibility of a business which uses, generates, processes, produces, packages, treats, stores, emits, discharges or disposes of hazardous material to **develop contingency plans** (Sections 25503 et. seq. CA Health and Safety Code and Title 19 CCR). This includes emergency response planning for contingencies within their facilities, and providing employees with proper training and skills to handle in-plant hazardous material emergencies. Businesses must abide by local, state and federal reporting requirements for hazardous material releases. They must comply with the specific mandates of the minimum planning regulations adopted by OES and their implementation by local Administering Agencies and other regulatory agencies. Throughout the duration of an incident, the business must keep the Scene Manager/Incident Commander informed as information becomes available concerning:

- Any conditions within the facility which may affect emergency response.
- On-site monitoring for extent of damage.
- Causation.
- Technical advice.

Businesses should be invited to participate in the local planning activities related to hazardous materials so that preparedness is reasonable and appropriate for local needs to make the best use of local resources, and to improve planning effectiveness.

Private Support

Specialized information and response resources provided by private industry include:

CHEMTREC (800-424-9300)

The Chemical Transportation Emergency Center (CHEMTREC) is a 24-hour public service of the Chemical Manufacturers Association. It has the capability of providing the following:

- Immediate emergency action information for spill, leak, exposure, or fire control measures.
- Precautionary information.
- Assistance in identification of hazardous substances, if the manufacturer is known, or shipping papers are present.
- Immediate notification of manufacturers or shippers through their emergency contacts or notification of industry mutual aid networks.

Community Awareness and Emergency Response (CAER)

The Chemical Manufacturers Association's (CMA) Community Awareness and Emergency Response program encourages chemical plant managers to take the initiative in cooperating with local communities to develop integrated emergency plans for responding to hazardous materials incidents. Because chemical industry representatives can be especially knowledgeable during the planning process, and because many chemical plant officials are willing and able to share equipment and personnel during response operations, community planners should seek out local CMA/CAER participants. Even if no such local initiative is in place, community planners can approach chemical plant managers or contact CMA and ask for assistance in the spirit of the CAER program.

National Poison Antidote Center (NPAC)

The Center is now a working part of the CHEMTREC system. It provides immediate information for treatment of most known poisons. It has communications to all major hospitals.

Poison Control Centers

Poison Control Centers are found regionally throughout the state and provide toxicological information concerning hazardous material incidents. Refer to Local Government Responsibilities, Emergency Medical Services, for more information.

Chemical Manufacturers

If known, the manufacturer of a spilled chemical can provide detailed technical information (including special precautions, disposal procedures, etc.) on their products and may provide an emergency response team if needed. Chemical manufacturers are activated by calling CHEMTREC.

Transportation Company Dispatch Centers

Carriers, including railroads, can be contacted for additional technical information and waybill or cargo manifest readouts. (When requested, CHEMTREC can accomplish this service.) Carriers may also provide assistance with chemical and wreckage removal.

Underground Service Alert, (U.S.A.) (800- 642-2444)

A 24-hour service subscribed to by major public utilities which has the capability of providing the location of any underground structures which could impact the response to hazardous material incidents.

Chlorine Emergency Plan (CHLOREP)

Organized by the Chlorine Institute for emergency response to chlorine emergencies, teams are activated by CHEMTREC.

Industrial Chemical Waste Removers

These organizations provide services under contract. They have the capability to clean up, haul, and decontaminate a hazardous material incident scene, as well as conduct restoration and repair of highways or other damaged property. They are a resource which should be identified during pre-incident planning. Contracts defining their role and scope of activities should be drawn up beforehand so the Scene Manager/Incident Commander may have ready access to their capabilities when the emergency occurs.

Coastal Oil Spill Cooperatives

The cooperatives are organized by oil companies to provide equipment and trained personnel for response to oil spills. These cooperatives are prepositioned at various locations along the California coast and can provide response equipment for responding to oil spills on the water.

Volunteers

Agency and jurisdiction specific plans should establish procedures to allow for well organized, worthwhile, and safe use of volunteers, including compliance with appropriate health and safety regulations. These plans should provide for the direction of volunteers by the appropriate officials knowledgeable in contingency operations and capable of providing leadership. The plans should also identify specific areas in which volunteers can be used, such as beach surveillance, logistical support, and bird and wildlife treatment. Unless specifically requested by the Incident Commander, volunteers generally should not be used for physical removal or remedial activities. If, in the judgement of the Incident Commander and/or safety official, that dangerous conditions exist or adequate training has not been provided, volunteers shall be restricted from on-scene operations.

NON-GOVERNMENT

Contents

MANAGING EMERGENCY OPERATIONS

This portion of the HMICP establishes policies and procedures and assigns responsibilities to ensure the effective management of emergency operations during the release or threatened release of a hazardous material. It describes the organization and structure of an appropriate response and provides state agencies with a basis for integrating their activities within the overall management of the incident response.

OBJECTIVES:

Specific objectives of the emergency management organization include:

- Establishing guidelines for the management and coordination of emergency operations.
- Establishing priorities, and adjudicating any conflicting demands for support.
- Establishing the framework for coordinating and maintaining liaison with appropriate federal, state, and local governmental agencies and applicable segments of the private sector.
- Establishing the methodology for requesting and allocating resources and other support.
- Providing guidance for identifying and activating communications systems.
- Providing guidance for disseminating warnings, including evacuation and sheltering in place.
- Providing guidance for managing the movement and reception and care of persons in the event an evacuation is ordered.
- Providing guidance for collecting, evaluating, and disseminating damage information and other essential data.
- Providing guidance for the coordination of mutual aid.

CONCEPT OF OPERATIONS:

The magnitude of hazardous material incidents ranges from minor to catastrophic. The majority of incidents are minor or moderate and can be addressed in a normal operating mode. Larger incidents may require greater coordination and/or direction.

A well managed incident maximizes the communication and agency coordination within the entire response organization. This portion of the HMICP is organized using the principles of the Incident Command System to enhance response organization and delivery.

THE INCIDENT COMMAND SYSTEM:

The Incident Command System (ICS) is a management structure especially useful when more than one organization responds to an emergency (i.e., wildland fire, earthquake, hazardous material release). The ICS is designed to be flexible and expandable to meet the needs of any incident. The ICS is currently mandated for response to hazardous material incidents by federal (29 CFR Part 1910.120) and proposed state labor regulations (5192 California Code of Regulations). The federal regulations state that "the senior emergency response official responding to an emergency shall become the individual in charge of a site-specific Incident Command System (ICS). All emergency responders and their communications shall be coordinated and controlled through the individual in charge of the ICS for each employer... The 'senior official' at an emergency response is the most

senior official on the site who has the responsibility for controlling operations at the site. Initially, it is the senior official on the first-due piece of apparatus to arrive on the incident scene. As more senior officers arrive (i.e., battalion chief, fire chief, state law enforcement official, site coordinator, etc.) the position is passed up the line of authority which has been previously established."

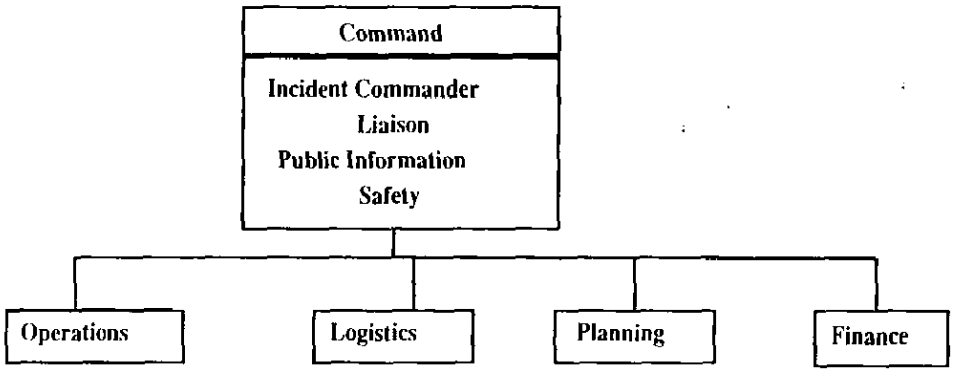
In July 1988, the Governor's Emergency Operations Executive Council directed state agencies to use the Incident Command System at the field operations level.

An excerpt from the California Emergency Plan states "Use of an Incident Command system is strongly recommended to all levels of government as a way of achieving coordination in decision making and concerted action in responding to large scale emergencies... Such a system will provide coordination in decision making for all levels of government involved in emergency management... The ICS is strongly recommended for use, statewide, by all response agencies. The ICS with its standardized organizational structure and common vocabulary can be used in both large and small emergencies. By employing common terminology to define resources and facilities, Incident Command can be used by all response agencies. ICS provides a flexible management system for incidents that require a cooperative response by neighboring jurisdictions or by different departments within the same jurisdiction. ICS is designed to maintain a manageable span of control at major emergencies involving large numbers of resources. ICS should be rapidly activated and organized around the functional requirement of the incident. The ICS system consists of five major functional areas which are activated at major incidents". Those functional areas are: Incident Command, Operations, Planning, Logistics, and Finance.

A sample hazardous material organization chart for ICS and descriptions of hazardous material specific positions are contained in Appendix 2. All state agency personnel who may become involved with a hazardous material incident are encouraged to become familiar with a hazardous material response using the ICS.

A generic ICS schematic follows:

Figure 3.1 ICS Schematic (generic)



COMMAND

INTRODUCTION

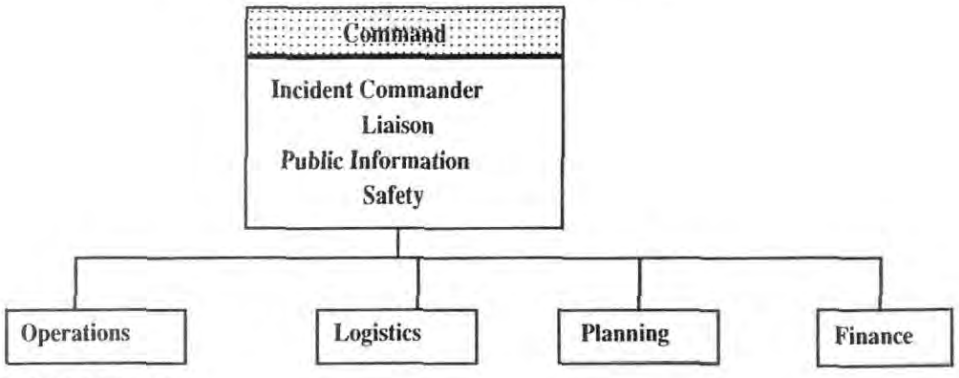
At a hazardous material incident, a clearly defined and identified command staff is critical to the appropriate management of the incident. The decentralized nature of California's approach to hazardous material management does not permit a uniform statewide description of command, coordination, finance, and other factors that will determine the overall emergency management of a hazardous material incident. These factors include:

- **location (i.e., on highway, off-highway, incorporated, unincorporated),**
- **nature of substance (i.e., oil, other hazardous material),**
- **magnitude (i.e., minor, moderate, major, catastrophic),**
- **capability (i.e., adequately trained and equipped personnel, inadequately trained and equipped personnel),**
- ***mandate (i.e., responsibility designated by a legislative body, responsibility not* designated by legislative body),**
- **responsible party (i.e., willing and able to provide a safe and adequate response, unable and/or unwilling to provide a safe and adequate response), and**
- **finance (funding agency requires direct control over expenditures, funding agency does not require direct control over expenditures).**

State agencies will provide Command functions consistent with legislative and agency policy requirements (i.e., State Agency Coordinator, State Warning Center) and physical jurisdiction.

An ICS schematic (Command) follows:

Figure 3.2 ICS Schematic (Command)



ROLE DETERMINATION

In California, the response to a hazardous material incident will be directed by a Scene Manager and/or an Incident Commander. Because of differing capabilities and mandates, local implementation of Scene Management/Incident Command may differ. The roles of agencies of the state of California will generally remain constant, but must remain flexible to appropriately integrate overall emergency management requirements with those of other governmental agencies and the private sector.

If the Scene Manager is the same person as the Incident Commander, then that person is in charge of directing and coordinating the overall incident and scene. If the position of Incident Commander and Scene Manager are held by different people, then a distinction must be made in the roles and responsibilities of each position. Scene Management entails the coordination of overall operations while utilizing the expertise and command structures of all responders. Incident Command entails the direct management of all incident operations and related activities. In some jurisdictions these functions have been combined. The California Highway Patrol has Incident Command/Scene Management responsibilities for all freeways and unincorporated roadways.

Scene Management, as defined in Section 2454 of the California Vehicle Code, "means coordination of operations which occur at the location of a hazardous substance spill or disaster. This coordinating function does not include how the specialized functions provided by the various other responding agencies are to be performed. The agency managing the scene of an on-highway spill or disaster shall consult with other response agencies at the scene to ensure that all appropriate resources are properly utilized. The agency managing the scene of an on-highway hazardous spill or disaster shall perform its coordinating function in a manner designed to minimize the risk of death or injury to other persons."

On highway scene management is vested with the law enforcement agency having primary traffic investigative responsibilities. Therefore, the CHP assumes scene management for incidents originating on freeways and roadways in unincorporated areas. For city streets, including non-freeway highways, Scene Management responsibilities are vested in the local police department (or sheriff, if the city contracts for police services.) **Note: Senate Bill 921, which became effective on January 1, 1990, authorizes "the local governing body of a city having jurisdiction where the spill or disaster occurs to assign the authority for management of the scene on local streets and roads, other than freeways, to either the local law enforcement agency or fire protection agency."** Since state law addresses only on-highway incidents, off-highway Scene Management responsibilities are jurisdiction specific. Federal facilities will generally provide personnel to represent their agency.

The term Scene Management originated in the Scene Management System and has been used traditionally in law enforcement.

Incident Command is the designation within the Incident Command System of the position with the responsibility for management of all incident operations. This position, along with the Safety, Liaison and Public Information Officers, comprise the Command Staff. The Incident Commander plus the Chiefs of the Operations, Planning, Logistics, and Finance Sections comprise the General Staff. Figure 3.3 illustrates SM/SAC/OSC/IC designations.

ROLE OF A UNIFIED COMMAND

A "Unified Command" is used when there is more than one agency with a management responsibility that cannot be delegated. In those circumstances, all parties should be brought together within the Command Staff for consultation and coordination of overall activities. The individuals in the Unified Command should be able to speak for, and commit the resources of, the organizations that they represent. In most cases, an overall Incident Commander should be designated from within the Unified Command, generally the representative of the jurisdiction where the incident originated, or the most qualified person present. Decisions should be made by consensus among the parties of the Unified Command. If consensus is not possible, the overall Incident Commander shall make the final decision. In those cases where a Unified Command is composed of an Incident Commander and a Scene Manager, the Incident Commander shall make the decisions regarding direct response to the incident and the Scene Manager shall have the

Figure 3.3 MANAGING EMERGENCY OPERATIONS RESPONSIBILITY DESIGNATIONS

SCENE MANAGEMENT (SM)

	Incorporated (excluding all freeways)	Unincorporated (including all freeways)
On-Highway	Police Department*/+	California Highway Patrol
Off-Highway	Locally Designated	Locally Designated

* Sheriff, if city contracts with county for law enforcement

\+ After 1/1/90, may be assigned to fire agency by local governing body

STATE AGENCY COORDINATOR (SAC)

On-Highway	California Highway Patrol
Off-Highway	Department of Fish and Game

FEDERAL ON-SCENE COORDINATOR* (OSC)

Coastal Areas	U.S. Coast Guard
Inland Areas	U.S. Environmental Protection Agency

*Department of Energy and Department of Defense may provide OSC for incidents involving their agencies.

INCIDENT COMMAND* (IC)

* CHP will be the Incident Commander for all freeways and unincorporated roadways.

Locally Designated

overall responsibility of coordinating the response agencies.

ROLE OF THE RESPONSIBLE PARTY (RP)

The "Responsible Party" is a legally recognized entity (person, corporation, business, partnership, etc.) that has a legally recognized status of financial accountability and liability for actions necessary to abate and mitigate adverse environmental and human health and safety impacts resulting from a non-permitted release or discharge of hazardous material.

The RP should be consulted in decisions that impact the hazardous material response, but the RP does not necessarily have standing within the Command Staff, unless the Incident Commander determines otherwise. The RP should be given the opportunity to abate the incident using their own resources, but not to the detriment of the overall operations. The questions that must be answered to the satisfaction of the Incident Commander include, but are not limited to:

- can the incident be abated adequately and in a reasonable amount of time?
- Is the proposed abatement and mitigation agent (cleanup contractor) of the RP able to, and legally allowed to, perform the required tasks?
- Can the waste generated be properly disposed by the RP?

If the Responsible Party is unable or unwilling to provide acceptable abatement and mitigation of the incident, or the Responsible Party is unknown, it may be necessary for a public agency to ensure the necessary response and cleanup that would normally be the responsibility of the Responsible Party. The reasons for a public agency taking these responsibilities are to best protect the public health, safety and environment by expediting the abatement and mitigation of the incident.

PROTECTIVE ACTIONS (EVACUATION AND IN-PLACE PROTECTION)

When a circumstance exists where an airborne hazardous material release may place the public in danger, there are two main options available to emergency responders. One is evacuation. The other is in-place protection (formerly referred to as sheltering-in-place). The need to take some form of protective action is a decision that must be determined quickly and often with a lack of definitive data to assist the decision-makers. (Portions of the following descriptions are excerpted and modified from Hazardous Materials. Managing the Incident by Gregory G. Noll, Michael S. Hildebrand, James G. Yvorra. Used with permission.)

Evacuations

Evacuations may be indicated when there are:

- Leaks involving unknown gases from large capacity storage containers.
- Explosives or large quantities of materials which could detonate or explode, damaging structures in the immediate area.
- Leaks that cannot be controlled and are expected to continue leaking.
- Leaks that cannot be controlled by emergency response personnel and civilians area at risk.

When the decision is made to evacuate, four things must be done:

- Notification- tell occupants where to go.
- Transportation- move occupants to a safe locations.
- Relocation- keep occupants housed, fed and informed.
- Information- keep occupants informed of your progress, and notify concerned citizens of the situation.

In California, the authority to close an area is generally vested in persons with peace officer powers or the local health officer by Sections 409.5 (a) and (c) of the California Penal Code.

Public highways may be closed for the protection of the public by the department of Public Works, the California Highway Patrol, the county board of

supervisors, police departments or the sheriff's office, by authority of various sections of the California Vehicle and Streets and Highways Codes.

In situations where the Governor has declared a state of Emergency or local government has declared a local emergency, the appropriate official may authorize an evacuation as according to provisions of the California Government Code.

In some instances specific state or local agencies in conjunction with a court order, may be empowered to close or isolate an area.

The question of who has the authority to order an evacuation will have to be decided on a case-by-case basis. Issues to be considered are the ownership of property, the level, type and impact of the problem, existing operating agreements or plans, applicable court orders, statutory authorities, and any overlapping responsibilities.

It is quite likely that concurrent, and perhaps even conflicting, responsibilities exist and should be worked out by mutual agreement.

Similarly, the power to terminate an evacuation may be concurrent with several entities and it would be possible for those entities to have differing opinions and considerations as to where an area needs to be closed or to remain closed. Theoretically one entity might terminate the closure and another reinstitute it because of its particular concerns. This would be possible whenever concurrent powers are involved and where no operating agreement or plan defining those types or command decisions has been adopted by all of the concerned parties.

In-Place Protection

In-place protection activities operate on the theory that toxic vapors pass over structures without moving inside them. Research and accident investigations indicate that staying indoors may provide safe haven during toxic cloud releases. However, sustained continuous releases may eventually filter into a structure and endanger the occupants.

Several factors may influence the in-place protection decision. The Incident Commander may have to make critical protection decisions based upon weather conditions and forecasts. High humidity and warm air can force vapors toward the ground. In addition, air ventilation and air conditioning ducts may draw toxic vapors into buildings.

In-place protection may be a viable option when:

- The hazardous material has been identified and is a moderate to low health hazard.
- Personnel are limited to assist with the evacuation, and isolation zones cannot be properly managed.
- The hazardous material has been totally released from its container and is quickly dissipating.
- The hazardous material is a migrating toxic vapor cloud, and the citizens are safer inside the building than they would be outside of it.
- Short duration solid or liquid leaks are present.
- Migrating vapor clouds low in toxicity and quantity are occurring.
- Vapor clouds form "puff" or migrating plume patterns, e.g., clouds that will quickly disperse and are not from a fixed, continuous point source.
- Leaks can be rapidly controlled at their source.

EXAMPLES

In order to provide some guidance within the HMICP concerning emergency management of a hazardous material incident five examples are provided:

Example 1:

A tanker truck containing a hazardous material overturns on a freeway, releasing its contents. The first arriving California Highway Patrol officer becomes the Scene Manager, as per Section 2454 California Vehicle Code, and the State Agency Coordinator (since this is an on-highway incident), and establishes a command post. The CHP officer contacts the CHP dispatcher to effect notification

and requests a response from CALTRANS, the local fire department, and the local environmental health department. The CHP isolates the scene and denies entry, attempts to identify the material (if it can be done safely), identifies and isolates contaminated victims (if it can be done safely). The senior ranking CHP member present at the scene assumes the role of Incident Commander/Scene Manager/State Agency Coordinator and establishes an Incident Command System using available personnel. A unified command is created with a representative from the CHP, CALTRANS, fire department, and consulting with the driver of the vehicle (representing the handler). The overall incident management and coordination of the entire operations the responsibility of the Incident Commander/ Scene Manager.

As the State Agency Coordinator, the CHP is also responsible for coordinating requests for mutual aid from other state agencies, if required. The CHP will act as the Liaison Officer and Public Information Officer until such time as that responsibility is delegated to someone else. CALTRANS will be responsible for ensuring cleanup of the highway, up to the right-of-way. Generally CALTRANS will use their in-house teams or a hazardous material cleanup contractor to conduct cleanup, and thus may fulfill the role of Operations, Finance and Logistics Section (in coordination with the CHP and the handler). Prior to initiating cleanup the representative of the handler is given the opportunity to engage their own resources to abate and mitigate the incident. The actions of the handler must receive the concurrence of the Incident Commander/Scene Manager to ensure a safe and adequate response. One of the representatives from environmental health may act as the Planning Section, providing technical reference information on the characteristics of the chemical, and potential toxicological and environmental impacts. Another environmental health representative or fire department member may be appointed as the Safety Official. A fire captain may be appointed to act as the Operations Section Chief.

Note: The Incident Commander/ Scene Manager fulfills all positions unless delegated. Also note: If the hazardous material release originates off of the right-of-way, even though it resulted from a motor vehicle accident, then the release would be considered an off-highway incident.

This example illustrates the appropriate management of an on-highway hazardous material incident, in which the CHP fulfills the role of Incident Commander, Scene Manager and State Agency Coordinator.

Example 2:

A suspected hazardous waste "midnight dump" is discovered in a field (off highway) in an unincorporated area of a rural county. Action has been taken previously by the Board of Supervisors to appoint the County Sheriff as the Scene Manager. As first on-scene public official, the sheriff's deputy initiates notification to the appropriate agencies and assumes all roles until other requested qualified responders arrive. The sheriff's deputy isolates the scene and denies entry and attempts to determine the nature of the chemicals (if it can be done safely). The sheriff's deputy makes a preliminary determination that the property owner is not culpable. The fire department arrives, but none of the personnel are qualified to act as an Incident Commander, and thus the sheriff's deputy will fulfill the role of both Scene Manager and Incident Commander. If state agencies are needed on the scene, the State Agency Coordinator is the representative of the California Department of Fish and Game (since this is an off-highway incident), who should be notified and is part of a unified command. In this case, both Scene Management and Incident Command will remain with the sheriff. If the fire department personnel were adequately trained, either by prior agreement or by an on-scene decision, Incident Command could be transferred to the fire department. If a neighboring public agency hazardous material team or private cleanup contractor is accessed, neither will generally accept Incident Command responsibilities.

Note: if this incident occurred on a highway or highway right-of-way within CHP jurisdiction, the CHP would establish Scene Management/Incident Command. The CHP would also notify its Hazardous Material/Waste Investigators who would conduct a follow-up investigation and seek prosecution, as appropriate.

This example illustrates the designation of management responsibilities and on-scene management decision-making for an off-highway hazardous material incident.

Example 3:

An ocean going oil tanker has entered one of California's deep water ports when it collides with another vessel. Oil tanks are breached and crude oil is discharged into the water. The representative of the tanker notifies the appropriate agencies and has accepted the role of responsible party. The RP maintains that their company will provide a safe and adequate response. A representative of the local jurisdiction in whose waters the incident has occurred and a representative of the U. S. Coast Guard Captain of the Port acting as the federal On-Scene Coordinator, along with a representative of the California Department of Fish and Game (State Agency Coordinator) should form a unified command in consultation with the RP. The Command Staff allows the tanker company representative to conduct abatement and mitigation activities under the Operations Officer (appointed by the Incident Commander), as long as the actions taken provide a safe and adequate response to the incident, in the opinion of the members of the Command Staff. The RP will usually obtain the services of one of the oil spill cooperatives. If the spill is major the Coast Guard may activate the resources of the Pacific Strike Team and those of the Navy.

If the company representative takes actions that are determined to be inappropriate or insufficient to protect the public health, safety, or the environment, the public representatives may activate their funding mechanisms (individually or collectively) and assume the responsibilities of ensuring a safe and adequate response. In this case, if no Scene Management provisions have been established legislatively by local government (since this is an off-highway incident), there is no Scene Manager as part of the organizational structure. The Incident Commander then fulfills the responsibilities of the Scene Manager.

This example illustrates the coordination responsibilities of state/federal/local officials at an off-highway (marine) incident and the role of the responsible party in abating and mitigating an oil spill. This example also addresses the funding aspects of the management of the incident by the public and private sectors.

Example 4:

A fixed facility experiences a major uncontrolled release to air and water of a hazardous material, that may require evacuation. The facility borders two jurisdictions and the hazardous material is impacting both areas. A Unified Command should be established comprising; the Scene Managers from both jurisdictions (if designated), the Incident Commanders from both jurisdictions (if different from the Scene Managers), the State Agency Coordinator representative (from Department of Fish and Game and/or the California Highway Patrol [if a highway is impacted]), and the federal On-Scene Coordinator (EPA if inland, or Coast Guard if in the coastal area).

The facility emergency coordinator should be consulted by the Command Staff. The law enforcement representatives in charge of the evacuation would generally be attached to an Evacuation Group within the Operations Section. The facility representative would be given the opportunity to abate the release within the facility property, if a safe and adequate response can be provided in a timely manner. An overall Incident Commander should be appointed from within the unified command, generally this would be the Incident Commander from the jurisdiction where the spill originated; or the most qualified person available.

Note: Wherever possible, the number of people in the Unified Command should be minimized by delegation or deferral, if permitted.

This example highlights the necessity to establish clear lines of authority and responsibility in hazardous material emergencies, especially in complex and multi-jurisdictional incidents.

Example 5:

A main line railroad freight train traveling down the Central Valley of California carrying a mix of freight derails on the approach of a river bridge near the city limits of a valley city. The railroad operations center located elsewhere in the state receives a two way radio report from the train crew that they are experiencing an emergency brake application. They advise the operations center that they are going to investigate. The train Conductor and the Engineer should have copies of the train's consist (manifest) listing the contents of all the railroad cars in the train. The operations center also has a computer list of the train's cars and contents. Within the next five minutes the train crew has walked back and found the rear half of the train derailed, a release of hazardous material, and a fire. The train crew advises their operations center of the situation. The railroad operations center calls the local emergency responder's communications center via a predetermined long distance emergency phone number (area code and seven digit number) and activates the railroad's internal hazardous material response mechanism. The operations center also ensures that the State Warning Center, the National Response Center and the local Administering Agency are notified of the incident. If the railroad operations center had not called, as required by law, they could have been contacted by the local emergency dispatch center or the Incident Commander via a predetermined emergency 800 or long distance telephone number.

An Incident Command Post is established consisting of local fire and law personnel along with a representative of the railroad train crew. A representative of California Department of Fish and Game (State Agency Coordinator) and Regional Water Quality Control Board joins the Command Staff upon arrival. The railroad's hazardous material team is in contact and verbally coordinating with the Command Post while in transit to the scene. In conjunction with the railroad's operations center, the railroad's hazardous material personnel are providing technical information to the local emergency responders and arranging for resources to assist in abatement and mitigation of the spill and derailment. Upon arrival, the railroad's hazardous material team is brought into the Command Post and allowed to conduct operations with the concurrence of the Incident Commander and the rest of the appropriate agencies. Fire suppression activities are coordinated with the local fire department to ensure that appropriate actions are taken to protect the public health, safety and environment. The predetermined notification and communication between the public and private sector is critical to the effective management of the incident.

This example depicts management of a hazardous material incident that is enhanced by effective communication and coordination, including pre-established notification procedures.

For all of the above examples a safety official, liaison officer and public information officer should be appointed. A safety official must be appointed if any contact or potential contact with the hazardous material is likely.

SAFETY

The Safety Official's function at the incident is to assess hazardous and unsafe situations and develop measures for assuring personnel safety.

The position of safety official for a hazardous material incident is critical for protecting the safety of emergency responders and the public. The safety official is mandated in both 29 CFR part 1910.120 and Section 5192 of the CCR. "The individual in charge of the ICS shall designate a safety official, who is knowledgeable in the opera-

tions being implemented at the emergency response site, with specific responsibility to identify and evaluate hazards and to provide direction with respect to the safety of operations for the emergency at hand... **When activities are judged by the safety official to be an IDLH [immediately dangerous to life and health] condition and/or involve an imminent danger condition, the safety official shall have the authority to alter, suspend, or terminate those activities** [emphasis added]. The safety official shall immediately inform the individual in charge of the ICS of any actions needed to be taken to correct these hazards at an emergency scene."

In a multi hazard response, where there are other responders in potentially dangerous situations in addition to a hazardous material group (response team) engaging in specialized emergency activities to abate the release or threatened release, an additional safety official should be appointed to coordinate safety related activities directly relating to the hazardous material team (group). The hazardous material safety official's authority shall derive from the overall safety official but shall report to the hazardous material group supervisor or equivalent. For a further discussion of the hazardous material safety official, refer to Appendix 2.

LIAISON

The Liaison Officer is the member of the Command Staff with responsibility for interacting with representatives from assisting or cooperating agencies. All arriving responders should coordinate with the Liaison Officer prior to, or upon, arrival to an incident scene. The Liaison Officer provides a point of contact for assisting/cooperating Agency Representatives, responds to requests from incident personnel for inter-organizational contacts and monitors incident operations to identify current or potential inter-organizational contacts. **Assuring that notification is conducted is the responsibility of the Liaison Officer.**

STATE AGENCY COORDINATOR (SAC)

SAC is a representative of either the CHP (for on-highway incidents) or the Department of Fish and Game (DFG) (for off-highway incidents). The first state official on scene shall assume the responsibility of the SAC until relieved by the CHP or DFG. Where state agency participation is required, the SAC supports the Incident Commander by coordinating state resources and maintains liaison with the Federal On Scene Coordinator (if present). The SAC shall obtain and provide pertinent information for state agencies (i.e., information pertaining to the public health, safety and environment impacting the mandate of the state agencies) and shall provide assistance to the Incident Commander in prioritizing and acquiring state resources necessary to mitigate and abate the incident.

ON SCENE COORDINATOR (OSC)

The OSC is the federal official that "directs response efforts and coordinates all other [federal] efforts at the scene of a discharge or release." In California, the OSC is generally the U.S. Coast Guard for the greater coastal areas and the U.S. Environmental Protection Agency (EPA) for the inland areas. In some circumstances the OSC may be a representative from the Department of Defense, Department of Energy or other federal agency. "The OSC... shall, to the extent practicable, collect pertinent facts about the discharge or release, such as its source and cause; the identification of potentially responsible parties; the nature, amount, and location of discharged or released materials; the probable direction and time of travel of the discharged or released materials; the pathways to human and environmental exposure; the potential impact on human health, welfare and safety and the environment; the potential impact on natural resources and property which may be affected; priorities for protecting human health and welfare, and the environment; and appropriate cost documentation... The OSC's/RPM's (Remedial Project Manager) efforts shall be coordinated with other appropriate Federal, State, local, and private response agencies." (National Contingency Plan)

The OSCs activities are determined by whether federal funding under the Oil Pollution Prevention, Response, Liability and Compensation Act (formerly section 311 (k) of the Clean Water Act) or the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA or Superfund) is being utilized. If these federal funds are not involved in the response, the OSC will monitor the response for appropriateness and compliance with federal environmental laws, prepare Pollution Reports (POLREPS), inform and coordinate with the [federal] Regional Response Team and act as a liaison with the Incident Command Staff and the State Agency Coordinator. In those circumstances, when in the opinion of the OSC that the responsible party is unwilling, unable or unidentified and the requirements of the incident exceed the capabilities of state and local government, the OSC may activate the funding available and direct the expenditure of federal funds in support of the response activities in addition to the OSC's monitoring responsibilities.

No distinction is made between the role of the Coast Guard or EPA OSCs in the National Contingency Plan other than their response areas. However, the Coast Guard will generally take a more aggressive role "to any discharge, or potential discharge of oil into the navigable waters of the United States... The presence of the federal OSC representative on-scene may not be necessary when state or local agencies take appropriate action. Phone coordination may be all that is necessary. However, when assistance is requested by state or local agencies, MSO [Marine Safety Office] will make every effort to go on scene. During a response, OSC personnel will:

- Coordinate the response with other agencies;
- Investigate the source, cause and violation or other laws;
- Assess cleanup feasibility;
- Determine when cleanup is satisfactory;
- Ensure recovered oil is properly disposed...

"[In hazardous material incidents the] OSC's role is to assist the state and local agencies with any technical advise and to monitor the response. The response will be federalized only when local agencies are unable to safely and adequately respond. Unlike oil pollution incidents, where Coast Guard personnel respond aggressively and often lead the investigation, ...response to hazardous chemicals is much more conservative. Often the Coast Guard is not the lead agency and ...OSC representatives act only as advisors to the Incident Commander." (U.S. Coast Guard Central and Northern California Coastal Zone Oil and Hazardous Substance Federal Pollution Contingency Plan)

NOTIFICATION

Notification is the process that ensures that the appropriate entities are informed of the occurrence of and details related to a release or threatened release of a hazardous material. Different agencies have different requirements for notification.

Section 2703 of Title 19 of the California Code of Regulations requires that "...a person [person means any employee, authorized representative, agent or designee of a handler] shall provide an immediate, verbal report of any release or threatened release of a hazardous material to the Administering Agency and the Office of Emergency Services as soon as:

1. A person has knowledge of the release or threatened release;
2. Notification can be provided without impeding immediate control of the release or threatened release; and
3. Notification can be provided without impeding immediate emergency medical measures..."

The immediate reporting "...shall not be required if there is a reasonable belief that the release or threatened release poses no significant present or potential hazard to human health, safety, property, or the environment." If there is a question in the mind of someone who has observed a release or threatened release of hazardous materials, whether the incident is significant or not, notification should be made. Notification should be made even if the impacts are potential or delayed .

The following is a discussion of the methodology of ensuring that appropriate local, state and federal agencies are notified of a hazardous material incident. Failure to notify may delay needed response mechanisms and may expose the Responsible Party to significant penalties.

Generally, the first number to call is to notify local emergency responders (i.e., fire, law enforcement, emergency medical services) by dialing **911 or an appropriate local telephone number for the jurisdiction in which the incident occurred.**

The 24 hour OES State Warning Center telephone number is 800-852-7550 or 916-427-4341. (For On-Highway incidents, the CHP must be notified by calling 911 pursuant to Sections 2453, 2454, and 23112.5 CVC.) The OES number is intended to be used as a single point of notification for appropriate state agencies. When adequate spill information is received the Warning Center will assign a Spill number (Control number) to the incident that can be used to track various activities associated with the incident. Notifying the Warning Center will satisfy the requirement to notify the State Emergency Response Commission (in California, the Chemical Emergency Planning and Response Commission) and the Local Emergency Planning Committees as required under Section 304 of SARA Title III. When the Warning Center is called, be prepared to provide the following information (Refer to figure 3.6):

- In what county the spill occurred
- Your name, address and phone number
- Name, address and phone number of reporting party, if different
- The substance(s) involved
- The quantity released or threatened to be released
- The location of the spill site
- What happened
- Name address and phone number of the responsible party
- What containment and/or cleanup actions have been taken
- If a body of water is involved
- Local agencies that are on scene and/or notified

The local Administering Agency must also be called by the handler if the call to 911 does not notify the Administering Agency.

The Federal Government has its own single point notification facility at the National Response Center (NRC). The NRC must be notified of oil spills, hazardous chemical releases, pipeline accidents, transportation accidents involving a hazardous material or oil, a release of radioactive material, and a release of etiological or hazardous biological material in excess of federal Reporting Quantities. **The National Response Center's 24 hour telephone number is 800-424-8802 or 202-426-2675.** Be prepared to report as much of the following as possible:

- Your name, address and telephone number
- Name of the party or individual responsible for the incident
- Mailing address of the responsible party
- Telephone number of the responsible party
- Date and time that the incident occurred or was discovered
- Specific location of the incident
- Name of the material spilled or released
- Source of the spilled material and
- Cause of the release and total quantity discharged
- Was material released to air ground, water or subsurface
- Amount spilled into water
- Weather conditions
- Vessel name, railcar/truck number or other identifying information
- Name of carrier
- Number and type of injuries or fatalities
- Whether evacuations have occurred
- Estimated dollar amount of property damage
- Description of cleanup action taken and future plans
- Other agencies that you have notified or plan to immediately notify

Figures 3.4-3.6 illustrate the decision-making process for notification, which agencies are contacted by the State Warning Center following notification and the telephone information form used by the State Warning Center:

Figure 3.4 NOTIFICATION FLOW DECISION TREE

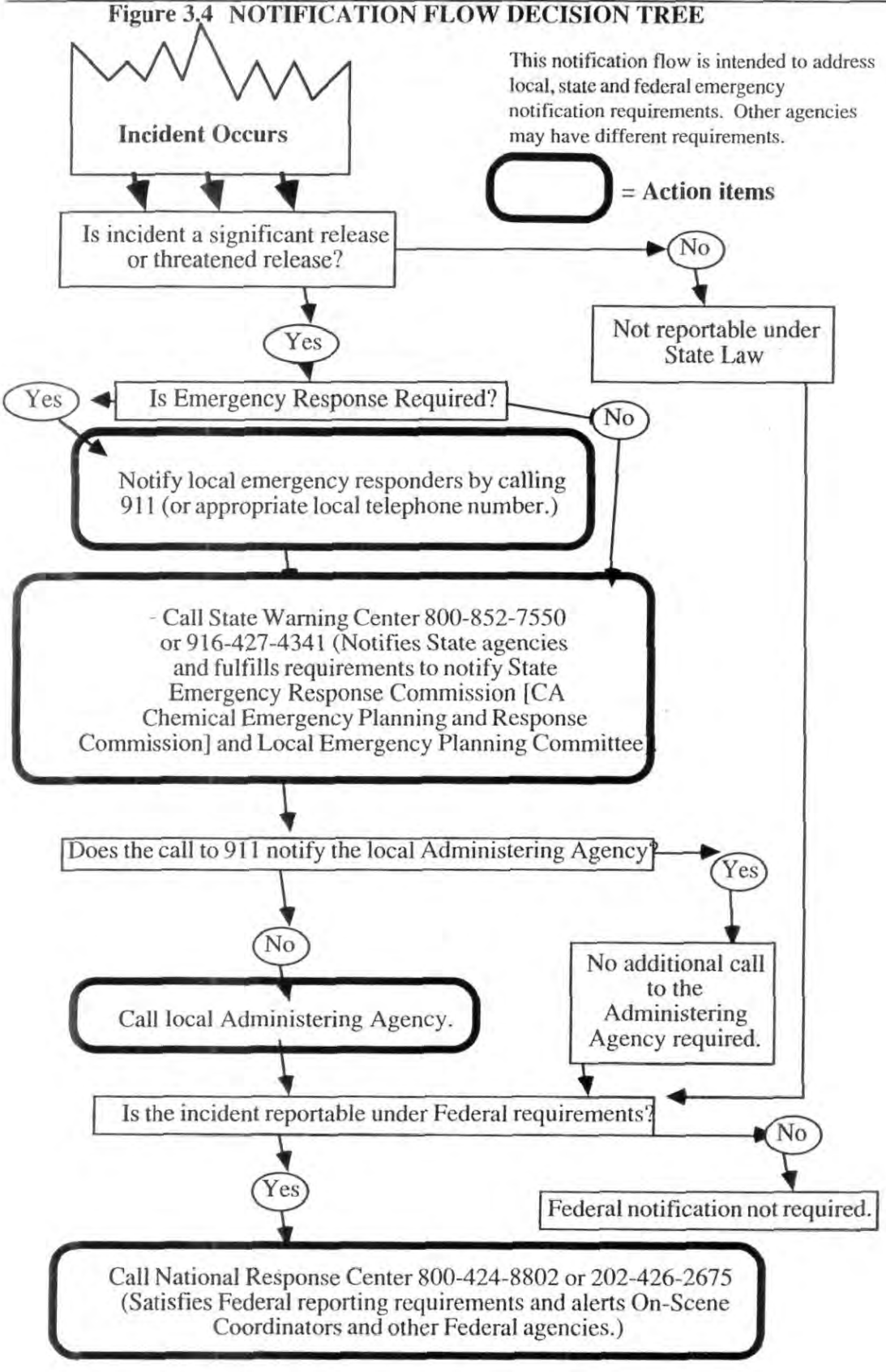
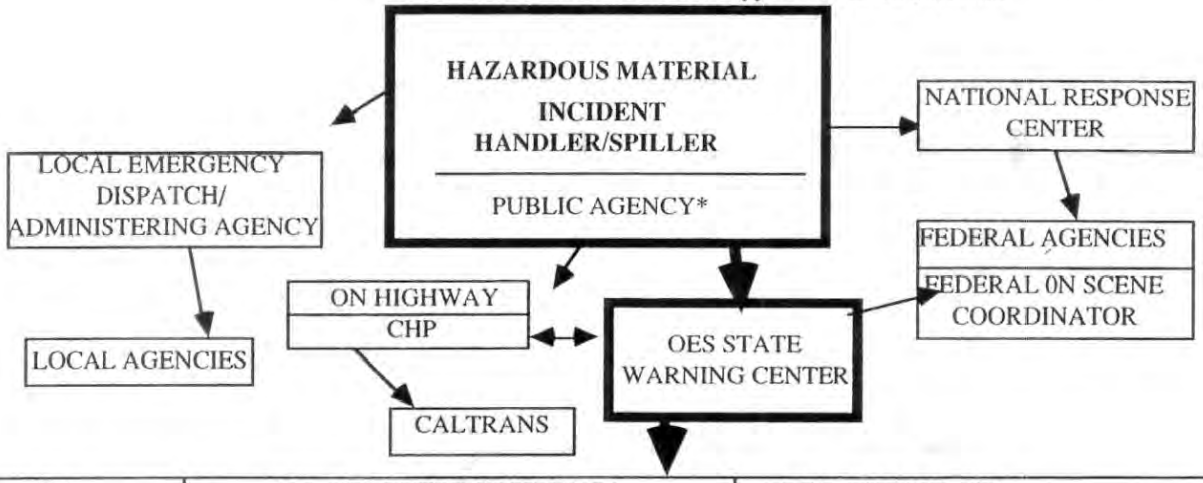


Figure 3.5 STATE WARNING CENTER DISSEMINATION OF NOTIFICATION INFORMATION

Not intended to be all inclusive or applicable for all incidents.



ALL	• ALL REPORTED INCIDENTS	DFG, RWQCB, EPA
MATERIAL INVOLVED	• Pesticide or Ag Chemical	DFA, RWQCB, DHS
	• Radioactive Material	DHS (Rad Health)
	• Oil	DFG, DOG, SLC, RWQCB, SWRCB
LOCATION	• On Highway	CHP
	• Off Highway	DFG
	• Water	RWQCB, DWR**, DFG, USCG, SLC
	• Industrial Incident with Injuries	DIR
	• Pipeline	CSFM
	• Railroad	PUC, CSFM
TYPE OF PROBLEM	• Large Number of Exposures with Health Effects or Medical Facilities Involved.	EMSA
	• Air Pollution	ARB
	• Water Pollution	RWQCB, DWR**, DHS***, DFG, SLC
	• Fish and Wildlife	DFG, USFWS
	• Public Health	DHS
	• Disposal	DHS

ARB-Air Resources Board
CALTRANS-California Department of Transportation
CHP-California Highway Patrol
CSFM-California State Fire Marshal
DFA-Department of Food and Agriculture
DFG-Department of Fish and Game
DHS-Department of Health Services
DIR-Department of Industrial Relations
DOG-Division of Oil and Gas
DWR-Department of Water Resources
EMSA-Emergency Medical Services Authority
EPA-U.S. Environmental Protection Agency
OES-Office of Emergency Services
PUC-Public Utilities Commission
RWQCB-Regional Water Quality Control Board
SLC-State Lands Commission
SWRCB-State Water Resources Control Board
USCG-U.S. Coast Guard
USFWS-U.S. Fish and Wildlife Service

*-requested, not required
**-impacting State Water Project
***-impacting public drinking water supplies

# #

STATE OF CALIFORNIA
OFFICE OF EMERGENCY SERVICES
STATE WARNING CENTER
VERBAL NOTIFICATION

DTG
COUNTY

Figure 3.6 HAZARDOUS SUBSTANCE SPILL REPORT

NOTIFIED OES _____ PHONE _____
REPORTED BY _____ PHONE _____
SUBSTANCE _____ QTY _____

SPILL SITE: P/L ☐ SHP ☐ RD ☐ O/F ☐ REF ☐ R/R ☐ S/S ☐ IND PLT ☐ DTG OCC/FND _____

LOCATION _____

ZIP

WHAT HAPPENED _____

CONTAINMENT/CLEANUP/WATER INVOLVED _____

RECEIVED BY

LCL AGENCIES ON SCENE/NTFD: FD ☐ SO ☐ PD ☐ CO DOH/HW ☐ CO OES ☐ AIR/Q ☐ NRC ☐

AGENCIES NOTIFIED

STATE AGENCIES	NAME	TIME		NAME	TIME	LOCAL AGENCIES & SPEC DISTRICTS	NAME	TIME
DFG			CDFA			DOH/CO		
RWQCB			CDF			E B PARKS		
SFM P/L			DPR			UC S BARB		
DOG			ST BAR			FRESNO CO		
SLC			**FEDERAL AGENCIES**			HUMBOLDT CO		
DHS/ST			EPA			LA CO FLOOD		
CAL/OSHA			USCG			SBDO CO		
PUC			USFWS			SOLANO CO		
CHP			FEMA IX			VENTURA CO		
CALTRANS			**OTHER**			SF FD		

CALIFORNIA HAZARDOUS MATERIAL INCIDENT CONTINGENCY PLAN 1990

PUBLIC INFORMATION

The primary role of the Public Information Officer (PIO) during a hazardous material incident is to provide emergency instructions and critical information through the media to the affected public. A secondary function is to provide the public (through the media) with accurate and complete information regarding incident cause, size, current status, resources committed, and potential short- or long-term impacts, if known. For large or complex incidents, or those involving numerous response agencies, PIOs from all responding agencies should work together in a joint information effort, with a Lead PIO appointed by the Incident Commander.

The PIO (Lead PIO in a team effort) should be included as an integral part of the Command Staff to ensure prompt access to the most complete, up-to-date status, response and health and safety information available.

Because a hazardous material incident can result in extreme responses from the general public, the PIO should be prepared to address inquiries of all types, particularly regarding health and safety issues. All release of information, whether verbal or printed should be coordinated through the PIO/Lead PIO to avoid release of conflicting instructions or information.

Section 409.5 of the California Penal Code allows duly credentialed members of the media to cross access lines in exercising their First Amendment rights. All reasonable efforts should be made to accommodate members of the media in their collection of the news. However, "upon determination by police personnel that unrestricted access of press representatives to disaster site will interfere with emergency operations, restrictions on media access may be imposed for only so long and only to such extent as is necessary to prevent actual interference, and members of press must be accommodated with whatever limited access to the site may be afforded without interference." [Leiserson v. City of San Diego (Appellate. 4 Dist.1986)] Further "a sheriff has a statutory duty to enforce the laws of the state and maintain public order and safety, and such duty implicitly carries authority to limit public access to certain events, including discretion to permit or not permit press and reporters to cross police lines." [Los Angeles Free Press, Inc. v. City of Los Angeles (1970)] Members of the media should be aware that any personnel and/or equipment exiting the Exclusion Zone (Hot Zone) may be subject to decontamination.

The following are examples of Public Information material from the MultiHazard Functional Planning Guidance to assist the Public Information team.

EMERGENCY PUBLIC INFORMATION CHECKLIST

The following Emergency Public Information (EPI) Checklist is specific to hazardous material incidents and should be considered in addition to the basic EPI Checklist within a jurisdiction's emergency plan. EPI actions will initially be taken by the On-Scene PIO Team using personnel assigned by the primary responding agency (additional EPI Staff may be requested from the jurisdiction). The EPI Staff at the Emergency Operating Center (EOC) will be mobilized depending on the extent of the hazard. Media should be briefed periodically throughout the year on hazardous material incident response procedures and related EPI procedures. All press releases must be cleared through the Incident Commander/Scene Manager and technical adviser at the scene or Emergency Manager at the EOC.

Unidentified Material

- If an incident is in a heavy traffic area, and alternate routes are available, notify media (radio) and request frequent announcements of instructions to avoid the area. (Coordinate announcements with responding law agency.)

- Notify media with full explanation as soon as material has been identified. (Clear with Incident Commander/Scene Manager and technical adviser to avoid unduly alarming or confusing the public.)
- If traffic will not impede response efforts, simply respond to media inquiry, as necessary.

Low Hazard/Confined Incident - No General Evacuation

- If appropriate, notify media (primarily radio) that incident has occurred.
- Indicate alternate routes for traffic and request frequent announcements of instructions to avoid the area.
- Indicate nature of incident, precautions for public.
- Release hotline number for public inquiries (if available and staffed).
- Indicate response agencies involved (coordinate with response agency PIOs), clean-up efforts underway, time frame for resumption of normal traffic patterns, if known.

High Hazard Incident- General Evacuation Requested/Mandatory

- Release all of the above information.
- Release evacuation instructions to media (radio). Use established Emergency Broadcast System (EBS) procedures as appropriate.
- Release mass care information when known (coordinate with American Red Cross).
- Have medical/technical spokesperson(s) available to describe the nature of the toxic substance, possible symptoms, precautions for the public to take.
- Hold media briefing(s) at scene where Incident Commander/Scene Manager and medical/technical spokesperson can answer media questions. Arrange for Emergency Manager to hold similar media briefings at the EOC if needed. Spokespersons should be prepared to answer questions similar to those listed below. Suggested responses or cautions are given in quotations:

- How many deaths/injuries were there? Any property damage?
- What response agencies were involved?
- Why was evacuation ordered? Why wasn't evacuation ordered? Number of persons evacuated.
- What are the long-term effects on people and the environment? Note: Long-term studies have not been done on most chemicals. Be careful not to speculate.
- What chemicals are involved? How toxic are they? What symptoms are produced? What are their normal uses? What precautions should residents take?
- What company/agency was involved? Is legal action being considered? Unless a definite Yes or No answer is known, do not speculate. Indicate "I don't know at this time," or "That would be the responsibility of the _____ and I can't answer for them".
- Has the company been involved in any other incidents recently?
- Does this jurisdiction have a plan for response to such incidents? If not, why? If so, how did it work? Answer honestly. If there are areas of improvement needed, or if more time is required to fully evaluate response procedures used, so indicate.
- What hazardous material incident training is required for your response personnel?
- How can such incidents be avoided in the future? Do not speculate. "This is a subject all the agencies involved, including the_____ company will be evaluating during the next few months. We all want to avoid incidents of this type if at all possible."

HAZARDOUS MATERIAL INCIDENT PIO SAMPLE NEWS RELEASES

Sample Media Message:
Unidentified Spill/Release in Heavy Traffic Area

This is _____ at the _____. An unidentified substance which may be hazardous has been spilled/released at_____(specific

location). Please avoid the area, if possible, while crews are responding. The best alternate routes are _____ and/or _____.

If you are already in the area, please be patient and follow directions of emergency response personnel. The substance will be evaluated by specially trained personnel, and further information will be released as soon as possible.

Thank you for your cooperation.

Sample Media Message:
Low Hazard/Confined Incident - No General Evacuation

This is _____ *at the* _____. A small amount of _____, a hazardous substance, has been spilled/released at _____. Streets are blocked, traffic is restricted, and authorities have asked *residents in the immediate* _____ *block* area to evacuate. Please avoid the area. The material is slightly/highly toxic to humans and can cause the following symptoms: _____ _____.

If you think you may have come in contact with this *material, you should (give health instructions and* hotline number, if available. For your safety, please avoid the area if at all possible. Alternate routes are _____ _____ and traffic is being diverted. If you are now near the spill/release area, *please follow directions of emergency response personnel.* Cleanup crews are on the scene. Thank you for your cooperation.

(Optional: Close windows and vents. Do not use heaters or air conditioners and other in place protection information.)

Sample Media Message:
High Hazard - General Evacuation
Requested/Mandatory

(Suggest EBS use; request repeated broadcast.)

This is _____ at the _____. A large/small amount of _____, a highly hazardous substance, has been spilled/released at _____. Because of the potential health hazard, authorities are requesting/requiring all residents within _____ *blocks/miles of the area to evacuate. If you are* (give evacuation zone boundaries) , you and your family should/must leave as soon as possible/now. Go immediately to the home of a friend or relative outside the evacuation area or to _____. If you can drive a *neighbor who has no transportation, or notify friends* or neighbors with hearing impairments, please do so. If you need transportation, call _____. Children attending the following schools: _____(list) _____ *will be evacuated to* _____.

Do not drive to your child's school. Pick your child up from school authorities at the evacuation center. Listen to this station for instructions.

[Optional

The material is highly toxic to humans and can *cause the following symptoms:*

_____ _____.

If you are experiencing any of these symptoms, seek help at a hospital outside the evacuation area, or at the evacuation center at _____.]

To repeat, if you are in the area of _____, you should/must leave, for your own safety. Please do not use your telephone unless you need emergency assistance.

Summary Statement for Media: Hazardous Material Incident

(TO BE ADAPTED ACCORDING TO THE SITUATION)

At approximately _____ A.M./P.M.. today a spill/release of a potentially hazardous substance was reported to this office by (a private citizen, city employee, etc.) . (Police/fire) units were immediately dispatched to cordon off the area and direct traffic. The material was later determined to be (describe) , a (hazardous/harmless) (chemical/substance/material/gas) which, upon contact, may produce symptoms of _____. Precautionary evacuation of the (immediate/X-block) area surrounding the spill was (requested/required) by (agency) . Approximately (number) persons were evacuated.

Clean-up crews from (agency/company) were dispatched to the scene, and normal traffic had resumed by (time) , at which time residents were allowed to return to their homes.

There were no injuries reported OR _____ persons, including (fire, police) personnel, were treated at area hospitals for _____ and (all, number) were later released.

Those remaining in the hospital are in _____ condition. Response agencies involved were _____.

Contents

SECTION 4

OPERATIONS 2

OPERATIONS

The Operations Officer is responsible for the direct management of all incident tactical activities.

This portion of the HMICP presents a concept of operations and an overview of resources for the operational aspects of a hazardous material response. It will not provide response information that an Operations Officer would use for the field management (abatement and mitigation) of a hazardous material incident. For a first on-scene checklist refer to page 1-2. Operational response information should be obtained from agency or local jurisdiction plans and standard operating procedures and should be used in conjunction with the HMICP.

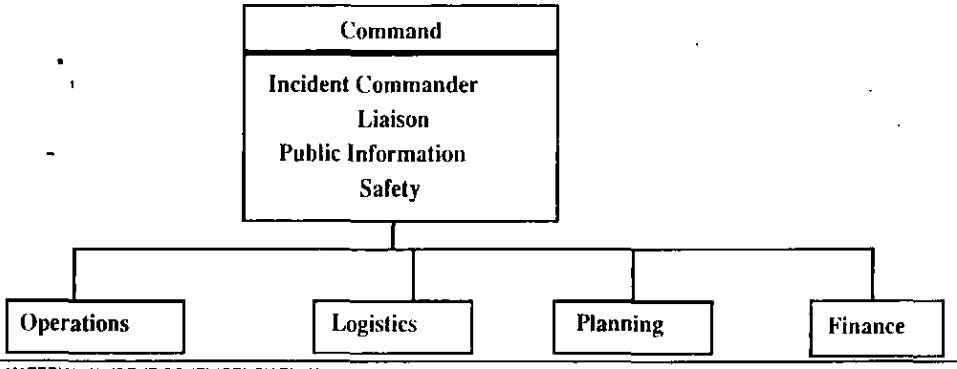
Appropriate management of a hazardous material incident will often involve the movement of personnel and equipment in a potentially hazardous situation. In order to minimize the danger to responders, the public and the environment, the Operations Section must take definitive action while taking all due caution. The activities associated with Operations require an understanding of control zones, the differentiation of levels of hazardous material emergency response training, the different levels of personal protective equipment and the primary groups (or teams) involved in effecting a task under the Operations Officer. This section is intended to provide sufficient background so that interaction with the Operations Section is done with a common understanding.

The Operations Section, when fully activated, should take direction from the Command Staff to implement public and environmental protection strategies developed by the Planning Section. Resources should be acquired through Logistics and funding issues addressed by the Finance Section. This separation of functions will allow the Operations Section to carry out its responsibilities efficiently. However, the first on-scene responders will have to perform the functions of all of the sections until such time as sufficient numbers of trained personnel arrive at the incident.

State agencies will perform Operations functions consistent with their training, such as traffic management or first on scene activities. CDF maintains several hazardous material teams as part of their county fire contracts. As a general rule, state agencies will act in support of local operations personnel. (Coastal oil spills or radiological releases may exhibit stronger state operational roles than other types of hazardous material emergencies.)

An ICS schematic (Operations) follows:

Figure 4.1 ICS Schematic (Operations)



Concept of Operations

The Operations section is the "nuts and bolts" of hazardous material response. It is also the most dangerous. Only those responders who are appropriately trained and equipped, and have an operational role should be inside the control zones (Appendix 2).

Hazardous Material Control Zones

Control zones are the geographical areas within the control lines set up at a hazardous material incident. The three most commonly used are the:
- Exclusion Zone,
- Contamination Reduction Zone, and
- Support Zone.

The size and configuration of the zones are not static and should constantly be re-evaluated based on factors such as wind direction, release rate etc.

Exclusion Zone- that area immediately around the spill. That area where contamination occurs or could occur. The innermost of the three zones at a site. Special protection is required for all personnel while in this zone (Formerly referred to as the Hot Zone).

Contamination Reduction Zone- that area between the Exclusion Zone and the Support Zone. This zone contains the personnel decontamination station. This zone may require a lesser degree of personnel protection than the Exelusion Zone. This area separates the contaminated area from the Support Zone and acts as a buffer to reduce contamination of the Support Zone (Formerly referred to as the Warm Zone).

Support Zone- the clean area outside of the Decontamination Control line where equipment or personnel are not expected to become contaminated and where special protective clothing is not required. This is where resources immediately supporting the hazardous material operation are located. The Command Post and media briefing site are located within the support zone. (Formerly referred to as the Cold Zone).

SPECIAL NOTE: Use of Exposure Values

The effect of a hazardous substance is based on a reaction of exposed organisms or ecosystems to exposure. Various criteria are used to establish exposure limits to chemicals such as; threshold limit value [TLV], short term exposure limit [STEL], immediately dangerous to life and health [IDLH], permissible exposure limits [PEL], emergency response planning guidelines [ERPG], etc. Recommended protection may vary widely based on the methodology used to determine these values. Care should be taken in using exposure values as the primary determinant of zone locations and protective action decisions. Victims can be allergic (hypersensitive), old, young, or infirm, and thus, be more at risk from exposure.

Activities Undertaken within Control Zones

Within the exclusion zone, responsibilities include:
- identifying the material(s) involved or threatened to be released,
- conducting rescue, if appropriate
- containing and abating the release or threatened release

Within the contamination reduction zone, responsibilities include:
- decontamination of victims and emergency personnel, and
- establishing a safe refuge area

Within the support zone, responsibilities include:
- providing for emergency medical care,
- providing an area for resources and staging,
- controlling access to all zones, and
- maintaining contact with the Incident Commander at the Incident Command Post

Outside of the control zones, responsibilities include:

• providing evacuation of endangered persons

Hazardous Material Responder Levels of Training

According to the final rule of 29 CFR 1910.120, there are five levels of "employees who participate, or are expected to participate, in emergency response..." These are minimum levels of training and should be considered the basis for all responders. Higher degrees of initial and continuing training are recommended. The training should be based on hazards that may be expected to be encountered.

First Responder Awareness Level

First responders at the awareness level are individuals who are likely to witness or discover a hazardous substance release and who have been trained to initiate an emergency response sequence by notifying the authorities of the release.

First Responder Operations Level

First responders at the operations level are individuals who respond to releases or potential releases of hazardous substances as part of the initial response to the site for the purpose of protecting nearby persons, property, or the environment from the effects of the release. They are trained to respond in a defensive fashion without actually trying to stop the release. Their function is to contain the release from a safe distance, keep it from spreading, and prevent exposures.

Hazardous Materials Technician

Hazardous materials technicians are individuals who respond to releases or potential releases for the purpose of stopping the release. They assume a more aggressive role than a first responder at the operations level in that they will approach the point of release in order to plug, patch or otherwise stop the release of a hazardous substance.

Hazardous Materials Specialist

Hazardous materials specialists are individuals who respond with, and provide support to, hazardous materials technicians. Their duties parallel those of the hazardous materials technician. However, their duties require a more directed or specific knowledge of the various substances they may be called upon to contain. The hazardous materials specialist would also act as the site liaison with federal, state, local and other government authorities in regard to site activities.

On Scene Incident Commander

Incident commanders, who will assume control of the incident scene beyond the first responder awareness level, shall receive at least 24 hours of training equal to the first responder operations level and, in addition, have competency in the following areas and the employer shall so certify:

- Know and be able to implement the employer's Incident Command system.
- Know how to implement the employer's emergency response plan.
- Know and understand the hazards and risks associated with employees working in chemical protective clothing.
- Know how to implement the local emergency response plan.
- Know of the state emergency response plan and of the Federal Regional Response Team.
- Know and understand the importance of decontamination procedures.

These categories of responders are similar to those who are likely to be encountered in the field. All public agency employees that have the potential of being involved in a hazardous material incident should have, at the minimum, first responder awareness level training. **Do not assume what level of training responders might have.**

Personal Protective Equipment (PPE)

Personal Protective Equipment and clothing is required to shield or isolate the person from chemical, physical and thermal hazards that may be encountered at a hazardous material incident. Adequate personal protective equipment should protect the respiratory system, skin, eyes, face, hands, feet, head, body, and hearing. Personal protective equipment includes both personal protective clothing and respiratory protection. PPE is divided into four categories based on the degree of protection needed. The following descriptions are not definitive. Federal OSHA regulations 29 CFR 1910.120 and National Fire Protection Association (NFPA) proposed standards 1991, 1992 and 1993 address PPE in greater detail.

An unidentified product with unknown properties should be approached only in Level A (vapor protective suit) or B (liquid splash protective suit) protection with positive pressure self-contained breathing apparatus (SCBA). Never use personal protection equipment unless you are properly trained and feel comfortable with its use. Hazardous material PPE does not protect against fire or explosion unless additional types of protection are used.

Level A- to be selected when the greatest level of skin, respiratory, and eye protection is required. (Vapor protective suits or fully [or totally] encapsulating suits and SCBA.)

Level B- the highest level of respiratory protection is necessary, but a lesser level of skin protection is needed. (Liquid splash protection with SCBA.)

Level C- respiratory protection can be provided with respirators and skin contact with the material will not cause an adverse affect or be absorbed through any exposed skin. (Liquid splash protection with air purifying respirator.)

Level D- a work uniform affording minimal protection, used for nuisance contamination only.

Note: Combinations of personal protective equipment other than those described for Levels A, B, C, and D protection may be more appropriate and may be used to provide the proper level of protection.

Hazardous Material Response Teams

Within California there are numerous agencies and firms that provide personnel and equipment for the purpose of providing emergency response to hazardous material incidents.

Jurisdictions, agencies and private firms have different levels of capability. The following will be a brief discussion of hazardous material response teams that may be encountered in the field, distinguishable by level of personal protective equipment used.

Levels C and D

Teams that have Level D capability do not enter potentially hazardous atmospheres since they do not use respiratory protection. Level C will involve use of respirators only for respiratory protection. Thus, capabilities are limited to initial evaluation of the hazards, activities that can be accomplished outside the exclusion zone, or when the material involved has been determined to be acceptable to Levels C or D Personal Protective Equipment.

Examples include a CALTRANS Spill Control Team or a local environmental health team that provides analyses of samples (but does not do sampling).

Levels A and B

Those agencies with Levels A and B protection are usually capable of entry into hazardous atmospheres. Areas that require complete skin protection require Level A protection. Level A and B response teams can operate in the exclusion zone, obtain and analyze samples, provide rescue, and take measures to stop or lessen the release or threat of release. Fire departments, private cleanup firms,

and some environmental health agencies may have the personnel who usually perform Level A and B activities.

Public agencies that have a hazardous material team with Level A or B capabilities will generally provide the following assistance:

- Identification and control (abatement) of the hazardous material.
- Make appropriate recommendations to the Incident Commander, including evacuation of the area and scene personnel safety.
- Upon request of the Incident Commander, obtain samples and place in container as needed. (Responsibility for identification of samples beyond the capability of the hazardous material team and for transportation of samples rests with the requesting agency.)
- Keep accurate accounting of expendable materials used at the scene.

A hazardous material team member, generally, will not:

- Be the Incident Commander,
- Make a commitment for, or authorize, clean-up (mitigation) services;
- Make a news release or provide information to news media except through the Incident Commander or designated Public Information Officer.

Specialized Equipment

Hazardous material incidents often require specialized equipment to accomplish the task of abatement of the release or threatened release. Some of the resources needed are readily available to emergency responders such as sand, water and foam from a fire engine, or the DOT Emergency Response Guidebook. Other forms of equipment are highly specialized and not widely distributed. Examples include sophisticated monitoring and sampling devices and totally encapsulating suits.

The space constraints of this Plan do not permit a thorough discussion of specific equipment used in hazardous material incidents. Equipment use and familiarity should be addressed during responder training. All agencies are encouraged to ascertain what equipment is available for hazardous material response both within their organization or otherwise acquirable.

Protective Actions

When a toxic plume is released or threatened to be released, there are two alternatives available for protecting the public. Evacuation entails removing people from the plume's path while in-place protection (formerly referred to as sheltering in-place) uses existing shelters as a buffer to allow the plume to pass over the potential victims. The decision to use either of these methods is determined by the Incident Commander, in consultation with the Operations and Planning Sections. If an evacuation is to be conducted, an Evacuation Group in the Operations Section should be formed. Refer to the Command Section of this plan for a further discussion of protective actions, including the authority to order an evacuation.

Decontamination (Contamination Reduction)

Decontamination is the physical and/or chemical process of reducing and preventing the spread of contamination from persons and equipment used at a hazardous material incident.

At every incident involving hazardous materials there is a possibility that response personnel and equipment will become contaminated. A contaminant poses a threat, not only to the persons contaminated but to other personnel who they may contact or subsequent contact with contaminated equipment.

Incident responders should have an established procedure to minimize contamination or contact, to limit migration of contaminants, and to properly dispose of contaminated materials. Decontamination procedures should be established upon arrival at the scene, should provide for an adequate number

of decontamination personnel, and should continue until the incident commander determines that decontamination procedures are no longer required. Decontamination of victims may be required.

Decontamination consists of removing the contaminants by chemical or physical processes. The conservative action is always to assume contamination has occurred and to implement a thorough, technically sound, decontamination procedure until it is determined or judged to be unnecessary.

Procedures for all phases of decontamination must be developed to reduce the possibility of spreading contamination to personnel and equipment. If protective equipment is grossly contaminated, use appropriate decontamination methods for the chemicals encountered.

Initial procedures should be upgraded or downgraded as additional information is obtained concerning the type of hazardous materials involved, the degree of hazard, and the probability of exposure to response personnel and equipment. (Adapted from NFPA 471.)

Contents

SECTION 5

LOGISTICS 2

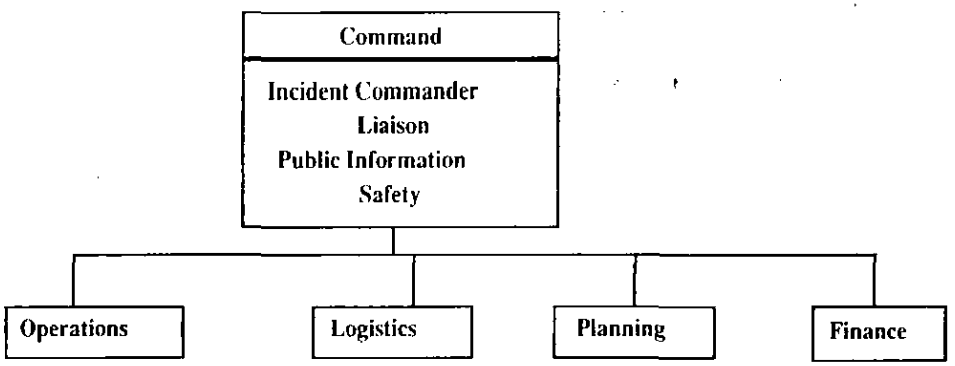
LOGISTICS

Logistics includes all support needs to the incident. The Logistics Section would also order all resources for related off-incident locations. These resources could include facilities, special expertise, transportation, supplies, equipment maintenance and fueling, feeding, communications, and medical support services.

State agencies will provide logistical support to responding agencies within the capabilities of their resources. For major incidents OES may activate the state's disaster response mechanism (i.e. the State Operations Center) to address resource shortfalls.

An ICS schematic (Logistics) follows:

Figure 5.1 ICS Schematic (Logistics)



Introduction

Logistics is the function that acquires and maintains the necessary resources to support the overall incident management. A jurisdiction or agency should use those resources under their control prior to accessing outside supplies. A good emergency plan will identify and delineate the location of supplies, and how they can be acquired within a community.

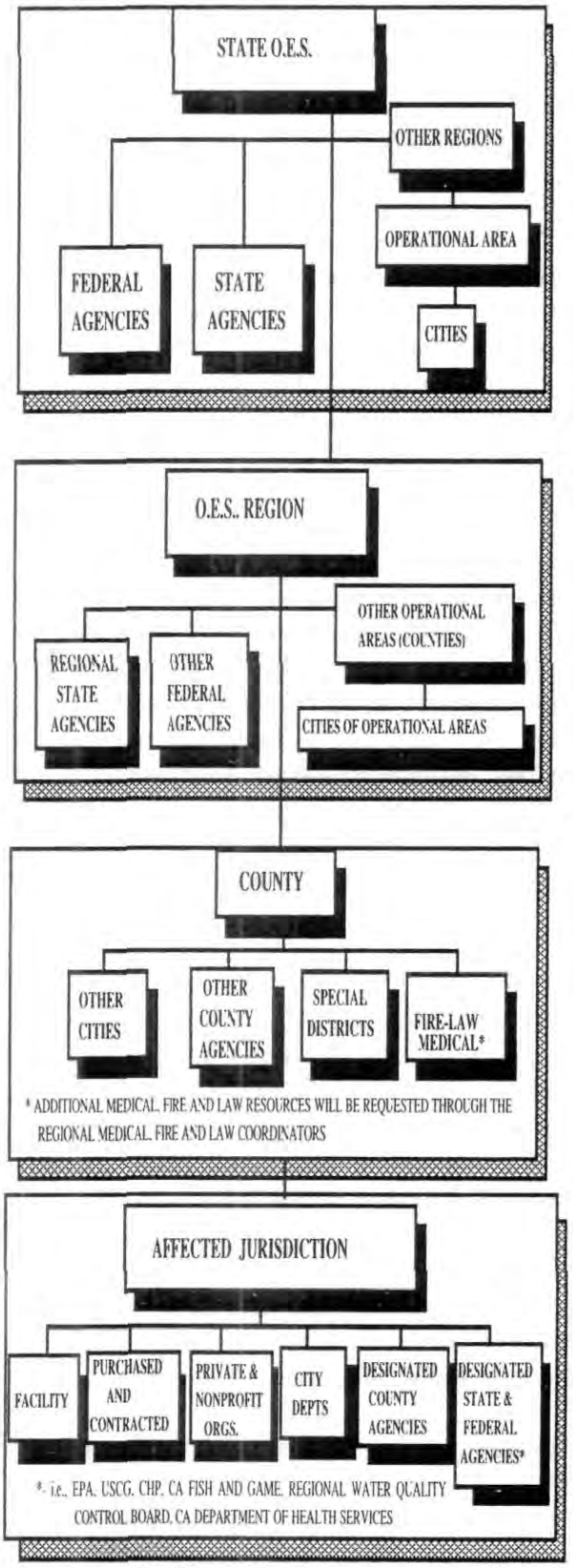
Mutual Aid

Owing to the limited resources in many communities for responding to a hazardous material incident, and because of the multiple functions involved in an appropriate response, mutual aid is often a critical factor in emergency response (Refer to Figure 5.2).

Mutual aid entails the provision of assistance from one jurisdiction to another, generally in the form of equipment and/or personnel. In a hazardous material incident, mutual aid will most often involve providing a vehicle outfitted with specialized equipment for abating the release or threatened release of a hazardous material and for personnel skilled in hazardous material response. All public agencies should assess their own capabilities and capability shortfalls in addressing a hazardous material incident that may impact that agency or jurisdiction. Agencies are further recommended to review current mutual aid agreements (formal and informal) to ensure that hazardous material response is included.

Hazardous material response may differ from traditional mutual aid (i.e., fire, law, medical, coroner, etc.) due to such factors as liability, cost recovery and lack of reciprocity. Therefore, methodologies such as Joint Powers Agreements (JPA) or Memorandums of Understanding (MOU) may

igure 5.2 MUTUAL AID FLOW FOR MAJOR HAZMAT EMERGENCIES



NOTE: RESOURCES AVAILABLE AT EACH LEVEL SHOULD BE USED BEFORE REQUESTING FROM THE NEXT HIGHER LEVEL

be appropriate means of ensuring the best utilization of resources.

A more detailed discussion of mutual aid is contained in the SARA Title III Regional Plans which correspond with the six OES mutual aid regions and in the Area Plans developed by the 127 Administering Agencies.

Accessing Private Response and Cleanup Firms

The private sector often has a significant role in a hazardous material incident. If no public hazardous material emergency response team is available, initial containment within the exclusionary zone may require a private contractor who will provide the personnel and equipment to enter a hazardous area. Private sector responders are often used to clean up (mitigate) a release after initial containment (abatement) has been accomplished. Private responders will usually require a prior financial commitment from an identified Responsible Party. If the spiller, handler or owner of the hazardous material is unwilling, unable to respond or unidentified, a public agency may have to ensure the emergency abatement and mitigation of the release. The agency is normally a county or city, but may be a state or federal agency in some circumstances (i.e., CALTRANS for a freeway spill).

An EPA hazardous waste identification number is required for proper disposal. All counties in California have been issued emergency numbers. For establishing financial responsibility of a firm, many contractors use the Dun and Bradstreet number that is required of businesses that file a business response plan as part of the hazardous material emergency planning and community right-to-know program.

Private hazardous material cleanup contractors must comply with all applicable laws and regulations. These include adequate insurance, OSHA training requirements and transporter regulations enforced by the California Highway Patrol. If public funds

are being used to pay for the cleanup, the contracting agency should ensure that the contractor is in compliance with the appropriate requirements. Cost control procedures should be addressed in any use of public funds.

All agencies who may interact with cleanup contractors are encouraged to establish relationships with available firms so that access, funding and disposal issues are resolved prior to an incident.

Communications

Communications is often a weak link in large incidents and in incidents that require response from multiple agencies. Incompatible radio frequencies, being out of range, inconsistent terminology and extensive radio traffic are examples of problems encountered in field response to hazardous material incidents. All agencies are encouraged to establish communication links with those entities that will require contact and information exchange prior to an incident.

The following is an overview of key radio channels for coordination of hazardous material incidents. For further information contact the California Office of Emergency Services Telecommunications Division at 916-427-4281 or write to 2800 Meadowview Road Sacramento, CA 95832. The most common interagency channels used in hazardous material incidents are **CALCORD** and **WHITE FIRE**. Several radio frequency systems are discussed below:

- **California Law Enforcement Mutual Aid Radio System (CLEMARS)**
  Available to all law enforcement agencies in California. Also available to certain other selected public safety agencies. Used on a day-to-day basis for law enforcement activities. Used in emergency and disaster situations in accordance with established priorities. The State will perform required frequency coordination and FCC licensing.

- **California Law Enforcement Radio System (CLERS)**
  This is the statewide law enforcement point-to-point network. It is designed and installed by the State of California. Virtually every county and major city in the state has a control station. It is composed of 16 separate mountaintop relay stations inter-connected through the State Microwave System. It permits contact from any member station to an other member station. In addition to counties and cities, the State OES and California Highway Patrol have stations. It is considered the backbone of the statewide emergency communications system.

- **White Fire**
  There are three white channels available to all fire agencies. White #1 is authorized for base station and mobile operation. Others are for mobile and portable use only. All three White channels are designated by the Federal Communications Commission as "Inter-system" channels, and are intended solely for interagency fire operations. White #2 and White #3 are intended for on-scene use only. NOTE: White #1 may be used under special conditions for alerting or warning and for announcements of special interest.

- **OES Fire Radio**
  The OES Fire Radio Net (Crossband System) is used for the day-to-day coordination of the Statewide Fire and Rescue Mutual Aid System and is consistent with the intent and provisions of the State Fire and Rescue Emergency Plan. The purpose of this system is to provide for centralized coordination, direction and control of OES fire and rescue resources mobilized to combat major fire or other emergencies. The system is also used for the gathering and dissemination of information during major disaster operations.

- **California Emergency Services Radio System (CESRS)**
  This is a statewide mobile relay system utilizing 26 mountaintop repeaters. It is designed to serve state and county OES use. Many counties have

control and base stations on this network. The network is interconnected through the State Microwave System to provide for statewide intertie. CESRS was formerly referred to as the Local Government (LG) radio system.

- **California On-Scene Emergency Coordination Channel (CALCORD 1)**
  The California On-Scene Emergency Coordination System was established to provide common radio frequencies to be used statewide by state and local Public Safety and Special Emergency agencies during periods of man-made or natural disasters or other emergencies where inter-agency coordination is required. CALCORD will be used in mobile and portable units at the scene of any emergency incident requiring coordinate action by more than one agency. These agencies must be eligible to operate in the Public Safety or Special Emergency Radio Services. It is intended that this System be used to facilitate communications when the Incident Command System is used. Use of this System will be limited to emergency operations only, with the exception of tests and drills.

- **Hospital Emergency Administrative Radio System (HEAR)**
  This frequency is available to any eligible agency for "the rendition and delivery of medical service, and may be designated by common consent as an inter-system mutual assistance frequency under area-wide medical communications plan." Certain areas in California have such a plan, and the balance of the state shall operate under the basic HEAR system. This limits usage to communications between hospital and ambulances or between base hospitals, normally for emergency traffic, and for large scale or disaster operations.

Contents

SECTION 6

PLANNING

For effective hazardous material emergency management there needs to be both pre-incident planning and planning activities in support of incident specific response.

Pre-incident planning involves clearly defining capabilities, roles and responsibilities and addressing the emergency response organization interrelationships prior to an incident. Some plans include standard operating procedures and resources (materiel and personnel).

At a hazardous material incident, the Planning Section is responsible for the collection, evaluation, and dissemination of information about the incident to the appropriate emergency responders. Activities include gathering and analysis of all data regarding incident operations and assigned resources, developing alternatives for tactical operations, conducting the planning meetings, preparing the action plan for each operational period, and preparing after action reports. Planning will work closely with the Operations Chief to ensure that appropriate actions are taken. With the assistance of Technical Specialists both short and long-term safety, as well as environmental and health impacts of the incident will be evaluated along with other factors. These will be developed into an incident action plan for evaluation by the Incident Commander and implementation by the entire respone organization.

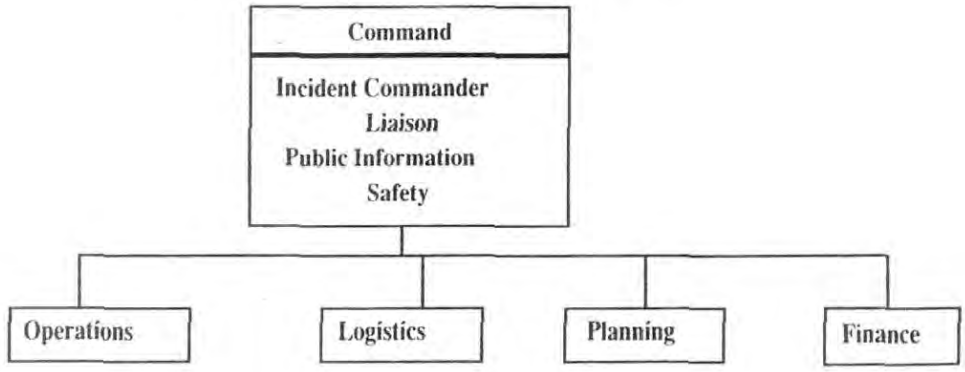
In circumstances where activated, organizations such as the Regional Response Team (RRT) and the State Interagency Oil Spill Committee (SIOSC) will have a role assisting the Planning Section, in addition to their function in assisting the Liaison activities.

In order to assist those involved in planning functions this portion of the HMICP contains descriptions of planning activities impacting hazardous material emergency response in California.

State agencies with hazardous material emergency responsibilities should participate in multi-disciplinary and multi-jurisdictional planning activities, both internally and with other agencies.

An ICS (Planning) schematic follows:

Figure 6.1 ICS (Planning) Schematic



Role of the Planning Process

Information is needed to:

- understand the current situation,
- predict probable course of incident events, and
- prepare alternative strategies and control operations for the incident.

The Planning Section is responsible to develop the Incident Action Plan. NOT ALL INCIDENTS REQUIRE WRITTEN PLANS, but a plan, with the associated planning process is important. When developing the Incident Action Plan it is imperative that the incident specific plan is consistent with the jurisdictions and agencies that may be impacted by the hazardous material incident. The use of Technical Specialists will ensure that the Incident Action Plan addresses the complex and multidisciplinary aspects of a hazardous material incident. The Planning Section prepares and maintains displays, charts and lists which reflect the current status of incident related activities. The Planning Section is responsible for the documentation of the incident for legal, analytical and historical purposes. The Planning Section coordinates with the Finance Section to ensure that documentation for cost recovery is complete and accurate. When the incident is terminated the Planning Section ensures that all after action reports (such as CHMIRS) are completed and submitted and that other organizations are aware of required after action reports.

Relationship to Other Plans

In California, myriad plans have been developed to address the various aspects of hazardous material emergency activities. In some cases these plans may be confusing or appear to be in conflict with each other. Therefore it is imperative that those in the Plans Section be knowledgeable of the different plans that may be applicable to ensure the best response to a specific incident. One plan may delineate a jurisdictions policies while another may list available resources. In order to clarify these different plans, a brief description and a chart showing where the plans are applicable to the private sector and local, state and federal government are provided.

Private Sector Planning

- Business Plans-(also known as Business Emergency Plans, Emergency Response Plans, Disclosure Plans, 2185 Plans, et al) These plans are developed pursuant to Chapter 6.95 of the California Health and Safety Code and SARA Title III. California's hazardous material Emergency Planning and Community Right-to-Know (EPCRA) program requires all businesses, unless specifically exempted, that handle hazardous materials in excess of threshold planning quantities to provide extensive inventory information of chemical name, composition, characteristics and location; emergency contact personnel, emergency response, evacuation and notification procedures; training and other issues related to the release or threatened release of hazardous materials. This program is administered by the 127 Administering Agencies in California. Further information is available from OES Hazardous Material Division at 916-427-4287.
- Standard Operating Procedures (SOP)-SOPs are a detailed delineation of specific actions to be taken during a an emergency, such as the release or threatened release of hazardous materials. The SOP may be part of the Business Plan or may be a separate document.
- Spill Prevention Containment and Countermeasures Plan (SPCC)-An SPCC is required under the Federal Clean Water Act (40 CFR Part 112) for facilities that have discharged, or could be expected to discharge, oil into the waters of the United States.
- Risk Management and Prevention Programs (RMPP)- Firms that handle extremely hazardous materials in excess of federal threshold planning quantities may be required by the local Administering Agency to prepare an RMPP for the facility. The RMPP may entail the sum total of programs for the purpose of minimizing acutely hazardous material accident risks such as system safety design review for equipment, safety evaluation

of work practices, system and element reliability, preventative maintenance procedures, risk assessment for specific equipment, emergency response planning, and internal or external auditing procedures.

- Hazardous Waste Facilities Emergency Plans- These plans are required under the Resource Conservation and Recovery Act 40 CFR Part 264 and Sections 67104 and 67141, et seq. of the California Code of Regulations, requires each hazardous waste facility to prepare a contingency plan that describes the actions the facility must take in response to emergencies and other activities intended to minimize the impacts of a release of hazardous waste.

Local Government Planning

- Area Plan- Area Plans are developed pursuant to Chapter 6.95 of California Health and Safety Code. The 127 administering agencies that are implementing the hazardous material emergency planning and community right-to-know programs are required to prepare a plan for their jurisdiction that addresses the emergency response to a release or threatened release of a hazardous material. These plans must include procedures and protocols for emergency personnel, pre-emergency planning, notification and coordination, training, public information, equipment, accessing contractors, incident critique, submission of CHMIRS reports, on-site inspections, and a data management system.
- Standard Operating Procedures (SOP)- Many departments will have internal plans that clearly define actions to be taken in the event of a hazardous material incident. (Refer to SOP under private sector planning.)
- Emergency Medical Services Plan (EMS)- A jurisdiction that has an EMS agency is required to have an EMS plan of which hazardous materials and the hazardous material aspect of mass casualties should be addressed.
- All Hazards Plans- (in California, known as MultiHazard Functional Plans [MHFP]) According to Civil Preparedness Guide (CPG 1-8) Guide for the Development of State and Local Emergency Operations Plans, All-Hazard Plans are a jursidiction's "Basic Emergency Plan" that incorporates a functionally oriented team approach to all hazard emergency planning in a community. The general format consists of a basic plan (Part One) with enclosures for Authorities and References, Hazard Mitigation, Mutual Aid, Continuity of Government, and a Glossary of Terms. An Appendix which identifies hazards the community needs to prepare for completes the basic plan. At the heart of the plan is a basic functional/agency matrix which identifies all agencies with functional responsibilities. This matrix may be modified for hazard specific threats and included in Annex A (Managing Emergency Operations). This general emergency plan format has helped clarify response duties when agencies with a wide variety of response capabilities are called upon to work together under emergency conditions in an effort to provide the maximum life and property saving effort. Under the current guidance, Part Two of the MHFP consists of the following functional annexes:

  Annex A- Managing Emergency Operations
  Annex B- Fire and Rescue Operations
  Annex C- Law Enforcement and Traffic Control Operations
  Annex D- Medical Operations
  Annex E- Public Health Operations
  Annex F- Coroner Operations
  Annex G- Care and Shelter Operations
  Annex H- Evacuation Operations
  Annex I- Rescue Operations
  Annex J- Construction and Engineering Operations
  Annex K- Resources and Support Operations
  Annex R- Radiological Protection

Appendices to the annexes address hazard specific threat contingencies and contain checklists of response actions to carry out the functional requirements to meet the needs posed by each threat.

Threats treated as appendices in the guidance will generally include, but are not limited to:

- Earthquakes

PLANNING

- Hazardous Material Incidents
- Floodings
- Dam Failures
- National Security Emergencies

Note: In some communities the Area Plan is incorporated into the hazardous material portion of the MHFP. In other jurisdictions the All-Hazard hazardous material threat scenario addresses only long term or prolonged incidents that may involve care and shelter issues and/or public health concerns.

Part Three of the MHFP consists of supporting documents containing desired operational data.

- County Hazardous Waste Management Plans (CoHWMP)- (also known as county Tanner Plans) These plans are developed as pursuant to Assembly Bill 2948. The CoHWMPs address the hazardous waste generation within a county and how the waste will be minimized, reduced, recycled, treated, stored or disposed. The CoHWMPs also establish hazardous waste facility siting criteria and should include hazardous waste emergency mitigation, preparedness and response activities.

Regional Planning

- SARA Title III Regional Plans- These plans are developed pursuant to the Superfund Amendments and Reauthorization Act of 1986 Title III, the SARA Plans build on the Area Plans of local government that are implementing the state hazardous material emergency planning and community right-to-know programs. The six OES mutual aid regions provide the geographical basis for the SARA Plans which address regional mutual aid, hazardous material transportation issues, hazard analysis, and coordination of incidents that cross jurisdictional boundaries.
- Regional Hazardous Waste Management Plans- These plans are being developed by the Association of Bay Area Governments (ABAG), the Association of Monterey Bay Area Governments (AMBAG), and the Southern California Association of Governments (SCAG) to address the management of hazardous waste on a regional level.
- Catastrophic Earthquake Response Plans- These plans are developed by the Bay Area Earthquake Preparedness Project and the Southern California Earthquake Preparedness Project and address the regional response to a catastrophic earthquake for the San Francisco Bay Area. Hazardous material incidents associated with the earthquake are addressed in the Fire, Rescue and Toxics section of the plan.

Statewide Planning

- California State Emergency Plan- The State Plan addresses California's response to emergencies requiring some level of state activity, including: extraordinary natural, technological (including hazardous materials) and war related hazards. The Emergency Plan is written in a MultiHazard functional format so that it is compatible with the MultiHazard Plans developed by local government. It provides a framework for specific response plans, such as, this plan (the HMICP) or regional earthquake plans, and for agency-specific response plans and procedures.
- California Hazardous Material Incident Contingency Plan (HMICP)- the HMICP is the state toxic disaster plan as authorized by Section 8574.17 of the California Government Code.
- California Oil Spill Contingency Plan- the Oil Spill Contingency Plan developed pursuant to Sections 8574.1 and 8574.7 of the California Government Code, is a stand alone annex to the HMICP that addresses oil spills in order to promote an effective response. The Oil Spill Contingency Plan is developed by the State Interagency Oil Spill Committee, chaired by the Department of Fish and Game.
- California Hazardous Waste Management Plan- This plan is developed pursuant to Assembly Bill 650, the plan is the culmination of hazardous waste management planning done at the local and regional level. The Hazardous Waste Management Plan will address the total hazardous waste generated in California and how best to minimize, recycle, treat, store and dispose of the waste. Facility siting and emergency response

are addressed in the Hazardous Waste Management Plan.

- California Hazardous Waste Capacity Assurance Document- This is a plan developed pursuant to CERCLA Section 104 (c) (9) California is required to show the federal government that California has the capability to manage all of its hazardous waste for a 20-year period.

Federal Planning

- Region IX-Mainland Oil and Hazardous Substance Pollution Contingency Plan (RCP) and the Supplement to the Region IX Contingency Plan for the Colorado River is also known as the Regional Contingency Plan. This is the plan whose purpose is the coordination of timely, effective response by various federal agencies and other organizations to discharges of oil and releases of hazardous substances, pollutants and contaminants in order to protect public health, welfare and the environment (NCP, 300.42(a)). This plan includes information on Comprehensive Environmental Response, Compensation and Liability Act (CERCLA [Superfund]) remedial response actions. However, the primary purpose of the plan is to provide guidance for emergency response and removal under the provisions of the Clean Water Act (CWA), for response actions under CERCLA, and for regional contingency planning under the provisions of the Superfund Amendments and Reauthorization Act (SARA). The RCP provides for the division of responsibilities among federal, state, and local governments from the federal perspective in response actions; procedures for establishing Federal Local Contingency Plans and procedures for undertaking response actions in accordance with the CWA and CERCLA.
- Federal Radiological Emergency Response Plan (FRERP)- This is the plan to be used by federal agencies in peacetime radiological emergencies. It primarily concerns the off-site federal response in support of state and local governments with jurisdiction for the emergency. The FRERP provides the Federal Government's concept of operations based on specific authorities for responding to radiological emergencies and outlines federal policies and planning assumptions that underlie this concept of operations. Federal agency response plans (in addition to their agency-specific policies) are based on the FRERP. The FRERP specifies authorities and responsibilities of each federal agency that may have a significant role in such emergencies. The FRERP includes the Federal Monitoring and Assessment Plan for use by federal agencies with radiological monitoring and assessment capabilities.
- Federal Response to a Catastrophic Earthquake- This is a plan that describes the organization of the Federal Government in the event of a catastrophic earthquakeon a national level and for FEMA Region IX.
- Marine Safety Office Oil and Hazardous Substance Federal Pollution Contingency Plan- Each Coast Guard Zone has developed a specific plan providing policies, responsibilities, and procedures for on-scene response. It is designed to be used in conjunction with the National, Regional, State and other Local Contingency Plans.

Incident Action Planning

Every incident needs some form of an action plan. For small incidents of short duration, the plan need not be written. The following are examples of when written action plans should be used:

- When resources from multiple agencies are necessary.
- When several jurisdictions are involved.
- When the incident will require changes in shifts of personnel and/or equipment.

The incident commander will establish objectives and make strategy determinations for the incident based upon the requirements of the jurisdictions. In the case of a unified command, the incident objectives must adequately reflect the policy and needs of all the jurisdictional agencies.

The action plan for the incident should cover all tactical support activities for the operational period.

After Action Reporting

A number of agencies require some form of after action report following an incident. These after action reports can be for the purposes of internal review of agency actions and policies, statistical analyses, determination of training and equipment needs, determination of compliance and enforcement.

Following an incident different organizations may be required to submit after action reports based on the role or location involved in the incident. The public agency in charge must submit a **California Hazardous Material Incident Reporting System** form. A facility must submit a **Section 304** report. A transporter must fill out a **U.S. Department of Transportation Hazardous Material Incident Reporting System (HMIS)** form for all incidents that have been reported to the National Response Center or when there is any unintentional release of a hazardous material during transportation. Further information is available from the Information Systems Manager, Office of Hazardous Materials Transportation, DHM-63, Research and Special Programs Administration, U.S. Department of Transportation, Washington D.C. 20590.

California Hazardous Material Incident Reporting System (CHMIRS).

Authorized by Government Code Section 8574.8(d), the CHMIRS program collects and analyzes statistical data from state and local government agencies. The information provided assists in establishing training and equipment needs, identifies trends in chemicals involved in incidents, addresses time and weather conditions as a factor in spills, and other important statistical data that assists agencies in reducing the frequency and severity of hazardous material incidents. The Administering Agency must ensure that "...the CHMIRS report shall be completed by the agency responsible for Incident Command immediately after the conclusion of the emergency response phase... Procedures for submitting CHMIRS reports should be included in Area Plans for all Administering Agencies." Forms and instruction manual are available from the Office of the State Fire Marshal or from OES at 916-427-4389

Three figures follow:

- Figure 6.2 is a chart illustrating the different hazardous material plans and their relationships, and
- Figures 6.3 a and b are a copy of the 1991 California Hazardous Material Incident Reporting form:

Figure 6.2 HAZARDOUS MATERIAL PLAN RELATIONSHIPS WITHIN CALIFORNIA

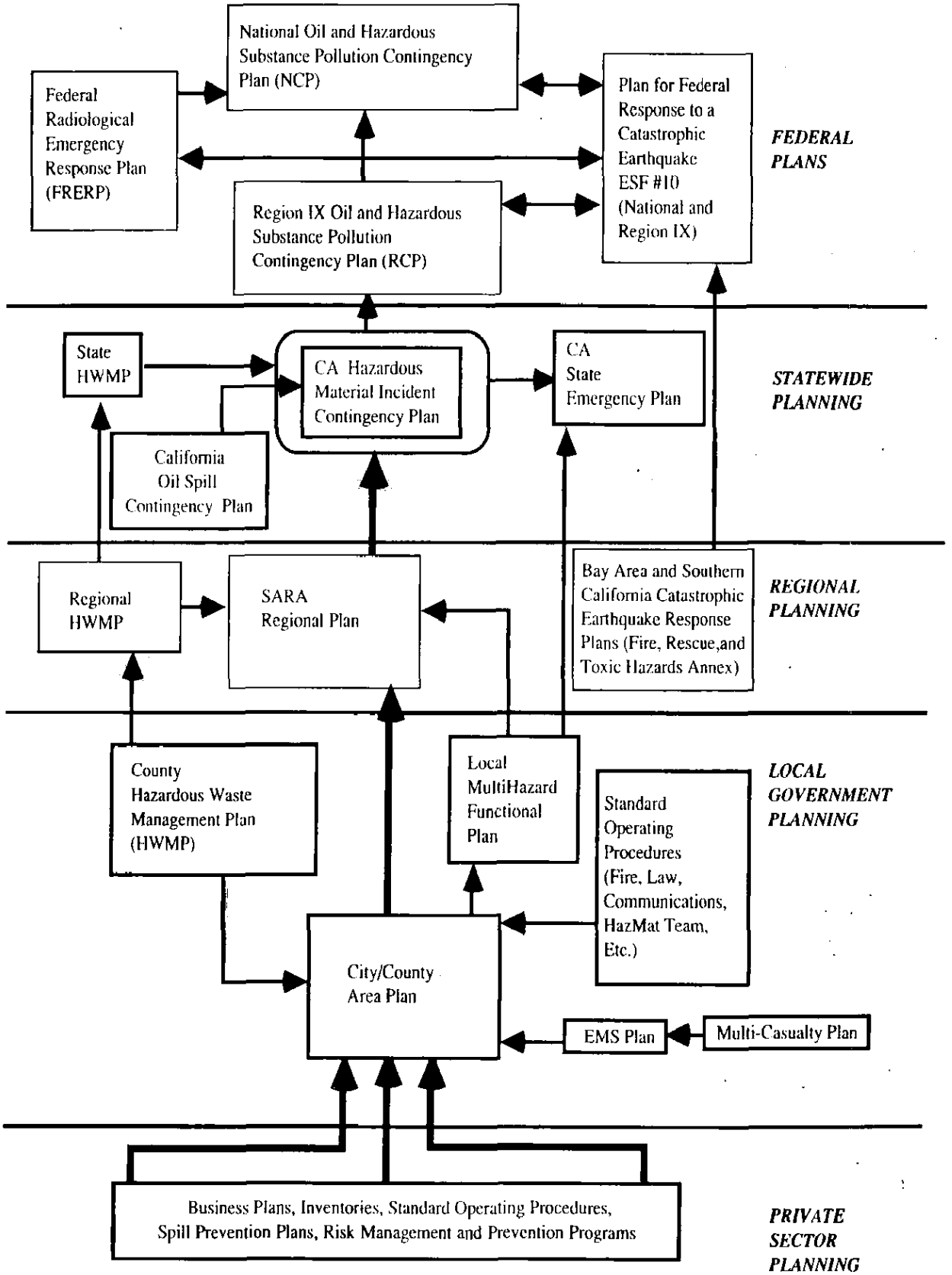


Figure 6.3a CALIFORNIA HAZARDOUS MATERIAL INCIDENT REPORT

OES 1/91 CHANGE 1 ☐ DELETE 2 ☐

A AGENCY NAME | AGENCY ID NO. | AGENCY INCIDENT NO. | AGENCY PHONE NO. ( ) ___ – ___ | OES CONTROL NO.

B INCIDENT DATE MO DAY YEAR | TIME NOTIFIED | TIME COMPLETED | DATE COMPLETED (IF DIFFERENT) MO DAY YEAR

C INCIDENT ADDRESS/LOCATION | CITY/COMMUNITY | COUNTY | ZIP

D

WEATHER (CHECK BEST DESCRIPTOR/S)

1 CLEAR 5 HAIL, SLEET 8 HIGH WIND
3 RAIN 6 ELECTRICAL STORM 9 OTHER
4 SNOW 7 FOG 0 UNKNOWN

ESTIMATED TEMPERATURE ___ ___ (Deg. F)

PROPERTY USE (USE CODES ON REVERSE)

PROPERTY USE ___ ___ ___ SURROUNDING AREA ___ ___ ___

PROPERTY MANAGEMENT FEDERAL STATE COUNTY CITY PRIVATE UNKNOWN

E

RELEASE FACTORS (CHECK BEST DESCRIPTOR/S)

11 INTENTIONAL ACT
12 SUSPICIOUS ACT
30 FAILURE TO CONTROL HAZMAT
31 ABANDONED
40 MISUSE OF HAZMAT
50 MECHANICAL FAILURE
60 DESIGN, CONSTRUCTION, INSTALLATION DEFICIENCY
70 OPERATIONAL DEFICIENCY
71 COLLISION/OVERTURN
80 NATURAL CONDITION
94 FIRE/EXPLOSION
98 NO RELEASE
99 OTHER
00 UNDETERMINED

TYPE OF EQUIPMENT INVOLVED

10 HEATING SYSTEMS
30 AIR CONDITION/REFRIG
77 CHEM PROCESSING EQUIP
78 WASTE RECOVERY EQUIP
96 HAZMAT TRANSFER EQUIP
97 VEHICULAR FUEL SYSTEM
98 NO EQUIP INVOLVED
99 OTHER
00 UNDETERMINED

MOBILE PROPERTY TYPE

10 PASSENGER VEH/ROAD
20 FREIGHT VEH/ROAD
30 RAIL TRANSPORT VEH
40 WATER TRANS VESSEL
50 AIR TRANSPORT VEH
60 HEAVY EQUIP-INDUST/AGRI
98 NO MOBILE PROPERTY INVOLVED
99 OTHER
00 UNDETERMINED

F

ACTIONS TAKEN (CHECK BEST DESCRIPTOR/S)

31 RESCUE, REMOVE FROM HARM
32 EXTRICATION, DISENTANGLEMENT
33 EMERGENCY MEDICAL SERVICES
35 SEARCH
36 TRANSPORT
41 REMOVE HAZARD (NEUTRALIZE)
42 ID/ANALYSIS OF HAZMAT
43 EVACUATION
44 ESTABLISH SAFE AREA
45 MONITOR
46 DECON-PERSON/EQUIP
47 DECON-AREA (CLEANUP)
48 CONTAIN/CONTROL HAZMAT
61 CROWD CONTROL
62 TRAFFIC CONTROL
63 NOTIFY OTHER AGENCY
64 PROVIDE PUBLIC INFO
71 INVESTIGATE
73 SHUT DOWN SYSTEM
82 SECURE PROPERTY
92 REFER TO PROPER AUTHORITY
98 NO ACTION TAKEN
97 HAZMAT RESPONSE, MATERIAL DETERMINED TO BE NONHAZARDOUS
99 OTHER

G

CHEMICAL OR TRADE NAME (PRINT OR TYPE) | DOT ID NO. | DOT HAZARD CLASS | CAS NO.

PHYSICAL STATE STORED: 1 SOLID 2 LIQUID 3 GAS
PHYSICAL STATE RELEASED: 1 SOLID 2 LIQUID 3 GAS
QUANTITY RELEASED: 1 lbs. 2 gal. 3 cu.ft.
ENVIRONMENTAL CONTAMINATION: 1 AIR 2 WATER 3 GROUND 9 OTHER
(USE CODES ON REVERSE) EXTENT OF RELEASE

CONTAINER DESCRIPTION: 1 FIXED 2 PORTABLE 3 MOBILE; 1 INSULATED 2 PRESSURIZED 3 ARMORED
(USE CODES ON REVERSE) CONTAINER TYPE | LEVEL OF CONTAINER | CONTAINER MATERIAL
CONTAINER CAPACITY 1 lbs. 2 gal. 3 cu. ft.

CHEMICAL OR TRADE NAME (PRINT OR TYPE) | DOT ID NO. | DOT HAZARD CLASS | CAS NO.

PHYSICAL STATE STORED: 1 SOLID 2 LIQUID 3 GAS
PHYSICAL STATE RELEASED: 1 SOLID 2 LIQUID 3 GAS
QUANTITY RELEASED: 1 lbs. 2 gal. 3 cu.ft.
ENVIRONMENTAL CONTAMINATION: 1 AIR 2 WATER 3 GROUND 9 OTHER
(USE CODES ON REVERSE) EXTENT OF RELEASE

CONTAINER DESCRIPTION: 1 FIXED 2 PORTABLE 3 MOBILE; 1 INSULATED 2 PRESSURIZED 3 ARMORED
(USE CODES ON REVERSE) CONTAINER TYPE | LEVEL OF CONTAINER | CONTAINER MATERIAL
CONTAINER CAPACITY 1 lbs. 2 gal. 3 cu. ft.

H MORE THAN 2 SUBSTANCES INVOLVED? ___YES ___NO (LIST ADDITIONAL INFORMATION ON REVERSE SIDE)

I SPECIAL STUDIES LOCAL USE 1. A B C D 2. A B C D 3. A B C D | STATE USE 4. A B C D 5. A B C D 6. A B C D

J

HAZMAT IDENTIFICATION SOURCES (CHECK BEST DESCRIPTOR/S)

PERSONNEL
19 ON-SITE FIRE SERVICES
29 OFF-SITE FIRE SERVICES
40 ON-SITE NON-FIRE SERVICES
60 OFF-SITE NON-FIRE SERVICES
54 CHEMIST
58 TOX CENTER
59 CHEMTREC
99 OTHER

REFERENCE MATERIAL
21 DOT MANUAL
23 MSDS
24 PLACARDS/SIGNS
25 PRIVATE INFO SOURCE
26 COMPUTER SOFTWARE
27 SHIPPING PAPERS
98 NO REFERENCE MATERIAL USED
99 OTHER

HAZMAT CASUALTIES

	NUMBER OF DECONTAMINATED	NUMBER OF INJURIES	NUMBER OF FATALITIES
RESPONDING AGENCY PERSONNEL			
OTHERS			

K

VEHICLE MAKE/YEAR	VEHICLE LICENSE NO.	STATE	VEHICLE ID NO. (VIN)	CA/DOT/PUC/ICC NO.	COMPANY NAME

L REPORTING OFFICER NAME/ID NO. (PRINT OR TYPE) | DATE | COMMENTS ON BACK? ___YES ___NO

Figure 6.3b CHMIRS Form (Continued)

CODES

PROPERTY USE and SURROUNDING AREA TYPE						EXTENT OF RELEASE
100	Public Assembly	762	Hazmat Chem Mfg	950	Railroad	1 Confined to Vehicle/Equipment
200	Educational	767	Petroleum Refinery	961	Freeway	2 Confined to Room of Origin
300	Health Care	800	Storage	962	County/City Road	3 Confined to Floor of Origin
400	Residential	931	Open Land	963	Private Road	4 Confined to Structure of Origin
500	Mercantile, Business	936	Vacant Lot	965	Rest Stop/Vista Point	6 Confined to Property Use of Origin
600	Industrial, Utility	941	Open Sea	966	Scale/Inspection Facility	7 Release Beyond Property Use of Origin
650	Agricultural	942	Harbor/Port	099	Other - Explain in comments section	8 NO RELEASE
700	Manufacturing	946	Lake/Pond/River			9 Other - Explain in comments section
						0 Undetermined

CONTAINER TYPE				LEVEL OF CONTAINER	CONTAINER MATERIAL
11	Drum	31	Sump/Pit	11 Ground Level	1 Iron, Steel & Other Iron Alloys
12	Cylinder	32	Pond or Surface Impoundment	30 Above Ground	2 Aluminum & Aluminum Alloys
13	Can or Bottle	33	Well	40 Below Ground	3 Copper, Brass, Bronze, & Other Copper Alloys
14	Carboy	41	Vehicular Fuel Tank		4 Plastic/Fiberglass, Rigid
15	Box or Carton	98	NO CONTAINER		5 Plastic, Flexible
16	Bag	99	Other - Explain in comments section		6 Wood, Paper, Textile, & Cellulose Products
21	Tank or Silo (incl vehicle cargo tanks)	00	Undetermined		7 Glass, Pottery & Clay
22	Pipe				8 NO CONTAINER
24	Machinery or Process Equipment				9 Other - Explain in comments section
					0 Undetermined

COMMENTS:

PLANNING

IMPORTANT INSTRUCTIONS

Incidents that involve the following shall not be reported:
1. Petroleum spills of less than 42 gallons from vehicular fuel tanks.
2. Sewage overflows.
3. Leaks in low-pressure fuel lines to residential properties.

CHANGE: If the information on a previously submitted form needs to be changed mark the CHANGE box and submit form with the correct information.

DELETE: If a certain report needs to be deleted from the database mark the DELETE box, complete sections **A, B, C,** and **L,** and submit form.

NOTE: ***IF ALL SECTIONS CONTAINING SHADED BOXES*** ■ ***ARE NOT COMPLETED, THE FORM WILL BE RETURNED FOR COMPLETION***

SECTION

- **A** OES Control No. is assigned when making phone notification to OES Warning Center. [Phone 1-800-852-7550 or (916) 427-4341].
- **B** Enter the date (month, day and year), notification and completion time of the incident (use 2400 hr clock). Enter completion date, if different from incident date.
- **D** Check the appropriate weather descriptor(s) at the time of the incident and indicate the approximate temperature in ° F. Enter property use and surrounding area codes. Indicate the entity responsible for property management.
- **E** Check the item(s) that describe(s) the cause of the incident, the type of equipment involved in the incident, and the mobile property type, if any.
- **F** Check the item(s) that indicate(s) which action(s) you took as a responder to the incident.
- **G** List the chemical or the trade name(s) of the hazardous material(s) involved in the incident. Include information required in the boxes. Check the information in the box(es) that describe(s) the hazardous material. Use the appropriate codes for Extent of Release, Container Type, Level of Container, and Container Material.
- **H** If more than two (2) hazardous materials were involved check **YES** and enter the information in the comments section.
- **I** This section is used for special studies. The first three numbers are for your agency's use; the last three are for state use. Leave blank unless otherwise directed.
- **J** Check item(s) describing who identified the material and how it was identified. Enter number of hazardous material casualties suffered by responding agency personnel and others (including the public) in spaces provided.
- **K** If vehicle/mobile property was involved in the incident, enter information about that vehicle.
- **L** Print your full name or your ID number and enter the date of report. Mark Yes or No to indicate whether there are additional comments.

Section 304 of SARA

Section 304 of SARA requires, as soon as practicable after a release occurs, that the facility provide written emergency release follow-up notices. The written report must be sent to the state commission and to the local emergency planning committee. The report must include an update on information required under the immediate notice provisions to the National Response Center as well as the following additional information:

- Actions taken to respond to and contain the release;
- Any known or anticipated health risks associated with the release, and;
- Where appropriate, advice regarding medical attention necessary for exposed individuals.

Figure 6.4a is a copy of the model §304 reporting form and Figure 6.4b is a copy of the §304 reporting form instructions:

OES CALIFORNIA
California Office of Emergency Services

Figure 6.4a

SARA TITLE III - SECTION 304 EMERGENCY RELEASE FOLLOW-UP NOTICE

A

BUSINESS NAME

FACILITY EMERGENCY CONTACT & PHONE NUMBER ( )____-_____

B

INCIDENT DATE MO DAY YR | | | | | | |

TIME OES NOTIFIED | | | | (use 24 hr time)

OES CONTROL NO | | | | | | | | |

C

INCIDENT ADDRESS LOCATION

CITY/COMMUNITY

COUNTY ZIP

D

CHEMICAL OR TRADE NAME (print or type)

CAS Number

CHECK IF CHEMICAL IS LISTED IN 40 CFR 355, APPENDIX A ☐

CHECK IF RELEASE REQUIRES NOTIFICATION UNDER 42 U.S.C. § 9603(a) ☐

PHYSICAL STATE CONTAINED ☐SOLID ☐LIQUID ☐GAS

PHYSICAL STATE RELEASED ☐SOLID ☐LIQUID ☐GAS

QUANTITY RELEASED

ENVIRONMENTAL CONTAMINATION ☐AIR ☐WATER ☐GROUND ☐OTHER

TIME OF RELEASE

DURATION OF RELEASE ___ DAYS ___ HOURS ___ MINUTES

E

ACTIONS TAKEN

F

KNOWN OR ANTICIPATED HEALTH EFFECTS (Use the comments section for additional information)

☐ ACUTE OR IMMEDIATE (explain) _____

☐ CHRONIC OR DELAYED (explain) _____

☐ NOT KNOWN (explain) _____

G

ADVICE REGARDING MEDICAL ATTENTION NECESSARY FOR EXPOSED INDIVIDUALS

H

COMMENTS INDICATE SECTION (A-G) AND ITEM WITH COMMENTS OR ADDITIONAL INFORMATION

I

CERTIFICATION: I certify under penalty of law that I have personally examined and I am familiar with the information submitted and believe the submitted information is true, accurate, and complete.

REPORTING FACILITY REPRESENTATIVE (print or type) _____

SIGNATURE OF REPORTING FACILITY REPRESENTATIVE _____ DATE: _____

Figure 6.4b EMERGENCY RELEASE FOLLOW-UP NOTICE REPORTING FORM INSTRUCTIONS

GENERAL INFORMATION:

Chapter 6.95 of Division 20 of the California Health and Safety Code requires that written emergency release follow-up notices prepared pursuant to 42 U.S.C. § 11004, be submitted using this reporting form. Non-permitted releases of reportable quantities of Extremely Hazardous Substances (listed in 40 CFR 355, appendix A) or of chemicals that require release reporting under Section 103(a) of the Comrehensive Environmental Response, Compensation, and Liability Act of 1980 [42 U.S.C. § 9603(a)] must be reported on the form, as soon as practicable, but no later than 30 days, following a release. The written follow-up report is required in addition to the verbal notification.

BASIC INSTRUCTIONS:

- The form, when filled out, reports follow-up information required by 42 U.S.C § 11004. Ensure that all information requested by the form is provided as completely as possible.
- If the incident involves reportable releases of more than one chemical, prepare one report form for each chemical released.
- If the incident involves a series of separate releases of chemical(s) at different times, the releases should be reported on separate reporting forms.

SPECIFIC INSTRUCTIONS:

Block A: Enter the name of the business and the name and phone number of a contact person who can provide detailed facility information concerning the release.

Block B: Enter the date of the incident and the time that verbal notification was made to OES. The OES control number is provided to the caller by OES at the time verbal notification is made. Enter this control number in the space provided.

Block C: Provide information pertaining to the location where the release occurred. Include the street address, the city or community, the county and the zip code.

Block D: Provide information concerning the specific chemical that was released. Include the chemical or trade name and the Chemical Abstract Service (CAS) number. Check all categories that apply. Provide best available information on quantity, time and duration of the release.

Block E: Indicate all actions taken to respond to and contain the release as specified in 42 U.S.C. §11004(c).

Block F: Check the categories that apply to the health effects that occurred or could result from the release. Provide an explanation or description of the effects in the space provided. Use Block H for additional comments/information if necessary to meet requirements specified in 42 U.S.C. §11004(c).

Block G: Include information on the type of medical attention required for exposure to the chemical released. Indicate when and how this information was made available to individuals exposed and to medical personnel, if appropriate for the incident, as specified in 42 U.S.C. §11004(c).

Block H: List any additional pertinent information.

Block I: Print or type the name of the facility representative submitting the report. Include the official signature and the date that the form was prepared.

MAIL THE COMPLETED REPORT TO:

Chemical Emergency Planning and Response Commission (CEPRC) / Local Emergency Planning Committee (LEPC)
Attn: Section 304 Reports
2800 Meadowview Road
Sacramento, CA 95832

Contents

SECTION 7

FINANCE

The Finance Section is established on incidents when the agency(ies) involved has (have) a specific need for financial services.

Financing the abatement and cleanup of a hazardous material incident is often a costly endeavor. Two points that should always be kept in mind are:

- whenever possible, the responsible party should bear all of the financial costs associated with a specific hazardous material incident, and
- with very few exceptions (i.e., EPA Local Government Reimbursement), all funding sources require approval prior to the use of these funds.

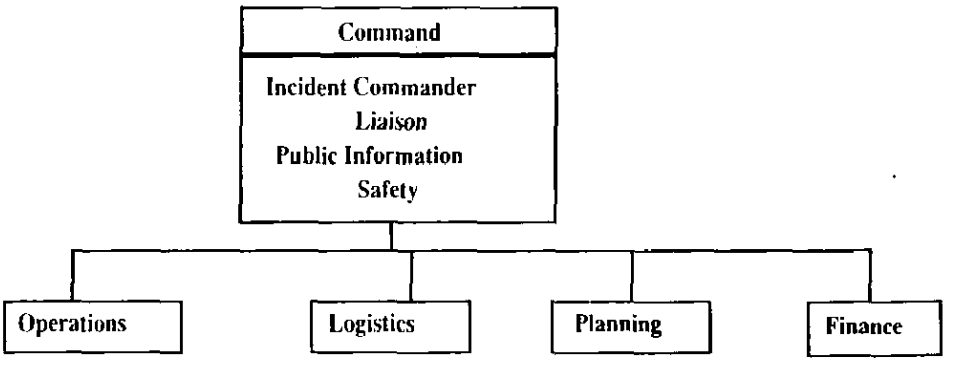
When the responsible party is either unwilling, unable or unidentified, the responsibility to protect the public health, safety and environment will usually fall to a public agency. If this happens, alternative funding will have to be established. Limited funding is available at the local, state and federal levels. Generally, funding from local government should be accessed first, state government second, and the federal government third. Section 13009.6 of the California Health and Safety Code makes a person or employer responsible for all costs to public agencies due to hazardous material incidents caused by negligence.

State agencies with emergency funding capabilities will assist requesting agencies in accessing the funding source, if appropriate.

In addition to the funding sources addressed in this section, a Presidential or Gubernatorial declared disaster may provide other financial assistance.

An ICS schematic (Finance) follows:

Figure 7.1 ICS Schematic (Finance)



Local Government

Local government should maintain a fund that is available for the purpose of financing the costs associated with a hazardous material incident impacting a local jurisdiction. Accessing this fund is usually accomplished by contacting the agency controlling the fund or through local government emergency communications dispatch.

State Government

The State of California operates a number of funds that are earmarked for specific aspects of hazardous material emergency response. Some of these funds are for addressing the impacts or potential impacts of a release. Other funds are for addressing incidents that impact specific state agencies.

Impact specific funds are:

Clandestine Laboratory Enforcement Program

FUNDING SOURCE
Health and Safety Code Section 11642(c)
ANNUAL TOTAL
Up to $300,000
ADMINISTERED BY
Controller
HOW CONTACTED
Within 24 hours of seizure of laboratory, the local law enforcement agency shall notify the local health officer who shall contact the Department of Health Services. The investigation report must accompany the request.
MAXIMUM SINGLE AWARD
N/A
TYPES OF RELEASES FUNDED
A prosecutable case where removal, disposal or storage of toxic waste from the sites of laboratories used for the unlawful manufacture of a controlled substance is necessary.
INFORMATION TO BE PROVIDED
Sufficient information for the local health officer to determine whether the site poses an immediate threat to public health and safety.
LIMITATIONS
Law enforcement agencies in counties with a population under 1,250,000. Addresses laboratory and wastes only. Will not fund cleanup or disposal of contaminated soil or dwellings.
COST RECOVERY
N/A

Emergency Reserve Account for Hazardous Materials Incidents (Cal-Superfund)

FUNDING SOURCE
Health and Safety Code Section 25354
ANNUAL TOTAL
$1,000,000
ADMINISTERED BY
Department of Health Services, Toxic Substances Control Program
HOW CONTACTED
916-324-2445 or, after hours 800-852-7550
MAXIMUM SINGLE AWARD
$20,000
TYPES OF RELEASES FUNDED
Threat to public health. This includes "midnight dumping" of barrels, discharges of fluids, spill situations without a responsible party or other actions needed to prevent potential emergencies (i.e., fencing, guard service, sampling, or immediate remedial measures for dangerous sites with uncooperative responsible parties). In some instances, emergency response associated with illegal drug wastes is fundable.
INFORMATION TO BE PROVIDED
Notify State Warning Center personnel that you are seeking approval for assistance from the Emergency Reserve Account. Provide a telephone number for the Duty Officer to call back and provide the following information to the DHS duty officer:
1. Is the material is a hazardous substance?,
2. The quantity released or spilled,
3. The hazard characterization,
4. Location of the incident relative to waterways, the public, and population,
5. Is the potential responsible party or alternative funding available,

6. Did the spill occur on state highway where the Department of Transportation has response teams under contract, and
7. Did the spill occur on navigable waters where the U.S. Coast Guard's Strike Team works with the U.S. Environmental Protection Agency and U.S. Coast Guard to respond.

LIMITATIONS

- The DHS Duty Officer must authorize the contractor and all expenditures in advance of funds being spent. No retroactive payments will be made.
- The hazardous material must acutely threaten human health, be flammable or explosive.
- Waste oil, fuel tanks from vehicular spills and radioactive materials will not be funded unless special circumstances exist.
- Drug laboratory wastes are not eligible for removal during an enforcement action funded by Department of Justice or Bureau of Narcotic Enforcement; and such wastes are in a facility that was discovered due to fire or explosion. Cleanup of found materials, associated with planned law enforcement action, including contaminated appurtenances, will not be financed by DHS if such materials can be secured as evidence or from public access.
- No funds will be made available for incidents on federal property.

COST RECOVERY

Cost recovery will be made at every site where a culpable responsible party is identified. Incident costs plus an administrative fee will be sought under Section 25360 of the California Health and Safety Code.

Fish and Wildlife Pollution Cleanup and Abatement Account

Note: This fund may be impacted by the Oil Spill, Abatement, and Removal Act of 1990.

FUNDING SOURCE

Fish and Game Code Section 12017

ANNUAL TOTAL

$500,000

ADMINISTERED BY

Department of Fish and Game, Wildlife Protection Division

HOW CONTACTED

State Warning Center 800-852-7550

MAXIMUM SINGLE AWARD

No limit

TYPES OF RELEASE FUNDED

Cleanup and abatement actions of materials threatening to pollute, contaminate or obstruct waters of this state to the detriment of fish, plant, bird, animal life or their habitat.

INFORMATION TO BE PROVIDED

Eligibility determined by Fish and Game Pollution Coordinators at scene.

LIMITATIONS

- Impacts must be to fish, wildlife and/or habitat.
- DFG has made a reasonable effort to have the responsible party remove the pollution in a timely manner, or reimburse the department for the cost of removal, the substance causing the prohibited condition.
- Funds are not available for disbursement from the emergency reserve account of the Cal-Superfund (Hazardous Substance Account)

COST RECOVERY

- All funds recovered for cleanup, removal, or abatement cost incurred by the state pursuant to Section 5655 or 12015, plus proceeds of civil damages recovered through legal actions pursuant to Section 12016 (Fish & Game Code) shall be deposited in the Fish and Wildlife Pollution Cleanup and Abatement Account.
- Any money paid by the State Water Resources Control Board to the Department of Fish and Game pursuant to Section 13442 of the Water Code shall be deposited in the Fish and Wildlife Pollution Cleanup and Abatement Account.

Oil Spill Response Trust Fund (Oil Spill Prevention, Abatement, and Removal Act of 1990)

Note: This bill creates a new fund that may impact other funds. Details of the implementation process have not been determined at the time this plan was printed.

FUNDING SOURCE
California Government Code Sections 8670.46-8670.53.95
ANNUAL TOTAL
Up to $100,000,000
ADMINISTERED BY
Administrator for oil spill response (DFG)
HOW CONTACTED
To be determined
MAXIMUM SINGLE AWARD
Up to $100,000,000
TYPES OF RELEASE FUNDED
Marine oil Spills
INFORMATION TO BE PROVIDED
To be determined
LIMITATIONS

- Marine oil spills only will be funded.
- Responsible party is unable or unwilling to provide adequate and timely cleanup and the pay for damages.
- Federal oil spill funds are not available or will not be available in an adequate period of time.
- Only releases directly impacting or threatening to impact the surface and groundwater are eligible.
- Assistance is not provided on a retroactive basis.
- Approval for use of these funds must be obtained prior to any expenditure.
- The only costs covered, are those over and above normal operating costs of the agency which are directly incurred for cleanup and abatement.
- Assistance is not provided if other funds are available.
- Non-emergency fund requests must be written and formally approved by the SWRCB (approximately 6 weeks).

Water Pollution Cleanup and Abatement Account

FUNDING SOURCE
California Water Code Sections 13440-13442
ANNUAL TOTAL
N/A
ADMINISTERED BY
State Water Resources Control Board
HOW CONTACTED
916-739-4319 during office hours or 800-852-7550
MAXIMUM SINGLE AWARD
Oral requests for emergency funding are limited to $50,000. The amount in the fund limits written requests.
TYPES OF RELEASE FUNDED
Assistance to public agencies with the authority to clean up waste or abate its effect.
INFORMATION TO BE PROVIDED
Contact State Board, Division of Clean Water Programs (916-739-4319) for information and written application form.
LIMITATIONS

State Agency Specific Funding Sources

The following is a listing of state agency funds for addressing hazardous material incidents that impact their mandate. Other public agencies cannot access these funds.

CALTRANS- administers a fund for hazardous material incidents that impact state highways and rights-of-way. CALTRANS has several hazardous material cleanup firms on contract. CALTRANS will not finance the cleanup of hazardous material that is beyond the right-of-way even though it has originated on a state highway.

Division of Oil and Gas (Department of Conservation)- administers a small fund to address the release of hazardous materials related to oil and gas production, drilling, maintenance or abandonment.

State Lands Commission- lessees of state lands are required to possess insurance for bodily injury or property damage to third parties and each lease has a performance bond for hazardous material cleanup.

California National Guard- has an account for use in cleaning chemical spills or other incidents caused by the National Guard only and can be accessed by the Director of Facilities and Engineering.

Federal Government

The federal government administers two primary funds to abate and mitigate a hazardous material incident. The funds are generally accessed when the state resources are exceeded. Both funds require activation by a federal On Scene Coordinator.

Oil Pollution Prevention, Response, Liability, and Compensation Act of 1990 Oil Spill Liability Trust Fund

Note: The Federal Oil Pollution Prevention, Response, Liability, and Compensation Act of 1990 replaces the four existing federal oil spill liability and compensation systems (the Clean Water Act [Federal Pollution Fund (311k)], the Trans-Alaska Pipeline Authorization Act, the Deepwater Port Act, and the Outer Continental Shelf Lands Act) with a single system in which owners and operators of vessels and facilities responsible for an oil spill are directly liable, up to specified limits, for the costs of cleaning up the spill and for physical and economic damages that result from the spill.

FUNDING SOURCE
Oil Pollution Prevention, Response, Liability, and Compensation Act
ANNUAL TOTAL
Up to $1,000,000,000
ADMINISTERED BY
U.S. Coast Guard /Federal On Scene Coordinator (OSC)
HOW CONTACTED
National Response Center 800-424-8802 to access OSC
MAXIMUM SINGLE AWARD
Up to $1,000,000,000
TYPES OF RELEASE FUNDED
Primarily oil spills
INFORMATION TO BE PROVIDED
Determined by OSC
LIMITATIONS
Responsible Party must be unknown, unwilling or unable to perform adequately and state resources are exhausted. Available for oil releases.
COST RECOVERY
A federal mechanism exists to recover costs from responsible parties.

Hazardous Substances Response Trust Fund (Superfund) Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA)

FUNDING SOURCE
CERCLA
ANNUAL TOTAL
N/A
ADMINISTERED BY
EPA/federal On Scene Coordinator
HOW CONTACTED
National Response Center 800-424-8802 to access OSC
MAXIMUM SINGLE AWARD
$50,000 Amounts in excess of $50,000 require EPA approval.
TYPES OF RELEASE COVERED
Hazardous Materials
INFORMATION TO BE PROVIDED
Determined by federal OSC
LIMITATIONS
Responsible party must be unknown, unwilling or unable to perform adequately. Funds available only for federally managed responses.
COST RECOVERY
A federal mechanism exists to recover costs from responsible parties. The responsible party may be subject to "treble damages" (three times the full cost of cleanup) and fines of up to $5,000/day.

Local Government Reimbursement Program

FUNDING SOURCE
Superfund Amendments and Reauthorizations Act of 1986 (SARA)
ANNUAL TOTAL
$2,000,000
ADMINISTERED BY

EPA

HOW CONTACTED

Application package obtained by calling RCRA/ Superfund Hotline at 800-424-9346.

MAXIMUM SINGLE AWARD

$25,000 per incident

TYPES OF RELEASE COVERED

Hazardous substances

INFORMATION TO BE PROVIDED

Available in application package

LIMITATIONS

Only local government can apply; requests cannot supplant local funds; reimbursement for costs associated with a specific response only; application must be made within six months of completion of response; not all qualified requests are funded.

COST RECOVERY

N/A

APPENDIX 1

TRAINING LEVELS AND TYPES OF PERSONAL PROTECTIVE EQUIPMENT

- **Excerpted from 29 Code of Federal Regulations 1910.120 Hazardous Waste Operations and Emergency Response; Final Rule (Federal Register March 6, 1989). (For more detailed information, refer to the analogous National Fire Protection Association 472 *Standard for Professional Competence of Responders to Hazardous Materials Incidents.*) (Page A1-1)**
- **Voluntary regulations for hazardous material responders in California, Sections 2500 et seq. California Code of Regulations, pursuant to Assembly Bill 2702 (Sections 8574.19 [formerly §8574.11] et seq. California Government Code.) (Page A1-6)**

Hazardous Material Responder Levels of Training

There are five levels of "employees who participate, or are expected to participate, in emergency response..." These minimum levels of training should be considered the basis for all responders. Higher degrees of initial and continuing training are recommended.

First Responder Awareness Level. First responders at the awareness level are individuals who are likely to witness or discover a hazardous substance release and who have been trained to initiate an emergency response sequence by notifying the authorities of the release. First responders at the awareness level shall have sufficient training or shall have had sufficient experience to objectively demonstrate competency in the following areas:

- An understanding of what hazardous materials are and the risks associated with them in an incident.
- An understanding of the potential outcomes associated with an emergency created when hazardous materials are present.
- The ability to recognize the presence of hazardous materials in an emergency.
- The ability to identify the hazardous materials, if possible.
- An understanding of the role of the first responder awareness individual in the employer's emergency response plan, including site security and control and the U.S. Department of Transportation's Emergency Response Guidebook.
- The ability to realize the need for additional resources, and to make appropriate notifications to the communication center.

First Responder Operations Level. First responders at the operations level are individuals who respond to releases or potential releases of hazardous substances as part of the initial response to the site for the purpose of protecting nearby persons, property, or the environment from the effects of the release. They are trained to respond in a defensive fashion without actually trying to stop the release. Their function is to contain the release from a safe distance, keep it from spreading, and

prevent exposures. First responders at the operational level shall have received at least eight hours of training or have had sufficient experience to objectively demonstrate competency in the following areas in addition to those listed for the awareness level and the employer shall so certify:

- Knowledge of the basic hazard and risk assessment techniques.
- Know how to select and use proper personal protective equipment provided to the first responder operational level.
- An understanding of basic hazardous materials terms.
- Know how to perform basic control, containment and/or confinement operations within the capabilities of the resources and personal protective equipment available within their unit.
- Know how to implement basic decontamination procedures.
- An understanding of the relevant standard operating procedures and termination procedures.

Hazardous Materials Technician . Hazardous materials technicians are individuals who respond to releases or potential releases for the purpose of stopping the release. They assume a more aggressive role than a first responder at the operations level in that they will approach the point of release in order to plug, patch or otherwise stop the release of a hazardous substance. Hazardous materials technicians shall have received at least 24 hours of training equal to the first responder operations level and, in addition, have competency in the following areas and the employer shall so certify:

- Know how to implement the employer's emergency response plan.
- Know the classification, identification and verification of known and unknown materials by using field survey instruments and equipment.
- Are able to function within an assigned role in the Incident Command System.
- Know how to select and use proper specialized chemical personal protective equipment provided to the hazardous materials technician.
- Understand hazard and risk assessment techniques.
- Are able to perform advance control, containment, and/or confinement operations within the capabilities of the resources and personal protective equipment available with the unit.
- Understand and implement decontamination procedures.
- Understand termination procedures.
- Understand basic chemical and toxicological terminology and behavior.

Hazardous Materials Specialist. Hazardous materials specialists are individuals who respond with, and provide support to, hazardous materials technicians. Their duties parallel those of the hazardous materials technician. However, their duties require a more directed or specific knowledge of the various substances they may be called upon to contain. The hazardous materials specialist would also act as the site liaison with federal, state, local and other government authorities in regard to site activities. Hazardous materials specialists shall have received at least 24 hours of training equal to the technician level and, in addition, have competency in the following areas and the employer shall so certify:

- Know how to implement the local emergency response plan.
- Understand classification, identification and verification of known and unknown materials by using advanced survey instruments and equipment.
- Know of the state emergency response plan.
- Are able to select and use proper specialized chemical personal protective equipment provided to the hazardous materials specialist.

- Understand in-depth hazard and risk techniques.
- Are able to perform specialized control, containment, and/or confinement operations within the capabilities of the resources and personal protective equipment available.
- Are able to determine and implement decontamination procedures.
- Have the ability to develop a site safety and control plan.
- Understand chemical, radiological and toxicological terminology and behavior.

On Scene Incident Commander. Incident commanders, who will assume control of the incident scene beyond the first responder awareness level, shall receive at least 24 hours of training equal to the first responder operations level and, in addition, have competency in the following areas and the employer shall so certify:

- Know and be able to implement the employer's Incident Command system.
- Know how to implement the employer's emergency response plan.
- Know and understand the hazards and risks associated with employees working in chemical protective clothing.
- Know how to implement the local emergency response plan.
- Know of the state emergency response plan and of the Federal Regional Response Team.
- Know and understand the importance of decontamination procedures.

These categories of responders are similar to those that may likely be encountered in the field. All public agency employees that have the potential of being involved in a hazardous material incident should have, at the minimum, first responder awareness level training. **Do not assume what level of training responders might have.**

Personal Protective Equipment (PPE)

Personal Protective Equipment and clothing is required to shield or isolate the person from chemical, physical, and biological hazards that may be encountered at a hazardous material incident. PPE is divided into four categories based on the degree of protection needed. The following descriptions are not definitive. Refer to appropriate documents for a complete description.

An unidentified product with unknown properties should be approached only in Level A or B protection. Never use personal protection equipment unless you are properly trained and feel comfortable with its use. PPE does not protect against fire or explosion unless additional types of protection are used.

Level A- to be selected when the greatest level of skin, respiratory, and eye protection is required. Level A protection should be used when:

- The hazardous substance has been identified and requires the highest level of protection for skin, eyes, and the respiratory system based on either the measured (or potential for) high concentration of a t - mospheric vapors, gases, or particulates; or the site operations and work functions involve a high potential for splash, immersions, orexposure to unexpected vapors, gases or particulates that are harmful to the skin or are capable of being absorbed through the skin.
- Substances with a high degree of hazard to the skin are known or suspected to be present and skin contact is possible.

- Operations are being conducted in confined, poorly ventilated areas, and the absence of conditions requiring Level A protection have not yet been determined.

Primary required equipment:

- Positive pressure, full face-piece self-contained breathing apparatus (SCBA), or positive pressure supplied air respirator with escape SCBA.
- Totally-encapsulating chemical-protective suit.

Other required equipment:

- Inner and outer chemical resistant gloves, chemical resistant boots with steel toe and shank.

Optional equipment:

- Long underwear; hard hat; disposable suit, gloves, boots, and coveralls.

Level B- the highest level of respiratory protection is necessary, but a lesser level of skin protection is needed. Level B should be used when:

- The type and atmospheric concentration of substances have been identified and require a high level of respiratory protection, but less skin protection;
- The atmosphere contains less that 19.5 percent oxygen; or
- The presence of incompletely identified vapors or gasses is indicated by a direct-reading organic vapor detection instrument, but vapors and gases are not suspected of containing high levels of chemicals harmful to the skin or capable of being absorbed through the skin. Note: This involves atmospheres with IDLH concentrations of specific substances that present severe inhalation hazards and that do not represent severe skin hazards; or that do not meet the criteria for use of air-purifying respirators.

Primary required equipment:

- Positive pressure, full face-piece self-contained breathing apparatus (SCBA), or positive pressure supplied air respirator with escape SCBA.
- Hooded chemical-resistant clothing (overalls and long-sleeved jacket; coveralls; one or two piece chemical-splash suit; disposable chemical-resistant overalls).

Other required equipment:

- Inner and outer chemical resistant gloves, chemical resistant boots with steel toe and shank.

Optional equipment:

- Coveralls, hard hat, boot covers, and face shield.

Level C- level C protection should be used when:

- The atmospheric contaminants, liquid splashes, or other direct contact will not adversely affect or be absorbed through any exposed skin;

- The types of air contaminants have been identified, concentrations measured, and an air-purifying respirator is available that can remove the contaminants; and
- All criteria for the use of air-purifying respirators are met.

Primary required equipment:

- Full-face or half-mask, air purifying respirators.
- Hooded chemical-resistant clothing (overalls and long sleeved jacket; coveralls; one or two piece chemical-splash suit; disposable chemical-resistant overalls).

Other required equipment:

- Inner and outer chemical resistant gloves.

Optional equipment:

- Coveralls, chemical resistant boots steel toe and shank, boot covers, hard hat, escape mask, face shield.

Level D- a work uniform affording minimal protection, used for nuisance contamination only. Level D protection should be used when:

- The atmosphere contains no known hazard; and
- Work conditions preclude splashes, immersion, or the potential for unexpected inhalation of, or contact with, hazardous levels of any chemicals.

Primary required equipment:

- Coveralls, boots/shoes chemical resistant steel toe and shank.

Optional equipment:

- Gloves, outer boots, safety glasses or chemical resistant goggles, hard hat, escape mask, face shield.

Note: Combinations of personal protective equipment other than those described for Levels A, B, C, and D protection may be more appropriate and may be used to provide the proper level of protection.

PROPOSED TITLE 19
CALIFORNIA CODE OF REGULATIONS (CCR)
CHAPTER 2
SUBCHAPTER 1.5
SECTION 2500 ET SEQ.

OFFICE OF EMERGENCY SERVICES
Initial Statement of Reasons
for
Hazardous Substances Emergency Response Training

BACKGROUND

In September 1986, Governor Deukmejian signed into law Assembly Bill 2702, Chapter 1503 (LaFollette), which authorizes the Director of the Office of Emergency Services, hereinafter called "Office", to establish a curriculum for the training and education of hazardous substance incident response personnel in order to avoid a duplication of effort and inconsistent application of safety procedures and protocol relative to multi-agency response to hazardous substances incidents. This bill added Article 3.8 (commencing with Section 8574.19) to Division 1, Title 2, of the Government Code.

PUBLIC PROBLEM

The public problem necessitating the promulgation of these regulations is clearly stated by the Legislature at Section 8574.19 of the Government Code:

The Legislature hereby finds and declares that, in order to protect the public health and safety and the environment, and to reduce personal injury and property loss resulting from the sudden release of hazardous substances into the environment, it is necessary to establish a single, coordinated, and standardized hazardous substances incident response training and education plan for firefighters and law enforcement, emergency rescue, and environmental health personnel. A standardized hazardous substances incident response training and education program is necessary to ensure a coordinated emergency response capability throughout the state, and to eliminate duplication and inconsistent hazardous substances emergency response training and education programs.

The description of the public problem set forth above applies to all of the regulations proposed herein. This description is offered to satisfy the requirements of Section 11346.7 (a) (1) of the Government Code.

PURPOSE OF THE REGULATIONS

The primary purpose of this proposed action is to establish a single and coordinated hazardous substances incident response training program for emergency response personnel in order to avoid and eliminate duplicative and inconsistent hazardous substances emergency response training programs.

By establishing a unified and coordinated curriculum of hazardous substances response training and education program, the Office will help protect the public health and safety and the environment, as well as reduce personal injury and property loss resulting from the sudden release of hazardous substances into the environment.

There are currently no regulations in existence which govern the operation of the aforementioned programs. The authority for adopting regulations is set forth at Section 8574.20 (a) of the Government Code.

In developing these regulations, the Office established a Curriculum Development Advisory Committee, pursuant to Section 8574.21 (c) of the Code, which consisted of representatives of the 23 agencies and organizations involved in hazardous substance training, education, or response. This group was augmented by additional experts representing the County Sheriffs' Association and the U.S. Environmental Protection Agency. The Committee served as expert consultants to the Director for the purpose of developing these regulations. The proposed regulations are set forth as follows:

2500. Definitions
2510. Student Certification Curriculum
2520. Instructor Certification Requirements
2530. Student Certification Minimum Standards

The proposed regulations implement, interpret, and make specific Section 8574.19 through 8574.23 of the Government Code.

2500. DEFINITIONS

The specific purpose of this regulation is to ensure that those persons directly affected by the proposed action are able to understand and comprehend the terms used in the text of the regulations. Many of the words included in this section may have meanings which are not generally familiar to those directly affected by the regulations, therefore, those words have been identified and defined.

Where applicable, these definitions have been taken from 29 CRF 1910, the "Hazardous Waste Operations and Emergency Response; Final Rule".

This regulation is necessary to enable those persons directly affected by this action to readily comprehend and understand the text of the proposed regulations without the need to utilize any outside source or reference for clarification purposes.

2510. STUDENT CERTIFICATION CURRICULUM

The specific purpose of this regulation is to provide a comprehensive program of training and education designed to adequately prepare students for response to hazardous substances incidents. Due to the potential for acute hazards, and significant life safety issues, there are a number of classes which the Office considers necessary to include in the curriculum. There are several levels of response personnel each having their own training requirements. The curriculum design addresses training programs for each level.

This regulation is necessary to adequately teach students the dangers of responding to hazardous substances incidents, and to present techniques to mitigate these dangers. This regulation makes specific the training requirements for the various levels of hazardous substances incident response, as set forth at Section 8574.21 (b). By establishing a required minimum standard, the Office will ensure training programs are relevant, appropriate and nonduplicative.

The minimum hours have been established to meet or exceed the requirements of federal law at 29 CFR 1910., where applicable. Also considered in establishing the minimum hours were recommendations for the Hazardous Substances Advisory Group and experience, and student feedback from pilot testing the curriculum.

The minimum standards for each course have been established to meet the mandate of the law to ensure a competent, coordinated response training program, and to assure the life safety of the public, as well as the responder.

<u>FIRST RESPONDER - AWARENESS LEVEL.</u>

The specific purpose of this regulation is to prepare responders to adequately respond at the appropriate level, and to safely utilize their resources and capabilities. Typical responsihilities include personal safety, attempts at isolating the area, proper notification and basic safe identification of hazardous substances.

This regulation is necessary to mitigate the dangers associated with hazardous substances first responders.

<u>FIRST RESPONDER OPERATIONAL - LEVEL.</u>

The specific purpose of this regulation is to prepare emergency personnel to respond at the appropriate level, and to safely utilize their resources and capabilities, including isolation and notification. In addition, they will be taught to identify and assess the release hazards, defensivcly select safe containment methods and/or protective actions; and to take other appropriate actions if adequate safety, resources, and capabilities are assurred.

This regulation is necessary to mitigate the dangers faced by operational first responders, especially given that they are the first level of personnel who are required to enter the scene of a hazardous substances incident.

HAZ MAT INCIDENT COMMANDER/SCENE MANAGER.

The specific purpose of this regulation is to delineate the training requirements for the next level of hazardous substances incident responder; the on-scene manager. On-Scene Managers/Incident Commanders, and their support staff will be taught how to safely manage and coordinate a multi-agency hazardous materials response in the field. They will be taught definitions and authorities, hazard assessment, and management of tactical priorities. They also will be taught about local agencies' contingency plans, how to coordinate a multi-agency response, and be familiar with disposal requirements. Emphasis will be placed on safe and proper management of a hazardous materials response in the field, at a unified command post.

This regulation is necessary because on-scene managers/incident commanders control the immediate operation in an incident and proper training is necessary to assure timely and appropriate decision-making and implementationof incident mitigation and safety plans.

HAZARDOUS SUBSTANCE INCIDENT RESPONSE TRAINING FOR EXECUTIVE MANAGERS.

The specific purpose of this regulation is to define the training requirements for the chief executive, department head, or key management staff of an agency or jurisdiction. Executive managers will be taught an awareness of contingency planning and agency coordination, as well as scene management and communications, particularly with the media. They need to learn about evacuations and investigations,reporting requirements, and contracting for clean-up. They also will be taught an awareness of the overall impacts of the laws, authorities, and liabilities pertaining to a safe and competent hazardous materials incident response, and their role at the incident or emergency operations center level.

This regulation is necessary because the executive manager exerts broad, policy authority over the hazardous substance incident. They should be knowledgeable about both the subject matter and emergency management issues.

ENVIRONMENTAL MONITORING

The specific purpose of this regulation is to define the parameters for training programs in environmental monitoring. Those responsible for environmental monitoring will be taught how to sample hazardous materials, and the requirements for analysis. They will also become familiar with documentation and chain-of-custody procedures, including the packaging, marking, labeling, and shipping of hazardous materials samples. Environmental monitors will learn to be cognizant of legal considerations and quality control/quality assurance issues.

This regulation is necessary because training in this technical area should be consistent and comprehensive. The environmental monitor is a crucial link between incident response and prosecution, therefore thorough training is necessary.

HAZARDOUS SUBSTANCES RELEASE INVESTIGATOR

The specific purpose of this regulation is to set forth the requirements for hazardous substances release investigators. The investigator of hazardous substances releases will be taught pertinent definitions and how to identify hazardous materials. They also will become familiar with laws and regulations encompassing hazardous materials, and learn to demonstrate proper investigative procedures. By the end of their training, the investigator should be competent in preparing a case for court, and familiar with other investigative tasks.

This regulation is necessary because hazardous substances investigators must follow established investigative standards, as well as have a working knowledge of the law. This specialized field of legal involvement has requirements and considerations which are appropriately addressed in a special training program.

HAZARDOUS SUBSTANCES INCIDENTS AT PORTS

The specific purpose of this regulation is to define minimum training standards for personnel responding to hazardous substances incidents at ports. Hazardous substances personnel with these responsibilities will be taught port organization, operations, activities, and responsibilities. They should become familiar with incident coordination concepts and contingency planning in port areas. Hazardous materials regulations in port areas, and the basics of vessel construction and operations and response considerations will also be a requirement. Students should be familiar with case histories and scenarios regarding hazardous substances incidents.

This regulation is necessary to prepare those who work in ports and waterways with the special knowledge they need to effectively respond to a hazardous substances incident.

SECTION 2520. INSTRUCTOR CERTIFICATION - REQUIREMENTS

The specific purpose of this regulation is to provide potential field instructors with the training needed to deliver competent and standardized hazardous materials training in the field. In addition to the course requirements for student certification, instructor candidates must make special application to the Office, as well as complete the appropriate hazardous substances instructor course. This special curriculum is necessary because it prepares the future instructor with not only subject matter expertise, but also methods of instruction in this technical area, and techniques for evaluating student performance to assure compliance with training standards.

This regulation is necessary to ensure that the instructor is properly trained in the most pertinent areas of hazardous substances incident response, and possesses the skills to transmit that information accurately to others.

2500. DEFINITIONS

(a) "Emergency Response" means a response effort by employees from outside the immediate release area or by other designated responders (e.g. mutual aid groups, and local fire departments.) to an occurrence which results, or is likely to result, in an uncontrolled release of a hazardous substance. Responses to incidental releases of hazardous substances where the substance can be absorbed, neutralized, or otherwise controlled at the time of the release by employees in the immediate release area, are not considered to be emergency responses within the scope of this standard. Response to releases of hazardous substances where there is no potential safety or health hazard established (e.g, fire, explosion, or chemical exposure) are not considered to be emergency responses.

(b) "Environmental Monitor" means a public or private employee who has responsibility for health and safety or who evaluates the soil, air or water at the scene of a hazardous substance incident.

(c) "Executive Manager" means the chief executive officer, department head, or key management staff of an agency, organization, or jurisdiction, who has oversight responsibilities for hazardous substance incidents.

(d) "First Responder - Awareness Level" means individuals who are likely to witness or discover a hazardous substance release and who have been trained to initiate an emergency response sequence by notifying the proper authorities of the release. They would take no further action beyond notifying the authorities of the release.

(e) "First Responder - Operations Level" means individuals who respond to releases or potential releases of hazardous substances as part of the initial response at the site, for the purpose of protecting nearby persons, property, or the environment from the effects of the release. They are trained to respond in a defensive fashion without actually trying to stop the release. Their function is to contain the release from a safe distance, keep it from spreading, and prevent exposures.

(f) "Hazardous Substance or Material" means any material or substance as defined at Section 25501 (j), (k) and (l), of the Health and Safety Code.

(g) "Incident Command System" means an organized system of roles, responsibilities, and standard operating procedures used to manage and direct emergency operations.

(h) "Incident Investigator" means the person who has investigative authority and responsibility in relation to a hazardous substance incident.

(i) "Incident Commander/Scene Manager" means the person responsible for all decisions relating to the management of the incident.

(j) "Personal Protective Equipment" means equipment provided to shield or isolate a person from the chemical, physical or thermal hazards that may be encountered at a hazardous materials incident. Personal protective equipment should protect the respiratory system, skin, eyes, face, hands, feet, head, body, and hearing. Personal protective equipment includes both personal protective clothing and respiratory protection.

NOTE: AUTHORITY: SECTION 8574.19 (a), GOVERNMENT CODE; REFERENCE: HAZARDOUS SUBSTANCES EMERGENCY RESPONSE TRAINING, CHAPTER 1503 , DIVISION 1, TITLE 2, (SECTION 8574.19, et seq.) GOVERNMENT CODE; and Section 25501 (j) (k) and (e), Health and Safety Code.

SECTION 2510. STUDENT CERTIFICATION CURRICULUM.

(a) FIRST RESPONDER AWARENESS.

(1) This course shall be a minimum of four hours in length.

(2) Certification for First Responder Awareness level shall include completion of the following courses:

(A) Overview of hazardous materials incidents and the role of the first responder;

(B) Basic hazardous materials recognition and safety;

(C) First responder awareness: safety, isolation and notification; and

(D) Basic command organization, identification and hazard assessment.

(3) The minimum standard shall include successful participation in an exercise/simulation, and a passing score on a written examination.

(b) FIRST RESPONDER OPERATIONAL.

(1) This course shall be a minimum of sixteen hours in length.

(2) Certification for First Responder Operational shall include, in addition to those listed above for first responder awareness, completion of the following courses:

(A) Protective equipment considerations;

(B) First responder operational actions including containment, protective options(e.g. evacuation), decontamination, proper disposal, and documentation;

(C) Overview of scene management and information flow;

(D) Agency coordination and planning;

(E) Health effects;

(F) Safety and isolation via establishing perimeters; and

(G) Legal aspects and the media.

(3) The minimum standard shall include successful participation in an exercise/simulation; and demonstrated proficiency in the use of the Department of Transportation Emergency Response Guidebook, as evaluated by a certified instructor; and a passing score on a written examination.

(c) HAZ MAT INCIDENT COMMANDER/SCENE MANAGER

(1) This course shall be a minimum of twenty-four hours in length.

(2) Certification for on-scene manager/incident commander shall include completion of the following courses:

(A) Overview of hazardous materials incidents and the role of the on-scene manager/incident commander;

(B) Agency coordination, contingency and action planning;

(C) Health effects;

(D) Safety, isolation, and perimeters;

(E) Scene management systems, and incident command system as applied to hazardous materials incidents;

(F) Identification and hazard assessment;

(G) Protective clothing and equipment;

(H) Containment and stabilization methods;

(I) Protective action options, including evacuation and sheltering in place;

(J) Hazardous materials incidents and the media;

(K) Decontamination and clean-up considerations;

(L) Disposal and funding issues;

(M) Documentation and reporting; and

(N) Hazardous materials legal aspects, liabilities, and investigations.

(3) The minimum standard shall include successful participation in an exercise/simulation, as evaluated by a certified instructor; and a passing score on a written examination.

(d) HAZARDOUS SUBSTANCE TRAINING FOR THE EXECUTIVE MANAGER.

(1) This course shall be a minimum of twenty-four hours in length.

(2) Certification for Hazardous Substances Executive Managers shall include the completion of the following courses:

(A) Overview of current federal and state laws pertaining to hazardous materials at the executive management level;

(B) Contingency planning;

(C) Agency coordination;

(D) Scene management, and the incident command system;

(E) Media/communications;

(F) Managing a hazardous materials disaster response in an emergency operations center environment;

(G) Evacuations;

(H) Investigations, and prosecution;

(I) Contracting for clean-up;

(J) Reporting requirements;

(K) Liability; and

(L) Hazardous materials mitigation considerations.

(3) The minimum standard shall be successful participation in an exercise/simulation.

(e) ENVIRONMENTAL MONITORING

(1) This course shall be a minimum of twenty-four hours in length.

(2) Certification in Environmental Monitoring shall include completion of the following courses:

(A) Hazardous materials sampling;

(B) Analytical equipment, procedures, and requirements;

(C) Documentation and chain-of-custody procedures;

(D) Packaging, marking, labeling, and shipping of hazardous materials samples;

(E) Legal considerations; and

(F) Quality control/quality assurance considerations.

(3) The minimum standard shall include successful participation in an exercise/simulation, and a passing score on a written examination.

(f) HAZARDOUS SUBSTANCES RELEASE INVESTIGATOR.

(1) This course shall be a minimum of thirty-two hours in length.

(2) Certification for Hazardous Substances Release Investigator shall include completion of the following courses:

(A) Definitions;

(B) Identification of hazardous materials;

(C) Identification of laws and regulations regarding hazardous materials and wastes;

(D) Hazardous materials investigations procedures;

(E) Preparing a case for prosecution; and

(F) Other investigative tasks.

(3) The minimum standard shall include successful participation in an exercise/simulation, and a passing score on a written examination.

(g) HAZARDOUS SUBSTANCES INCIDENTS AT PORTS.

(1) This course shall be a minimum of eight hours in length.

(2) Certification in Hazardous Substances Incidents at Ports shall include completion of the following courses:

(A) Description of port operations and activities;

(B) Port organization and responsibilities;

(C) Incident coordination;

(D) Hazardous materials regulations in port areas;

(E) Overview of vessel construction and operation;

(F) Response considerations on vessels;

(G) Contingency planning in port areas; and

(H) Case histories/scenarios.

(3) The minimum standard shall include a passing score on a written evaluation.

NOTE: AUTHORITY: SECTION 8574.20 (a), GOVERNMENT CODE; REFERENCE: SECTION 8574.20 (b), (c), (e) , and (f), GOVERNMENT CODE.

SECTION 2520. INSTRUCTOR CERTIFICATION REQUIREMENTS.

(a) Certification as a Hazardous Substances Instructor shall include the following requirements:

(1) Application to the Office of Emergency Services, California Specialized Training Institute; and

(2) Hazardous materials response and/or training experience in the subject matter for which certification is being sought, as evaluated by the Director, Office of Emergency Services, or a designated representative, and

(3) Agreement to adhere to policies, procedures and administrative requirements for delivering hazardous substances field training programs, as established by the Director of the Office of Emergency Services or a designated representative, and

(4) Successful completion of an equivalent subject matter course, for which the applicant is seeking to be certified as an instructor, and

(A) For the First Responder Awareness, First Responder Operational, or Incident Commander/On-Scene Manager levels, successful completion of the appropriate Hazardous Substances Instructor Course, as taught by the Office of Emergency Services; or

(B) For the Executive Manager, Release Investigator, or Incidents at Ports level, successful completion of the Hazardous Substances Instructor Refresher Course, as taught by the Office of Emergency Services.

SECTION 2530. CURRICULUM ACCREDITATION:

(a) Curriculum equivalency and accreditation shall include the following:

(1) Proposed curriculum will be reviewed to determine if curriculum meets criteria established by the Office of Emergency Services, California Specialized Training Institute.

(2) Curriculum will be reviewed on an annual basis to determine on-going accreditation by the Office of Emergency Services, California Specialized Training Institute.

NOTE: AUTHORITY: SECTION 8574.20 (a), GOVERNMENT CODE; REFERENCE: SECTION 8574.20 (b), (c), (e), and (f) GOVERNMENT CODE.

APPENDIX 2
EXCERPTS FROM FIRESCOPE HAZARDOUS MATERIALS MODULE TO THE INCIDENT COMMAND SYSTEM

TABLE OF CONTENTS

Appendix 2

This document is the latest draft of the Hazardous Materials module to the Incident Command System. This document is the result of the knowledge, research, and long hours of meetings by those individuals listed below. The people on this committee were selected by the agencies of the FIRESCOPE Program for their expertise in the subject of Hazardous Materials response. Without the skills, dedication and energy of these committee members this would not have been a successful project.

A special thanks goes to **Mr. Gary Nelson** of the Los Angeles County Fire Department for his liaison work with this group and with the FIRESCOPE Task Force.

FIRESCOPE Hazardous Materials Specialist Group

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INTRODUCTION

The Hazardous Materials organizational module is designed to provide an organizational structure that will provide necessary supervision and control for the essential functions required at virtually all Hazardous Materials incidents. This is based on the premise that controlling the tactical operations of companies and movement of personnel and equipment will provide a greater degree of safety and also reduce the probability of spreading of contaminants. The primary functions will be directed by the Hazardous Materials Group Supervisor, and all resources that have a direct involvement with the hazardous material will be supervised by one of the functional leaders or the Hazardous Materials Group Supervisor.

The three functional positions of the Hazardous Materials Group (Entry Leader, Site Access Control Leader, and Decontamination Leader) require a high degree of control and close supervision. The Entry Leader supervises all companies and personnel operating in the Exclusion Zone. The Entry Leader has the responsibility to direct all tactics and control the positions and functions of all personnel in the Exclusion Zone. The Site Access Control Leader controls all movement of personnel and equipment between the control zones. The Site Access Control Leader has the responsibility for isolating the Exclusion and Contamination Reduction Zone and ensuring that citizens and personnel use proper access routes. The Decontamination Leader ensures all rescue victims, personnel, and equipment have been decontaminated before leaving the incident.

The Hazardous Materials Group Supervisor manages these three functional responsibilities which includes all tactical operations carried out in the Exclusion Zone. All rescue operations, by definition, will come under the direction of the Hazardous Materials Group Supervisor. Evacuation and all other tactical objectives that are outside of the control zones are not the responsibility of the Hazardous Materials Group Supervisor. In addition to the three primary functions, the Group Supervisor will work with a Assistant Safety Officer, who is Hazardous Materials trained, and who must be present at the hazardous site. The Incident Safety Officer will have overall incident safety concerns, with the Assistant Safety Officer working directly with the Hazardous Materials Group Supervisor. The Group Supervisor may also supervise one or more Technical Specialists.

Tactical operations outside of the controlled zones, as well as many other hazardous materials related functions, will be managed by regular ICS positions. In most cases, the array of tactical objectives such as evacuation, isolation, medical, traffic control, etc., will be managed by Division/Group Supervisors. Other needs will be met by filling Command and General Staff positions.

UNIFIED COMMAND

It is assumed that all hazardous materials incidents will be managed under Unified Command principles because in virtually all cases fire, law enforcement, and public health will have some statutory functional responsibility for incident mitigation. Depending on incident factors, several other agencies will respond to a hazardous materials incident.

The Assisting Agencies section of ICS-HM-120-1 lists some of the typical functional responsibilities of Law Enforcement and Health agencies.

MODULAR DEVELOPMENT

A series of examples of modular development are included to illustrate one method of expanding the incident organization.

INITIAL RESPONSE ORGANIZATION (page 4)

Initial response resources are managed by the Incident Commander who will handle all Command and General Staff responsibilities.

REINFORCED RESPONSE ORGANIZATION (page 5)
(3 to 15 fire and/or Law Enforcement units)

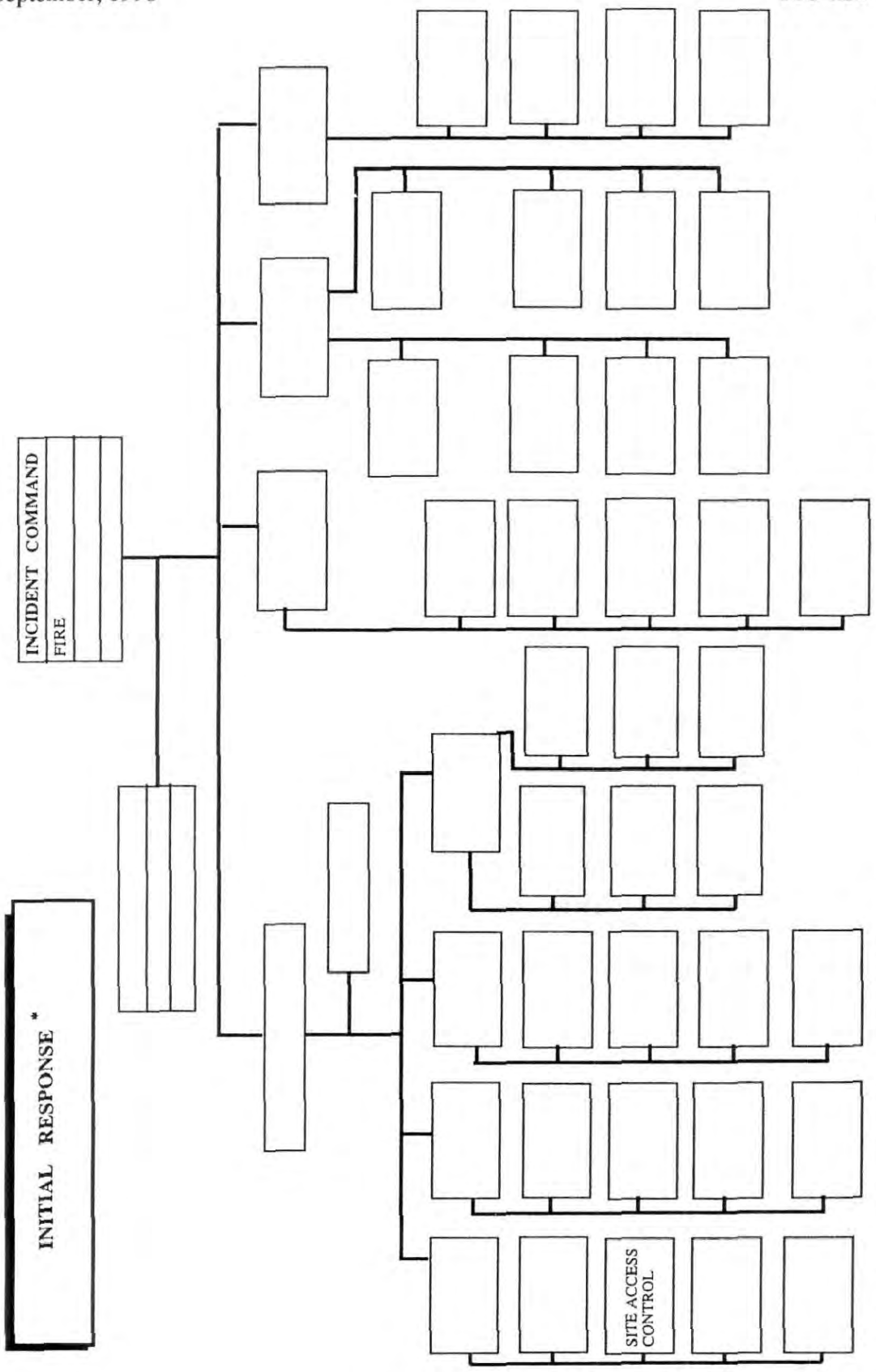
The Incident Commander has established a Hazardous Materials Group to manage all activities around the Control Zones and has assigned two Law Enforcement units to isolate the operational area. One Law Enforcement Officer has met with the Fire Incident Commander and together they have established Unified Command. The Incident Commanders have decided to establish a Planning Section to manage information.

MULTI-DIVISION ORGANIZATION (page 6)

The Incident Commanders have established most Command and General Staff positions and have established a combination of divisions and groups.

MULTI-BRANCH ORGANIZATION (page 7)

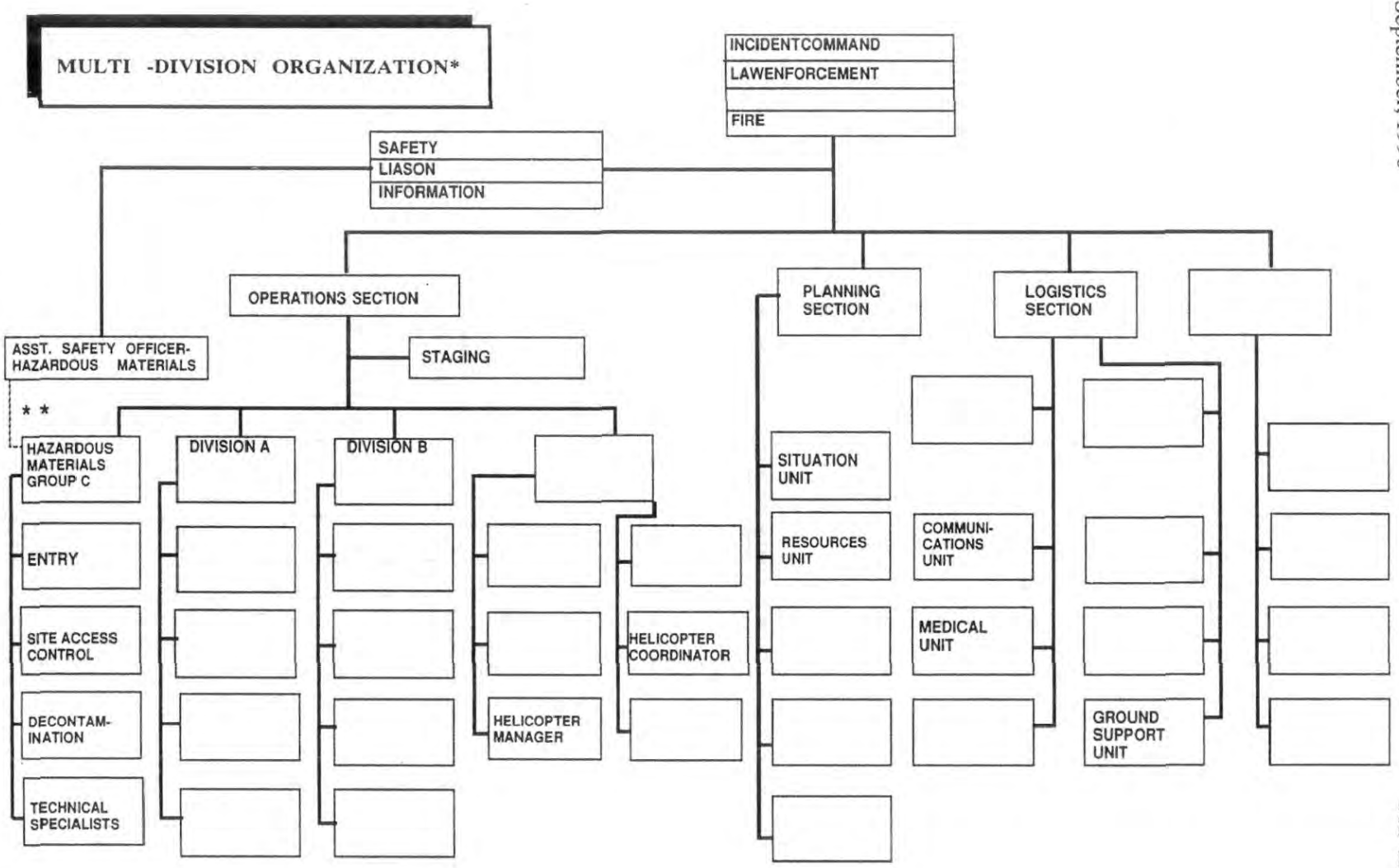
The Incident Commanders have established all Command and General Staff positions and have established four branches.



*INITIAL RESPONSE ORGANIZATION (EXAMPLE) Initial response resources are managed by the Incident Commander who will handle all Command and General staff responsibilities.

*REINFORCED RESPONSE ORGANIZATION (3 to 15 Fire and/or Law Enforcement Units) (Example) The two Incident Commanders have established Unified Command. They have established a Hazardous Materials Group to manage all activities around the Control Zones and have organized Law Enforcement units into a task force to isolate the operational area. The Incident Commanders have decided to establish a Planning Section, a Staging Area, and a Safety Officer.

**Coordination- See page 12.



*MULTI-DIVISION ORGANIZATION (EXAMPLE) The Incident Commanders have activated most Command and General Staff positions and have established a combination of divisions and groups.

**Coordination- See Page 12

*MULTI-BRANCH ORGANIZATION (EXAMPLE) The Incident Commanders have activated all Command and General Staff positions and have established four branches in the Operations Section.

**Coordination- See page 12.

HAZARDOUS MATERIALS POSITION DESCRIPTIONS AND FUNCTIONS

HAZARDOUS MATERIALS GROUP SUPERVISOR - The Hazardous Materials Group Supervisor reports to the Operations Section Chief (or Hazardous Materials Branch Director if activated). The Hazardous Materials Group Supervisor is responsible for the implementation of the phases of the Incident Action Plan dealing with the Hazardous Materials Group operations. The Hazardous Materials Group Supervisor is responsible for the assignment of resources within the Hazardous Materials Group, reporting on the progress of control operations and the status of resources within the Group. The Hazardous Materials Group Supervisor directs the overall operations of the Hazardous Materials Group.

A. Obtains briefing from the Operations Section Chief or Hazardous Materials Branch Director (if activated).

B. Ensures the development of Control Zones and Access Control Points and the placement of appropriate control lines.

C. Evaluates and recommends public protection action options to the Operations Chief or Branch Director (if activated).

D. Ensures that current weather data and future weather predictions are obtained.

E. Establishes environmental monitoring of the hazard site for contaminants.

F. Ensures that a Site Safety Plan is developed and implemented.

G. Conducts safety meetings with the Hazardous Materials Group.

H. Participates, when requested, in the development of the Incident Action Plan. (Develops the Hazardous Materials attachment to the Incident Action Plan).

I. Ensures that nationally recommended safe operational procedures are followed.

J. Ensures that the proper Personal Protective Equipment is selected and used.

K. Ensures that appropriate agencies are notified through the Incident Commander.

L. Maintains Unit Log (ICS 214).

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HAZARDOUS MATERIALS POSITION DESCRIPTIONS AND FUNCTIONS

ENTRY LEADER - Reports to the Hazardous Materials Group Supervisor. The Entry Leader is responsible for the overall entry operations of assigned personnel within the Exclusion Zone.

A. Obtains briefing from the Hazardous Materials Group Supervisor.

B. Supervises entry operations.

C. Recommends actions to mitigate the situation within the Exclusion Zone.

D. Carries out actions, as directed by the Hazardous Materials Group Supervisor, to mitigate the hazardous materials release or threatened release.

E. Maintains communications and coordinates operations with the Decontaminaton Leader.

F. Maintains communications and coordinates operations with the Site Access Control Leader.

G. Maintains communications and coordinates operations with Technical Specialist/Hazardous Materials Reference.

H. Maintains control of the movement of people and equipment within the Exclusion Zone, including contaminated victims.

I. Directs rescue operations, as needed, in the Exclusion Zone.

J. Maintains Unit Log (ICS 214).

HAZARDOUS MATERIALS POSITION DESCRIPTIONS AND FUNCTIONS

DECONTAMINATION LEADER - Reports to the Hazardous Materials Group Supervisor. The Decontamination Leader is responsible for the operations of the decontamination element, providing decontamination as required by the Incident Action Plan.

A. Obtains briefing from the Hazardous Materials Group Supervisor.

B. Establishes the Contamination Reduction Corridor(s).

C. Identifies contaminated people and equipment.

D. Supervises the operations of the decontamination element in the process of decontaminating people and equipment.

E. Maintains control of movement of people and equipment within the Contamination Reduction Zone.

F. Maintains communication and coordinates operations with the Entry Leader.

G. Maintains communications and coordinates operations with the Site Access Control Leader.

H. Coordinates the transfer of contaminated patients requiring medical attention (after decontamination) to the Medical Group.

I. Coordinates handling, storage, and transfer of contaminates within the Contamination Reduction Zone.

J. Maintains Unit Log (ICS 214).

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HAZARDOUS MATERIALS POSITION DESCRIPTIONS AND FUNCTIONS

SITE ACCESS CONTROL LEADER - Reports to the Hazardous Materials Group Supervisor. Site Access Control Leader is responsible for the control of the movement of all people and equipment through appropriate access routes at the hazard site and ensures that contaminants are controlled and records are maintained.

A. Obtains briefing from the Hazardous Materials Group Supervisor.

B. Organizes and supervises assigned personnel to control access to the hazard site.

C. Oversees the placement of the Exclusion Control Line and the Contamination Control Line.

D. Ensures appropriate action is taken to prevent the spread of contamination.

E. Establishes the Safe Refuge Area within the Contamination Reduction Zone. Appoints Safe Refuge Area Manager (as needed).

F. Ensures that injured or exposed individuals are decontaminated prior to departure from the hazard site.

G. Tracks persons passing through the Contamination Control Line to ensure that long term observations are provided.

H. Coordinates with the Medical Group for proper separation and tracking of potentially contaminated individuals needing medical attention.

I. Maintains observations of any changes in climatic conditions or other circumstances external to the hazard site.

J. Maintains communications and coordinates operations with the Entry Leader.

K. Maintains communications and coordinates operations with the Decontamination Leader.

L. Maintains Unit Log (ICS 214).

HAZARDOUS MATERIALS POSITION DESCRIPTIONS AND FUNCTIONS

ASSISTANT SAFETY OFFICER - HAZARDOUS MATERIALS - Reports to the Incident Safety Officer as an Assistant Safety Officer and coordinates with the Hazardous Materials Group Supervisor (or Hazardous Materials Branch Director if activated). The Assistant Safety Officer-Hazardous Materials coordinates safety related activities directly relating to the Hazardous Materials Group operations as mandated by 29 CFR part 1910.120 and Subsection 5192, Title 8, CCR. This position advises the Hazardous Materials Group Supervisor (or Hazardous Materials Branch Director) on all aspects of health and safety and has the authority to stop or prevent unsafe acts. It is mandatory that a Assistant Safety Officer-Hazardous Materials be appointed at all hazardous materials incidents. In a multi-activity incident the Hazardous Materials Safety Officer does not act as safety for the overall incident.

A. Obtains briefing from the Incident Safety Officer.

B Obtains briefing from the Hazardous Materials Group Supervisor.

C. Participates in the preparation of, and implements the Site Safety Plan.

D. Advises the Hazardous Materials Group Supervisor (or Hazardous Materials Branch Director) of deviations from the Site Safety Plan or any dangerous situations.

E. Has full authority to alter, suspend, or terminate any activity that may be judged to be unsafe.

F. Ensures protection of the Hazardous Materials Group personnel from physical, environmental, and chemical hazards/exposures.

G. Ensures provision of required emergency medical services for assigned personnel and coordinates with Medical Unit Leader.

H. Ensures that medical related records for the Hazardous Materials Group personnel are maintained.

I. Maintains Unit Log (ICS 214).

HAZARDOUS MATERIALS POSITION DESCRIPTIONS AND FUNCTIONS

TECHNICAL SPECIALIST-HAZARDOUS MATERIALS REFERENCE - Reports to the Hazardous Materials Group Supervisor (or Hazardous Materials Branch Director if activated). This position provides technical information and assistance to the Hazardous Materials Group using various reference sources such as computer data bases, technical journals, CHEMTREC, and phone contact with facility representatives. The Technical Specialist-Hazardous Materials Reference may provide product identification using hazardous categorization tests and/or any other means of identifying unknown materials.

A. Obtains briefing from the Hazardous Materials Group Supervisor.

B. Obtains briefing from the Planning Section Chief.

C. Provides technical support to the Hazardous Materials Group Supervisor.

D. Maintains communications and coordinates operations with the Entry Leader.

E. Provides and interprets environmental monitoring information.

F. Provides analysis of hazardous material sample.

G. Determines personal protective equipment compatibility to hazardous material.

H. Provides technical information of the incident for documentation.

I. Provides technical information management with public and private agencies ie: Poison Control Center, Tox Center, CHEMTREC, State Department of Food and Agriculture, National Response Team.

J. Assists Planning Section with projecting the potential environmental effects of the release.

K. Maintains Unit Log (ICS 214).

ASSISTING AGENCIES IN HAZARDOUS MATERIALS INCIDENT

LAW ENFORCEMENT - The local law enforcement agency will respond to most Hazardous Materials incidents. Depending on incident factors, law enforcement may be a partner in Unified Command or may participate as an assisting agency. Some functional responsibilities that may be handled by law enforcement are:

A. Isolating the incident area

B. Managing crowd control

C. Managing traffic control

D. Managing public protective action

E. Providing scene management for on-highway incidents

F. Managing criminal investigations

September, 1990 ICS-HM-120-1

ASSISTING AGENCIES IN HAZARDOUS MATERIALS INCIDENT

Health Agencies- In most cases the local or State health agency will be at the scene as a partner in Unified Command. Some functional responsibilities that may be handled by health agencies are:

A. Determining the identity and nature of the Hazardous Materials.

B. Establish the criteria for clean-up and disposal of the Hazardous Materials.

C. Declaring the site safe for re-entry by the public.

D. Providing medical follow-up of exposed individuals.

E. Monitoring the environment.

F. Supervising clean-up of site.

G. Enforcing various laws and acts.

H. Determining legal responsibility.

I. Providing technical advice.

J. Approving cost of clean-up.

GLOSSARY OF TERMS

29 CFR PART 1910.120 — 29 of the Code of Federal Regulations, Part 1910.120 is the Hazardous Waste operations and Emergency Response reference document as required by SARA. This document covers employees involved in certain hazardous waste operations and any emergency response to incidents involving hazardous situations. Federal OSHA enforces this code.

ACCESS CONTROL POINT — The point of entry and exit from the control zones. Regulates access to and from the work areas.

CHEMTREC — Chemical Transportation Emergency Center. A public service of the Chemical Manufactures Association.

COMPATIBILITY — The matching of Personal Protective Equipment to the hazardous materials involved in order to provide the best protection for the worker.

CONTAMINATION REDUCTION CORRIDOR (CRC)— That area within the Contamination Reduction zone where the actual decontamination is to take place. Exit from the Exclusion zone is through the Contamination Reduction Corridor (CRC). The CRC will become contaminated as people and equipment pass through to the decontamination stations.

CONTAMINATION CONTROL LINE (CCL)— The established line around the Contamination Reduction Zone that separates the contamination Reduction Zone from the Support Zone.

CONTAMINATION REDUCTION ZONE (CRZ)— That area between the Exclusion Zone and the Support Zone. This zone contains the Personnel Decon-

tamination Station. This zone may require a lesser degree of personnel protection than the Exclusion Zone. This area separates the contaminated area from the clean area and acts as a buffer to reduce contamination of the clean area.

CONTROL ZONES— The geographical areas within the control lines set up at a hazardous materials incident. The three zones most commonly used are the Exclusion Zone, Contamination Reduction Zone, and Support Zone.

DECONTAMINATION (DECON)— That action required to physically remove or chemically change the contaminants from personnel and equipment.

ENVIRONMENTAL— Atmospheric, Hydrologic and Geologic media (air, water and soil).

EXCLUSION ZONE— That area immediately around the spill. That area where contamination does or could occur. The innermost of the three zones of a hazardous materials site. Special protection is required for all personnel while in this zone.

EVACUATION — The removal of potentially endangered, but not yet exposed, persons from an area threatened by a hazardous materials incident. Entry into the evacuation area should not require special protective equipment.

HAZARDOUS CATEGORIZATION TEST (HAZ CAT) — A field analysis to determine the hazardous characteristics of an unknown material.

HAZARDOUS MATERIAL — Any material which is explosive, flammable, poisonous, corrosive, reactive, or radioactive, or any combi-

nation, and requires special care in handling because of the hazards it poses to public health, safety, and/or the environment.

HAZARDOUS MATERIALS INCIDENT— Uncontrolled, unlicensed release of hazardous materials during storage or use from a fixed facility or during transport outside a fixed facility that may impact the public health, safety and/or environment.

MITIGATE— Any action employed to contain, reduce or eliminate the harmful effects of a spill or release of a hazardous substance.

PERSONAL PROTECTIVE EQUIPMENT (PPE) That equipment and clothing required to shield or isolate personnel from the chemical, physical, and biologic hazards that may be encountered at a hazardous materials incident.

RESCUE — The removal of victims from an area determined to be contaminated or otherwise hazardous. Rescue shall be performed by emergency personnel using appropriate personal protective equipment.

SAFE REFUGE AREA (SRA)— An area within the Contamination Reduction Zone for the assemblage of individuals who are witnesses to the hazardous materials incident or who were on site at the time of the spill. This assemblage will provide for the separation of contaminated persons from non-contaminated persons.

SITE— That area within the Contamination Reduction Control Line at a hazardous materials incident.

SITE SAFETY PLAN— An Emergency Response Plan describing the general safety procedures to be followed at an incident involving hazardous materials. This plan should be prepared in accordance with 29 CFR 1910.120 and the U.S. Environmental Protection Agency's "Standard

Operating Safety Guides for Environmental Incidents (1984)".

SUPPORT ZONE— The clean area outside of the Contamination Control Line. Equipment and personnel are not expected to become contaminated in this area. Special protective clothing is not required. This is the area where resources are assembled to support the hazardous materials operation.

Appendix 2

Appendix 3

HAZARDOUS MATERIAL INCIDENT CONTINGENCY PLAN

REGISTRATION FORM

OFFICE OF EMERGENCY SERVICES, HAZARDOUS MATERIAL DIVISION
2800 MEADOWVIEW ROAD, SACRAMENTO, CALIFORNIA 95832
TELEPHONE: (916) 427-4287, ATSS 466-4287
FAX: (916) 427-0418

To receive plan updates as they occur, you must complete and return this form t the Office of Emergency Services, Hazardous Material Division at the above address.

PLEASE TYPE OR PRINT LEGIBLY

Agency Name _____

Street Address _____

City _____ State _____ Zip _____

Contact Name _____

Phone Number _____ Fax Number _____

Suggestions for plan improvement _____

_____

_____

_____

Errors or inaccuracies noted in this plan _____

_____

_____

APPENDIX 4
ACRONYMS

AA- Administering Agency
ABAG- Association of Bay Area Governments
AG- Attorney General
AMBAG- Association of Monterey Bay Area Governments
APCD- Air Pollution Control District
APCO- Air Pollution Control Officer
ARB- Air Resources Board
ARC- American Red Cross
ATSDR- Agency for Toxic Substances and Disease Registry
ATSS- Automatic Telecommunications Switching System

BIA- Bureau of Indian Affairs
BLM- Bureau of Land Management
BOM- Bureau of Mines

CA- California
CAC- County Agricultural Commissioner (formerly CA Administrative Code, now CCR)
CAER- Community Awareness and Emergency Response
CALCORD- CA On-Scene Emergency Coordination Channel
Cal OSHA- CA Occupational Safety and Health Administration
CALTRANS- CA Department of Transportation
CAMEO- Computer Aided Management of Emergency Operations
CAP- Civil Air Patrol
CAS- Chemical Abstract Service
CCC- CA Conservation Corps (or CA Coastal Commission)
CCR- CA Code of Regulations
CDC- Centers for Disease Control (or CA Department of Corrections)
CDF- CA Department of Forestry and Fire Protection
CDFA- CA Department of Food and Agriculture
CEC- CA Energy Commission
CEPRC- Chemical Emergency Planning and Response Commission
CERCLA- Comprehensive Emergency Response Compensation and Liability Act
CFR- Code of Federal Regulations
CHEMTREC- Chemical Transportation Emergency Center
CHLOREP- Chlorine Emergency Program
CHP- CA Highway Patrol
CHMIRS- CA Hazardous Material Incident Reporting System
CLEMARS- CA Law Enforcement Mutual Aid Radio System
CLERS- CA Law Enforcement Radio System
CNG- CA National Guard
COHWMP- County Hazardous Waste Management Plan
CPG- Civil Preparedness Guide
CRC- Coastal Resource Coordinator
CSFM- CA State Fire Marshal
CSTI- CA Specialized Training Institute
CVC- CA Vehicle Code
CWA- Clean Water Act

DEA- Drug Enforcement Administration
DFG- Department of Fish and Game
DHS- Department of Health Services
DOC- Department of Commerce
DOD- Department of Defense
DOE- Department of Energy
DOG- Division of Oil and Gas
DOI- Department of the Interior
DOJ- Department of Justice
DOL- Department of Labor
DOT- Department of Transportation
DPR- Department of Parks and Recreation
DTG- Date/Time Group
DWR- Department of Water Resources

EERU- Environmental Emergency Response Unit
EMB- Environmental Management Branch
EMS- Emergency Medical Services
EMSA- Emergency Medical Services Authority
EOC- Emergency Operations Center
EOD- Explosive Ordnance Disposal
EPA- Environmental Protection Agency
ERPG- Emergency Response Planning Guidelines
ERT- Environmental Response Team

FAA- Federal Aviation Administration
FAX- Facsimile
FEMA- Federal Emergency Management Agency
FHA- Federal Highway Administration
FIRESCOPE- Firefighting Resources of California Organized for Potential Emergencies
FRA- Federal Railroad Administration
FRERP- Federal Radiological Emergency Response Plan
FTS- Federal Telephone System

HEAR- Hospital Emergency Administrative Radio System
HHS- Health and Human Services
HMICP- Hazardous Material Incident Contingency Plan
HMIS- Hazardous Material Incident Reporting System
HMIX- Hazardous Material Information Exchange
HWSF- Hazardous Waste Strike Force

IC- Incident Commander
ICS- Incident Command System
IDLH- Immediately Dangerous to Life and Health

JPA- Joint Powers Agreement

LEPC- Local Emergency Planning Committee

MACS- Multi-Agency Coordination System
MHFP- Multi-Hazard Functional Plan
MMS- Minerals Management Service
MOU- Memorandum of Understanding
MW- Megawatt

NFPA- National Fire Protection Association
NMFS- National Marine Fisheries Service
NOAA- National Oceanic and Atmospheric Administration
NPAC- National Poison Antidote Center
NRC- National Response Center (or Nuclear Regulatory Commission)
NRT- National Response Team
NSF- National Strike Force (or National Science Foundation)
NTSB- National Transportation Safety Board

OES- Office of Emergency Services
OHMT- Office of Hazardous Material Transportation
OSC- On-Scene Coordinator
OSHA- Occupational Safety and Health Administration

PEL- Permissible Exposure Limit
PIAT- Public Information Assist Team
PIO- Public Information Officer
PPE- Personal Protective Equipment
PUC- Public Utilities Commission

RACES- Radio Amateur Civil Emergency Services
RCP- Regional Contingency Plan
RMPP- Risk Management and Prevention Program
RP- Responsible Party
RRT- Regional Response Team
RSPA- Research and Special Programs Administration
RWQCB- Regional Water Quality Control Board

SAC- State Agency Coordinator
SARA- Superfund Amendments and Reauthorization Act
SCAG- Southern California Association of Governments
SERC- State Emergency Response Commission
SIOSC- State Interagency Oil Spill Committee
SLC- State Lands Commission
SM- Scene Manager
SOC- State Operations Center
SOP- Standard Operating Procedures
SPCC- Spill Prevention Containment and Countermeasures
SSC- Scientific Support Coordinator
STEL- Short Term Exposure Limit
SWRCB- State Water Resources Control Board

TAT- Technical Assistance Team
TLA- Three Letter Acronym
TLV- Threshold Limit Value
TSCP- Toxic Substances Control Program

UC- University of California
USA- Underground Service Alert
USCG- United States Coast Guard
USDA- United States Department of Agriculture
USFS- United States Forest Service
USFWS- United States Fish and Wildlife Service
USGS- United States Geological Survey

APPENDIX 5

HMICP Reference Pages

IMPORTANT TELEPHONE NUMBERS (as of November 1990)

3-13 through 3-17	**FOR NOTIFICATION PURPOSES, THE FOLLOWING AGENCIES MUST BE CALLED**	
	Local Government	**911 (or appropriate local number)**
	State Government (State Warning Center)	**800-852-7550 or 916-427-4341**
	On Highway Spills (Call CHP)	**911 (or appropriate local number)**
	Federal Government (National Response Center)	**800-424-8802 or 202-426-2675**
	(Administering Agency [AA] must also be notified if the call to 911 does not contact the AA.)	

	OTHER TELEPHONE NUMBERS	Telephone Number
2.5-3	CHEMTREC Chemical information and emergency handling; coordination with shipper and manufacturer; Chlorine, Compressed Gases, Phosphorus, Swimming Pool Chemicals, Hydrogen Cyanide, Hydrogen Fluoride, LPG and other product mutual aid	800-424-9300
2.4-3	EPA Spill Phone	415-744-2000
2.4-2	U.S. Coast Guard Marine Safety Offices	
	San Diego	619-557-5860
	Los Angeles/Long Beach	213-499-5555
	San Francisco	415-437-3073
2.1-3	U.S. Coast Guard 11th Coast Guard District	213-499-5330
2.4-9	NOAA Scientific Support Coordinator	213-499-5475 or 206-526-6317
2.1-2	DHS Toxics Hotline- To report violations of hazardous waste laws	800-258-6942

7-2 ACCESSING EMERGENCY FUNDING

The Responsible Party (RP) is liable for the costs associated with the abatement and mitigation of a hazardous material spill. If the RP is unknown, unwilling or unable to provide a safe and adequate response, government may have to ensure the protection of the public health and safety, and the environment by providing abatement and mitigation of the spill. The following telephone numbers are provided to assist responding agencies.

7-2 • **Use responsible party and local resources first!**

7-3 STATE

	Impact	Agency and Fund Name	Telephone Number
7-3	Human Health	Department of Health Services Emergency Reserve Account	916-324-3773 or 800-852-7550
7-3	Illegal Drug Labs	Department of Justice Clandestine Laboratory Enforcement Program	Contact Local Health Officer
7-4	Fish, Wildlife and Habitat	Department of Fish and Game (DFG) Fish and Wildlife Pollution Account	800-852-7550 to access DFG Pollution Coordinator
7-4	Marine Oil Spill	DFG Office of Oil Spill Response Oil Spill Response Trust Fund	800-852-7550 to access Administrator of Oil Spill Response
7-5	Surface and Groundwater	State Water Resources Control Board (SWRCB) Water Pollution Cleanup and Abatement Account	800-852-7550 to access SWRCB

7-5 FEDERAL

	Spill Type	Fund Name	Telephone Number
7-5	Oil Spill	Oil Spill Liability Trust Fund	800-424-8802
7-6	Hazardous Material	Superfund (CERCLA)	800-424-8802

2.3-5 POISON CONTROL CENTERS

Davis	800-342-9293, 916-453-3692	San Francisco	800-523-2222, 415-476-6600
Santa Clara	800-662-9886 (7), 408-299-5112(3,4)	Fresno	800-346-5922, 209-445-1222
Los Angeles	800-777-6476, 213-664-5151	San Diego	800-876-4766, 619-543-6000
Irvine	800-544-4404, 714-634-5988		

APPENDIX 5

HMICP Reference Pages

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	State Government (State Warning Center)	**800-852-7550 or 916-427-4341**
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	(Administering Agency [AA] must also be notified if the call to 911 does not contact the AA.)	

	OTHER TELEPHONE NUMBERS	Telephone Number
2.5-3	CHEMTREC	800-424-9300
	Chemical information and emergency handling; coordination with shipper and manufacturer; Chlorine, Compressed Gases, Phosphorus, Swimming Pool Chemicals, Hydrogen Cyanide, Hydrogen Fluoride, LPG and other product mutual aid	
2.4-3	EPA Spill Phone	415-744-2000
2.4-2	U.S. Coast Guard Marine Safety Offices	
	San Diego	619-557-5860
	Los Angeles/Long Beach	213-499-5555
	San Francisco	415-437-3073
2.1-3	U.S. Coast Guard 11th Coast Guard District	213-499-5330
2.4-9	NOAA Scientific Support Coordinator	213-499-5475 or 206-526-6317
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Santa Clara	800-662-9886 (7), 408-299-5112(3,4)	Fresno	800-346-5922, 209-445-1222
Los Angeles	800-777-6476, 213-664-5151	San Diego	800-876-4766, 619-543-6000
Irvine	800-544-4404, 714-634-5988		

Appendix E2

Cortese List

SITE / FACILITY NAME	ENVIROSTOR ID	PROGRAM TYPE	STATUS	STATUS DATE	ADDRESS DESCRIPTION	CITY	ZIP	CALENVIROSCREEN SCORE	COUNTY	SITE CODE	LATITUDE	LONGITUDE
		FEDERAL SUPERFUND			COVERS CITY OF SAN GABRIEL, PORTIONS OF CITIES OF ALHAMBRA,							
AREA 3 (SAN GABRIEL VALLEY SUPERFUND SITE)	60001335	- LISTED	ACTIVE	5/12/2015	ROSEMEAD, TEMPLE CITY, SAN MARINO AND SOUTH PASADENA	ALHAMBRA	91778	71-75%	LOS ANGELES	301178	34.09858579	-118.1165886
410 E. 32ND STREET & 317 E. 33RD STREET	60002760	STATE RESPONSE	ACTIVE	12/6/2018	410 E. 32ND STREET & 317 E. 33RD STREET	LOS ANGELES	90011	91-95%	LOS ANGELES	401862	34.01844379	-118.2679572
AMTRAK REDONDO JUNCTION FACILITY	19400012	STATE RESPONSE	ACTIVE	1/10/2003	2435 E. WASHINGTON BLVD.	LOS ANGELES	90021	91-95%	LOS ANGELES	300719	34.01915871	-118.2264626
			CERTIFIED / OPERATION & MAINTENANCE -									
CALTRANS I-105 #16 & 17	19990003	STATE RESPONSE	LAND USE RESTRICTIONS	6/30/1994	I-5 FWY BTW NORMANDIE BLV & IMPERIAL HWY	LOS ANGELES	90047	96-100%	LOS ANGELES	300203	33.92855586	-118.3017158
CHARLES CAINE COMPANY, INC.	19281216	STATE RESPONSE	ACTIVE	7/2/2001	8325 HINDRY AVENUE	LOS ANGELES	90045	56-60%	LOS ANGELES	300997	33.9627787	-118.3738661
DAVIS CHEMICAL COMPANY	19281215	STATE RESPONSE	ACTIVE - LAND USE RESTRICTIONS	9/6/2000	1550 NORTH BONNIE BEACH PLACE	LOS ANGELES	90063	96-100%	LOS ANGELES	300432	34.0591752	-118.1826778
										400048,		
		FEDERAL SUPERFUND								400851,		
DEL AMO FACILITY	19300230	- LISTED	ACTIVE - LAND USE RESTRICTIONS	4/22/1996	DEL AMO BLVD & VERMONT AVE	LOS ANGELES	90020	96-100%	LOS ANGELES	401628	33.8497	-118.292
										300065,		
			CERTIFIED / OPERATION & MAINTENANCE -							300647,		
FRANCISCAN CERAMICS, INC.	19320112	STATE RESPONSE	LAND USE RESTRICTIONS	12/30/1994	2901 LOS FELIZ BOULEVARD	LOS ANGELES	90039	96-100%	LOS ANGELES	301628	34.12656111	-118.2629333
										300457,		
										308400,		
HARD CHROME PRODUCTS	19340231	STATE RESPONSE	ACTIVE	7/1/2001	617 EAST 56TH STREET	LOS ANGELES	90011	96-100%	LOS ANGELES	908400	33.99183625	-118.2643676
INTERNATIONAL LEAD CO. (A.K.A. WESTERN LEAD AND			CERTIFIED / OPERATION & MAINTENANCE -									
METAL CO.)	19390044	STATE RESPONSE	LAND USE RESTRICTIONS	12/30/2007	2182 EAST 11TH STREET	LOS ANGELES	90021	91-95%	LOS ANGELES	300591	34.02421476	-118.2338372
PALACE PLATING	19340646	STATE RESPONSE	ACTIVE	7/13/2018	710 EAST 29TH STREET	LOS ANGELES	90011	91-95%	LOS ANGELES	301391	34.01844918	-118.2626672
		FEDERAL SUPERFUND								300126,		
SAN FERNANDO VALLEY (AREA 1)	19990011	- LISTED	ACTIVE	5/15/1996	NORTH HOLLYWOOD WELLFIELD AREA	LOS ANGELES	91601	96-100%	LOS ANGELES	300173	34.1875	-118.3838889
		FEDERAL SUPERFUND										
SAN FERNANDO VALLEY (AREA 4)	19990009	- LISTED	CERTIFIED / OPERATION & MAINTENANCE	1/1/1999	POLLOCK WELLFIELD	LOS ANGELES	90086	96-100%	LOS ANGELES	300129	34.12944444	-118.2641667
										301695,		
SERVICE PLATING COMPANY INC	60002166	STATE RESPONSE	ACTIVE	4/1/2015	1855 EAST 62ND STREET	LOS ANGELES	90001	96-100%	LOS ANGELES	301695	33.98385174	-118.2391685
SPENCE PROPERTY AKA DRY CLEANER IN EAGLE ROCK	60000305	STATE RESPONSE	ACTIVE	5/5/2006	7047-7051 NORTH FIGUEROA STREET	LOS ANGELES	90042	51-55%	LOS ANGELES	301285	34.130497	-118.188914
										300683,		
STANDARD NICKEL CHROMIUM PLATING CO.	71003183	STATE RESPONSE	ACTIVE - LAND USE RESTRICTIONS	6/4/2004	811,817/819, 825 & 826 E. 62ND STREET	LOS ANGELES	90001	96-100%	LOS ANGELES	308401	33.982915	-118.260409
										900272,		
WATTS/JORDAN DOWNS PROJECT	60002017	STATE RESPONSE	ACTIVE	2/12/2016	VARIOUS ADDRESSES NEAR ALAMEDA STREET AND EAST 97TH STREET	LOS ANGELES	90002	96-100%	LOS ANGELES	900313	33.9487635	-118.2298932
										300545,		
										300855,		
WILLIAM MEAD HOMES	19290312	STATE RESPONSE	ACTIVE - LAND USE RESTRICTIONS	10/5/2001	1300 CARDINAL STREET	LOS ANGELES	90012	96-100%	LOS ANGELES	301015	34.06318	-118.229891
CORNELL-DUBILIER ELECTRONICS	19360279	STATE RESPONSE	ACTIVE - LAND USE RESTRICTIONS	4/14/2015	4144 GLENCOE AVENUE	MARINA DEL REY	90292	41-45%	LOS ANGELES	300040	33.98898075	-118.44116
HOLCHEM, INC.	19281213	STATE RESPONSE	ACTIVE	5/13/1997	13546 DESMOND STREET	PACOIMA	91331	96-100%	LOS ANGELES	300593	34.27496191	-118.4271708
		FEDERAL SUPERFUND										
PALOS VERDES SHELF	19460003	- LISTED	ACTIVE	2/26/1999	PACIFIC OCEAN - WHITE POINT OUTFALL	PALOS VERDES	90000		LOS ANGELES	400645	33.7105	-118.3219
			CERTIFIED / OPERATION & MAINTENANCE -							400116,		
PALOS VERDES LANDFILL	19490181	STATE RESPONSE	LAND USE RESTRICTIONS	4/13/1999	25706 HAWTHORNE BLVD.	ROLLING HILLS ESTATES	90274	1-5%	LOS ANGELES	401798	33.784775	-118.348361
			CERTIFIED / OPERATION & MAINTENANCE -							400066,		
GATX ANNEX TERMINAL-SAN PEDRO	19420029	STATE RESPONSE	LAND USE RESTRICTIONS	5/28/2002	208 EAST 22ND STREET	SAN PEDRO	90731	NA	LOS ANGELES	401665	33.726803	-118.277544
RICHARDS CLEANERS	60000408	STATE RESPONSE	ACTIVE	9/19/2013	538 WEST 5TH STREET	SAN PEDRO	90731	91-95%	LOS ANGELES	401317	33.73992073	-118.2888496
										401270,		
SAN PEDRO BOAT WORKS	70000023	STATE RESPONSE	ACTIVE	4/1/2005	PORT OF LOS ANGELES BERTHS 44-45	SAN PEDRO	90731	NA	LOS ANGELES	900255	33.715	-118.2752777
SOUTHWEST MARINE TERMINAL ISLAND FACILITY	60000999	STATE RESPONSE	ACTIVE	11/5/2008	985 SEASIDE AVENUE	SAN PEDRO	90731	NA	LOS ANGELES	401456	33.73449	-118.26963
										900316,		
EXIDE PARKWAYS RESIDENTIAL	60002705	STATE RESPONSE	ACTIVE	8/20/2018	VARIOUS LOCATIONS IN THE COUNTY OF LOS ANGELES	VARIOUS	90058	NA	LOS ANGELES	900320	34.00580184	-118.1943079
										900291,		
EXIDE RESIDENTIAL CLEANUP	60002267	STATE RESPONSE	ACTIVE	11/9/2015	VARIOUS LOCATIONS IN THE COUNTY OF LOS ANGELES	VARIOUS	90058	NA	LOS ANGELES	NEWEXI	34.00580184	-118.1943079
										400015,		
BASIN BY-PRODUCTS	19290278	STATE RESPONSE	ACTIVE	1/1/1985	3031 EAST I STREET	WILMINGTON	90744	NA	LOS ANGELES	401674	33.78395545	-118.2255452
TCL CORP./TCL2 (PORT OF LONG BEACH)	19510060	STATE RESPONSE	CERTIFIED / OPERATION & MAINTENANCE	12/15/1997	420 N HENRY FORD AVE	WILMINGTON	90744	NA	LOS ANGELES	400431	33.77495833	-118.2411917
			CERTIFIED / OPERATION & MAINTENANCE -									
TCL CORPORATION - TOYOTA PARCEL	19510062	STATE RESPONSE	LAND USE RESTRICTIONS	8/2/1995	420 N HENRY FORD AVE	WILMINGTON	90744	NA	LOS ANGELES	400154	33.77495833	-118.2411917

REGION	FACILITY ID	FACILITY NAME	AGENCY NAME	PLACE TYPE	PLACE SUBTYPE	FACILITY TYPE	AGENCY TYPE	# OF AGENCIES	PLACE ADDRESS	PLACE CITY	PLACE ZIP	PLACE COUNTY	PLACE LATITUDE	PLACE LONGITUDE	SIC CODE 1	SIC DESC 1	SIC CODE 2	SIC DESC 2	# OF PLACES	SOURCE OF FACILITY	PROGRAM	# OF PROGRAMS	WDID	REG MEASURE ID
4	715631	1st Street Viaduct Widening over Los Angeles River		Facility					1st St btwn Vignes St & Mission Rd	Los Angeles	90012	Los Angeles							1	Enf Action	CER	1		
4	260429	Santa Susana Field Laboratory	The Boeing Company	Facility		All other facilities	Privately-Owned Business	1	5800 Woolsey Canyon Road	Canoga Park	91304-1148	Los Angeles	34.238158	-118.660757	3761	Guided Missiles and Space Vehicles	3764	Guided Missile and Space Vehicle Propulsion Units and Propulsion Unit Parts	1	Reg Meas	UNREGS	1	4A562013N01	341596
4	223110	Former Excello Plating Co Inc.	Excello Plating Co Inc	Facility	Groundwater Cleanup Site	All other facilities	Privately-Owned Business	1	4057 & 4059 Goodwin Avenue	Los Angeles	90039	Los Angeles	34.137089	-118.269612	3471	Electroplating, Plating, Polishing, Anodizing, and Coloring			1	Reg Meas	WIP	1	4WIP1135243	165819

REG MEASURE TYPE	REGION	ORDER #	STATUS	STATUS DATE	EFFECTIVE DATE	STATUS ENROLLEE	INDIVIDUAL/GENERAL	DIRECTION/VOICE	ENFORCEMENT ID (EID)	REGION	ORDER / RESOLUTION NUMBER	ENFORCEMENT ACTION TYPE	EFFECTIVE DATE	YEAR EFFECTIVE	ADOPTION / ISSUANCE DATE	STATUS	TITLE	DESCRIPTION	PROGRAM	# OF PROGRAMS	ASSIGNED STAFF	# OF ASSIGNED STAFF	LATEST MILESTONE COMPLETION DATE	TOTAL ASSESSMENT AMOUNT	INITIAL ASSESSED AMOUNT	LIABILITY $ AMOUNT	PROJECT $ AMOUNT	LIABILITY $ PAID
									370521	4	R4-2009-0083	Clean-up and Abatement Order	7/30/2009	2009	7/30/2009	Active	CAO R4-2009-0083 issued 7/30/09 for violations of 401 Certification.	CAO R4-2009-0083 issued 7/30/09 for violations of 401 Certification.	CER	1	Dana Cole	1	8/20/2009	0	0	0	0	0
Unregulated	4	Unregulated discharge.	Active	3/3/2008	11/6/2007	N	I	Passive	341411	4	R4-2007-0054	Clean-up and Abatement Order	11/6/2007	2007	11/6/2007	Active	CAO R4-2007-0054 issued 11/6/07 for cleanup of wastes.	CAO R4-2007-0054 issued 11/6/07 to clean up LOX debris field and former shooting range, both in the Northern Drainage area.	UNREGS	1	Cassandra Owens	2		0	0	0	0	0
Unregulated	4	WIP Case 113.5243	Active	6/17/2005		N	I	Passive	320936	4	R4-2003-0038-R	Clean-up and Abatement Order	6/2/2005	2005	6/2/2005	Active	CAO (revised) R4-2003-0038-R issued 6/2/05: Time schedule for SA & RAP.	CAO (revised) R4-2003-0038-R issued 6/20/03 contains a time schedule to determine the extent of the contamination & implement a RAP.	WIP	1	Lawrence Moore	1		0	0	0	0	0

PROJECT $ COMPLETED	TOTAL $ PAID/COMPLETED AMOUNT	RANK 1 VIOLATIONS	RANK 2 VIOLATIONS	RANK 3 VIOLATIONS	UNCLASSIFIED VIOLATIONS	ATOX VIOLATIONS #	BMP VIOLATIONS #	BASIN PLAN PROHIBITION VIOLATIONS #	CAT1 VIOLATIONS #	CAT2 VIOLATIONS #	CTOX VIOLATIONS #	DEFICIENT MONITORING VIOLATIONS #	DEFICIENT REPORT VIOLATIONS #	ENFORCEMENT ACTION VIOLATIONS #	FEES VIOLATIONS #	GROUNDWATER VIOLATIONS #	HYDRO MODIFICATION VIOLATIONS #	LATE REPORT VIOLATIONS #	OEV VIOLATIONS #	OTHER CODES VIOLATIONS #	PERMIT CONDITION VIOLATIONS #	PRETREATMENT VIOLATIONS #	REPORTING FAILURE TO NOTIFY VIOLATIONS #	SSO VIOLATIONS #	SURFACE WATER VIOLATIONS #	SWPPP VIOLATIONS #
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

UNAUTHORIZED DISCHARGE VIOLATIONS #	PRIORITY VIOLATIONS	TOTAL MMP VIOLATIONS #	EFFLUENT MMP SERIOUS	CHRONIC MMP	REPORTING MMP SERIOUS	TOTAL # OF VIOLATIONS LINKED TO THIS ENFORCEMENT ACTION	ECONOMIC BENEFIT	STAFF COST	MAXIMUM POTENTIAL LIABILITY
0	0	0	0	0	0	0	0	5100	0
0	0	0	0	0	0	0			
0	0	0	0	0	0	0			

The Marquardt Co. CA ID CAD044696102 16555 Saticoy Street Van Nuys, CA 91406

GLOBAL ID	SITE / FACILITY NAME	SITE / FACILITY TYPE	STATUS	ADDRESS (OR PARTIAL ADDRESS)	CITY	ZIP	COUNTY
T0603700851	AL-SAL OIL #17	LUST CLEANUP SITE	OPEN - REMEDIATION	1848 MARENGO ST	BOYLE HEIGHTS	90033	LOS ANGELES
T0603700831	CHEVRON #9-3690	LUST CLEANUP SITE	OPEN - REMEDIATION	1101 MISSION RD N	BOYLE HEIGHTS	90033	LOS ANGELES
T10000008974	COMMERCIAL PROPERTY	LUST CLEANUP SITE	OPEN - REMEDIATION	21401 VANOWEN ST	CANOGA PARK	91303	LOS ANGELES
T0603711858	SHELL SERVICE STATION	LUST CLEANUP SITE	OPEN - REMEDIATION	7601 TOPANGA CANYON BLVD.	CANOGA PARK	91304	LOS ANGELES
T0603704677	AMVAC CHEMICAL CORP.	LUST CLEANUP SITE	OPEN - VERIFICATION MONITORING	4100 WASHINGTON BLVD E	EAST LOS ANGELES	90023	LOS ANGELES
T0603721246	TARGET #T-0287	LUST CLEANUP SITE	OPEN - REMEDIATION	11155 BALBOA BLVD.	GRANADA HILLS	91344	LOS ANGELES
T10000007706	KODAK FACILITY FORMER	LUST CLEANUP SITE	OPEN - SITE ASSESSMENT	6700 SANTA MONICA BLVD	HOLLYWOOD	90038	LOS ANGELES
T0603700762	SHELL #204-3490-0401	LUST CLEANUP SITE	OPEN - REMEDIATION	1309 LA BREA AVE N	HOLLYWOOD	90028	LOS ANGELES
T10000012937	ADOLFO'S AUTO REPAIR	LUST CLEANUP SITE	OPEN - ACTIVE	4601 IMPERIAL HWY W	INGLEWOOD	90304	LOS ANGELES
T0603787881	TUNE-UPS PLUS	LUST CLEANUP SITE	OPEN - SITE ASSESSMENT	7556 N BALBOA BLVD	LAKE BALBOA	91406	LOS ANGELES
T10000001058	76 SERVICE STATION 2149	LUST CLEANUP SITE	OPEN - REMEDIATION	9779 PICO BLVD. W.	LOS ANGELES	90035	LOS ANGELES
T10000010971	76 STATION #0979	LUST CLEANUP SITE	OPEN - SITE ASSESSMENT	4600 MELROSE AVE	LOS ANGELES	90029	LOS ANGELES
T0603700465	76 STATION #2124	LUST CLEANUP SITE	OPEN - REMEDIATION	801 HOOVER ST S	LOS ANGELES	90005	LOS ANGELES
T0603700490	A & J AUTO REPAIR	LUST CLEANUP SITE	OPEN - SITE ASSESSMENT	5226 COMPTON AVE	LOS ANGELES	90011	LOS ANGELES
T10000006344	A1 STEEL FENCE CO FORMER	LUST CLEANUP SITE	OPEN - SITE ASSESSMENT	4655 TELEGRAPH RD	LOS ANGELES	90022	LOS ANGELES
T0603700903	AL-SAL OIL COMPANY #1	LUST CLEANUP SITE	OPEN - VERIFICATION MONITORING	1701 ROBERTSON BLVD S	LOS ANGELES	90036	LOS ANGELES
T0603700559	ARAMARK MAGAZINE & BOOK	LUST CLEANUP SITE	OPEN - REMEDIATION	2340 FAIRFAX AVE S	LOS ANGELES	90016	LOS ANGELES
T0603701129	ARCO #1092	LUST CLEANUP SITE	OPEN - REMEDIATION	2041 BEVERLY BLVD W	LOS ANGELES	90057	LOS ANGELES
T0603797967	ARCO #1597	LUST CLEANUP SITE	OPEN - REMEDIATION	1601 GLENDALE BLVD	LOS ANGELES	90026	LOS ANGELES
T0603700725	ARCO #5054	LUST CLEANUP SITE	OPEN - REMEDIATION	2106 TEMPLE ST W	LOS ANGELES	90026	LOS ANGELES
T0603744063	ARCO - SERRATO, RUDY C.	LUST CLEANUP SITE	OPEN - SITE ASSESSMENT	5555 E ALHAMBRA AVE	LOS ANGELES	90032	LOS ANGELES
T0603759109	AUTO PARK 18	LUST CLEANUP SITE	OPEN - SITE ASSESSMENT	145 N GRAND AVE	LOS ANGELES	90012	LOS ANGELES
T0603760075	AVENUE 64 FUEL (FORMER SHELL)	LUST CLEANUP SITE	OPEN - SITE ASSESSMENT	405 AVENUE 64 N.	LOS ANGELES	90042	LOS ANGELES
T0603756938	BUY RITE GASOLINE	LUST CLEANUP SITE	OPEN - REMEDIATION	251 MANCHESTER AVE	LOS ANGELES	90003	LOS ANGELES
T10000010304	CALTRANS PUMPING STATION	LUST CLEANUP SITE	OPEN - ACTIVE	1260 SAINT ANDREWS PLACE N.	LOS ANGELES	90038	LOS ANGELES
T10000006419	CAR WASH	LUST CLEANUP SITE	OPEN - SITE ASSESSMENT	401 SOUTH WESTERN AVE	LOS ANGELES	90020	LOS ANGELES
T0603701172	CENTURY WEST CAR WASH	LUST CLEANUP SITE	OPEN - REMEDIATION	9500 PICO BLVD W	LOS ANGELES	90035	LOS ANGELES
T0603700886	CHEVRON #9-0726	LUST CLEANUP SITE	OPEN - REMEDIATION	7020 BEVERLY BLVD	LOS ANGELES	90036	LOS ANGELES
T0603700547	CHEVRON #9-3929	LUST CLEANUP SITE	OPEN - REMEDIATION	1600 OLYMPIC BLVD W	LOS ANGELES	90015	LOS ANGELES
T0603725285	CHUNG'S AUTO REPAIR	LUST CLEANUP SITE	OPEN - REMEDIATION	8620 NORMANDIE AVE. S.	LOS ANGELES	90044	LOS ANGELES
T0603700433	CIRCLE #2211098 FORMER MOBIL #18-G8X/11-G8X)	LUST CLEANUP SITE	OPEN - REMEDIATION	657 VERMONT AVE N	LOS ANGELES	90004	LOS ANGELES
T0603764916	CIRCLE K #2211315/MOBIL #18-LQG	LUST CLEANUP SITE	OPEN - REMEDIATION	4605 BEVERLY BLVD	LOS ANGELES	90004	LOS ANGELES
T0603778729	CIRCLE K STORE #2211339 FORMER MOBIL 18-LD4	LUST CLEANUP SITE	OPEN - REMEDIATION	6601 MELROSE AVE.	LOS ANGELES	90038	LOS ANGELES
T10000012935	COMMERCIAL-INDUSTRIAL PROPERTY	LUST CLEANUP SITE	OPEN - ACTIVE	1227 MANCHESTER AVE W	LOS ANGELES	90044	LOS ANGELES
T10000012936	COMMERCIAL-INDUSTRIAL PROPERTY	LUST CLEANUP SITE	OPEN - ACTIVE	1231 MANCHESTER AVE W	LOS ANGELES	90044	LOS ANGELES
T0603700599	DILLINGHAM PROPERTY	LUST CLEANUP SITE	OPEN - REMEDIATION	409 BEAUDRY AVE	LOS ANGELES	90017	LOS ANGELES
T0603717686	DONG A AUTO SERVICE	LUST CLEANUP SITE	OPEN - REMEDIATION	1510 LA BREA AVE. S.	LOS ANGELES	90019	LOS ANGELES
T0603700532	FIRE STATION #3	LUST CLEANUP SITE	OPEN - REMEDIATION	108 FREMONT AVE N	LOS ANGELES	90012	LOS ANGELES
T0603732362	FISHER PROPERTY	LUST CLEANUP SITE	OPEN - REMEDIATION	3800-3832 6TH STREET	LOS ANGELES	90005	LOS ANGELES
T0603726504	FOMER GASOLINE STATION	LUST CLEANUP SITE	OPEN - SITE ASSESSMENT	7402 S AVALON BLVD	LOS ANGELES	90003	LOS ANGELES
T0603700630	FORMER ARCO #1860	LUST CLEANUP SITE	OPEN - REMEDIATION	3817 3RD ST W	LOS ANGELES	90020	LOS ANGELES
T10000012939	FORMER BETHUNE LIBRARY	LUST CLEANUP SITE	OPEN - ACTIVE	3665 VERMONT AVE S	LOS ANGELES	90007	LOS ANGELES
T0603701137	FORMER CHEVRON #306417 (FORMER UNOCAL #0219)	LUST CLEANUP SITE	OPEN - REMEDIATION	2101 8TH ST W	LOS ANGELES	90057	LOS ANGELES
T0603778204	FORMER CHEVRON #9-8304	LUST CLEANUP SITE	OPEN - VERIFICATION MONITORING	5700 MELROSE AVE.	LOS ANGELES	90038	LOS ANGELES
T10000004605	FORMER INTERNATIONAL TIRE FACILITY	LUST CLEANUP SITE	OPEN - SITE ASSESSMENT	800 HOOVER, SOUTH	LOS ANGELES	90005	LOS ANGELES
T0603789106	FORMER MOBIL STATION #18-GT9	LUST CLEANUP SITE	OPEN - REMEDIATION	7601 SEPULVEDA BLVD. S.	LOS ANGELES	90045	LOS ANGELES
T10000003278	FORMER SERVICE STATION	LUST CLEANUP SITE	OPEN - SITE ASSESSMENT	1247 MANCHESTER AVENUE, WEST	LOS ANGELES	90044	LOS ANGELES
T10000011272	FORMER SERVICE STATION	LUST CLEANUP SITE	OPEN - ACTIVE	110-114 BOYLE AVE S	LOS ANGELES	90033	LOS ANGELES
T10000002718	FORMER SERVICE STATION AT V & A CAR WASH	LUST CLEANUP SITE	OPEN - REMEDIATION	5839-5845 HOOVER ST. S.	LOS ANGELES	90044	LOS ANGELES
T060374891	FORMER SHELL STATION	LUST CLEANUP SITE	OPEN - REMEDIATION	3553 LA BREA AVE S	LOS ANGELES	90016	LOS ANGELES

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T10000003220	FORMER TARGET SERVICE STATION	LUST CLEANUP SITE	OPEN - VERIFICATION MONITORING	6121 VERMONT AVENUE	LOS ANGELES	90044	LOS ANGELES
T0603742795	GAS TO GO (FORMER)	LUST CLEANUP SITE	OPEN - REMEDIATION	1353 WESTERN AVE. N.	LOS ANGELES	90027	LOS ANGELES
T10000009425	GLENVILLE PROPERTY LLC	LUST CLEANUP SITE	OPEN - SITE ASSESSMENT	9301 PICO BLVD W	LOS ANGELES	90035	LOS ANGELES
T0603795104	GOLDEN GATE KNITTING MILL (DESIGNS IN PIPE)	LUST CLEANUP SITE	OPEN - REMEDIATION	6930 AVALON BLVD	LOS ANGELES	90003	LOS ANGELES
T0603792893	GREAT AMERICAN GAS CO. (FORMER TEXACO)	LUST CLEANUP SITE	OPEN - REMEDIATION	5801 PICO BLVD W	LOS ANGELES	90019	LOS ANGELES
T10000011594	GREG'S EXCLUSIVE AUTO BODY	LUST CLEANUP SITE	OPEN - ACTIVE	8000 3RD ST W	LOS ANGELES	90048	LOS ANGELES
T10000000748	HK MARKET	LUST CLEANUP SITE	OPEN - REMEDIATION	124 WESTERN AVE. N.	LOS ANGELES	90004	LOS ANGELES
T0603704553	HOOPER TEXACO SERVICE	LUST CLEANUP SITE	OPEN - ASSESSMENT & INTERIM REMEDIAL ACTION	11913 COMPTON AVE S	LOS ANGELES	90059	LOS ANGELES
T0603729686	JAMES LEE SERVICE CENTER	LUST CLEANUP SITE	OPEN - REMEDIATION	3950 MARTIN LUTHER KING JR. BL.	LOS ANGELES	90008	LOS ANGELES
T0603700775	JAMES SCOVEL PROPERTY	LUST CLEANUP SITE	OPEN - REMEDIATION	3827 SUNSET BLVD W	LOS ANGELES	90029	LOS ANGELES
T0603700530	JIMMIE JOE'S TEXACO	LUST CLEANUP SITE	OPEN - REMEDIATION	900 HILL ST N	LOS ANGELES	90012	LOS ANGELES
T0603700575	KEN'S AUTOMOTIVE	LUST CLEANUP SITE	OPEN - REMEDIATION	5787 ADAMS BLVD W	LOS ANGELES	90016	LOS ANGELES
T0603701153	KUK YONS KIM	LUST CLEANUP SITE	OPEN - REMEDIATION	449 IMPERIAL HWY W	LOS ANGELES	90061	LOS ANGELES
T0603700874	LA CIENEGA CAR WASH	LUST CLEANUP SITE	OPEN - REMEDIATION	1907 LA CIENEGA BLVD S	LOS ANGELES	90034	LOS ANGELES
T0603700846	LAC/USC MEDICAL CENTER	LUST CLEANUP SITE	OPEN - REMEDIATION	1200 STATE ST N	LOS ANGELES	90033	LOS ANGELES
T0603799753	LANZIT PROJECT	LUST CLEANUP SITE	OPEN - REMEDIATION	930 111TH PL. E.	LOS ANGELES	90059	LOS ANGELES
T10000006479	LIBERTY CAR & TRUCK RENTAL FORMER	LUST CLEANUP SITE	OPEN - SITE ASSESSMENT	800 LA BREA AVENUE N	LOS ANGELES	90038	LOS ANGELES
T060370268	MAGIC AUTO BODY	LUST CLEANUP SITE	OPEN - REMEDIATION	5217 W PICO BLVD	LOS ANGELES	90019	LOS ANGELES
T0603700511	MAIN STREET OIL DEPOT	LUST CLEANUP SITE	OPEN - REMEDIATION	1630 MAIN ST N	LOS ANGELES	90012	LOS ANGELES
T0603701089	MANCHESTER ST ANDREWS CARWASH	LUST CLEANUP SITE	OPEN - REMEDIATION	1923 MANCHESTER AVE W	LOS ANGELES	90047	LOS ANGELES
T0603507404	MANUAL GALLEGOS	LUST CLEANUP SITE	OPEN - SITE ASSESSMENT	4635 VALLEY BLVD. E.	LOS ANGELES	90032	LOS ANGELES
T0603700891	MAS AUTO SERVICE	LUST CLEANUP SITE	OPEN - REMEDIATION	371 SOUTH FAIRFAX AVE	LOS ANGELES	90036	LOS ANGELES
T0603700727	MOBIL #11-LM9	LUST CLEANUP SITE	OPEN - REMEDIATION	2608 TEMPLE ST	LOS ANGELES	90026	LOS ANGELES
T0603700411	MOBIL #18-EL4 (FORMER #11-EL4)	LUST CLEANUP SITE	OPEN - REMEDIATION	105 CENTURY BLVD W	LOS ANGELES	90003	LOS ANGELES
T0603700880	MOBIL #18-FOM (FORMER 11-FOM)	LUST CLEANUP SITE	OPEN - REMEDIATION	9448 PICO BLVD	LOS ANGELES	90035	LOS ANGELES
T060374883	MOBIL #18-HYO/CIRCLE K STORE #2211262	LUST CLEANUP SITE	OPEN - REMEDIATION	5857 SUNSET BLVD W	LOS ANGELES	90028	LOS ANGELES
T0603700474	MOBIL #18-HYQ	LUST CLEANUP SITE	OPEN - REMEDIATION	958 ALVARADO ST S	LOS ANGELES	90006	LOS ANGELES
T0603701086	MOBIL #18-KWL (FORMER #11-KWL)	LUST CLEANUP SITE	OPEN - ASSESSMENT & INTERIM REMEDIAL ACTION	1803 MANCHESTER AVE W	LOS ANGELES	90047	LOS ANGELES
T0603700620	MOBIL #18-LLR	LUST CLEANUP SITE	OPEN - REMEDIATION	989 WESTERN AVE W	LOS ANGELES	90019	LOS ANGELES
T0603792206	MOBIL 17314 (FORMER)	LUST CLEANUP SITE	OPEN - REMEDIATION	5501 ADAMS BLVD.	LOS ANGELES	90016	LOS ANGELES
T0603701095	MOBIL 18-K1R	LUST CLEANUP SITE	OPEN - REMEDIATION	1406 MANCHESTER AVE W	LOS ANGELES	90047	LOS ANGELES
T0603717863	MOZA AUTOMOTIVE REPAIR	LUST CLEANUP SITE	OPEN - REMEDIATION	1201 MISSION RD N.	LOS ANGELES	90033	LOS ANGELES
T0603776617	NATIONAL CAR SALES	LUST CLEANUP SITE	OPEN - SITE ASSESSMENT	9204 AIRPORT BLVD	LOS ANGELES	90045-4590	LOS ANGELES
T10000006007	PAKS WESTERN PLAZA LLC	LUST CLEANUP SITE	OPEN - REMEDIATION	833 WESTERN AVE S	LOS ANGELES	90005	LOS ANGELES
T0603700555	PALMS DISTRIBUTION HEADQUARTER	LUST CLEANUP SITE	OPEN - REMEDIATION	2311 FAIRFAX AVE S	LOS ANGELES	90016	LOS ANGELES
T0603780422	PICASSO AUTO BODY	LUST CLEANUP SITE	OPEN - REMEDIATION	8355 WEST 3RD STREET	LOS ANGELES	90048	LOS ANGELES
T10000011125	PINTO PROPERTY	LUST CLEANUP SITE	OPEN - SITE ASSESSMENT	2554 PICO BLVD W	LOS ANGELES	90006	LOS ANGELES
T0603700534	PIPER TECHNICAL CENTER	LUST CLEANUP SITE	OPEN - SITE ASSESSMENT	555 RAMIREZ ST	LOS ANGELES	90012	LOS ANGELES
T0603777871	PIZZA HUT SITE #11-7488	LUST CLEANUP SITE	OPEN - REMEDIATION	1851 SLAUSON AVE. W.	LOS ANGELES	90047	LOS ANGELES
T0603702085	RAWA AND SONS SITE	LUST CLEANUP SITE	OPEN - REMEDIATION	21404 SHERMAN WY	LOS ANGELES	91303	LOS ANGELES
T10000005251	SCOVEL PROPERTY	LUST CLEANUP SITE	OPEN - REMEDIATION	5600 FRANKLIN AVENUE	LOS ANGELES	90028	LOS ANGELES
T0603793069	SELVIAN AUTOMOTIVE	LUST CLEANUP SITE	OPEN - REMEDIATION	3979 MISSION RD N	LOS ANGELES	90031	LOS ANGELES
T10000003360	SERKIS ARCO	LUST CLEANUP SITE	OPEN - REMEDIATION	2135 SAN FERNANDO ROAD N	LOS ANGELES	90065	LOS ANGELES
T0603769038	SHELL	LUST CLEANUP SITE	OPEN - REMEDIATION	1203 SOTO ST.	LOS ANGELES	90033	LOS ANGELES
T0603701002	SHELL #204-4531-5409	LUST CLEANUP SITE	OPEN - REMEDIATION	5137 FIGUEROA ST N	LOS ANGELES	90042	LOS ANGELES
T0603701360	SHELL #204-4539-0600	LUST CLEANUP SITE	OPEN - REMEDIATION	1553 MANCHESTER AVE W	LOS ANGELES	90047	LOS ANGELES
T0603700410	SHELL STATION	LUST CLEANUP SITE	OPEN - REMEDIATION	9915 BROADWAY S	LOS ANGELES	90003	LOS ANGELES
T0603700743	SHELL/TESORO (FORMER ARCO #5025)	LUST CLEANUP SITE	OPEN - VERIFICATION MONITORING	1630 VERMONT AVE N	LOS ANGELES	90027	LOS ANGELES

GLOBAL ID	SITE / FACILITY NAME	SITE / FACILITY TYPE	STATUS	ADDRESS (OR PARTIAL ADDRESS)	CITY	ZIP	COUNTY
T0603700615	SHIN BROTHERS' AUTOBODY & PAINT	LUST CLEANUP SITE	OPEN - REMEDIATION	4100 OLYMPIC BLVD W	LOS ANGELES	90019	LOS ANGELES
T0603701096	SMITH AUTO REPAIR (FORMER)	LUST CLEANUP SITE	OPEN - REMEDIATION	6610 NORMANDIE AVE S	LOS ANGELES	90047	LOS ANGELES
T0603701091	SOUTHWEST STREET MAINT YARD	LUST CLEANUP SITE	OPEN - REMEDIATION	5860 WILTON PL S	LOS ANGELES	90047	LOS ANGELES
T10000012960	STATION #17	LUST CLEANUP SITE	OPEN - SITE ASSESSMENT	1460 LA CIENEGA BLVD S	LOS ANGELES	90035	LOS ANGELES
T0603797655	STREET LIGHTING FIELD OPERATIONS HEADQUARTERS	LUST CLEANUP SITE	OPEN - ASSESSMENT & INTERIM REMEDIAL ACTION	4550 SANTA MONICA BLVD.	LOS ANGELES	90029	LOS ANGELES
T0603700718	SUNSET CARWASH	LUST CLEANUP SITE	OPEN - REMEDIATION	2028 SUNSET BLVD	LOS ANGELES	90026	LOS ANGELES
T0603700861	THRIFTY #247/CHEVRON (FORMER)	LUST CLEANUP SITE	OPEN - REMEDIATION	3505 SEPULVEDA BLVD S	LOS ANGELES	90034	LOS ANGELES
T10000003612	TOSCO - 76 STATION	LUST CLEANUP SITE	OPEN - SITE ASSESSMENT	1000 ELYSIAN PARK AVE	LOS ANGELES	90012	LOS ANGELES
T0603700871	TOSCO - 76 STATION #0981	LUST CLEANUP SITE	OPEN - REMEDIATION	1004 LA CIENEGA BLVD S	LOS ANGELES	90035	LOS ANGELES
T0603700822	TOSCO - 76 STATION #5608	LUST CLEANUP SITE	OPEN - REMEDIATION	5376 HUNTINGTON DR S	LOS ANGELES	90032	LOS ANGELES
T0603701004	TOSCO - 76 STATION #5948	LUST CLEANUP SITE	OPEN - REMEDIATION	475 AVENUE 60 S	LOS ANGELES	90042	LOS ANGELES
T10000012966	TRENCH SHORING COMPANY	LUST CLEANUP SITE	OPEN - ACTIVE	636 ROSECRANS AVE E	LOS ANGELES	90059	LOS ANGELES
T0603705505	UNITED EL SEGUNDO STATION #54	LUST CLEANUP SITE	OPEN - SITE ASSESSMENT	705 EASTERN AVE N	LOS ANGELES	90063	LOS ANGELES
T0603701155	UNITED OIL #38	LUST CLEANUP SITE	OPEN - REMEDIATION	11320 MAIN ST S	LOS ANGELES	90061	LOS ANGELES
T10000002602	UNIVERSAL CITY GAS AND MART	LUST CLEANUP SITE	OPEN - REMEDIATION	3167 W. CAHUENGA BOULEVARD	LOS ANGELES	90068	LOS ANGELES
T0603700445	UNOCAL #0457	LUST CLEANUP SITE	OPEN - REMEDIATION	4005 003RD ST W	LOS ANGELES	90020	LOS ANGELES
T10000012963	USPS PROCESSING AND DISTRIBUTION CENTER VMF	LUST CLEANUP SITE	OPEN - ACTIVE	7001 CENTRAL AVE	LOS ANGELES	90052	LOS ANGELES
T10000008789	WESTERN GAGE PROPERTY	LUST CLEANUP SITE	OPEN - VERIFICATION MONITORING	6300 WESTERN AVE	LOS ANGELES	90047	LOS ANGELES
T0603700634	WILSHIRE CAR WASH	LUST CLEANUP SITE	OPEN - VERIFICATION MONITORING	505 VERMONT AVE S	LOS ANGELES	90020	LOS ANGELES
T0603739097	WINALL #1	LUST CLEANUP SITE	OPEN - REMEDIATION	401 SOTO ST. S.	LOS ANGELES	90033	LOS ANGELES
T0603799292	WINALL OIL #2	LUST CLEANUP SITE	OPEN - REMEDIATION	615 FLORENCE AVE	LOS ANGELES	90044	LOS ANGELES
T0603784346	WINALL OIL COMPANY #3	LUST CLEANUP SITE	OPEN - REMEDIATION	3200 BROADWAY	LOS ANGELES	90031	LOS ANGELES
T0603700571	WORLD OIL #27	LUST CLEANUP SITE	OPEN - VERIFICATION MONITORING	5234 ADAMS BLVD W	LOS ANGELES	90016	LOS ANGELES
T0603797024	WORTMANN OIL CO STATION #8	LUST CLEANUP SITE	OPEN - REMEDIATION	6174 YORK BLVD.	LOS ANGELES	90042	LOS ANGELES
T060379096	UNITED OIL #1	LUST CLEANUP SITE	OPEN - REMEDIATION	450 E EL SEGUNDO BLVD	LOS ANGELES	90061	LOS ANGELES
T10000001843	DEL REY FUEL, LLC	LUST CLEANUP SITE	OPEN - REMEDIATION	13800 BORA BORA WAY	MARINA DEL REY	90292	LOS ANGELES
T0603704864	MARINA DEL REY SHERIFF'S STATION	LUST CLEANUP SITE	OPEN - VERIFICATION MONITORING	13851 FIJI WAY	MARINA DEL REY	90292	LOS ANGELES
T0603700617	LA DPW WESTERN DISTRICT-H.Q.	LUST CLEANUP SITE	OPEN - REMEDIATION	5898 VENICE BLVD	MID CITY	90019	LOS ANGELES
T0603702299	TERRIBLE HERBST OIL COMPANY	LUST CLEANUP SITE	OPEN - ELIGIBLE FOR CLOSURE	11501 SEPULVEDA BLVD N	MISSION HILLS	91345	LOS ANGELES
T0603700808	FOUA D N DAGHER	LUST CLEANUP SITE	OPEN - REMEDIATION	3130 BROADWAY N	MONTECITO HEIGHTS	90031	LOS ANGELES
T0603702568	TOSCO - 76 STATION #1736	LUST CLEANUP SITE	OPEN - SITE ASSESSMENT	10974 VENTURA BLVD	NORTH HOLLYWOOD	91604	LOS ANGELES
T10000004640	DMR PARTNERS SITE	LUST CLEANUP SITE	OPEN - REMEDIATION	18251 NAPA STREET	NORTHRIDGE	91324	LOS ANGELES
T10000010675	USA GASOLINE STATION #827	LUST CLEANUP SITE	OPEN - ELIGIBLE FOR CLOSURE	19301 PARTHENIA ST	NORTHRIDGE	91324	LOS ANGELES
T0603701612	CABRILLO MARINA, BERTH 31	LUST CLEANUP SITE	OPEN - ELIGIBLE FOR CLOSURE	210 WHALERS WALK	SAN PEDRO	90731	LOS ANGELES
T0603752984	EAST GAFFEY RETAIL CENTER	LUST CLEANUP SITE	OPEN - REMEDIATION	640-650 GAFFEY ST.	SAN PEDRO	90731	LOS ANGELES
T0603788226	MOBIL 18-MVM	LUST CLEANUP SITE	OPEN - REMEDIATION	2490 WESTERN AVE. S.	SAN PEDRO	90732	LOS ANGELES
T0603759003	SAN PEDRO CAR WASH	LUST CLEANUP SITE	OPEN - REMEDIATION	735 GAFFEY ST. S.	SAN PEDRO	90731	LOS ANGELES
T0603717723	SAN PEDRO SHELL (FORMER)	LUST CLEANUP SITE	OPEN - REMEDIATION	406 GAFFEY ST.	SAN PEDRO	90731	LOS ANGELES
T0603767871	SHELL SERVICE STATION	LUST CLEANUP SITE	OPEN - REMEDIATION	990 WESTERN AVE N	SAN PEDRO	90732	LOS ANGELES
T10000001906	UNOCAL STATION #0692 FORMER	LUST CLEANUP SITE	OPEN - REMEDIATION	78 BERTH	SAN PEDRO	90731	LOS ANGELES
T0603702479	ARCO #1361 (FORMER)	LUST CLEANUP SITE	OPEN - REMEDIATION	14311 VENTURA BLVD	SHERMAN OAKS	91423	LOS ANGELES
T0603702480	FASHION SQUARE CAR WASH	LUST CLEANUP SITE	OPEN - REMEDIATION	4625 WOODMAN AVE	SHERMAN OAKS	91423	LOS ANGELES
T0603702474	SHELL #204-7199-0307	LUST CLEANUP SITE	OPEN - REMEDIATION	4404 WOODMAN AVE	SHERMAN OAKS	91423	LOS ANGELES
T0603791324	SHERMAN OAKS CAR WASH	LUST CLEANUP SITE	OPEN - REMEDIATION	15150 VENTURA BLVD	SHERMAN OAKS	91403	LOS ANGELES
T0603702476	TEXACO	LUST CLEANUP SITE	OPEN - ASSESSMENT & INTERIM REMEDIAL ACTION	14344 VENTURA BLVD	SHERMAN OAKS	91423	LOS ANGELES
T0603702485	VENTURA CAR WASH	LUST CLEANUP SITE	OPEN - REMEDIATION	13320 VENTURA BLVD	SHERMAN OAKS	91423	LOS ANGELES

GLOBAL ID	SITE / FACILITY NAME	SITE / FACILITY TYPE	STATUS	ADDRESS (OR PARTIAL ADDRESS)	CITY	ZIP	COUNTY
T0603702422	WINALL STATION #17	LUST CLEANUP SITE	OPEN - REMEDIATION	4441 VAN NUYS BLVD N	SHERMAN OAKS	91403	LOS ANGELES
T0603719545	CIRCLE K STORE 2211209	LUST CLEANUP SITE	OPEN - REMEDIATION	11001 VENTURA BLVD.	STUDIO CITY	91604	LOS ANGELES
T0603702574	FORMER SHELL STATION	LUST CLEANUP SITE	OPEN - ASSESSMENT & INTERIM REMEDIAL ACTION	4360 COLDWATER CANYON AVE	STUDIO CITY	91604	LOS ANGELES
T060370027	TERMINAL ISLAND PRISON	LUST CLEANUP SITE	OPEN - REMEDIATION	1299 SEASIDE AVE	TERMINAL ISLAND	90731	LOS ANGELES
T0603700602	VENICE MAINT. YARD	LUST CLEANUP SITE	OPEN - ASSESSMENT & INTERIM REMEDIAL ACTION	2000 ABBOT KINNEY BLVD	VENICE	90291	LOS ANGELES
T0603743956	SANTA PALM CAR WASH	LUST CLEANUP SITE	OPEN - REMEDIATION	8787 SANTA MONICA BLVD.	WEST HOLLYWOOD	90069	LOS ANGELES
T0603704683	SHELL #204-4530-1201	LUST CLEANUP SITE	OPEN - REMEDIATION	8873 SUNSET BLVD	WEST HOLLYWOOD	90069	LOS ANGELES
T0603701222	SOUTHERN CA RTD	LUST CLEANUP SITE	OPEN - ELIGIBLE FOR CLOSURE	8800 SANTA MONICA BLVD	WEST HOLLYWOOD	90069	LOS ANGELES
T0603763571	WESTERN DISTRICT COLLECTION YARD	LUST CLEANUP SITE	OPEN - ASSESSMENT & INTERIM REMEDIAL ACTION	2027 STONER AVE S.	WEST LOS ANGELES	90025	LOS ANGELES
T0603742460	ARCO SERVICE STATION	LUST CLEANUP SITE	OPEN - VERIFICATION MONITORING	22455 VENTURA BL.	WOODLAND HILLS	91364	LOS ANGELES
T0603776248	MOBIL #18-F17	LUST CLEANUP SITE	OPEN - REMEDIATION	6350 FALLBROOK AVE	WOODLAND HILLS	91367	LOS ANGELES
T0603729414	SHELL OIL STATION	LUST CLEANUP SITE	OPEN - VERIFICATION MONITORING	22330 VENTURA BLVD.	WOODLAND HILLS	91364	LOS ANGELES
T0603729300	THRIFTY STATION	LUST CLEANUP SITE	OPEN - VERIFICATION MONITORING	22406 VENTURA BLVD.	WOODLAND HILLS	91364	LOS ANGELES

Appendix F

Archeological and Paleontological Resources Reports

Appendix F1 **Contractors' Guide to Sidewalk Repair in Historic Areas**

Appendix F2 **Paleo Figures**

Appendix F1

Contractors' Guide to Sidewalk Repair in Historic Areas

Contractors' Guide to Sidewalk Repair in Historic Areas

2018

This manual will be updated every 5 years – as the city declares more sidewalks, trees, and buildings "historic" and as you provide important feedback on the manual.

This manual will help you learn if your work order is located in a historic area or not. Because some sidewalks, sidewalk furniture, and trees in the City of Los Angeles are considered historic, their repair and replacement require special care and attention. Use this manual to help you tackle your work orders in a historically sensitive manner.

Feedback Form

As you use this manual, think of ways in which it can be improved. Pass your ideas on to your supervisor, and we will use your feedback to improve this manual.

How could it be more useful? How is it helpful? Have you come across issues on ZIMAS? Is it difficult to repair certain kinds of materials? What kind of additional guidance would be helpful?

Thank you!

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***Sidewalk Repair Step 1*: Is the existing sidewalk considered historic?**

Has the property adjacent to the sidewalk been identified as a historical resource, or is it within a historic neighborhood?

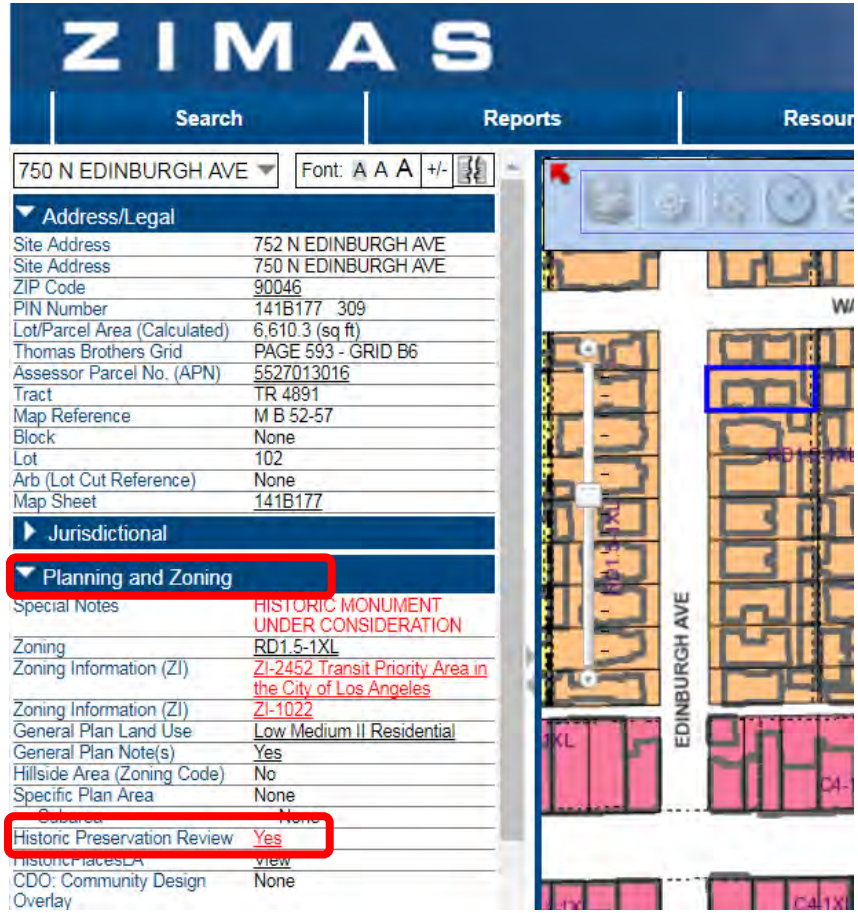
1. Check ZIMAS.lacity.org. See the graphic to the right for a visual guide.
2. Search the address.
3. Click on the "Planning and Zoning" tab, located on the left-hand side. Does "Historic Preservation Review" read "Yes"?

   If Yes:

   See **Step 2** on pages 2 and 3 for further instruction.

   If No:

   Proceed with work. In the work order report, note that you checked ZIMAS and the location is not historic.



***Sidewalk Repair Step 2*: What does your work order say you need to do here? Follow these historic preservation guidelines, which are informed by the Secretary of the Interior's Standards for Rehabilitation.**

Historic sidewalks require special attention. When repairing or replacing sidewalk features, do the work in a sensitive way that doesn't drastically change its material, design, or appearance.

Work Order (Program Access Improvement)	Recommendation
Repair broken concrete Repair cracks Repair driveways Required accessibility improvements such as cross-slope work Curb ramp repairs or installation Repair curb and gutter Repair uplifts	Observe the existing materials (concrete, brick, stone/terrazzo, etc.) and appearance (texture, pattern, and color) of the sidewalk, curb, or driveway. Remove the portion of sidewalk material that is broken and replace it with matching material. **DO** match the appearance as best you can. Replicate score lines, texture, swirl patterns, and coloration. For example: If the original material is concrete, use concrete. If the original color is dark gray, add color powder to mixture to match the historic sidewalk. If the original material is terrazzo (stone), replicate the appearance using stone or another material with a *similar texture, pattern, and color*. **DON'T** use black asphalt to patch up cracks or voids Note: If the uplift requires tree removal or replacement, follow the instructions in **PART B: Tree Removal and Replacement**.
Crosswalk repaving	Observe the existing materials and appearance (texture, pattern, and color) of the crosswalk. **DO** match the appearance as best you can. **DON'T** replace a concrete crosswalk with asphalt scored and painted to look like brick.

DON'T patch sidewalk uplifts with an incompatible material like asphalt (as shown above). The historic sidewalk is concrete and has been scored to create a pattern of smaller squares.

DO dye or prepare the concrete so it matches the shade of gray as closely as possible. Make sure the old and new blend visually.

Minor utility work, such as utility box adjustments	No special guidance. Proceed as usual.
Major underground and/or overhead utility relocation work	When possible, **DO** avoid replacing or trenching sidewalks and perform work underneath the sidewalks. Patch ground surface and street surface back to original appearance.

This work program is considered a rehabilitation project. The following 4 of 10 **Secretary of the Interior's Standards** are applicable to this project:

2. The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces and spatial relationships that characterize a property will be avoided.
3. Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.
5. Distinctive materials, features, finishes and construction techniques or examples of craftsmanship that characterize a property will be preserved.
6. Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.

DON'T use black asphalt to patch up broken sidewalk material (as shown below). The historic sidewalk is concrete and has been scored to create a pattern of smaller squares.

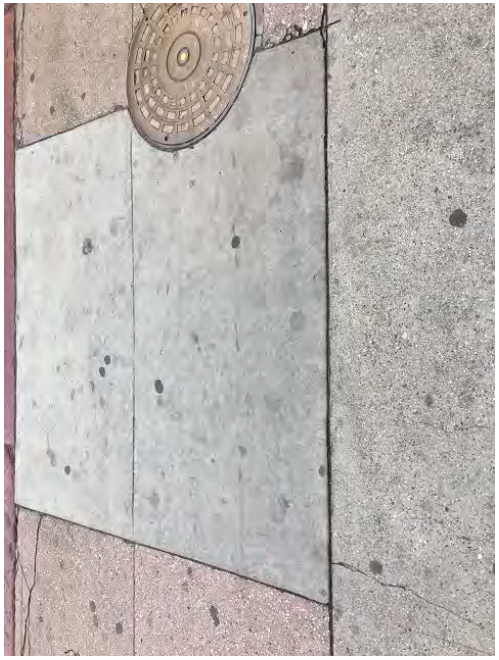
DO remove the entire broken concrete portion and replace with concrete that matches the original. Dye or prepare the concrete so it matches the shade of gray as closely as possible. Score the concrete to match the grid lines.

This sidewalk is made of terrazzo (blended stone) of multiple colors.

DO only replace portions that cannot be repaired.

DO craft the replacements so that they match the color, texture, and pattern of the existing terrazzo.

DON'T replace the broken portion with an incompatible replacement. For example, don't use black or gray asphalt or concrete as a replacement.

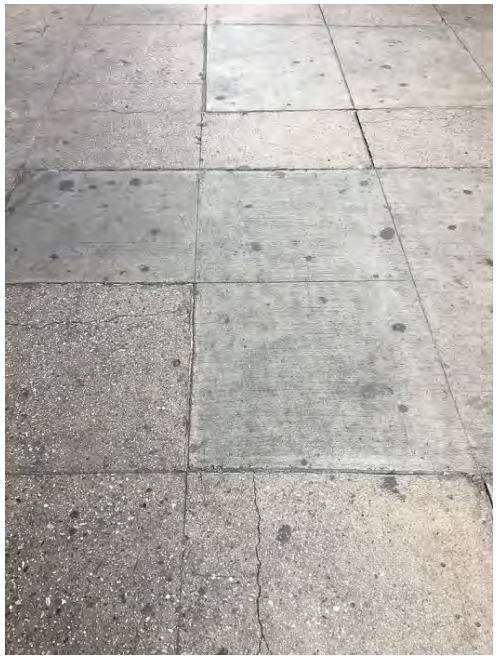


Historical red gravel has been replaced with unsympathetic scored gray concrete.

DO observe the original materials and appearance (texture, pattern, and color) of the sidewalk: textured concrete, scored grid pattern, and light red coloration.

DO replicate the original materials and appearance, when preparing the replacement sidewalk.

DON'T replace red material with gray material.



A few squares of this sidewalk have been replaced. The original sidewalk is concrete mixed with stone material. The replacement is similar in color and pattern but does not match the original textured concrete.

DO remove the broken portion and replace with material to match: textured gray concrete, with scoring that follows the original grid pattern.

If there is **no feasible way** to texture the concrete in a similar fashion, you may prepare a smooth surface in a similar colored concrete as shown above.

***Tree Repair and Replacement Step 1*: Is the existing tree considered historic?**

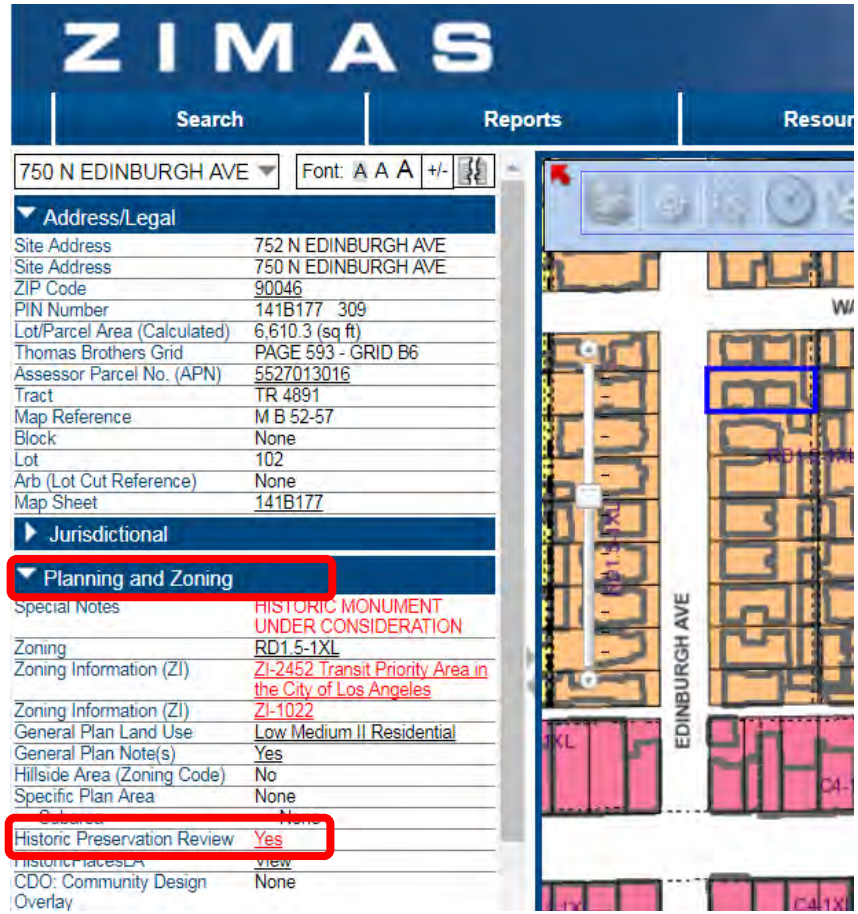
Is the tree itself historic? Is it near a historical resource? Is it within a historic neighborhood?

For sidewalk uplifts that require tree removal, is the existing tree causing the uplift considered historic?

1. Check ZIMAS.lacity.org. See the graphics on the next page for a visual guide.
2. Search the address.
3. Click on the "Planning and Zoning" tab, located on the left-hand side. Does "Historic Preservation Review" read "Yes"?

If Yes:	If No:
• **Stop work** – DO NOT REMOVE THE TREE. Write in work order report that the tree is historic and work has stopped. • Click on Yes. A box will appear. Click on ZIMAS • If the "Historic Preservation Overlay Zone" tab shows an "HPOZ Name": **CONSULTATION REQUIRED:** Consult with the HPOZ Board. • If the "Other Historic Designations" tab shows "CITY OF LOS ANGELES DESIGNATION": **CONSULTATION REQUIRED:** Consult with the Cultural Heritage Commission. • If the "MILLS ACT" tab shows "Contract Number": **CONSULTATION REQUIRED:** Consult with the Office of Historic Resources and Cultural Heritage Commission.	• Check the list and accompanying map of **City of Los Angeles Street Trees as Historic-Cultural Monuments** (p. 9) to make sure that you are not removing a historic tree. o If it is **not** on the list, or if the work order does not involve **street tree removal or replacement:** These historic preservation guidelines do not apply. In your work order report, note that you checked ZIMAS and that the location is not historic. o If it **is** on the list: **Stop work** – DO NOT REMOVE THE TREE. Write in work order report that the tree is historic and work has stopped. **CONSULTATION REQUIRED:** Consult with the Cultural Heritage Commission.

1

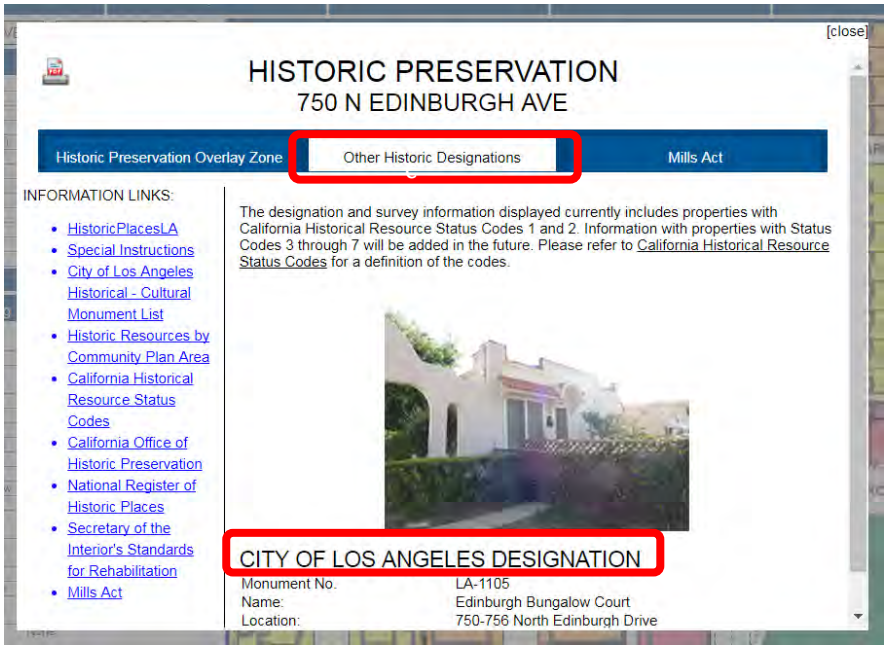


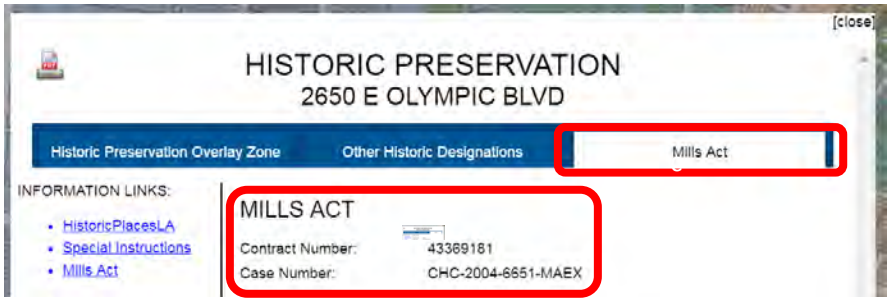
2

This is a designated historic resource and requires historic preservation review. Continue to ZIMAS and follow the Special Instructions.

To search for additional information on this designated resource and on resources surveyed through SurveyLA please visit HistoricPlacesLA.org, the City's new historic resources inventory and management system.

3





City of Los Angeles Street Trees as Historic-Cultural Monuments

The City of Los Angeles has recognized and designated several street tree locations as worthy of Historic-Cultural Monument status. This list may grow and will be updated every five years. As of early 2018, these are:

1. Monument #24 – Coast oak live(Quercus agrifolia) (deceased) in median island on Louise Avenue 210 feet south of Ventura Boulevard
2. Monument #41 – Deodar cedar (*Cedrus deodar*) trees on White Oak Avenue between Devonshire Street and Ronald Reagan Freeway (State Route 118)
3. Monument #49 – Olive (*Olea europea*) trees on Lassen Street between Topanga Canyon Boulevard and Farralone Avenue
4. Monument #67 – Deodar cedar (*Cedrus deodar*) trees on Los Feliz Boulevard between Riverside Drive and Western Avenue
5. Monument #93 – California pepper (*Schinus molle*) trees on Canoga Avenue between Ventura Boulevard and Saltillo Street
6. Monument #94 – Median island Queen Palm (*Syagrus romanzoffianum*) and Mexican Fan Palm (*Washingtonia robusta*) trees on Highland Avenue
7. Monument #148 – Coral (*Erythrina caffra*) trees on San Vicente Boulevard between Bringham Avenue and 26th Street
8. Monument #465 – Sycamore (*Platanus racemosa*) trees on Bienvenida Avenue between Sunset Boulevard and the dead end south of Sunset Boulevard
9. Monument #509 – Camphor (*Cinnamomum camphora*) trees in the 1200 block of Lakme Avenue

A map is provided on the next page.

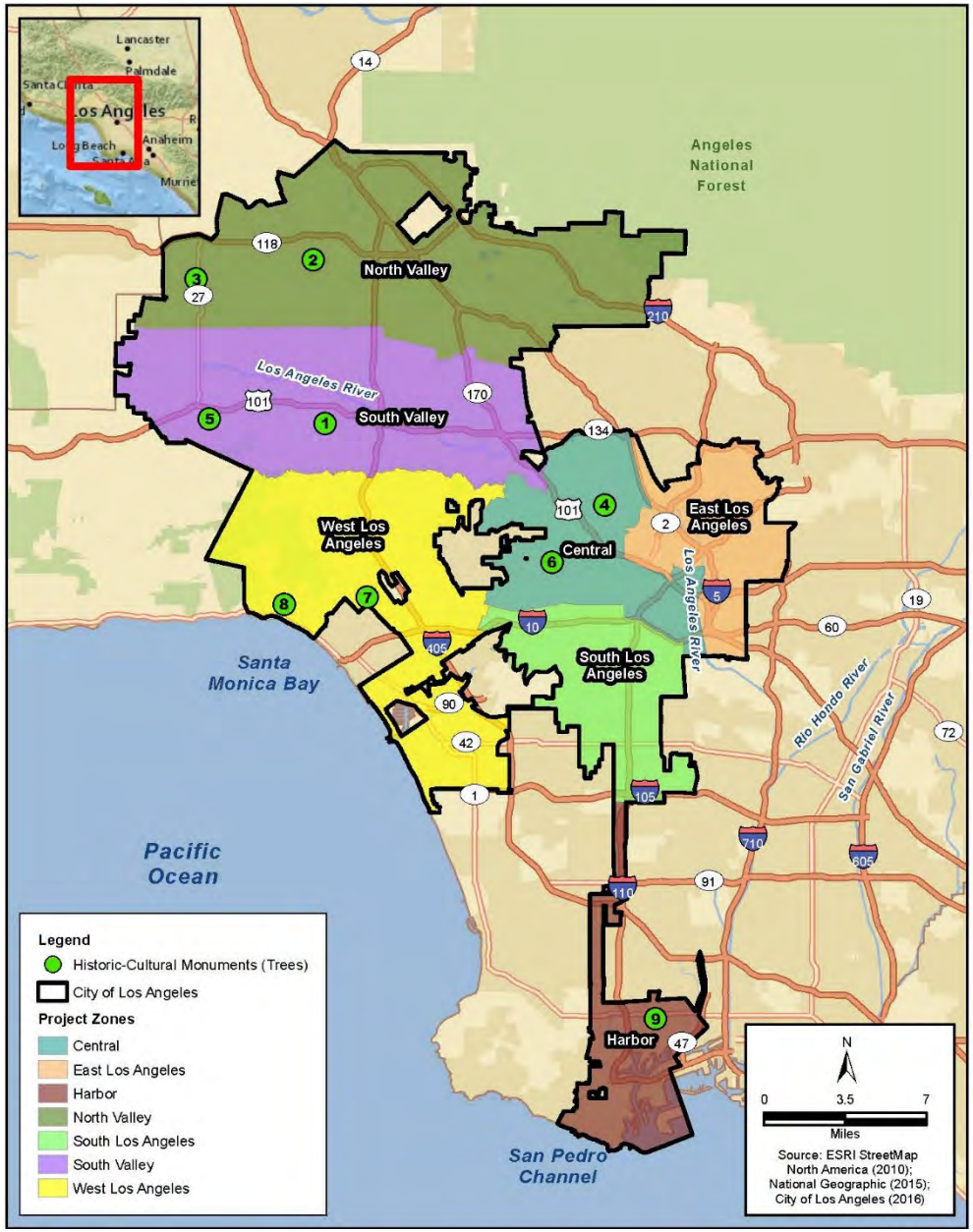


Figure 1
City of Los Angeles Street Trees as Historic-Cultural Monuments (HCM)

City of Los Angeles Historic Preservation Overlay Zones (HPOZ)

The City of Los Angeles has recognized and designated over 30 historic districts, or HPOZs. This list may grow and will be updated every five years. As of early 2018, they are:

- Adams/Normandie HPOZ
- Angelino Heights HPOZ
- Balboa/Highlands HPOZ
- Banning Park HPOZ
- Carthay Circle HPOZ
- Carthay Square HPOZ
- Country Club Park HPOZ
- El Sereno – Berkshire HPOZ
- Gregory Ain Mar Vista Tract HPOZ
- Hancock Park HPOZ
- Harvard Heights HPOZ
- Highland Park/Garvanza HPOZ
- Hollywood Grove HPOZ
- Jefferson Park HPOZ
- Lafayette Square HPOZ
- Lincoln Heights HPOZ
- Melrose Hill HPOZ
- Miracle Mile HPOZ
- Miracle Mile North HPOZ
- Oxford Square HPOZ
- Pico-Union HPOZ
- South Carthay HPOZ
- Spaulding Square HPOZ
- Stonehurst HPOZ
- Sunset Square HPOZ
- University Park HPOZ
- Van Nuys HPOZ
- Vinegar Hill HPOZ
- West Adams Terrace HPOZ
- Western Heights HPOZ
- Whitley Heights HPOZ
- Wilshire Park HPOZ
- Windsor Square HPOZ
- Windsor Village HPOZ
- 52nd Place HPOZ

Maps are provided on the following pages.

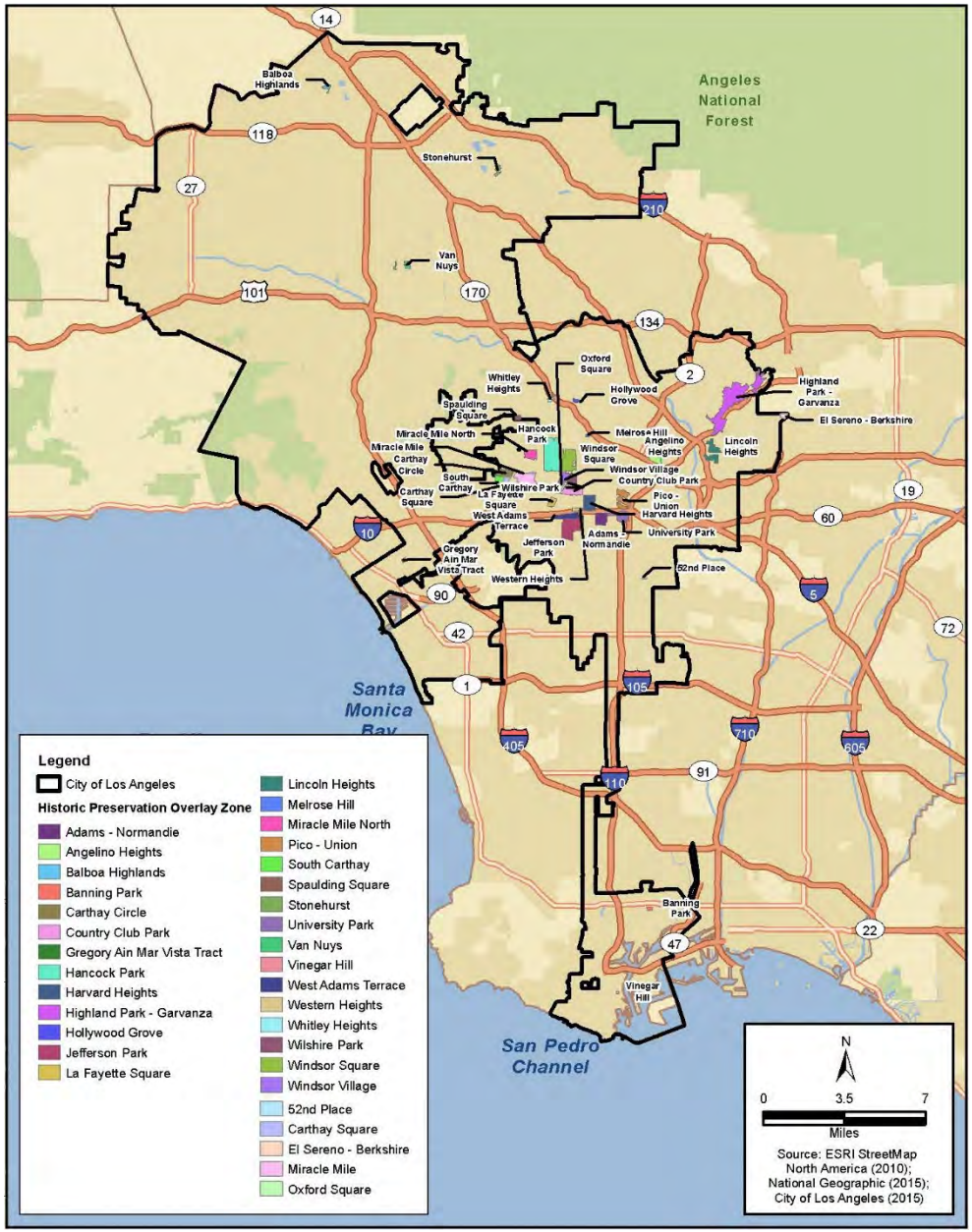


Figure 2
City of Los Angeles Historic Preservation Overlay Zones (HPOZ)

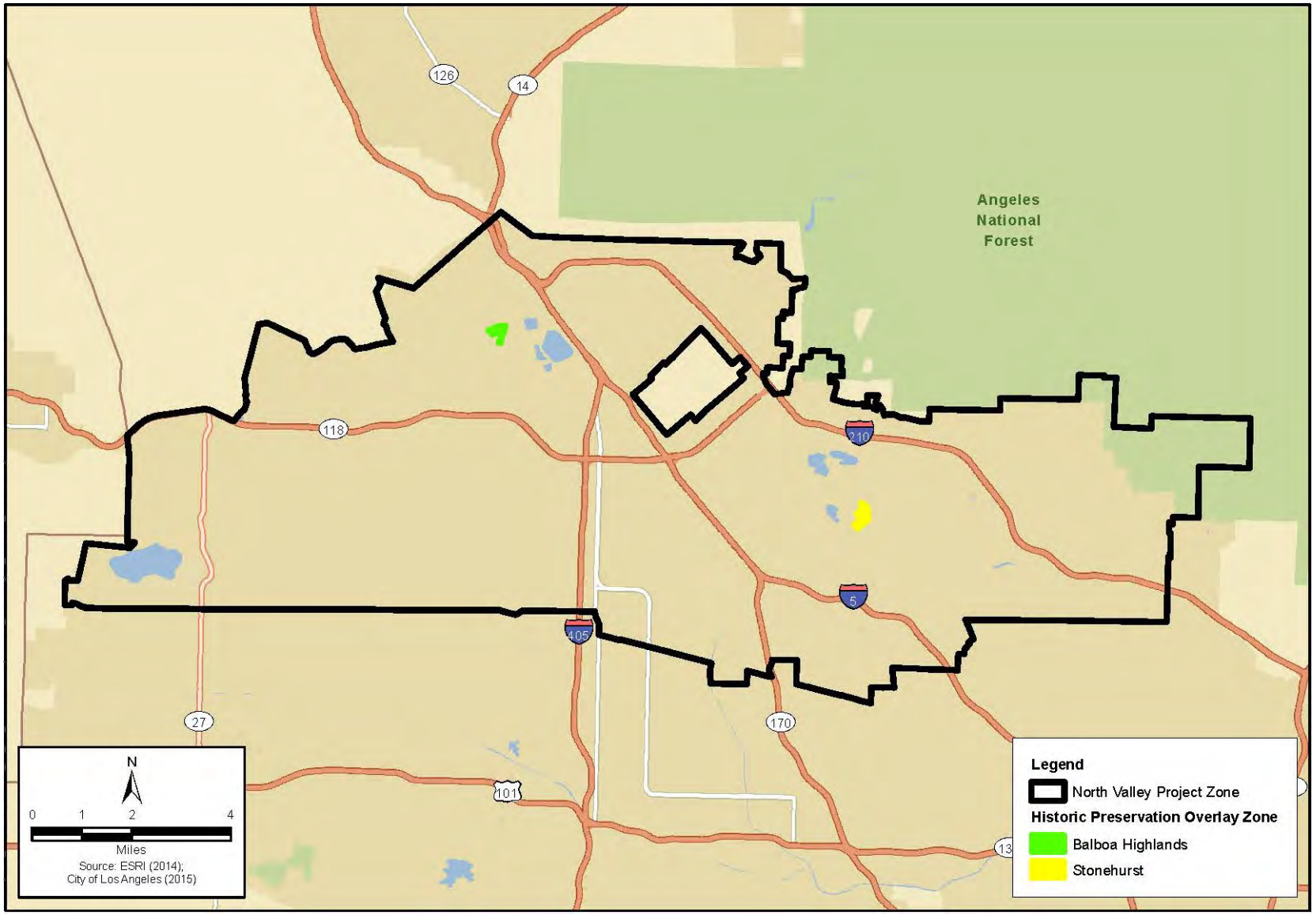


Figure 3. Historic Preservation Overlay Zones within North Valley Project Zone

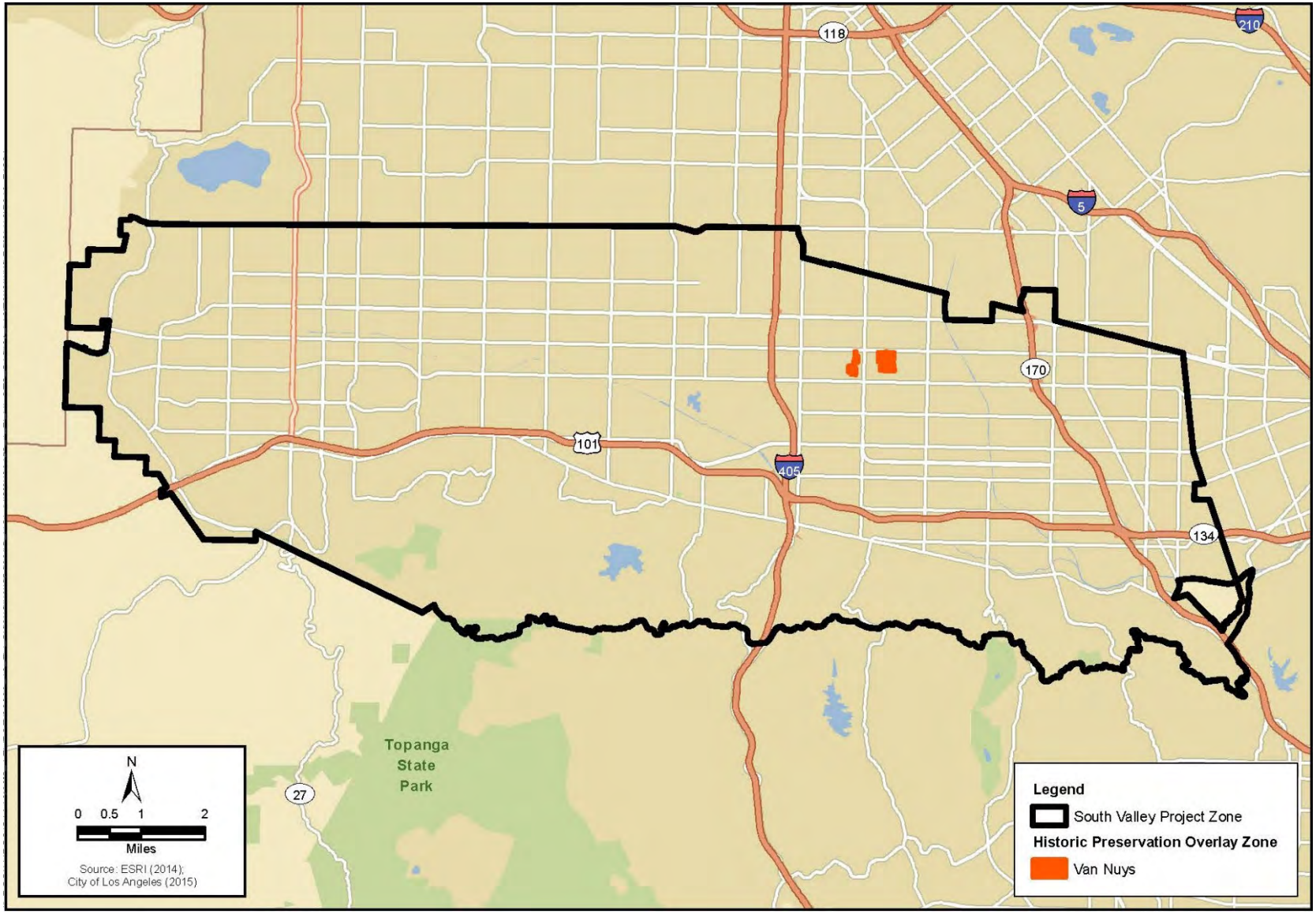


Figure 4. Historic Preservation Overlay Zones within South Valley Project Zone

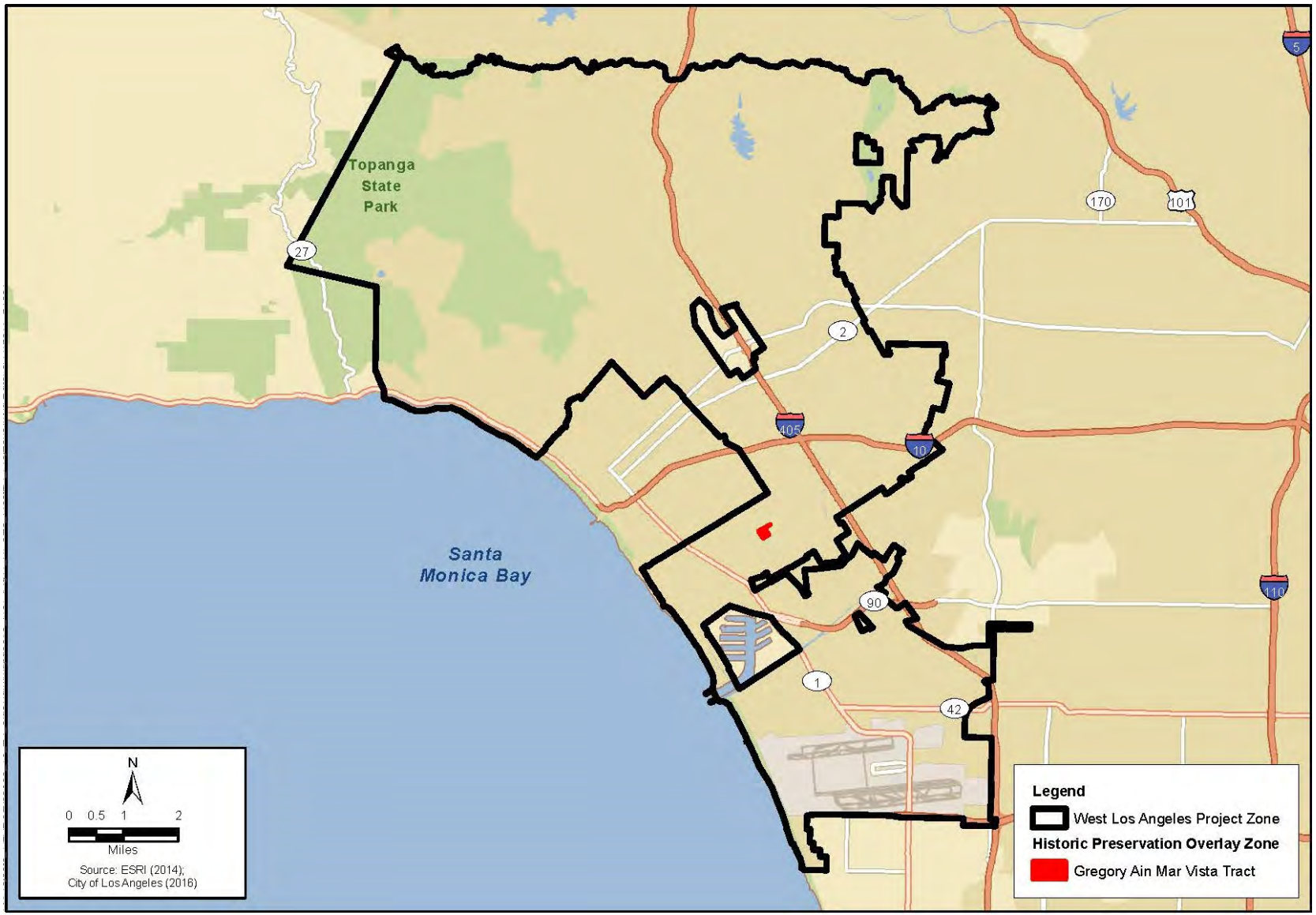


Figure 5. Historic Preservation Overlay Zones within West Los Angeles Project Zone

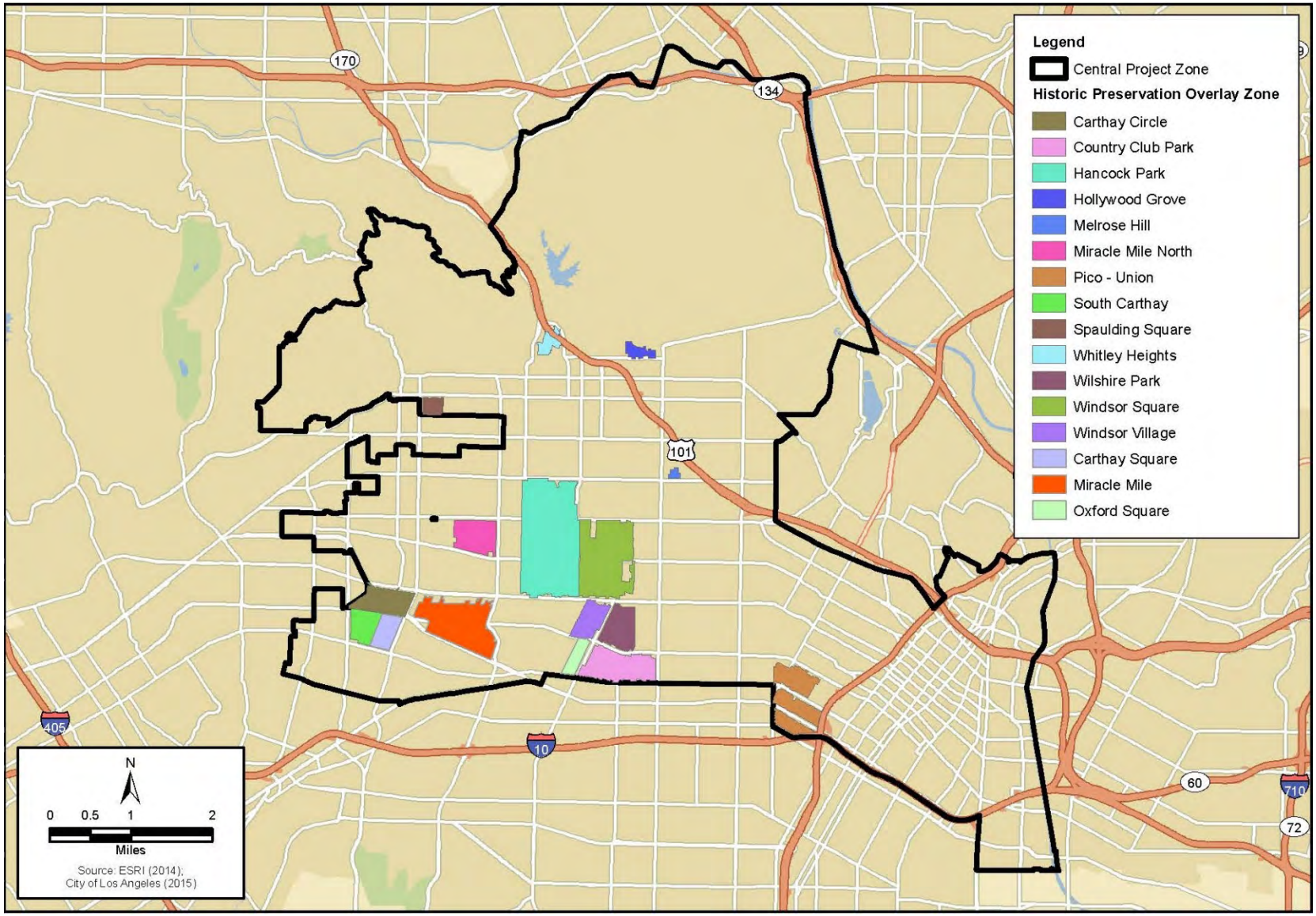


Figure 6. Historic Preservation Overlay Zones within Central Project Zone

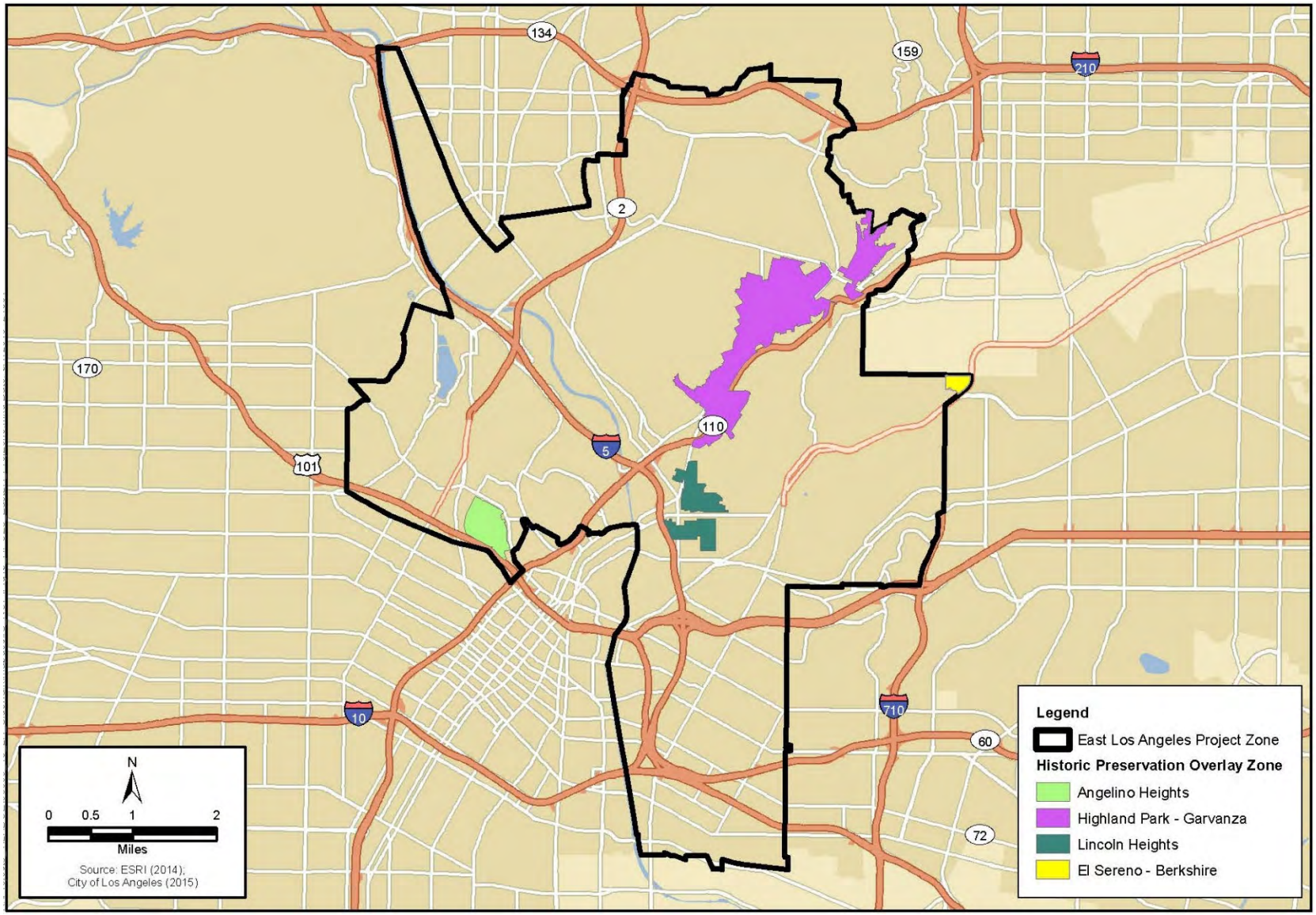


Figure 7. Historic Preservation Overlay Zones within East Los Angeles Project Zone

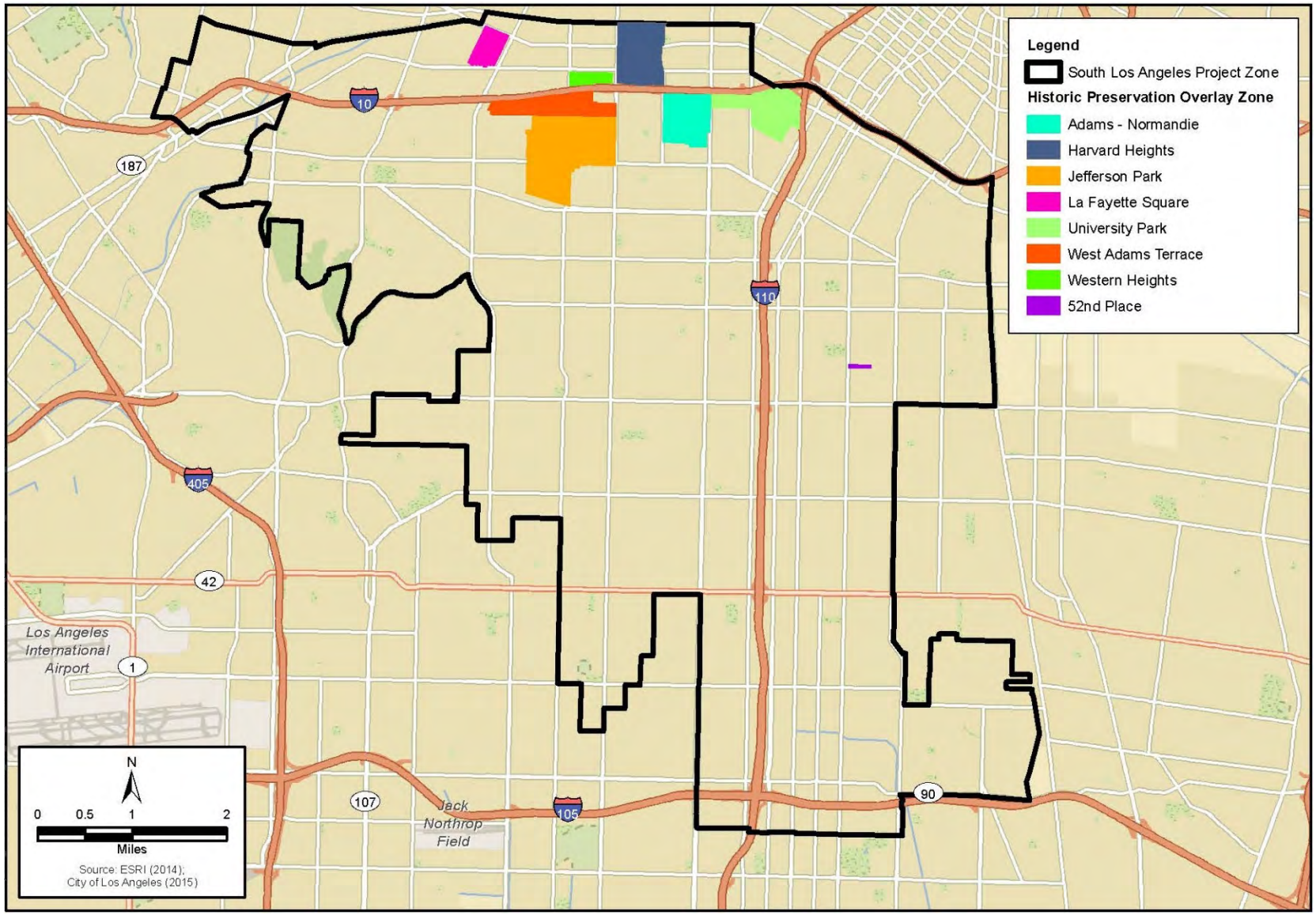


Figure 8. Historic Preservation Overlay Zones within South Los Angeles Project Zone

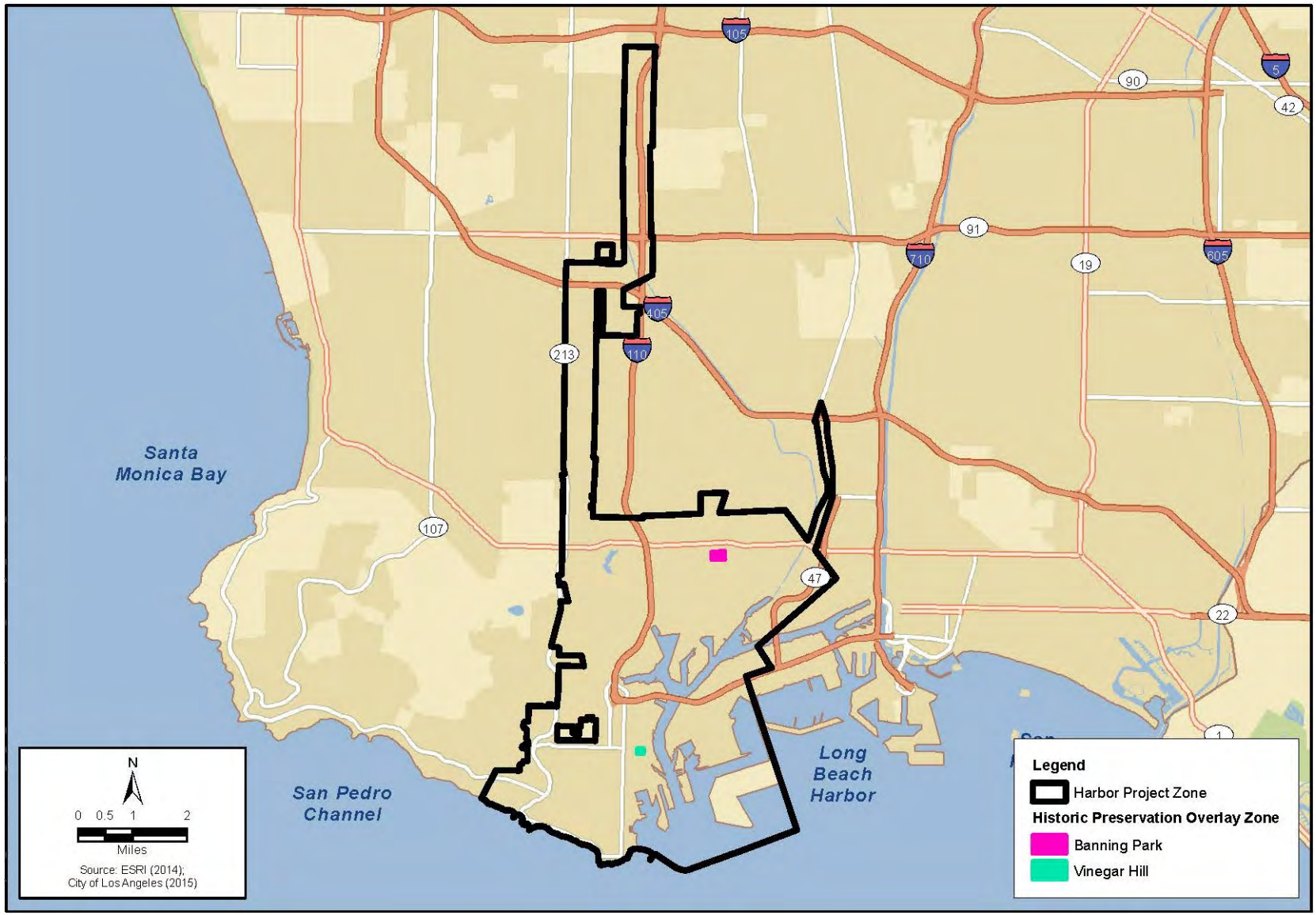


Figure 9. Historic Preservation Overlay Zones within Harbor Project Zone

History of Paved Sidewalks in the City of Los Angeles

In the early years of Los Angeles settlement, there were no sidewalks of any kind. Wood was scarce, but the earliest sidewalks were boards. When Harris Newmark arrived in Los Angeles in 1853, he observed: "Graded streets and sidewalks were unknown; hence, after heavy winter rains mud was from six inches to two feet deep, while during the summer, dust piled up to about the same extent" (Newmark 1926:34). Some of the earliest commercial buildings in the late 1850s, including the Arcadia Block and the Temple Block, address this problem by elevating the entire building well above street grade, and the entrances were accessed by several steps (Newmark 1926:226, 229). In 1860, John Temple improved the sidewalk outside his block by covering bricks with a thick layer of asphalt from area now known as the La Brea tar pits, then sprinkled with sand (Newmark 1926:287). In 1880, the Temple Block then became the first in Los Angeles to replace wooden sidewalks with cement pavement (Newmark 1926:519).

After that slow start, concrete sidewalks have become ubiquitous in Los Angeles. The variety in their design – scored squares, terrazzos, and concrete slabs – is indicative of individual choices and shifting jurisdiction over sidewalks. Whereas today sidewalks are regarded as a public realm feature, in their early years, sidewalks were privately owned and, therefore, their design commissioned, by abutting property owners.

From 1911 to 1978, private owners maintained responsibility over sidewalks (Loukaitou-Sideris and Ehrenfeucht:259). In an effort to clear sidewalks of clutter, the Los Angeles City Council regulated sidewalk use and required maintenance of street trees and gravel – between 1880 and 1920, it passed over twenty new ordinances (Loukaitou-Sideris and Ehrenfeucht:37).

In 2009, Los Angeles had 700,000 street trees along 6,500 miles of road and over 10,400 miles of sidewalk gravel. Annually, the city plants 5,000 new trees and removes 2,000 (Loukaitou-Sideris and Ehrenfeucht:210).

Types of Historic Sidewalk Features

Following are some examples of how the sidewalk itself can contribute to the historic significance to a historical resource.

Entire sidewalks: In some cases, the full extent of the sidewalk may be considered a historical resource or is an important part of the setting of the historical resource. A series of examples are illustrated in Figure 10:

- The entire sidewalk that comprises the Hollywood Boulevard Walk of Fame is itself a City of LA Historic Cultural Monument (LA HCM #194), and much of it is located with the boundary of the NRHP-listed/CRHR-listed Hollywood Boulevard Commercial and Entertainment District (listed April 4, 1985).
- The custom terrazzo pattern at the Wilshire Professional Building (LA HCM #1087) stretches from the base of the building to the curb.
- In some HPOZs, Windsor Square for example, having concrete paved streets and sidewalks was an important part of the advertising campaign to attract residents soon after the subdivision first opened in 1911.

Artwork embedded in the sidewalk: In some cases, a tenant of a commercial or government building may have inserted artwork in the sidewalk to mark an entrance for patrons or visitors. A series of examples are illustrated in Figure 11:

- The terrazzo at Clifton's Cafeteria features artwork representing many of Los Angeles' most important tourist destinations.
- The terrazzo pattern at the Garfield Building is part of the entire entryway's starburst theme.
- The Broadway Department Store Medallion is still visible even though it is now a government building, the Junipero Serra State Office Building.
- In some cases, ceramic tile squares to form text or brass letters were inserted into the concrete sidewalk to identify the building's name or the primary tenant, such as at Newberry's Department Store.

Streetlights: Historic era streetlights or luminaires may have been designed specifically for use in a specific location. See Figure 12. For example, the Victoria Box lampposts along the downtown portion of Wilshire Boulevard are unique to that location. Double-acorn lights were used throughout the downtown Los Angeles area, including within the NRHP-listed historic districts along Broadway and Spring Street, and NRHP-eligible historic districts along Hill Street and 7th Street. Some historical resources had special luminaires designed specifically for that resource and integrated directly into the resource itself, including the Los Angeles Union Passenger Terminal, commonly known as Union Station (NRHP/CRHR-listed November 13, 1980; LA HCM #101). Some HPOZ surveys included mention of the different historic era-streetlights along the different streets within the HPOZ, including Windsor Square and Hancock Park.

Street furniture: Street furniture is the common term for pedestrian amenities attached directly to a sidewalk. Examples are illustrated in Figure 13:

- Sidewalk clocks were common in the late 19th and early 20th centuries.
- Subdivision markers were often installed at the entrance of a new subdivision to mark it for potential buyers and existing residents.
- Additional street furniture included gates marking the main entrance to a subdivision, included those in Beachwood Canyon and Bel Air.

Staircases: In some HPOZs where lots were elevated several feet above the sidewalk level, staircases were uniformly constructed for the convenience of residents and visitors. Staircase could be provided access to the lot from the street, or in some cases, up from street to street on a steep hill.

Landscape: In some HPOZs, landscape was designed at the same time as the entire subdivision or neighborhood. See Figure 14. As shown in the site plan (circa 1947) for the Gregory Ain Mar Vista Tract HPOZs, street trees along the sidewalks were carefully planned by two masters in partnership: the architect, Gregory Ain, and landscape designer, Garrett Eckbo (City of Los Angeles Department of City Planning 2002:32-38).

Sidewalk Prism Lights: Commonly used in the late-nineteenth and early-twentieth centuries in commercial buildings in downtown Los Angeles were glass prism lights embedded into the concrete sidewalk. These prism lights illuminated the basement below that extended under the sidewalk, providing natural light to the tenants. See Figure 15.

Figure 10a: Entire sidewalks
Hollywood Walk of Fame (top) and Wilshire Professional Building (bottom).

Source: ICF, 2018.

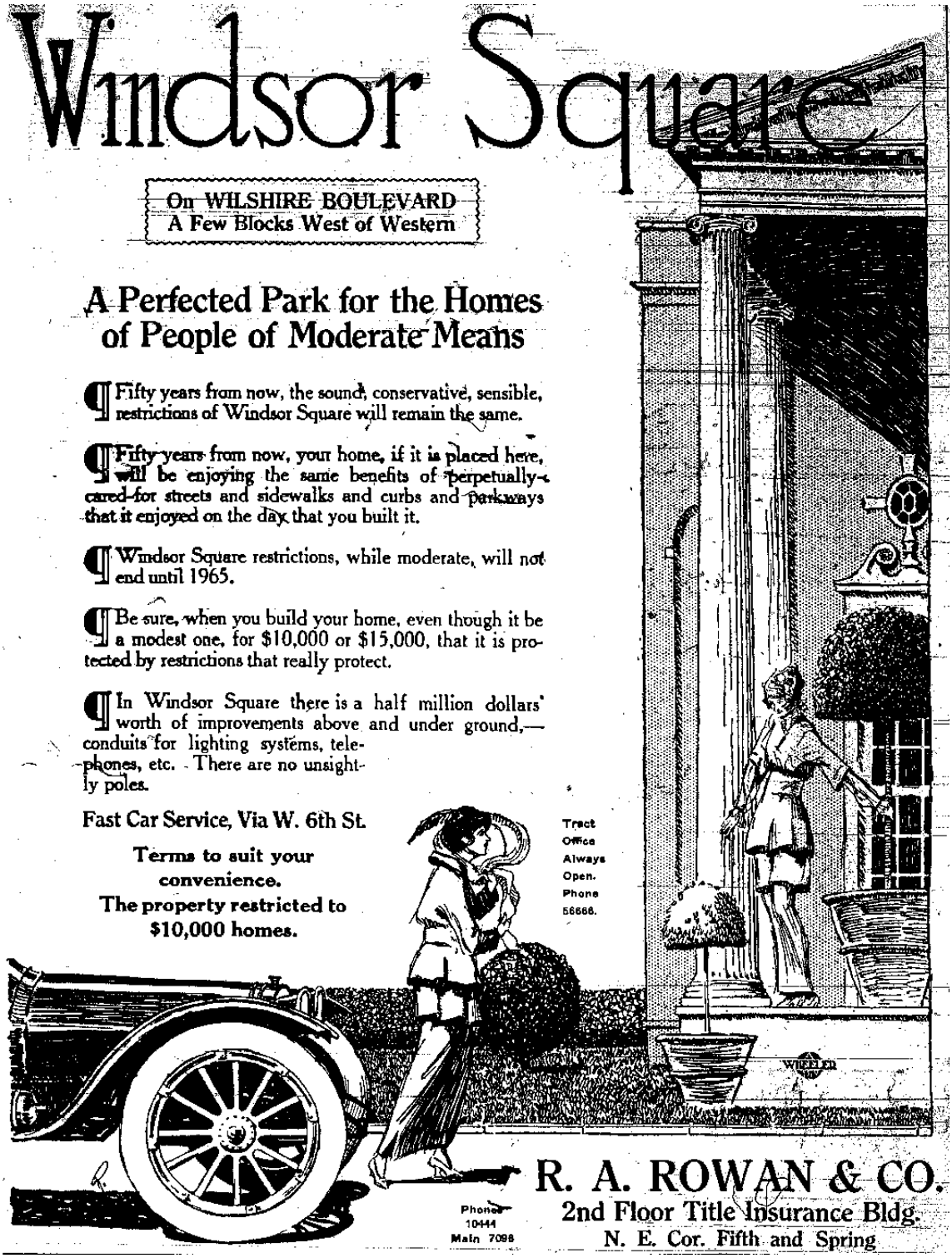


Figure 10b: Entire sidewalks

Advertisement for Windsor Square, noting the benefits of perpetually cared for streets and sidewalks and curbs and parkways.

Source: Los Angeles Times, March 22, 1914, Part VI, Page 4.

Figure 11a: Artwork embedded in the sidewalk
Terrazzo fronting Clifton's Cafeteria (context and detail).

Source: ICF, 2018.

Figure 11b: Artwork embedded in the sidewalk

Starburst at the Garfield Building (top). Broadway Department Store/Junipero Serra State Office Building Medallion (bottom-left). Newberry's Department Store script (bottom-right).

Source: ICF, 2018.

Figure 12: Streetlights
Acorn streetlights commonly found in Downtown Los Angeles.

Source: ICF, 2018.

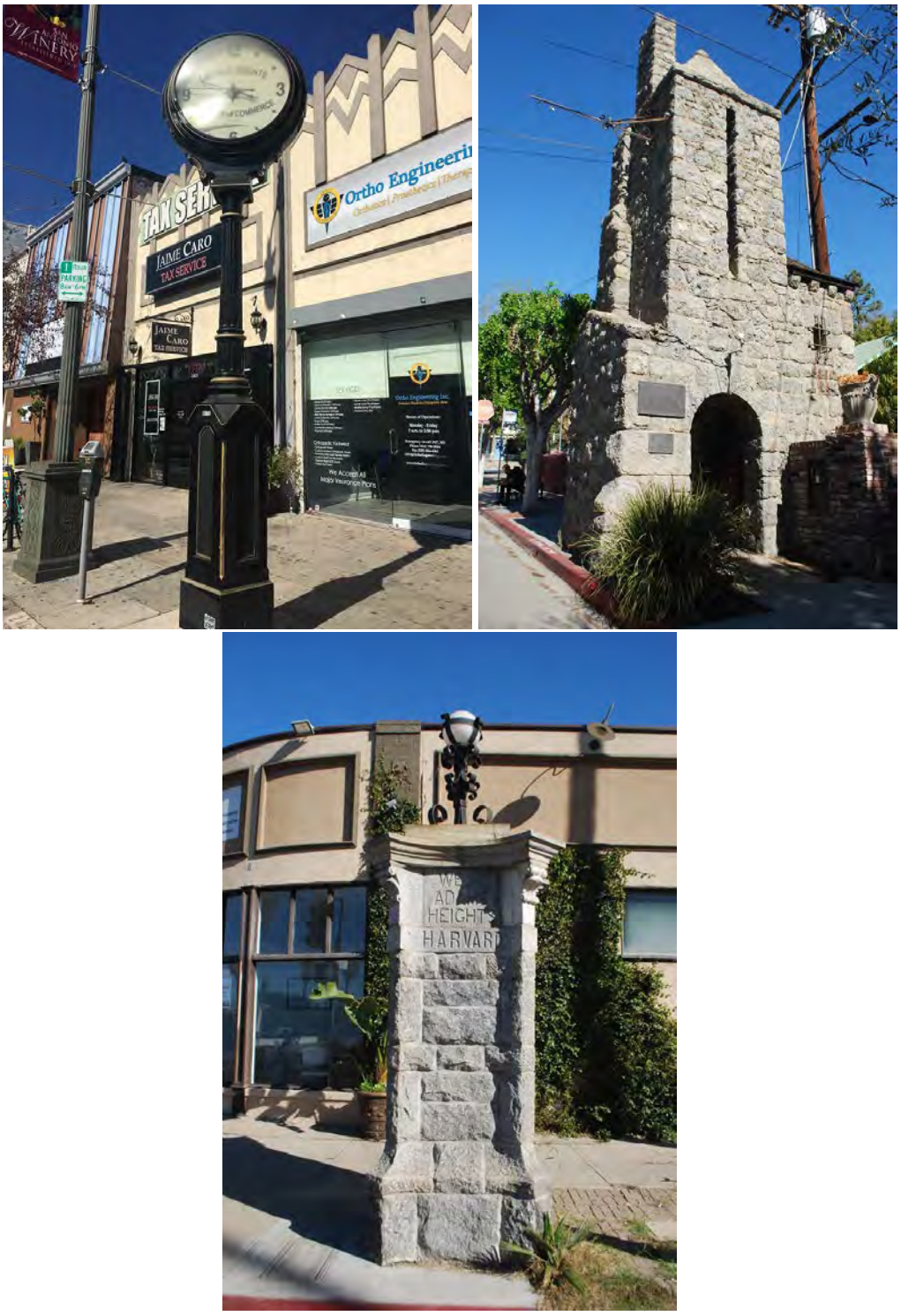


Figure 13: Street Furniture
Clock in Lincoln Heights HPOZ (top-left). Beachwood Canyon Gates (top-right). Harvard Heights HPOZ Marker (bottom).

Source: ICF, 2018.

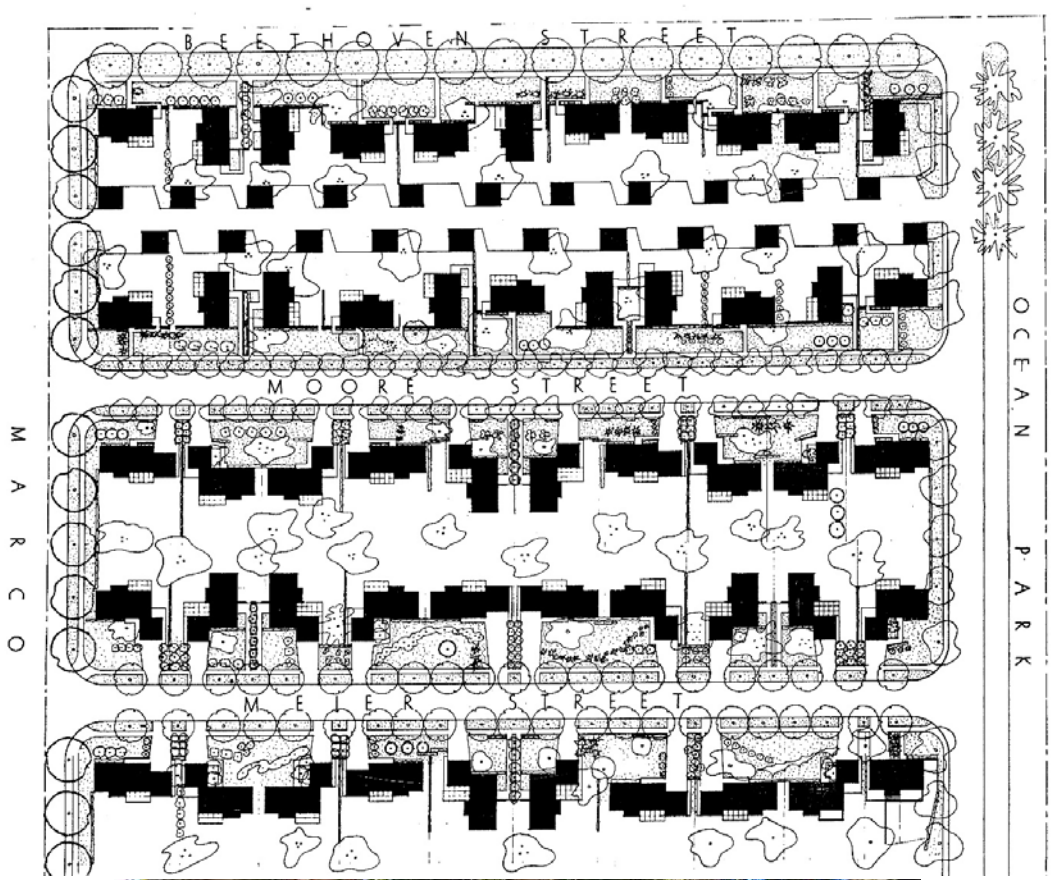


Figure 14: Landscape

Gregory Ain Mar Vista Tract HPOZ street trees and sidewalks in site plan (top). Street trees along Meier Street sidewalks in HPOZ (bottom).

Source: City of Los Angeles Department of City Planning, Gregory Ain Mar Vista Tract (Mar Vista Housing) Historic Preservation Overlay Zone Historic Resources Survey. December 2002. ICF 2018.

Figure 15: Sidewalk Prism Lights
Sidewalk prisms allow sunlight to enter the area below (e.g. subway path, basement).
Source: ICF, 2018.

References:

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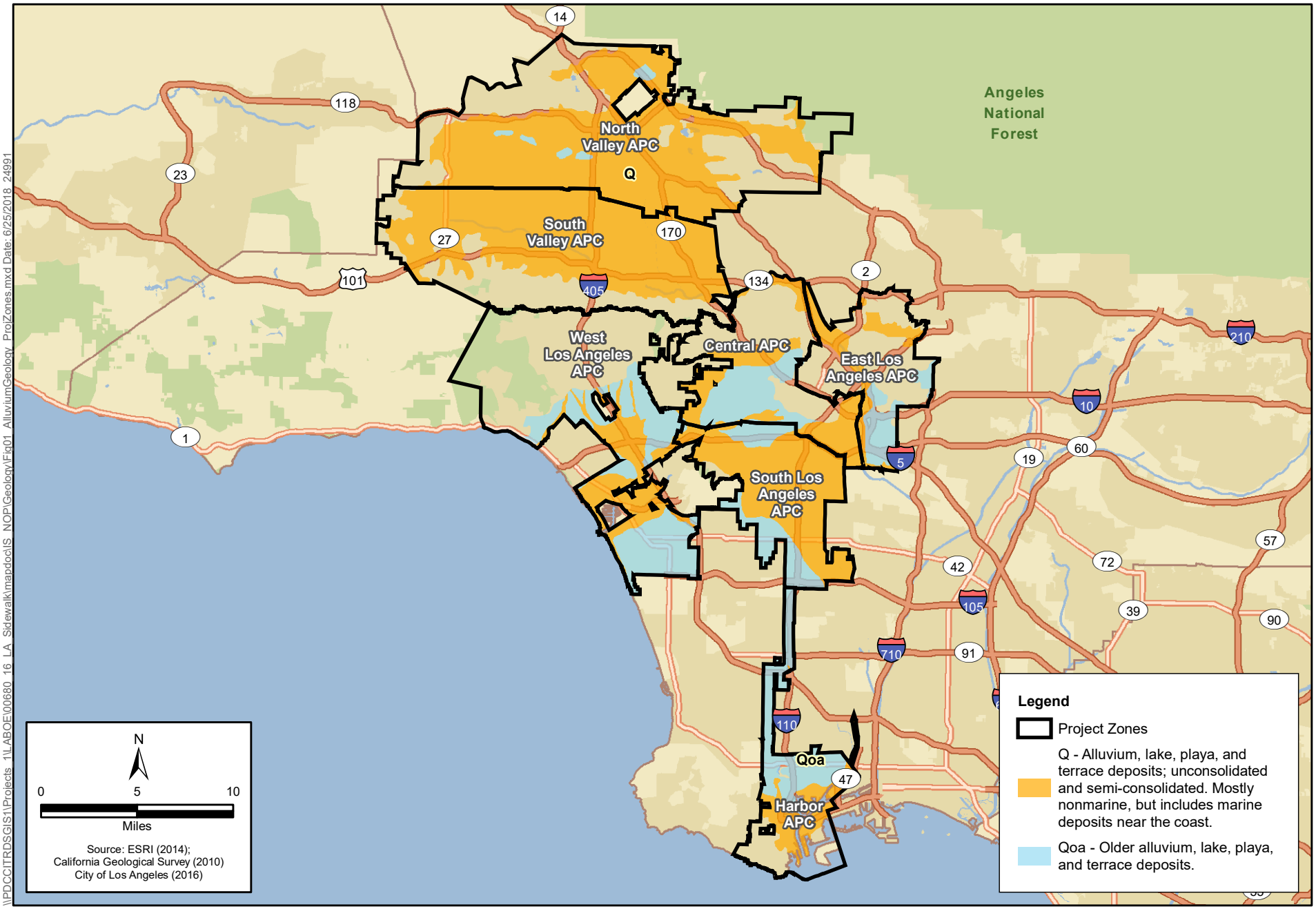
Appendix F2

Paleo Figures



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ICF

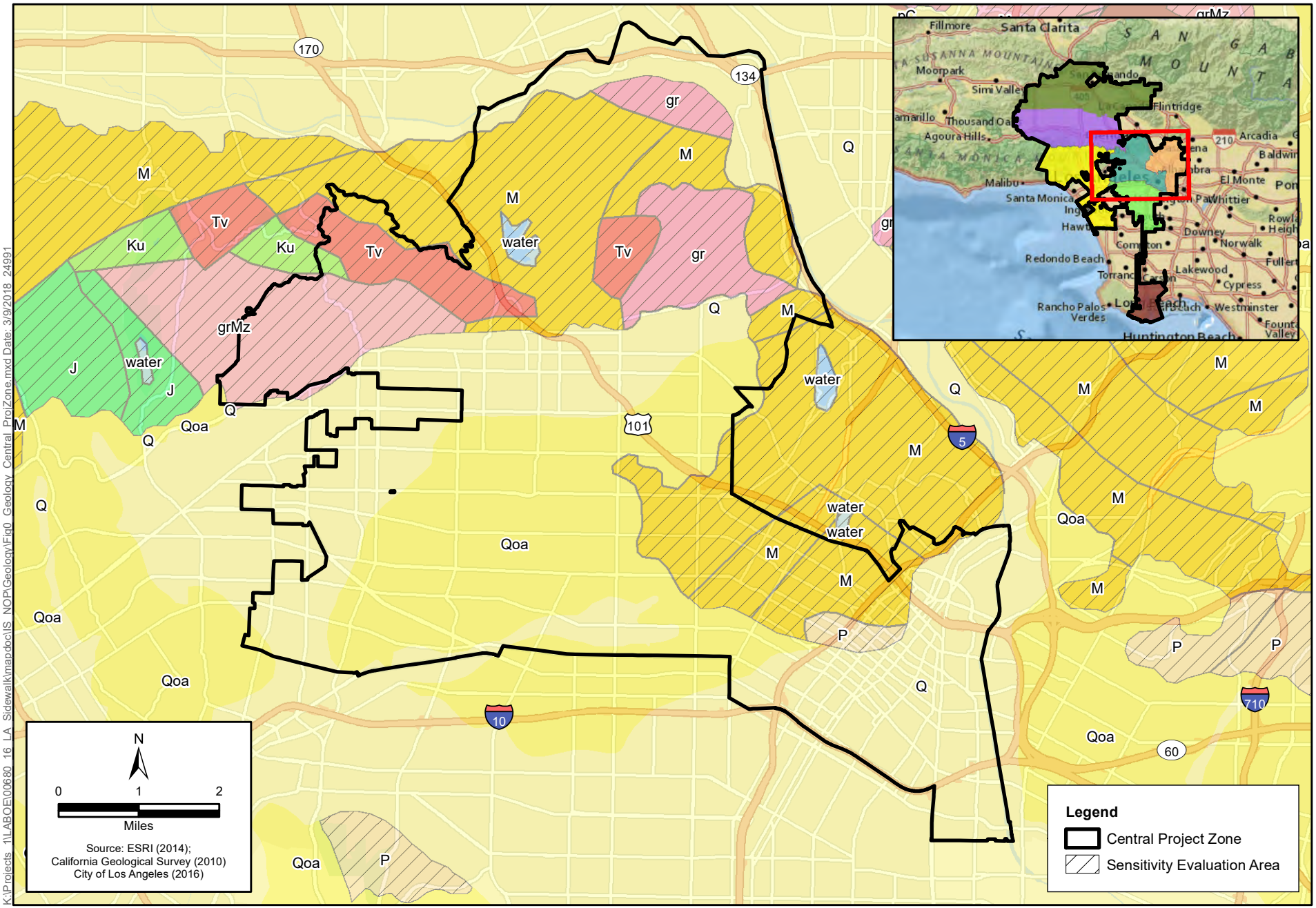
Figure A
Alluvium Geology of the Project Zones
Citywide Sidewalk Repair Program

Legend

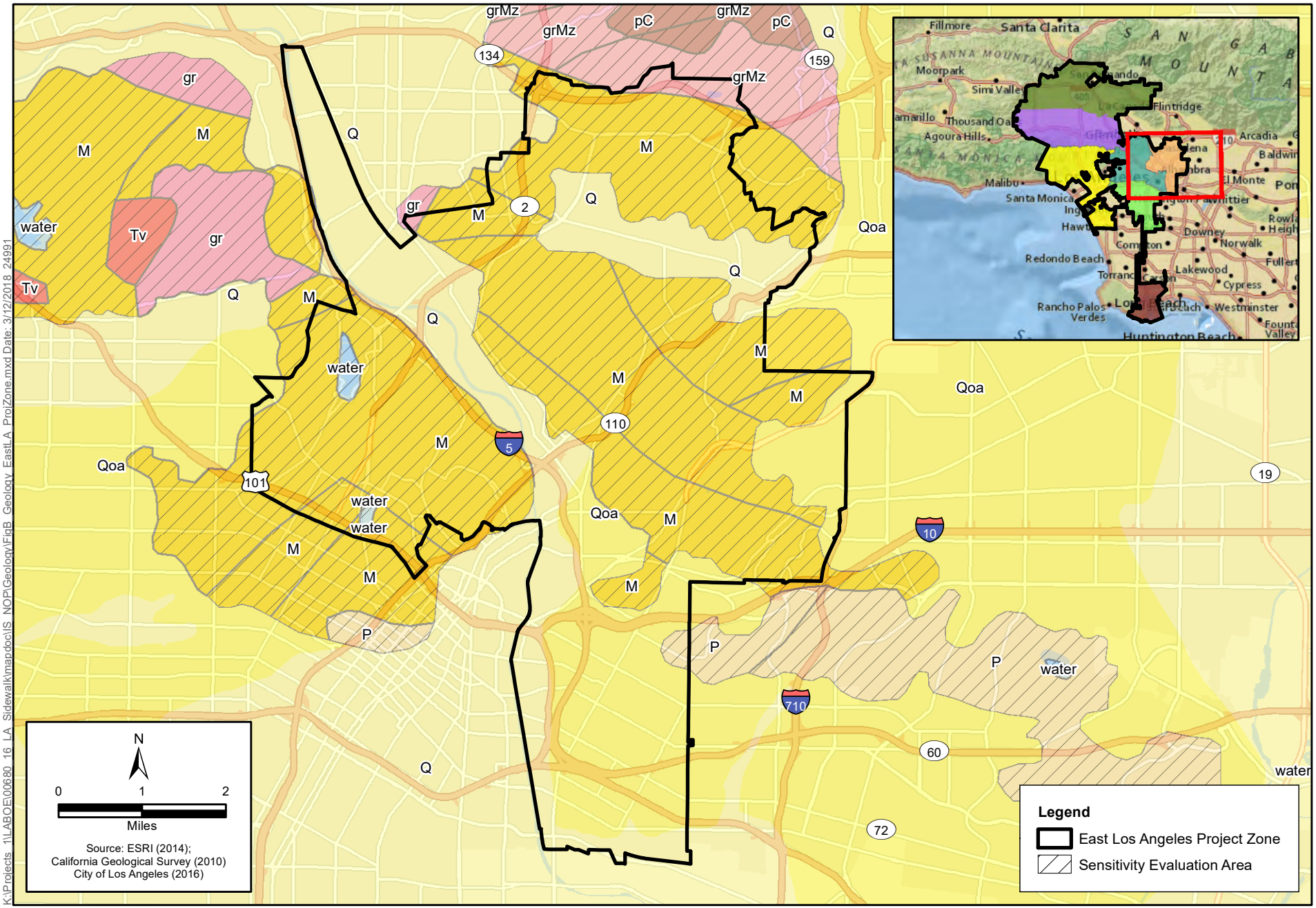
Geologic Symbols

- Qls - Quaternary large landslide deposits. Selected large landslides, such as Blackhawk slide on north side of San Gabriel Mountains; early to late Quaternary.
- Q - Quaternary alluvium and marine deposits. Alluvium, lake, playa, and terrace deposits; unconsolidated and semi-consolidated. Mostly nonmarine, but includes marine deposits near the coast.
- QPc - Plio-Pleistocene and Pliocene loosely consolidated deposits. Pliocene and/or Pleistocene sandstone, shale, and gravel deposits; in part Miocene.
- P - Pliocene marine rocks. Sandstone, siltstone, shale, and conglomerate; in part Pleistocene and Miocene.
- M;M? - Miocene marine rocks. Sandstone, shale, siltstone, conglomerate and breccia; in part Pliocene and
- Mc - Miocene nonmarine rocks. Sandstone, shale, conglomerate, and fanglomerate; in part Pliocene and
- Tv - Tertiary volcanic flow rocks. Tertiary volcanic flow rocks; minor pyroclastic
- Oc - Oligocene nonmarine rocks. Sandstone, shale, and conglomerate; in part Miocene and Eocene.
- Ti - Tertiary intrusive rocks (hypabyssal). Tertiary intrusive rocks; mostly shallow (hypabyssal) plugs and dikes. Includes some Mesozoic rocks.
- E - Eocene marine rocks. Shale, sandstone, conglomerate, and minor limestone; in part Oligocene and
- Ep - Late Cretaceous to Eocene. Sandstone, shale, and conglomerate; mostly well consolidated
- grMz; grMz? - Mesozoic granitic rocks. Mesozoic granite, quartz monzonite, granodiorite, and quartz diorite
- K - Cretaceous marine rocks (in part nonmarine). Undivided Cretaceous sandstone, shale, and conglomerate; minor nonmarine rocks in Peninsular Ranges
- Ku - Upper Cretaceous marine rocks. Upper Cretaceous sandstone, shale, and conglomerate
- KJf - Franciscan Complex. Franciscan complex: Cretaceous and Jurassic sandstone with smaller amounts of shale, chert, limestone, and conglomerate. Includes Franciscan melange, except where separated--see KJfm.
- J - Jurassic marine rocks. Shale, sandstone, minor conglomerate, chert, slate, limestone; minor pyroclastic rocks
- gr-m - pre-Cenozoic granitic and metamorphic rocks undivided. Granitic and metamorphic rocks, mostly gneiss and other metamorphic rocks injected by granitic rocks. Mesozoic to Precambrian.
- gr - Undated granitic rocks. Undated granitic rocks
- grPz - Paleozoic and Permo-Triassic granitic rocks. Paleozoic and Permo-Triassic granitic rocks in the San Gabriel and Klamath Mountains
- pC - Precambrian rocks, undivided. Conglomerate, shale, sandstone, limestone, dolomite, marble, gneiss, hornfels, and quartzite; may be Paleozoic in part
- pCc - Precambrian igneous and metamorphic rock complex. Complex of Precambrian igneous and metamorphic rocks. Mostly gneiss and schist intruded by igneous rocks; may be Mesozoic in part.
- grpC; grpC? - Precambrian granitic rocks. Precambrian granite, syenite, anorthosite, and gabbroic rocks in the San Gabriel Mountains; also various Precambrian plutonic rocks elsewhere in southeastern California
- Water

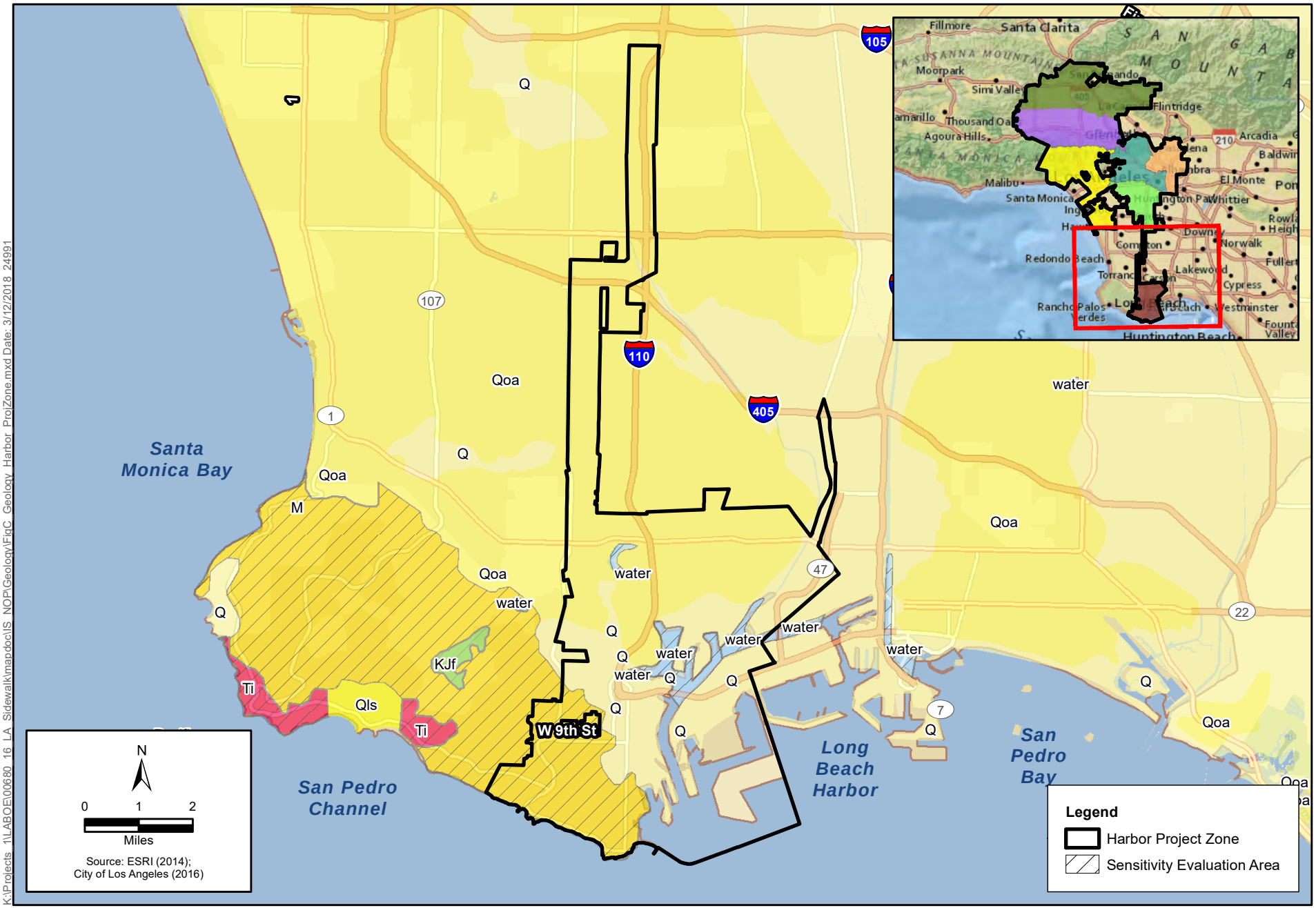
Paleo Figure B
Geologic Map Legend
Citywide Sidewalk Repair Program



Paleo Figure C
Geology of the Central Project Zone
Citywide Sidewalk Repair Program



Paleo Figure D
Geology of the East Los Angeles Project Zone
Citywide Sidewalk Repair Program



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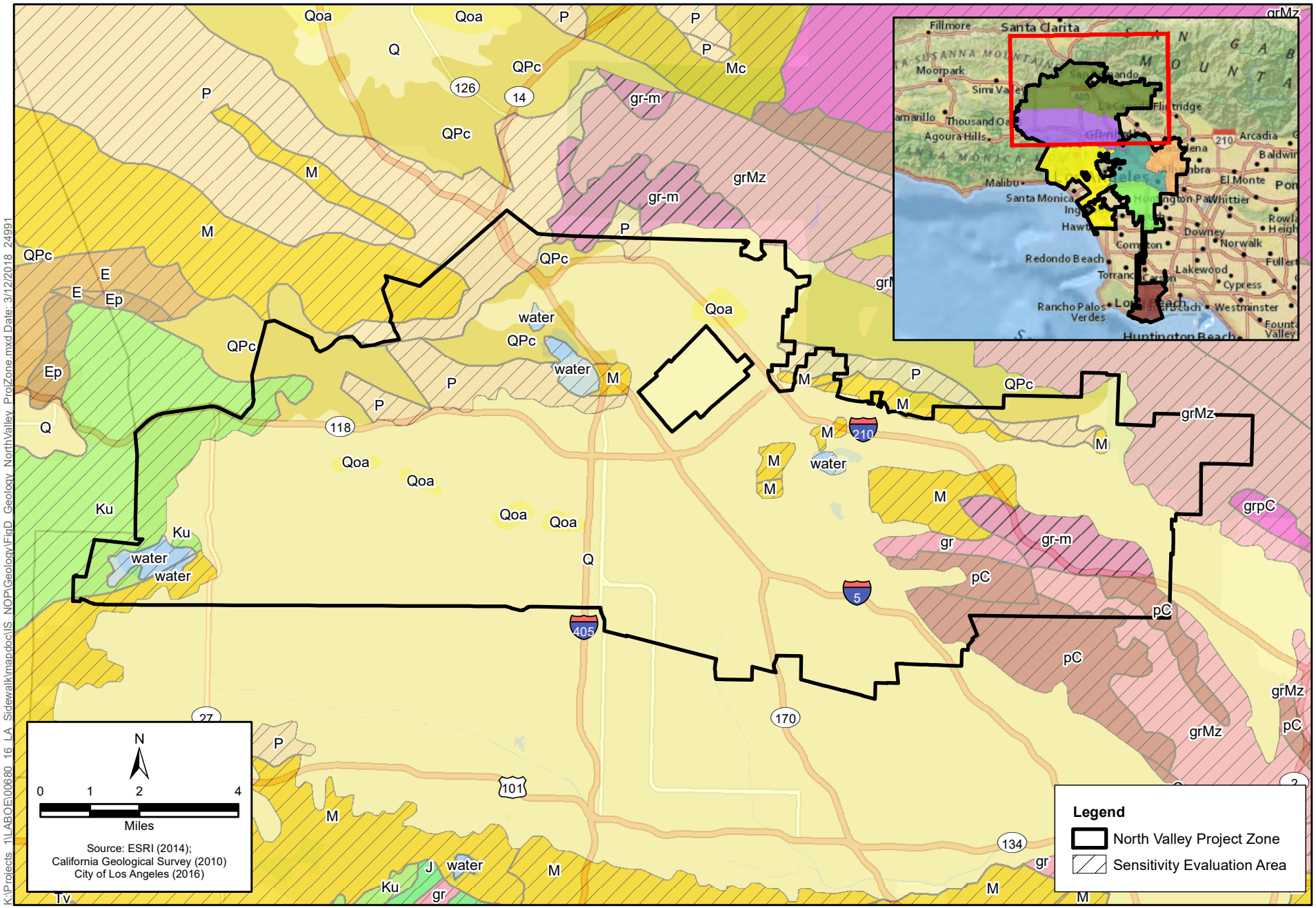
Paleo Figure E
Geology of the Harbor Project Zone
Citywide Sidewalk Repair Program



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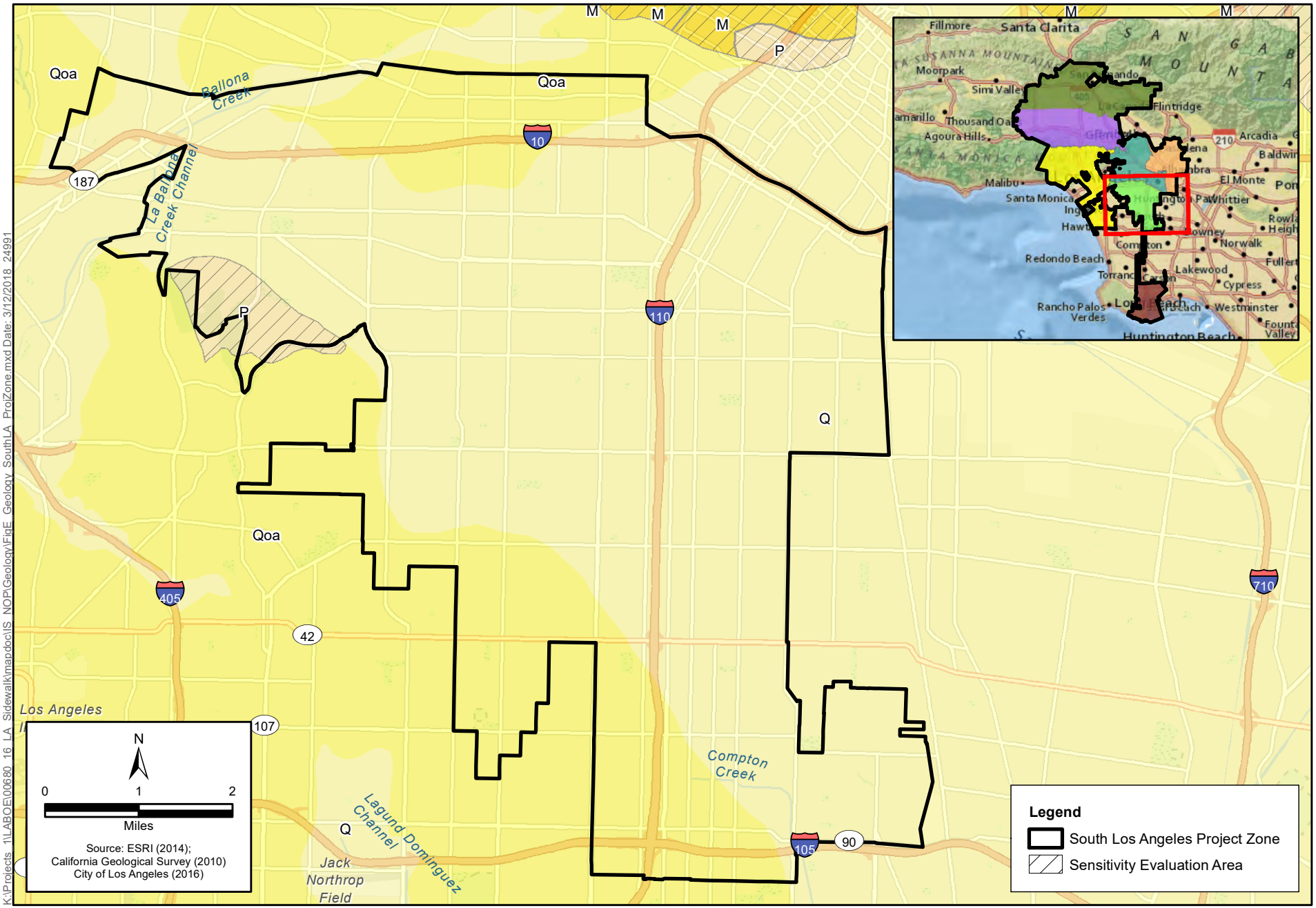
Paleo Figure F
Geology of the North Valley Project Zone
Citywide Sidewalk Repair Program



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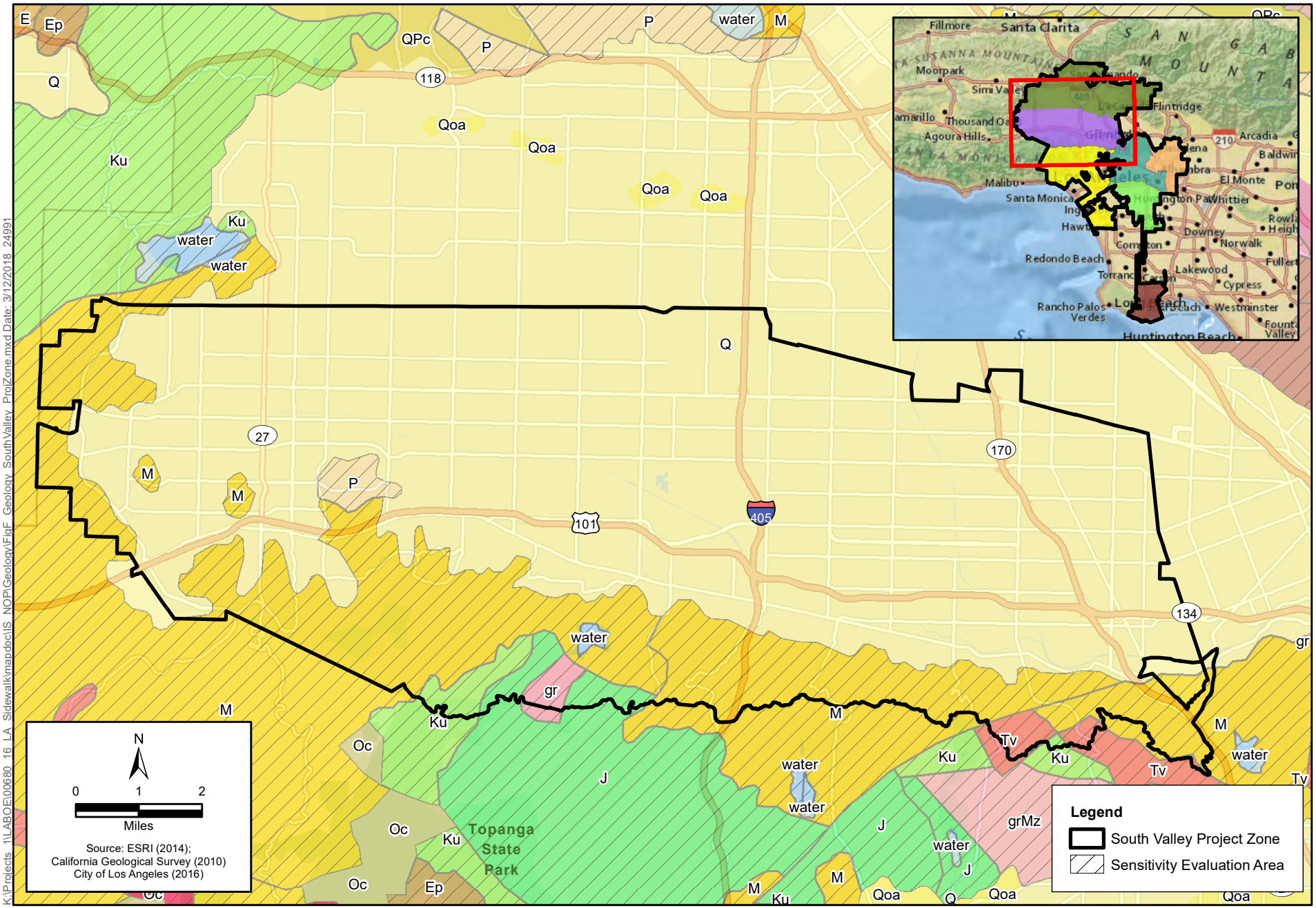
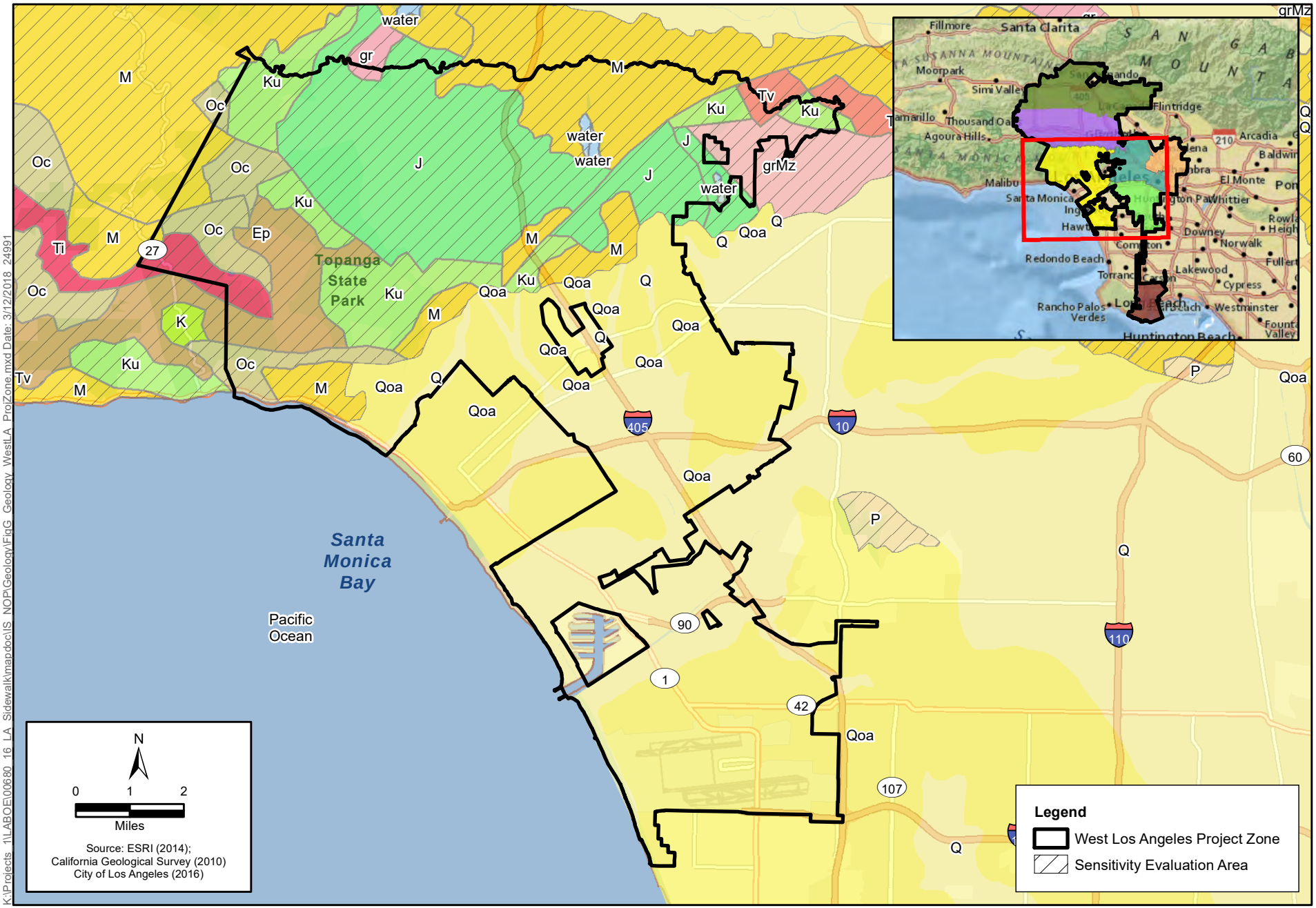
Paleo Figure G
Geology of the South Los Angeles Project Zone
Citywide Sidewalk Repair Program



Paleo Figure H
Geology of the South Valley Project Zone
Citywide Sidewalk Repair Program



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ICF

Paleo Figure I
Geology of the West Los Angeles Project Zone
Citywide Sidewalk Repair Program

Appendix G

Preliminary Geologic Hazards Evaluation

Preliminary Geologic Hazards Evaluation

City of Los Angeles Sidewalk Repair Program
Los Angeles, California

ICF International

601 West 5th Street, Suite 900 | Los Angeles, California 90071

February 16, 2018 | Project No. 209403012

Geotechnical | Environmental | Construction Inspection & Testing | Forensic Engineering & Expert Witness

Geophysics | Engineering Geology | Laboratory Testing | Industrial Hygiene | Occupational Safety | Air Quality | GIS

Ninyo & Moore

Geotechnical & Environmental Sciences Consultants

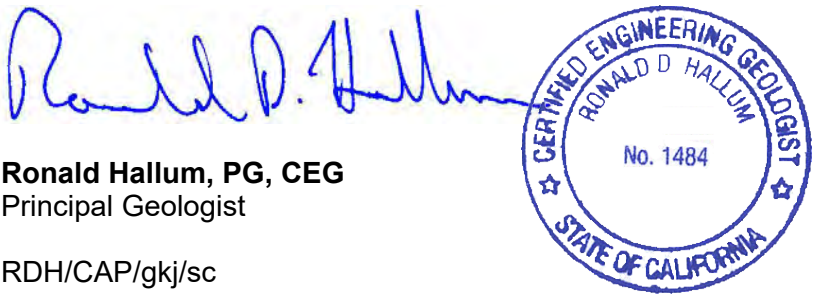
Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

Preliminary Geologic Hazards Evaluation

City of Los Angeles Sidewalk Repair Program
Los Angeles, California

Mr. Mario Barrera
ICF International
601 West 5th Street, Suite 900 | Los Angeles, California 90071

February 16, 2018 | Project No. 209403012



Ronald Hallum, PG, CEG
Principal Geologist

RDH/CAP/gkj/sc

Distribution: (1) Addressee (via e-mail)

CONTENTS

TABLE

FIGURES

1 INTRODUCTION

Ninyo & Moore was retained by ICF International (ICF) on behalf of the City of Los Angeles Department of Public Works Bureau of Engineering (LABOE) to perform a preliminary geologic hazards evaluation for the City of Los Angeles Sidewalk Repair Program. This project is anticipated to take place over the course of 30 years in seven project zones within the city of Los Angeles, California (Figures 1 and 2). We understand that the Sidewalk Repair Program consists of the removal and replacement of concrete and asphalt with occasional public utility repair.

1.1 Site History

The city of Los Angeles grew into an industrial center in the late 1800s when several railroads selected it as their western terminus. In 1892, oil was discovered in what is now downtown Los Angeles, and later in other areas of the city. During World War II, Los Angeles was a center for production of aircraft and war supplies. The postwar growth boomed in the city by continuing aircraft-related industries, oil production and refining, attracting automotive assembly plants, furniture production, clothing manufacturing, and many other industries that spread out along major thoroughfares becoming the largest incorporated city in the United States, covering 469 square miles (quickfacts.census.gov/qfd/states/06/064000.html).

1.2 Purpose

The objective of this evaluation is to assess the potential for geologic hazards to impact the project and thresholds established for the Environmental Impact Report (EIR) (LABOE, 2017), and to establish guidelines for the standard procedures that should be pursued in the event that one or more of those thresholds may be impacted during the execution of the project.

1.3 Scope of Services

Ninyo & Moore's scope of services for this preliminary evaluation included the activities listed below.

- Review of readily available topographic and geologic maps, published geotechnical literature, geologic and seismic data, soil data, groundwater data, and aerial photographs.
- Review of in-house information related to our previous work in the project vicinity.
- Review physical setting and background information.
- Compilation and analysis of existing geotechnical data pertaining to the site.
- Assessment of the general geologic conditions and seismic hazards affecting the area and evaluation of their potential impacts on the project.

- Preparation of this preliminary report presenting the results of our study, as well as our conclusions regarding the project's geologic and seismic impacts, and preliminary recommendations to address the impacts to be included in the environmental planning documents.

2 PROJECT UNDERSTANDING

Ninyo & Moore understands that the City is undertaking a 30-year sidewalk repair program in order to address the terms of the settlement from the 2010 Willits v. City of Los Angeles class action law suit. This program aims to address accessibility and safety issues, with the goal of bringing the City into compliance with the Americans with Disabilities Act. The proposed project is anticipated to involve the removal of asphalt, concrete, mature trees, and, as needed, the repair of public utilities at or near sidewalk improvement locations under two construction scenarios. According to the EIR (ICF, 2017), specific repairs anticipated during the implementation of the project include, but are not limited to:

- Curb ramp installation, repair, and upgrade
- Sidewalk and walkway repair
- Broken or uneven pavement repair
- Non-compliant slope correction
- Tree grate installation
- Missing utility cover installation
- Overhanging or protruding object removal causing the narrowing of pedestrian right-of-way
- Pedestrian rights-of-way widening where accessibility is limited
- Remediation of other accessibility issues

The program does not propose the construction of sidewalks where they are not already in existence, as well as other areas where factors associated with a location and its surroundings (e.g., site constraints) preclude it from inclusion in the project.

2.1 Project Zones

ICF designated seven regional project zones, which coincide with the existing Area Planning Commissions in the City. These zones include North Valley, South Valley, West, Central, East, South, and Harbor regions, and are shown on Figure 2.

2.2 Anticipated Scenarios

Sidewalk improvement activities at each individual location are anticipated to resemble one of two different sidewalk improvement scenarios:

- Construction Scenario 1: This scenario is projected to take up to approximately one week of sidewalk repairs or replacement at a single location. In this scenario, sidewalk improvements will be conducted without alteration of nearby public utilities.

- Construction Scenario 2: This scenario is anticipated to take approximately one month, and will involve the replacement and/or repair of public utilities at or near the location of sidewalk improvements. Under this scenario, Ninyo & Moore recommends that, if warranted by the presence of existing distress features (i.e., severely cracked and broken sidewalk slabs, tilted utility poles, soil subsidence), additional geotechnical evaluation, including subsurface evaluation and laboratory testing, be performed prior to final design.

3 GEOLOGY

3.1 Regional Geology

The State of California is divided into geomorphic provinces defined by geographic location, large-scale bedrock types, and tectonic structure. The city of Los Angeles is situated at the northwest end of the Peninsular Ranges geomorphic province and also includes a portion of the Transverse Ranges geomorphic province. The Peninsular Ranges geomorphic province encompasses an area that extends approximately 125 miles from the Transverse Ranges province south to the Mexican border, and beyond another approximately 775 miles to the tip of Baja California. The Peninsular Ranges province varies in width from approximately 30 to 100 miles and is characterized by northwest-trending mountain range blocks separated by similarly northwest-trending faults. The Transverse Ranges are a distinctive unit of east- to west-trending faults and mountain ranges with intervening valleys in Santa Barbara, Ventura, Los Angeles, and San Bernardino Counties, rotated into their current configuration due to a left bend in the San Andreas fault. Associated compression of the region has resulted in folding, reverse/thrust faulting, and uplift of the province. (Norris and Webb, 1990; Harden, 1998). A regional geologic map of the city of Los Angeles is presented as Figure 3.

3.2 Site Geology

Los Angeles lies on a hilly coastal plain with the Pacific Ocean as its southern and western boundaries. The city stretches north to the Verdugo Mountains and is bounded by the San Gabriel Mountains to the east. Numerous canyons and valleys also characterize the area.

Much of the Los Angeles area is composed of low lying areas comprising the Los Angeles Basin and San Fernando Valley. The present-day Los Angeles Basin is a northwesterly trending,

approximately 50 miles long by 20 miles wide alluviated lowland which is bounded on the north by the Santa Monica Mountains and the Elysian, Repetto, and Puente Hills, and on the east and southeast by the Santa Ana Mountains and San Joaquin Hills.

The San Fernando Valley is an elongated valley, roughly 22 miles long in an east/west direction and is approximately 9 miles wide in a north/south direction, although stretching to 12 miles wide at its wide point. Situated within the Transverse Ranges geomorphic province of California, the San Fernando Valley is bounded by the San Gabriel and Santa Susana Mountains to the north, the Santa Monica Mountains to the south, the Verdugo Mountains to the east, and the Simi Hills to the west.

Holocene to Pleistocene alluvial and older elevated alluvial soils comprise the majority of geologic material exposed at the surface of the Los Angeles Basin and San Fernando Valley. Erosion of the surrounding mountains has resulted in deposition of unconsolidated sediments in low-lying areas by rivers such as the Los Angeles River and its major tributaries (Burbank Western Channel, Pacoima Wash, Tujunga Wash, Verdugo Wash, Aliso Creek, and Arroyo Calabasas in the San Fernando Valley; and the Arroyo Seco, Compton Creek, Ballona Creek, and Rio Hondo south of the Glendale Narrows).

To the north, northeast, east, and southeast, the basins are bounded by mountains and hills that expose Pre-Cambrian to Mesozoic basement rocks and sedimentary and igneous rocks of Late Cretaceous to late Pleistocene age. The crystalline rocks which form the central core in the mountains are flanked on the north, west, and south by overlying younger Tertiary sedimentary and volcanic rock formations.

3.3 Soils

Soils within the city of Los Angeles generally range from sandy loam in the central Los Angeles Basin and San Fernando Valley, to gravelly loams developed on alluvial fans adjacent to foothills and mountains. The western portions of the city are generally underlain by silty clay and sandy clay loams with silty sands in the Manhattan Beach/Los Angeles International Airport area.

3.4 Groundwater

The project study area varies between low-lying alluvial basins (Los Angeles Basin, San Fernando Valley) and elevated foothills and mountains (Hollywood Hills, Elysian Hills, Repetto Hills, Puente Hills, and Santa Monica Mountains). Groundwater depths across the project area vary from near surface to in excess of 100 feet.

4 FAULTING AND SEISMICITY

The Los Angeles area is seismically active, as is the majority of southern California, and the potential for strong ground motion at the project locations is considered significant during the design life of proposed improvements. Table 1 lists selected principal known active faults within the project area and the maximum moment magnitude (M_{max}) as published by the United States Geological Survey (USGS, 2014a) in general accordance with the Uniform California Earthquake Rupture Forecast, version 3 (Field, et al., 2013).

Table 1 – Major Regional Faults

Fault	Maximum Moment Magnitude (M_{max})
Anacapa-Dume	7.2
Hollywood	6.7
Newport-Inglewood	7.5
Northridge	6.9
Oak Ridge	7.2
Palos Verdes	7.7
Puente Hills Blind Thrust	7.0
Raymond	6.8
San Andreas	8.2
San Gabriel	7.4
San Joaquin Hills Blind Thrust	7.1
San Jose	6.7
Santa Monica	7.4
Santa Susana	6.9
Sierra Madre	7.3
Simi-Santa Rosa	6.9
Upper Elysian Park Blind Thrust	6.7
Verdugo	6.9
Whittier	7.9

The faults in southern California are classified as active, potentially active, and inactive faults. As defined by the California Geological Survey (CGS), active faults are faults that have ruptured within Holocene time, or within approximately the last 11,000 years. Potentially active faults are those that show evidence of movement during Quaternary time (approximately the last 1.6 million years) but for which evidence of Holocene movement has not been established. Inactive faults have not ruptured in the last approximately 1.6 million years. Figure 4 shows the project site relative to the principal faults in the region based on the Fault Activity Map of California (Jennings and Bryant, 2010).

5 CONCLUSIONS AND RECOMMENDATIONS FOR POTENTIAL GEOLOGIC AND SEISMIC IMPACTS/HAZARDS

The purpose of our evaluation was to provide an overview of the geotechnical site conditions and the potential geologic/seismic hazards that may impact the Sidewalk Repair Program in the city of Los Angeles. Our evaluation was based on review of readily available geologic, seismic and groundwater data, previous subsurface exploration data by Ninyo & Moore and others, and engineering analyses. Based on the results of our geotechnical evaluation and the nature of the proposed project, implementation of the proposed Sidewalk Repair Program is not anticipated to have a significant impact on the geologic environment.

The potential geologic/seismic hazards and geotechnical constraints described in the following sections could involve various types of mitigation in order to reduce the potential impacts and suitably prepare the sites for the project. Mitigation generally includes sound engineering practice in the design and construction of future development, including the implementation of appropriate geotechnical recommendations prior to the design and construction of the proposed improvements in the project area. General mitigation concepts regarding the potential geotechnical hazards and constraints to the Sidewalk Repair Program are presented in the following sections. Based on the nature of the project (replacement of existing sidewalks), full mitigation for some geologic hazards (surface fault rupture, seismic shaking, liquefaction, landslides, tsunamis, subsidence, and compressible/collapsible soils) may not be warranted or economical. Regardless, prior to design of future improvements, a geotechnical evaluation, including subsurface exploration, should be performed to address the site-specific conditions at the locations of the planned sidewalk improvements and to provide recommendations for design and construction.

5.1 Surface Fault Rupture

Surface fault rupture is the offset or rupturing of the ground surface by relative displacement across a fault during an earthquake. Based on our review of referenced geologic and fault hazard data, numerous active faults cross the Los Angeles area. Although individual sidewalk projects are not known at this time, some sites may be located within a State of California Earthquake Fault Zone (formerly known as Alquist-Priolo Fault Zones) (Hart and Bryant, 2007) (Figure 5). Therefore, the potential for surface rupture across one or more of the Sidewalk Repair Program sites is considered moderate. Lurching or cracking of the ground surface as a result of nearby seismic events is also a possibility.

5.2 Seismic Ground Shaking

Earthquake events from one of the regional active or potentially active faults near the project area could result in strong ground shaking which could affect the project site and proposed improvements. The level of ground shaking at a given location depends on many factors, including the size and type of earthquake, distance from the earthquake, and subsurface geologic conditions. The type of construction also affects how particular structures and improvements perform during ground shaking.

The 2016 California Building Code specifies that the potential for liquefaction and soil strength loss be evaluated, where applicable, for the mapped peak ground acceleration (PGA_M), which is defined as the Maximum Considered Earthquake Geometric Mean (MCE_G) peak ground acceleration (PGA) with adjustment for site class effects in accordance with the American Society of Civil Engineers (ASCE) 7-10 Standard. The MCE_G PGA is based on the geometric mean PGA with a 2 percent probability of exceedance in 50 years. The MCE_G PGA for the Los Angeles region was calculated using the USGS (USGS, 2014c) seismic design tool. Mapped MCE_G PGAs ranged from roughly 0.20g to in excess of 1.0g across the city of Los Angeles.

The anticipated potential levels of ground shaking could have major impacts on some proposed project improvements. Appropriate structural design techniques, such as thickened or reinforced sidewalk slabs, could reduce the impacts related to seismic ground shaking.

5.3 Liquefaction and Lateral Spreading

Liquefaction is the phenomenon in which loosely deposited granular soils located below the water table undergo rapid loss of shear strength due to excess pore pressure generation when subjected to strong earthquake-induced ground shaking. Ground shaking of sufficient duration results in the loss of grain-to-grain contact due to rapid rise in pore water pressure causing the soil to behave as a fluid for a short period of time. Liquefaction is known generally to occur in saturated or near-saturated cohesionless soils at depths shallower than 50 feet. Factors known to influence liquefaction potential include composition and thickness of soil layers, grain size, relative density, groundwater level, degree of saturation, and both intensity and duration of ground shaking. The potential damaging effects of liquefaction include differential settlement, loss of ground support, ground cracking, and heaving and cracking of slabs due to sand boiling or settlement.

Lateral spreading of the ground surface during an earthquake usually takes place along weak shear zones that have formed within a liquefiable soil layer. Lateral spreading has generally been

observed to take place in the direction of a free-face (i.e., slope, retaining wall, creek wall) but has also been observed to a lesser extent on ground surfaces with very gentle slopes.

According to Seismic Hazard Zones Maps published by the State of California (CGS, 2001a and 2001b), portions of the Los Angeles Basin, San Fernando Valley, San Pedro area, and other low-lying areas with shallow groundwater are considered susceptible to liquefaction (and thus to lateral spreading) (Figure 6). Proposed improvements in these areas could be impacted.

5.4 Landslides

Landslides, slope failures, and mudflows of earth materials generally occur where slopes are steep and/or the earth materials are too weak to support themselves. Earthquake-induced landslides may also occur due to seismic ground shaking. According to the Seismic Hazard Zones map (Figure 7), many of the hillside and mountainous areas of the city of Los Angeles are mapped as being generally susceptible to landsliding and could impact portions of the proposed project.

5.5 Tsunamis

Tsunamis are long seismic sea waves (long compared to ocean depth) generated by sudden movements of the sea floor caused by submarine earthquakes, landslides, or volcanic activity. As shown on Figure 8 (California Emergency Management Agency, 2009a, 2009b, and 2009c), areas of Los Angeles adjacent to the coast (primarily Venice, San Pedro, and Long Beach) are considered subject to tsunami inundation. Proposed improvements in these areas could be impacted.

5.6 Soil Erosion

Erosion is a process by which soil or earth material is loosened or dissolved and removed from its original location. Future construction at the site will result in ground surface disruption during demolition, excavation, grading, and trenching that would create the potential for erosion to occur. Erosion can occur by varying processes and may occur at the site where bare soil is exposed to wind or moving water (both rainfall and surface runoff). The processes of erosion are generally a function of material type, terrain steepness, rainfall or irrigation levels, surface drainage conditions, and general land uses.

Based on our review of geologic references and site reconnaissance, the materials exposed at the surface of the project site could include sands, silty sands, and clayey soils. Sandy soils typically have low cohesion, and have a relatively higher potential for erosion from surface runoff when exposed in cut slopes or utilized near the face of fill embankments. Surface soils with higher

amounts of clay tend to be less erodible as the clay acts as a binder to hold the soil particles together.

Future construction may create the potential for soil erosion during excavation, grading, and trenching activities. However, a Storm Water Pollution Prevention Program incorporating Best Management Practices (BMPs) for erosion control is typically prepared prior to the start of construction to mitigate erosion during site construction. Typical BMPs include erosion prevention mats or geofabrics, silt fencing, sandbags, plastic sheeting, temporary drainage devices, and positive surface drainage to allow surface runoff to flow away from site improvements or areas susceptible to erosion. Surface drainage design provisions and site maintenance practices would reduce potential soil erosion following site development.

5.7 Subsidence

Subsidence is characterized as a sinking of the ground surface relative to surrounding areas, and can generally occur where deep soil deposits are present. Subsidence in areas of deep soil deposits is typically associated with regional groundwater withdrawal or other fluid withdrawal from the ground such as oil and natural gas. Subsidence can result in the development of ground cracks and damage to sidewalks, pipelines and other improvements.

Several areas of Los Angeles have experienced subsidence due to withdrawal of groundwater or oil. These include the Wilmington area, areas adjacent to San Pedro and Long Beach, and the central Los Angeles Basin. Proposed improvements in these areas could be impacted.

5.8 Compressible/Collapsible Soils

Compressible soils are generally comprised of soils that undergo consolidation when exposed to new loading, such as fill or foundation loads. Soil collapse is a phenomenon where the soils undergo a significant decrease in volume upon increase in moisture content, with or without an increase in external loads. Buildings, structures and other improvements may be subject to excessive settlement-related distress when compressible soils or collapsible soils are present.

As major additional fills are not proposed for the Sidewalk Improvements project, the potential for compressible/collapsible soils to occur is considered low. However, individual projects may be impacted.

5.9 Expansive Soils

Expansive soils include clay minerals that are characterized by their ability to undergo significant volume change (shrink or swell) due to variations in moisture content. Sandy soils are generally

not expansive. Changes in soil moisture content can result from rainfall, irrigation, pipeline leakage, surface drainage, perched groundwater, drought, or other factors. Volumetric change of expansive soil may cause excessive cracking and heaving of structures with shallow foundations, concrete slabs-on-grade, flatwork, or pavements supported on these materials.

The Sidewalk Repair Program extends over a wide area and variable near-surface soils are anticipated. Detailed assessment of the potential for expansive soils would be evaluated during the design phase of the project and mitigation techniques would be developed, as appropriate, to reduce the impacts related to expansive soils.

The potential for expansive soils to impact site improvements can be mitigated by removal of near-surface expansive soils and replacement with low expansive material during construction and providing positive surface drainage for site improvements to reduce infiltration of water into the subsurface. Additionally, expansive soil mitigation can involve design of site improvements to resist the effects of expansive soils, including thickened sidewalk slabs with additional reinforcement.

5.10 Thresholds

In December 2017, the LABOE established the Sidewalk Repair Program Draft Thresholds (LABOE, 2017), including those in relation to geological resources. The preparation of this report is conducted with the intent of establishing a guidance framework to address these threshold issues on a case by case basis for each individual sidewalk improvement job included in the project. The Thresholds of Significance (as referenced from Appendix G of the Sidewalk Repair Program EIR) are presented below. We have included in bold our preliminary conclusions as to potential impacts from geological hazards or impacts to geological resources:

- Would the project cause or accelerate geologic hazards, which would result in substantial damage to structures or infrastructure, or expose people to substantial risk of injury resulting from rupture of a known earthquake fault; landslides; and seismic ground shaking or seismic ground shaking or seismic-related ground failure, including liquefaction? **If properly engineered and implemented, the proposed Sidewalk Repair Program will not cause or accelerate geologic hazards, which would result in substantial damage to structures or infrastructure, or expose people to substantial risk of injury resulting from rupture of a known earthquake fault; landslides; and seismic ground shaking or seismic ground shaking or seismic-related ground failure, including liquefaction**.

- Would the project cause one or more distinct and prominent geologic or topographic features to be destroyed, permanently covered or materially and adversely modified? Such features may include, but are not limited to, hilltops, ridges, hill slopes, canyons, ravines, rock outcrops, water bodies, streambeds and wetlands? **If properly engineered and implemented, the proposed Sidewalk Repair Program will not cause one or more distinct geologic or topographic features to be destroyed or adversely modified.**

- Would the project constitute a geologic hazard to other properties by causing or accelerating instability from erosion? **If properly engineered and implemented, the proposed Sidewalk Repair Program will not constitute a geologic hazard by causing or accelerating instability from erosion.**

- Would the project accelerate natural processes of wind and water erosion and sedimentation, resulting in sediment runoff or deposition that would not be contained or controlled on-site? **If properly engineered and implemented, the proposed Sidewalk Repair Program will not accelerate natural processes of wind or water erosion and sedimentation resulting in sediment runoff that would not be contained or controlled on-site.**

- Would the project be located on unstable soil or would result in an onsite or offsite landslide, collapse or lateral spreading? **If properly engineered and implemented, the proposed Sidewalk Repair Program will not result in an on-site or off-site landslide, collapse, or lateral spreading.**

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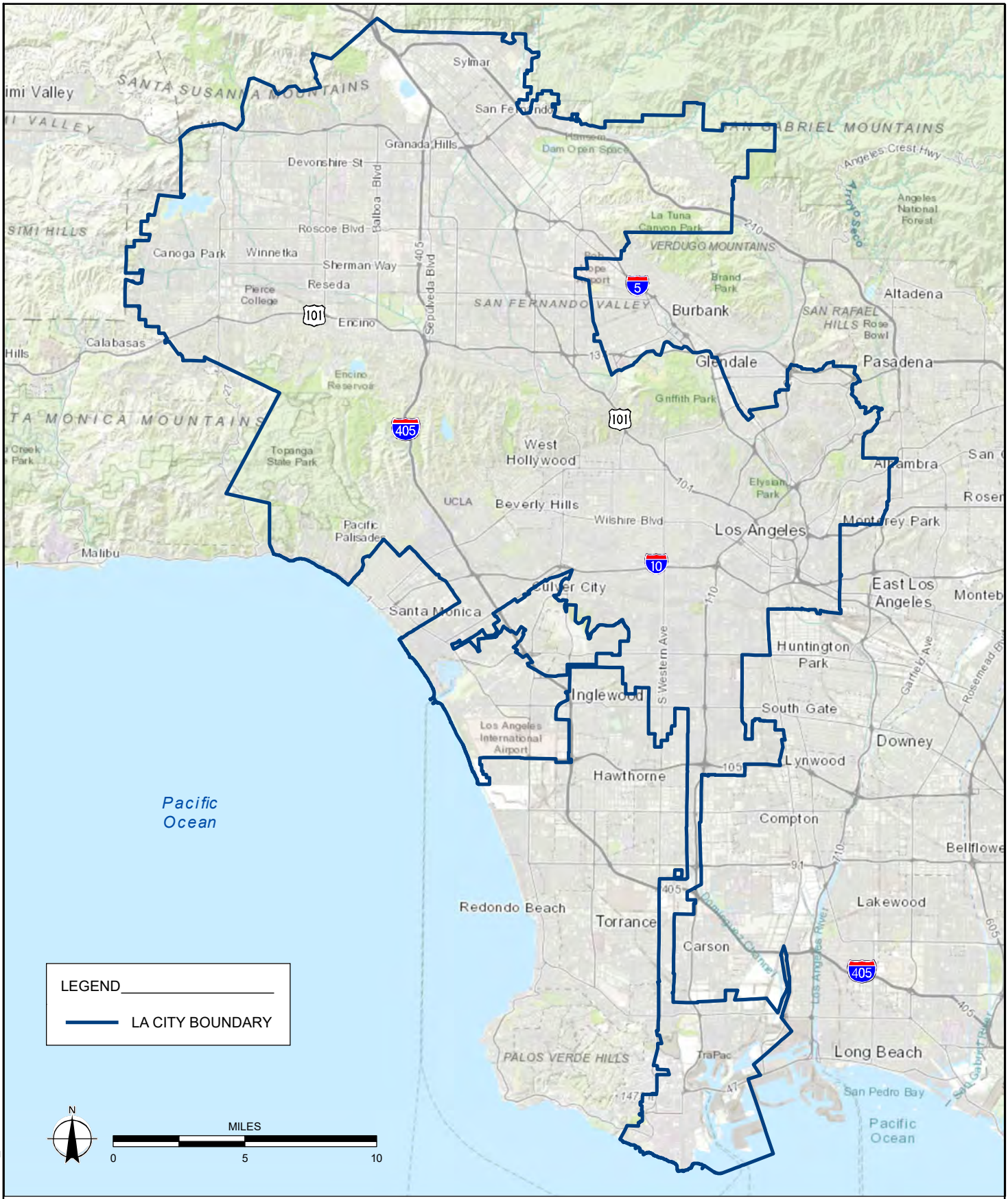
FIGURES



NOTE: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE. | SOURCE: ESRI WORLD TOPO, 2017

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FIGURE 1

SITE LOCATION

LABOE CITY SIDEWALKS
LOS ANGELES, CALIFORNIA

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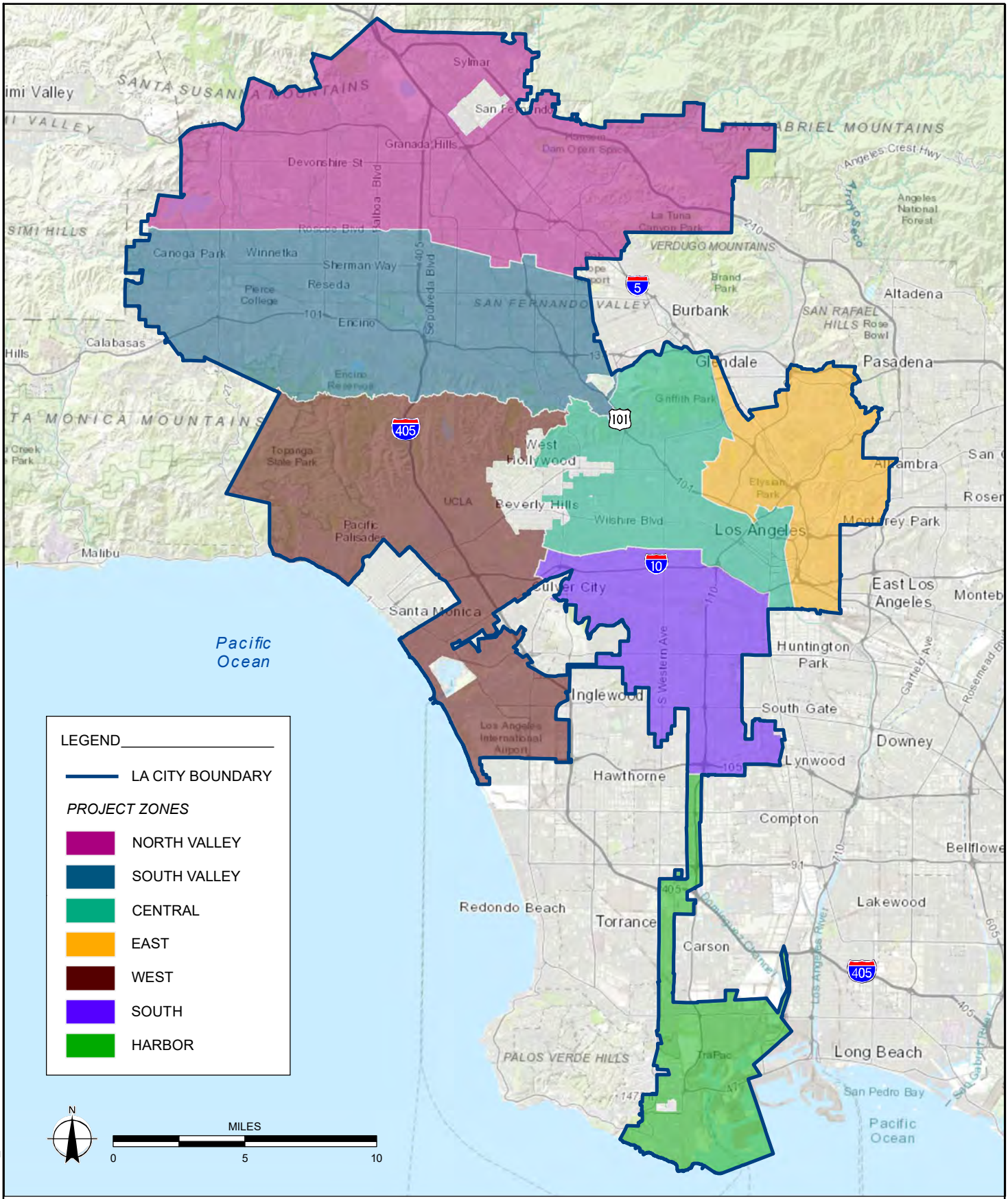

NOTE: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE. | SOURCE: ESRI WORLD TOPO, 2017

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FIGURE 2

PROJECT ZONES

LABOE CITY SIDEWALKS
LOS ANGELES, CALIFORNIA

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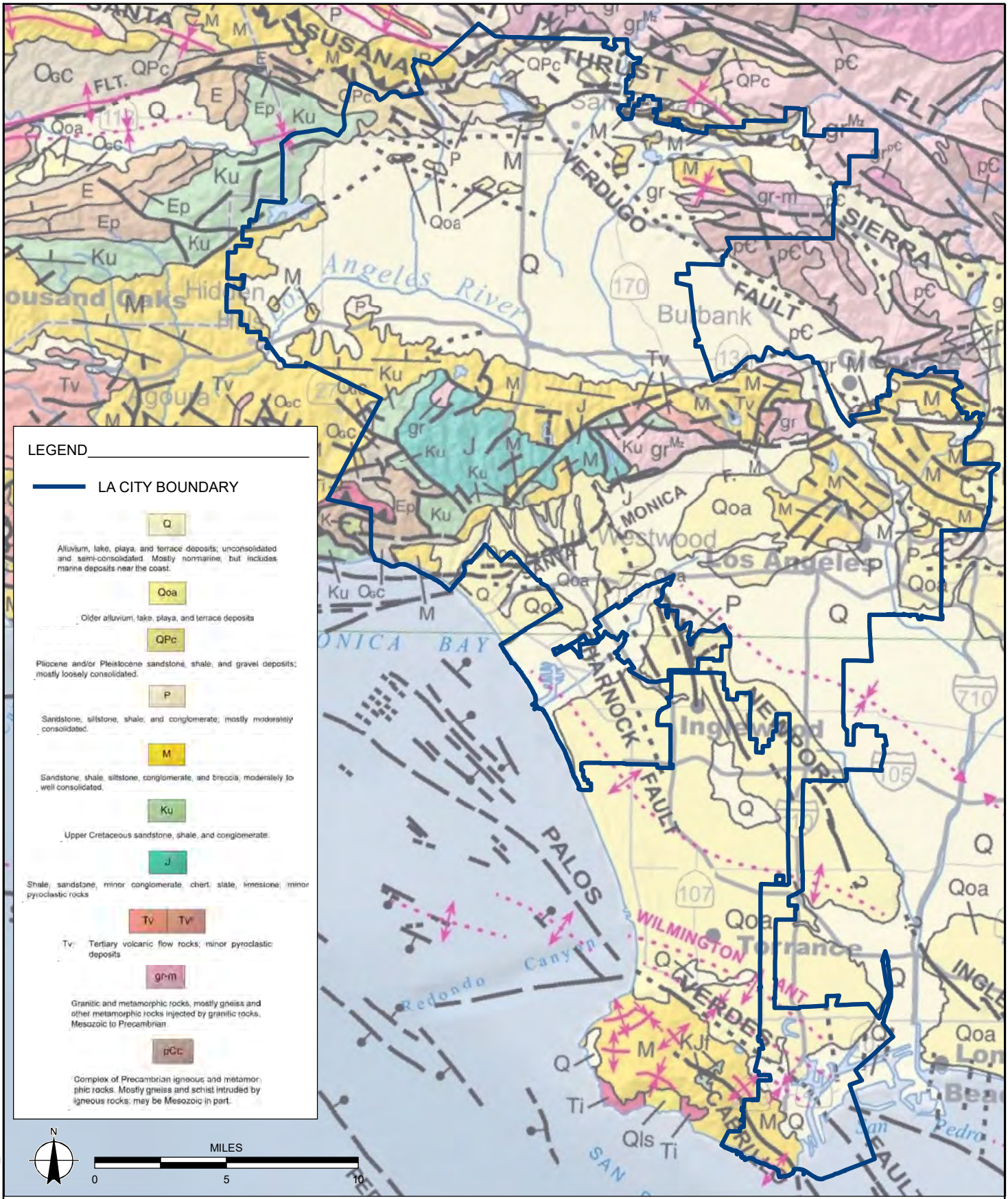

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FIGURE 3

GEOLOGY

LABOE CITY SIDEWALKS
LOS ANGELES, CALIFORNIA

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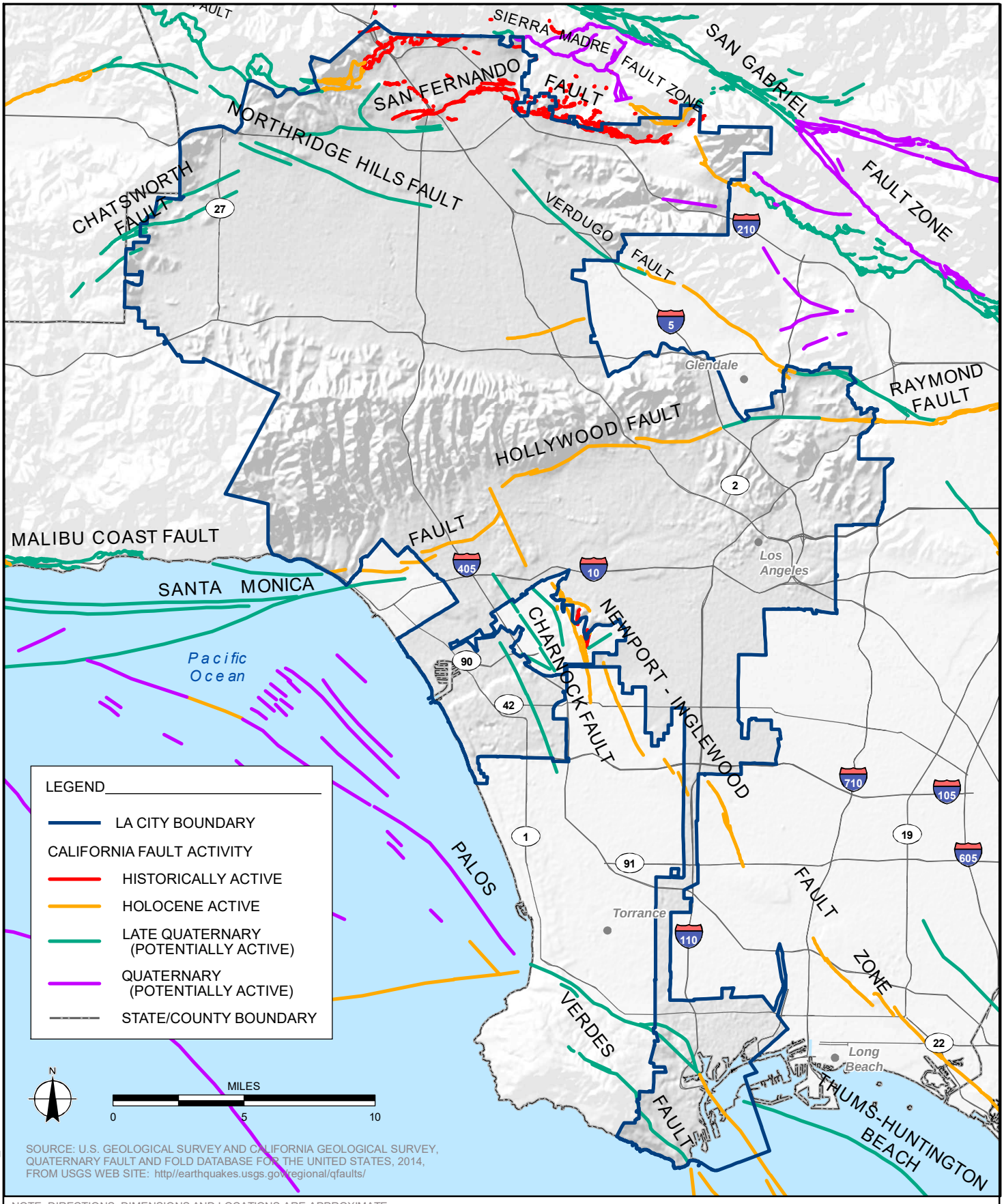

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NOTE: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE.

FIGURE 4

FAULT LOCATIONS

LABOE CITY SIDEWALKS
LOS ANGELES, CALIFORNIA

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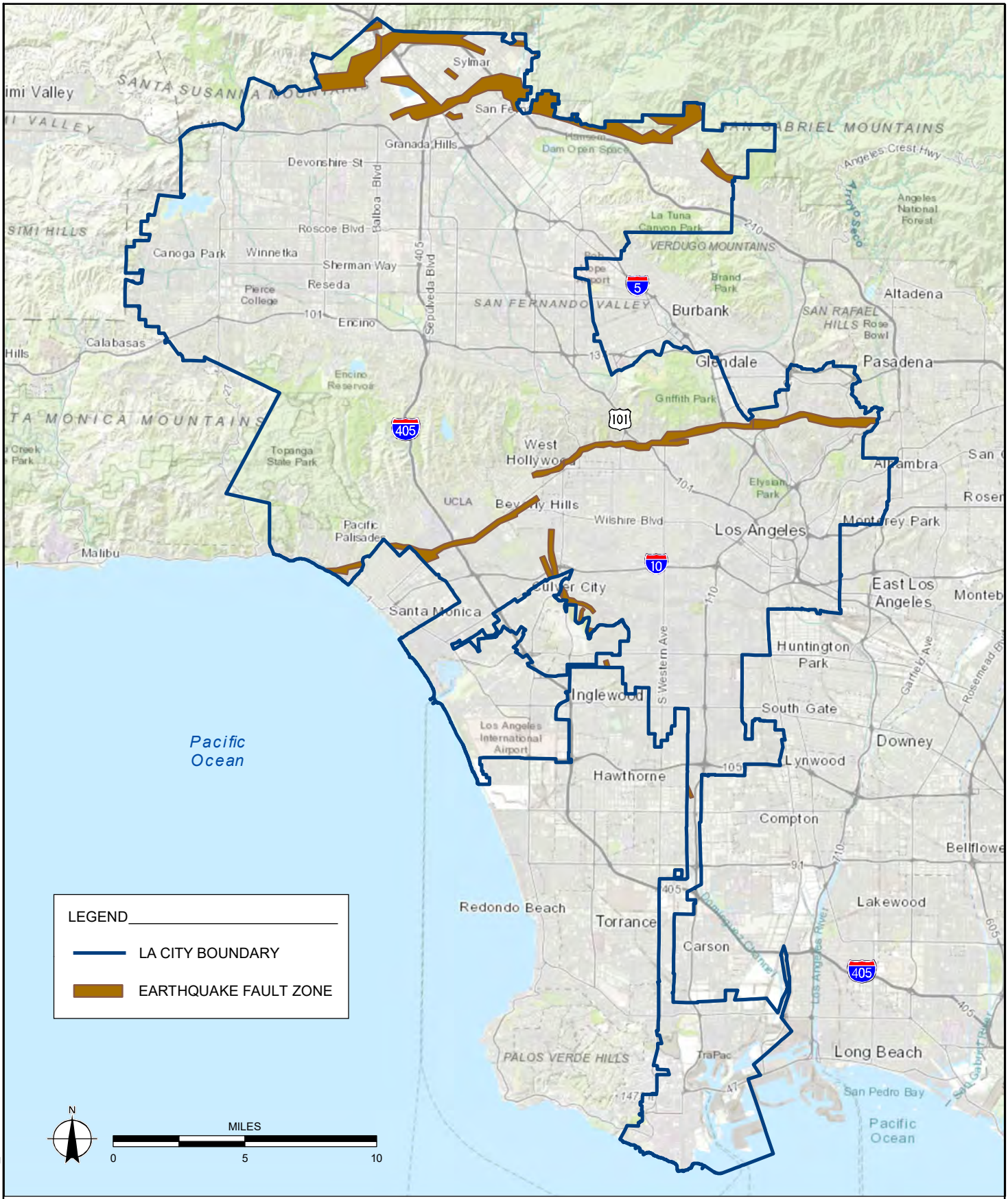

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NOTE: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE. | SOURCES: ESRI WORLD TOPO, 2017; SEISMIC HAZARDS - DEPARTMENT OF CONSERVATION, CALIFORNIA GEOLOGICAL SURVEY, 2018

FIGURE 5

EARTHQUAKE FAULT ZONES

LABOE CITY SIDEWALKS
LOS ANGELES, CALIFORNIA

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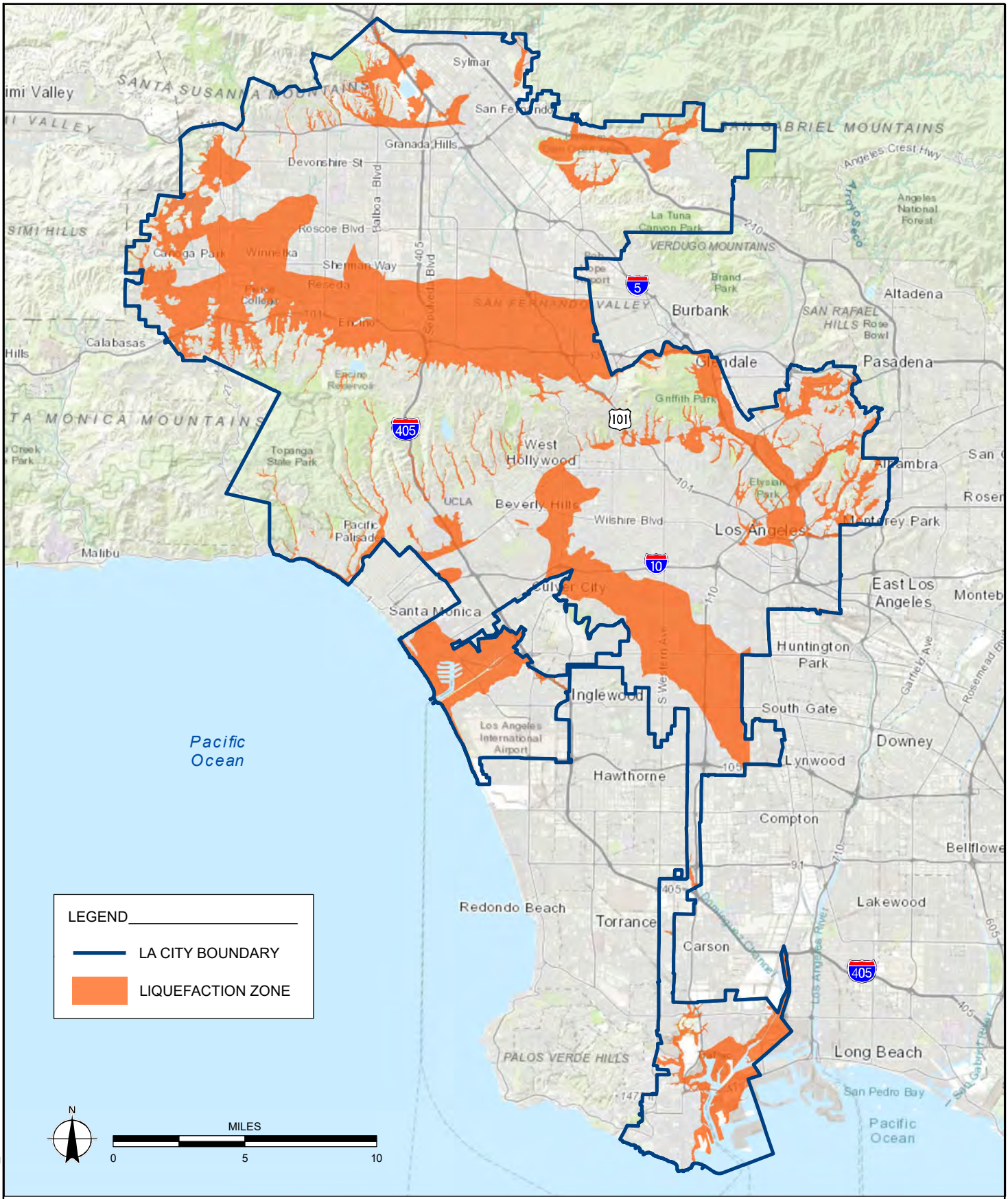

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NOTE: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE. | SOURCES: ESRI WORLD TOPO, 2017; SEISMIC HAZARDS - DEPARTMENT OF CONSERVATION, CALIFORNIA GEOLOGICAL SURVEY, 2018

FIGURE 6

LIQUEFIABLE SOIL AREAS

LABOE CITY SIDEWALKS
LOS ANGELES, CALIFORNIA

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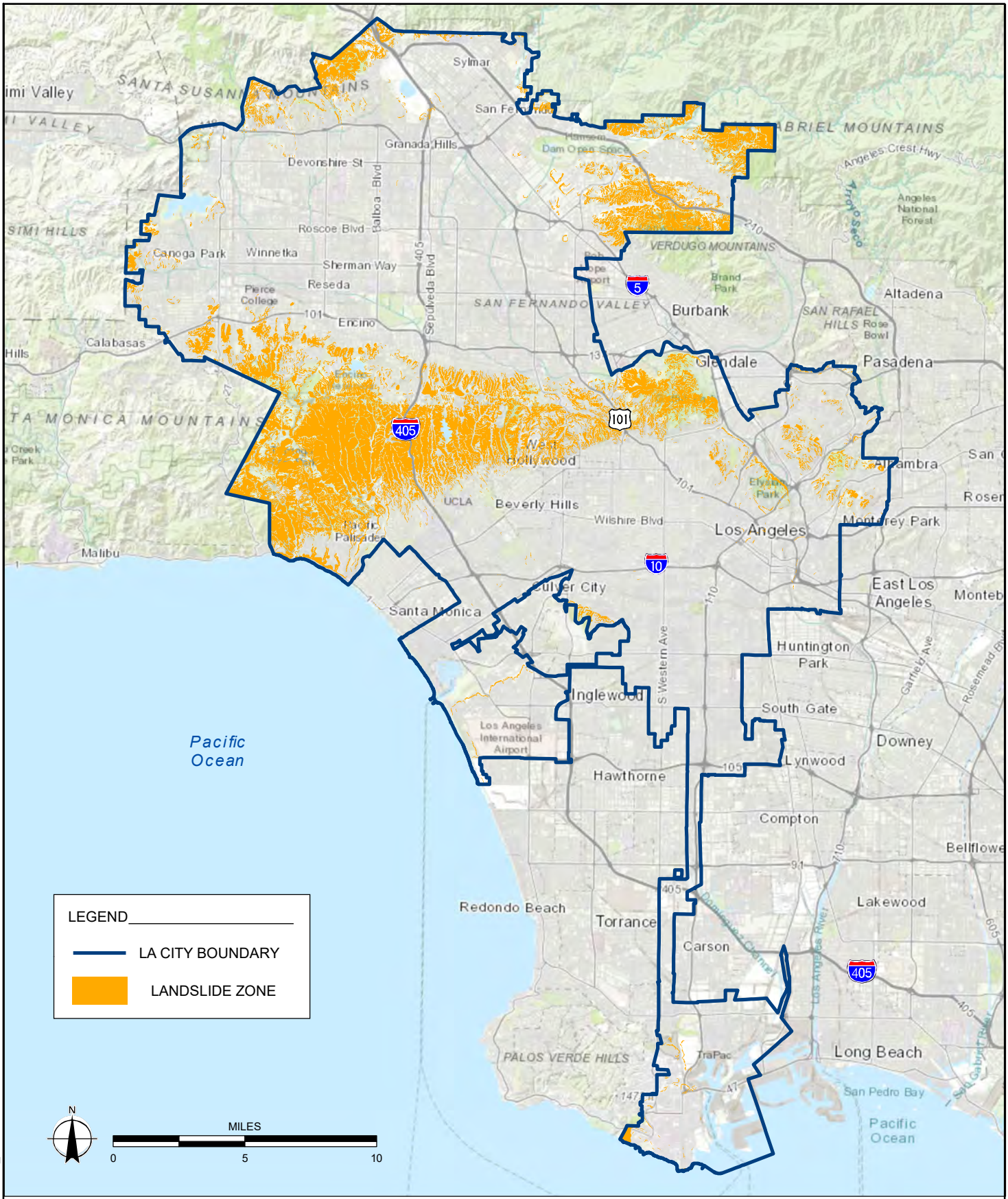

NOTE: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE. | SOURCES: ESRI WORLD TOPO, 2017; SEISMIC HAZARDS - DEPARTMENT OF CONSERVATION, CALIFORNIA GEOLOGICAL SURVEY, 2018

FIGURE 7

LANDSLIDES

LABOE CITY SIDEWALKS
LOS ANGELES, CALIFORNIA

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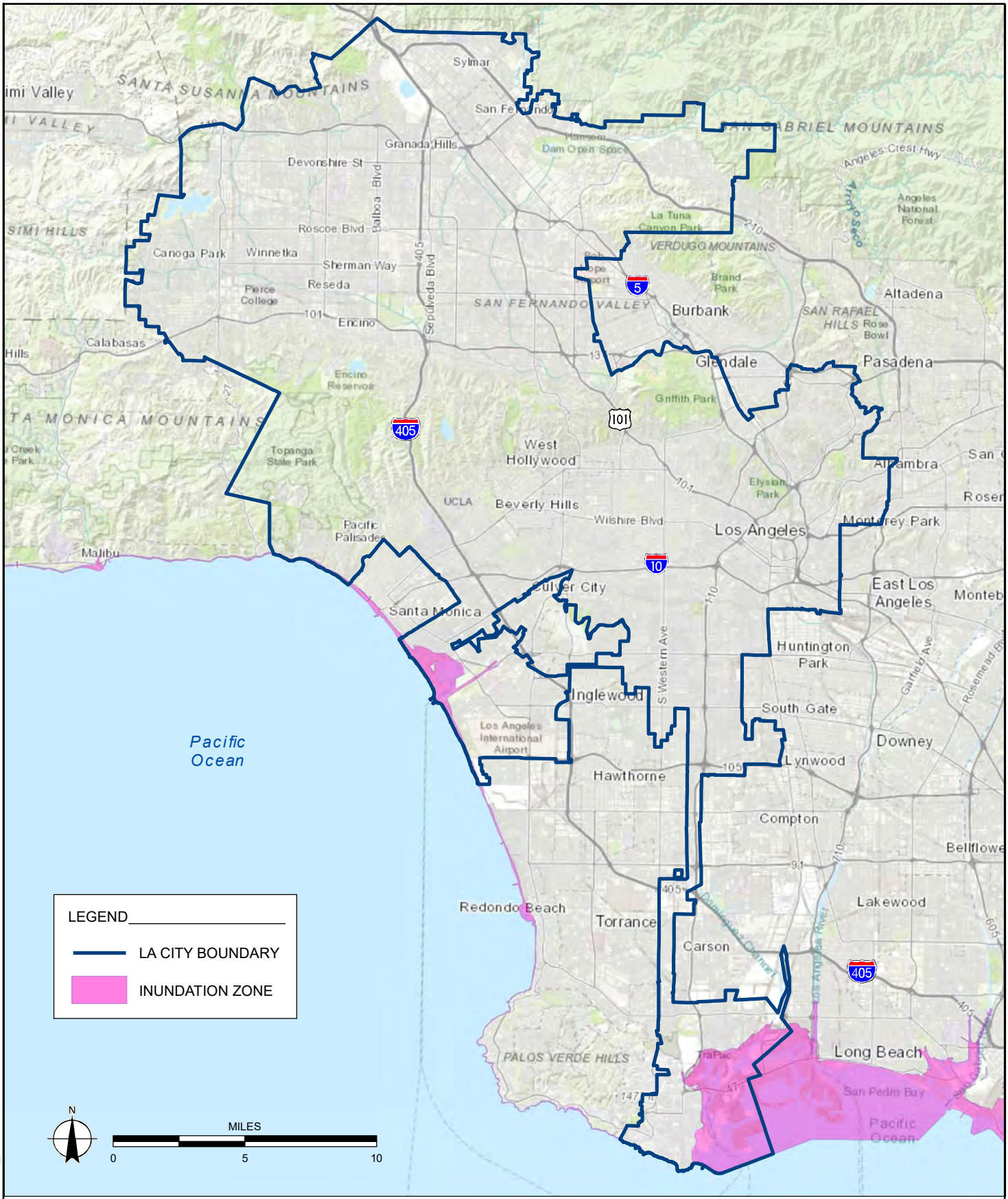

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NOTE: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE. | SOURCES: ESRI WORLD TOPO, 2017; CALIFORNIA GEOLOGICAL SURVEY, CALEMA, TSUNAMI RESEARCH CENTER-UNIVERSITY OF SOUTHERN CALIFORNIA, 2017

FIGURE 8

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LABOE CITY SIDEWALKS
LOS ANGELES, CALIFORNIA

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Appendix H

Greenhouse Gas Emissions Calculations

GHG Emissions - Annual Summary

Year	ConEquip	ConTrips	OpsTrips	Total	MTCO2e	Constructio
2018	205.3	584.1	65.6	854.9		789.3
2023	218.0	579.5	54.8	852.3		797.5
2028	250.1	633.3	46.9	930.4		883.4
2033	302.8	658.8	42.4	1004.0		961.6
2038	346.5	707.4	40.0	1093.8		1053.8
2043	394.2	735.0	38.9	1168.2		1129.3

Construction Equipment Emissions - Annual GHG Emissions

ProgramYear	Scenario	Phase ID	Phase Name	Equipment	Fuel	Count	HP	LF	Hours/day	Days/Event	Sites/Day	Repairs/Year
2018	1	1A	Mobilization	Compressor	Electric	1	5	0.48	2	5	5	286
2018	1	1A	Mobilization	Small Generator	Diesel	1	8	0.74	8	5	5	286
2018	1	1A	**MobilizationTotal**									
2018	1	1B	TrafficControl/Demo/Removal	Pneumatic Jackhammer	Air	2	N/A		4	1	5	286
2018	1	1B	TrafficControl/Demo/Removal	Concrete Saw	Diesel	2	16	0.73	1	1	5	286
2018	1	1B	TrafficControl/Demo/Removal	Skid-Steer Loader	Diesel	1	49	0.37	4	1	5	286
2018	1	1B	TrafficControl/Demo/Removal	Tractor	Diesel	1	23	0.37	2	1	5	286
2018	1	1B	**TrafficControl/Demo/RemovalTotal**									
2018	1	1C	Grading/Formwork	Roller	Diesel	1	49	0.38	1.5	1	5	286
2018	1	1C	**Grading/FormworkTotal**									
2018	1	1D	ConcretePouring	Concrete Mixer	Diesel	1	20	0.56	6	1	5	286
2018	1	1D	ConcretePouring	Concrete Vibrator	Electric	2	N/A		2	1	5	286
2018	1	1D	**ConcretePouringTotal**									
2018	1	1E	UtilityAdjustment	Manhole Cutter	Diesel	1	49	0.36	2	2	5	286
2018	1	1E	UtilityAdjustment	Concrete Saw	Diesel	1	81	0.73	2	2	5	286
2018	1	1E	UtilityAdjustment	Concrete Mixer	Diesel	1	6	0.56	2	2	5	286
2018	1	1E	**UtilityAdjustmentTotal**									
2018	1	1F	TreeRemoval	Bucket Truck	Diesel	1	360	0.31	2	1	2	286
2018	1	1F	TreeRemoval	Saw	Diesel	1	6	0.31	1.5	1	2	286
2018	1	1F	TreeRemoval	Wood Chipper	Gas	1	8	0.31	1	1	2	286
2018	1	1F	TreeRemoval	Stump Grinder	Gas	1	23	0.31	2	1	2	286
2018	1	1F	TreeRemoval	Skid-Steer Loader	Diesel	1	46	0.37	2	1	2	286
2018	1	1F	**TreeRemovalTotal**									
2018	1	1G	TreePlanting	Mini Excavator	Diesel	1	17	0.38	2	1	2	286
2018	1	1G	**TreePlantingTotal**									
2018	2	2A	Mobilization	Compressor	Electric	1	5	0.48	2	5	1	12
2018	2	2A	Mobilization	Small Generator	Diesel	1	8	0.74	8	5	1	12
2018	2	2A	**MobilizationTotal**									
2018	2	2B	TrafficControl/Demo/Removal	Pneumatic Jackhammer	Air	2	N/A		4	1	1	12
2018	2	2B	TrafficControl/Demo/Removal	Concrete Saw	Diesel	2	16	0.73	1	1	1	12
2018	2	2B	TrafficControl/Demo/Removal	Skid-Steer Loader	Diesel	1	49	0.37	4	1	1	12
2018	2	2B	TrafficControl/Demo/Removal	Tractor	Diesel	1	23	0.37	2	1	1	12
2018	2	2B	**TrafficControl/Demo/RemovalTotal**									
2018	2	2C	Grading/Formwork	Roller	Diesel	1	49	0.38	1.5	1	1	12
2018	2	2C	**Grading/FormworkTotal**									
2018	2	2D	ConcretePouring	Concrete Mixer	Diesel	1	20	0.56	6	1	1	12
2018	2	2D	ConcretePouring	Concrete Vibrator	Electric	2	N/A		2	1	1	12
2018	2	2D	**ConcretePouringTotal**									
2018	2	2E	UtilitiesRelocation	Concrete Saw	Diesel	1	81	0.73	4	20	1	12
2018	2	2E	UtilitiesRelocation	Excavator	Diesel	1	350	0.38	6	20	1	12
2018	2	2E	UtilitiesRelocation	Plate Compactor	Gas	1	6	0.43	2	20	1	12
2018	2	2E	UtilitiesRelocation	Asphalt Paver	Diesel	1	46	0.42	2	20	1	12
2018	2	2E	**UtilitiesRelocationTotal**									
2018	2	2F	CrosswalkRepaving	Concrete Saw	Diesel	1	16	0.73	4	2	1	12
2018	2	2F	CrosswalkRepaving	Skid-Steer Loader	Diesel	1	49	0.37	2	2	1	12
2018	2	2F	CrosswalkRepaving	Asphalt Paver	Diesel	1	46	0.42	2	1	1	12
2018	2	2F	CrosswalkRepaving	Line Striper	Diesel	1	6	0.48	2	1	1	12
2018	2	2F	**CrosswalkRepavingTotal**									
2018	2	2G	TreeRemoval	Bucket Truck	Diesel	1	360	0.31	2	1	1	12
2018	2	2G	TreeRemoval	Saw	Diesel	1	6	0.31	1.5	1	1	12
2018	2	2G	TreeRemoval	Wood Chipper	Gas	1	8	0.31	1	1	1	12
2018	2	2G	TreeRemoval	Stump Grinder	Gas	1	23	0.31	2	1	1	12
2018	2	2G	TreeRemoval	Skid-Steer Loader	Diesel	1	46	0.37	2	1	1	12
2018	2	2G	**TreeRemovalTotal**									
2018	2	2H	TreePlanting	Mini Excavator	Diesel	1	17	0.38	2	1	1	12
2018	2	2H	**TreePlantingTotal**									
2023	1	1A	Mobilization	Compressor	Electric	1	5	0.48	2	5	6	332
2023	1	1A	Mobilization	Small Generator	Diesel	1	8	0.74	8	5	6	332
2023	1	1A	**MobilizationTotal**									
2023	1	1B	TrafficControl/Demo/Removal	Pneumatic Jackhammer	Air	2	N/A		4	1	6	332
2023	1	1B	TrafficControl/Demo/Removal	Concrete Saw	Diesel	2	16	0.73	1	1	6	332
2023	1	1B	TrafficControl/Demo/Removal	Skid-Steer Loader	Diesel	1	49	0.37	4	1	6	332
2023	1	1B	TrafficControl/Demo/Removal	Tractor	Diesel	1	23	0.37	2	1	6	332
2023	1	1B	**TrafficControl/Demo/RemovalTotal**									
2023	1	1C	Grading/Formwork	Roller	Diesel	1	49	0.38	1.5	1	6	332
2023	1	1C	**Grading/FormworkTotal**									
2023	1	1D	ConcretePouring	Concrete Mixer	Diesel	1	20	0.56	6	1	6	332
2023	1	1D	ConcretePouring	Concrete Vibrator	Electric	2	N/A		2	1	6	332
2023	1	1D	**ConcretePouringTotal**									

Construction Equipment Emissions - Annual GHG Emissions

				Daily GHG Emissions (1 Site)		Annual GHG Emissions		
ProgramYear	Scenario	Phase ID	Phase Name	CO2 (lb/day)	CH4 (lb/day)	CO2 lb/year	CH4 lb/year	MTCO2e/year
2018	1	1A	Mobilization	0.000	0.000	-	-	0.00
2018	1	1A	Mobilization	59.337	0.006	84,851.4	9.1	38.63
2018	1	1A	**MobilizationTotal**					38.63
2018	1	1B	TrafficControl/Demo/Removal	0.000	0.000	-	-	0.00
2018	1	1B	TrafficControl/Demo/Removal	29.267	0.003	8,370.5	0.9	3.81
2018	1	1B	TrafficControl/Demo/Removal	87.543	0.027	25,037.3	7.8	11.48
2018	1	1B	TrafficControl/Demo/Removal	20.116	0.006	5,753.3	1.8	2.64
2018	1	1B	**TrafficControl/Demo/RemovalTotal**					17.9
2018	1	1C	Grading/Formwork	33.638	0.010	9,620.4	3.0	4.41
2018	1	1C	**Grading/FormworkTotal**					4.4
2018	1	1D	ConcretePouring	84.194	0.010	24,079.5	2.8	10.97
2018	1	1D	ConcretePouring	0.000	0.000	-	-	0.00
2018	1	1D	**ConcretePouringTotal**					11.0
2018	1	1E	UtilityAdjustment	84.722	0.026	48,460.8	14.9	22.21
2018	1	1E	UtilityAdjustment	148.166	0.011	84,751.1	6.6	38.54
2018	1	1E	UtilityAdjustment	8.419	0.001	4,815.9	0.5	2.19
2018	1	1E	**UtilityAdjustmentTotal**					62.9
2018	1	1F	TreeRemoval	241.318	0.075	69,017.0	21.5	31.64
2018	1	1F	TreeRemoval	26.018	0.279	7,441.2	79.8	4.61
2018	1	1F	TreeRemoval	4.696	0.004	1,343.0	1.1	0.63
2018	1	1F	TreeRemoval	27.001	0.024	7,722.4	6.8	3.61
2018	1	1F	TreeRemoval	41.092	0.013	11,752.2	3.6	5.39
2018	1	1F	**TreeRemovalTotal**					45.9
2018	1	1G	TreePlanting	15.534	0.005	4,442.6	1.4	2.04
2018	1	1G	**TreePlantingTotal**					2.0
2018	2	2A	Mobilization	0.000	0.000	-	-	0.00
2018	2	2A	Mobilization	59.337	0.006	3,560.2	0.4	1.62
2018	2	2A	**MobilizationTotal**					1.6
2018	2	2B	TrafficControl/Demo/Removal	0.000	0.000	-	-	0.00
2018	2	2B	TrafficControl/Demo/Removal	29.267	0.003	351.2	0.0	0.16
2018	2	2B	TrafficControl/Demo/Removal	87.543	0.027	1,050.5	0.3	0.48
2018	2	2B	TrafficControl/Demo/Removal	20.116	0.006	241.4	0.1	0.1
2018	2	2B	**TrafficControl/Demo/RemovalTotal**					0.8
2018	2	2C	Grading/Formwork	33.638	0.010	403.7	0.1	0.2
2018	2	2C	**Grading/FormworkTotal**					0.2
2018	2	2D	ConcretePouring	84.194	0.010	1,010.3	0.1	0.5
2018	2	2D	ConcretePouring	0.000	0.000	-	-	0.0
2018	2	2D	**ConcretePouringTotal**					0.5
2018	2	2E	UtilitiesRelocation	296.333	0.023	71,119.8	5.5	32.3
2018	2	2E	UtilitiesRelocation	860.473	0.267	206,513.6	64.2	94.5
2018	2	2E	UtilitiesRelocation	6.465	0.001	1,551.6	0.2	0.7
2018	2	2E	UtilitiesRelocation	46.604	0.014	11,184.9	3.5	5.1
2018	2	2E	**UtilitiesRelocationTotal**					132.6
2018	2	2F	CrosswalkRepaving	58.535	0.006	1,404.8	0.2	0.6
2018	2	2F	CrosswalkRepaving	43.772	0.014	1,050.5	0.3	0.5
2018	2	2F	CrosswalkRepaving	46.604	0.014	559.2	0.2	0.3
2018	2	2F	CrosswalkRepaving	7.217	0.001	86.6	0.0	0.0
2018	2	2F	**CrosswalkRepavingTotal**					1.4
2018	2	2G	TreeRemoval	241.318	0.075	2,895.8	0.9	1.3
2018	2	2G	TreeRemoval	26.018	0.279	312.2	3.3	0.2
2018	2	2G	TreeRemoval	4.696	0.004	56.4	0.0	0.0
2018	2	2G	TreeRemoval	27.001	0.024	324.0	0.3	0.2
2018	2	2G	TreeRemoval	41.092	0.013	493.1	0.2	0.2
2018	2	2G	**TreeRemovalTotal**					1.9
2018	2	2H	TreePlanting	15.534	0.005	186.4	0.1	0.1
2018	2	2H	**TreePlantingTotal**					0.1
2023	1	1A	Mobilization	0.000	0.000	-	-	0.00
2023	1	1A	Mobilization	59.337	0.006	98,498.9	9.5	44.83
2023	1	1A	**MobilizationTotal**					44.83
2023	1	1B	TrafficControl/Demo/Removal	0.000	0.000	-	-	0.00
2023	1	1B	TrafficControl/Demo/Removal	29.267	0.003	9,716.8	1.0	4.42
2023	1	1B	TrafficControl/Demo/Removal	84.324	0.027	27,995.6	9.1	12.84
2023	1	1B	TrafficControl/Demo/Removal	19.279	0.006	6,400.6	2.1	2.94
2023	1	1B	**TrafficControl/Demo/RemovalTotal**					20.2
2023	1	1C	Grading/Formwork	32.380	0.010	10,750.2	3.5	4.93
2023	1	1C	**Grading/FormworkTotal**					4.9
2023	1	1D	ConcretePouring	84.194	0.009	27,952.4	3.0	12.73
2023	1	1D	ConcretePouring	0.000	0.000	-	-	0.00
2023	1	1D	**ConcretePouringTotal**					12.7

Construction Equipment Emissions - Annual GHG Emissions

ProgramYear	Scenario	Phase ID	Phase Name	Equipment	Fuel	Count	HP	LF	Hours/day	Days/Event	Sites/Day	Repairs/Year
2023	1	1E	UtilityAdjustment	Manhole Cutter	Diesel	1	49	0.36	2	2	6	332
2023	1	1E	UtilityAdjustment	Concrete Saw	Diesel	1	81	0.73	2	2	6	332
2023	1	1E	UtilityAdjustment	Concrete Mixer	Diesel	1	6	0.56	2	2	6	332
2023	1	1E	**UtilityAdjustmentTotal**									
2023	1	1F	TreeRemoval	Bucket Truck	Diesel	1	360	0.31	2	1	3	332
2023	1	1F	TreeRemoval	Saw	Diesel	1	6	0.31	1.5	1	3	332
2023	1	1F	TreeRemoval	Wood Chipper	Gas	1	8	0.31	1	1	3	332
2023	1	1F	TreeRemoval	Stump Grinder	Gas	1	23	0.31	2	1	3	332
2023	1	1F	TreeRemoval	Skid-Steer Loader	Diesel	1	46	0.37	2	1	3	332
2023	1	1F	**TreeRemovalTotal**									
2023	1	1G	TreePlanting	Mini Excavator	Diesel	1	17	0.38	2	1	3	332
2023	1	1G	**TreePlantingTotal**									
2023	2	2A	Mobilization	Compressor	Electric	1	5	0.48	2	5	1	12
2023	2	2A	Mobilization	Small Generator	Diesel	1	8	0.74	8	5	1	12
2023	2	2A	**MobilizationTotal**									
2023	2	2B	TrafficControl/Demo/Removal	Pneumatic Jackhammer	Air	2	N/A		4	1	1	12
2023	2	2B	TrafficControl/Demo/Removal	Concrete Saw	Diesel	2	16	0.73	1	1	1	12
2023	2	2B	TrafficControl/Demo/Removal	Skid-Steer Loader	Diesel	1	49	0.37	4	1	1	12
2023	2	2B	TrafficControl/Demo/Removal	Tractor	Diesel	1	23	0.37	2	1	1	12
2023	2	2B	**TrafficControl/Demo/RemovalTotal**									
2023	2	2C	Grading/Formwork	Roller	Diesel	1	49	0.38	1.5	1	1	12
2023	2	2C	**Grading/FormworkTotal**									
2023	2	2D	ConcretePouring	Concrete Mixer	Diesel	1	20	0.56	6	1	1	12
2023	2	2D	ConcretePouring	Concrete Vibrator	Electric	2	N/A		2	1	1	12
2023	2	2D	**ConcretePouringTotal**									
2023	2	2E	UtilitiesRelocation	Concrete Saw	Diesel	1	81	0.73	4	20	1	12
2023	2	2E	UtilitiesRelocation	Excavator	Diesel	1	350	0.38	6	20	1	12
2023	2	2E	UtilitiesRelocation	Plate Compactor	Gas	1	6	0.43	2	20	1	12
2023	2	2E	UtilitiesRelocation	Asphalt Paver	Diesel	1	46	0.42	2	20	1	12
2023	2	2E	**UtilitiesRelocationTotal**									
2023	2	2F	CrosswalkRepaving	Concrete Saw	Diesel	1	16	0.73	4	2	1	12
2023	2	2F	CrosswalkRepaving	Skid-Steer Loader	Diesel	1	49	0.37	2	2	1	12
2023	2	2F	CrosswalkRepaving	Asphalt Paver	Diesel	1	46	0.42	2	1	1	12
2023	2	2F	CrosswalkRepaving	Line Striper	Diesel	1	6	0.48	2	1	1	12
2023	2	2F	**CrosswalkRepavingTotal**									
2023	2	2G	TreeRemoval	Bucket Truck	Diesel	1	360	0.31	2	1	1	12
2023	2	2G	TreeRemoval	Saw	Diesel	1	6	0.31	1.5	1	1	12
2023	2	2G	TreeRemoval	Wood Chipper	Gas	1	8	0.31	1	1	1	12
2023	2	2G	TreeRemoval	Stump Grinder	Gas	1	23	0.31	2	1	1	12
2023	2	2G	TreeRemoval	Skid-Steer Loader	Diesel	1	46	0.37	2	1	1	12
2023	2	2G	**TreeRemovalTotal**									
2023	2	2H	TreePlanting	Mini Excavator	Diesel	1	17	0.38	2	1	1	12
2023	2	2H	**TreePlantingTotal**									
2028	1	1A	Mobilization	Compressor	Electric	1	5	0.48	2	5	7	384
2028	1	1A	Mobilization	Small Generator	Diesel	1	8	0.74	8	5	7	384
2028	1	1A	**MobilizationTotal**									
2028	1	1B	TrafficControl/Demo/Removal	Pneumatic Jackhammer	Air	2	N/A		4	1	7	384
2028	1	1B	TrafficControl/Demo/Removal	Concrete Saw	Diesel	2	16	0.73	1	1	7	384
2028	1	1B	TrafficControl/Demo/Removal	Skid-Steer Loader	Diesel	1	49	0.37	4	1	7	384
2028	1	1B	TrafficControl/Demo/Removal	Tractor	Diesel	1	23	0.37	2	1	7	384
2028	1	1B	**TrafficControl/Demo/RemovalTotal**									
2028	1	1C	Grading/Formwork	Roller	Diesel	1	49	0.38	1.5	1	7	384
2028	1	1C	**Grading/FormworkTotal**									
2028	1	1D	ConcretePouring	Concrete Mixer	Diesel	1	20	0.56	6	1	7	384
2028	1	1D	ConcretePouring	Concrete Vibrator	Electric	2	N/A		2	1	7	384
2028	1	1D	**ConcretePouringTotal**									
2028	1	1E	UtilityAdjustment	Manhole Cutter	Diesel	1	49	0.36	2	2	7	384
2028	1	1E	UtilityAdjustment	Concrete Saw	Diesel	1	81	0.73	2	2	7	384
2028	1	1E	UtilityAdjustment	Concrete Mixer	Diesel	1	6	0.56	2	2	7	384
2028	1	1E	**UtilityAdjustmentTotal**									
2028	1	1F	TreeRemoval	Bucket Truck	Diesel	1	360	0.31	2	1	3	384
2028	1	1F	TreeRemoval	Saw	Diesel	1	6	0.31	1.5	1	3	384
2028	1	1F	TreeRemoval	Wood Chipper	Gas	1	8	0.31	1	1	3	384
2028	1	1F	TreeRemoval	Stump Grinder	Gas	1	23	0.31	2	1	3	384
2028	1	1F	TreeRemoval	Skid-Steer Loader	Diesel	1	46	0.37	2	1	3	384
2028	1	1F	**TreeRemovalTotal**									
2028	1	1G	TreePlanting	Mini Excavator	Diesel	1	17	0.38	3	1	3	384
2028	1	1G	**TreePlantingTotal**									

Construction Equipment Emissions - Annual GHG Emissions

				Daily GHG Emissions (1 Site)		Annual GHG Emissions		
ProgramYear	Scenario	Phase ID	Phase Name	CO2 (lb/day)	CH4 (lb/day)	CO2 lb/year	CH4 lb/year	MTCO2e/year
2023	1	1E	UtilityAdjustment	40.532	0.013	26,913.1	8.7	12.34
2023	1	1E	UtilityAdjustment	148.167	0.007	98,382.6	4.8	44.70
2023	1	1E	UtilityAdjustment	8.419	0.001	5,590.5	0.6	2.54
2023	1	1E	**UtilityAdjustmentTotal**					59.6
2023	1	1F	TreeRemoval	232.285	0.075	77,118.6	25.0	35.37
2023	1	1F	TreeRemoval	26.018	0.277	8,638.0	91.9	5.34
2023	1	1F	TreeRemoval	4.696	0.004	1,559.0	1.3	0.73
2023	1	1F	TreeRemoval	27.001	0.023	8,964.5	7.7	4.18
2023	1	1F	TreeRemoval	39.581	0.013	13,140.8	4.3	6.03
2023	1	1F	**TreeRemovalTotal**					51.6
2023	1	1G	TreePlanting	14.966	0.005	4,968.8	1.6	2.28
2023	1	1G	**TreePlantingTotal**					2.3
2023	2	2A	Mobilization	0.000	0.000	-	-	0.00
2023	2	2A	Mobilization	59.337	0.006	3,560.2	0.3	1.62
2023	2	2A	**MobilizationTotal**					1.6
2023	2	2B	TrafficControl/Demo/Removal	0.000	0.000	-	-	0.00
2023	2	2B	TrafficControl/Demo/Removal	29.267	0.003	351.2	0.0	0.16
2023	2	2B	TrafficControl/Demo/Removal	84.324	0.027	1,011.9	0.3	0.46
2023	2	2B	TrafficControl/Demo/Removal	19.279	0.006	231.3	0.1	0.1
2023	2	2B	**TrafficControl/Demo/RemovalTotal**					0.7
2023	2	2C	Grading/Formwork	32.380	0.010	388.6	0.1	0.2
2023	2	2C	**Grading/FormworkTotal**					0.2
2023	2	2D	ConcretePouring	84.194	0.009	1,010.3	0.1	0.5
2023	2	2D	ConcretePouring	0.000	0.000	-	-	0.0
2023	2	2D	**ConcretePouringTotal**					0.5
2023	2	2E	UtilitiesRelocation	296.333	0.015	71,119.9	3.5	32.3
2023	2	2E	UtilitiesRelocation	826.672	0.267	198,401.2	64.2	90.8
2023	2	2E	UtilitiesRelocation	6.465	0.001	1,551.6	0.2	0.7
2023	2	2E	UtilitiesRelocation	44.881	0.014	10,771.5	3.5	4.9
2023	2	2E	**UtilitiesRelocationTotal**					128.7
2023	2	2F	CrosswalkRepaving	58.535	0.006	1,404.8	0.2	0.6
2023	2	2F	CrosswalkRepaving	42.162	0.014	1,011.9	0.3	0.5
2023	2	2F	CrosswalkRepaving	44.881	0.014	538.6	0.2	0.2
2023	2	2F	CrosswalkRepaving	7.217	0.001	86.6	0.0	0.0
2023	2	2F	**CrosswalkRepavingTotal**					1.4
2023	2	2G	TreeRemoval	232.285	0.075	2,787.4	0.9	1.3
2023	2	2G	TreeRemoval	26.018	0.277	312.2	3.3	0.2
2023	2	2G	TreeRemoval	4.696	0.004	56.4	0.0	0.0
2023	2	2G	TreeRemoval	27.001	0.023	324.0	0.3	0.2
2023	2	2G	TreeRemoval	39.581	0.013	475.0	0.2	0.2
2023	2	2G	**TreeRemovalTotal**					1.9
2023	2	2H	TreePlanting	14.966	0.005	179.6	0.1	0.1
2023	2	2H	**TreePlantingTotal**					0.1
2028	1	1A	Mobilization	0.000	0.000	-	-	0.00
2028	1	1A	Mobilization	59.337	0.006	113,926.4	10.8	51.84
2028	1	1A	**MobilizationTotal**					51.84
2028	1	1B	TrafficControl/Demo/Removal	0.000	0.000	-	-	0.00
2028	1	1B	TrafficControl/Demo/Removal	29.267	0.003	11,238.7	1.2	5.12
2028	1	1B	TrafficControl/Demo/Removal	84.394	0.027	32,407.3	10.5	14.86
2028	1	1B	TrafficControl/Demo/Removal	19.279	0.006	7,403.2	2.4	3.39
2028	1	1B	**TrafficControl/Demo/RemovalTotal**					23.4
2028	1	1C	Grading/Formwork	32.397	0.010	12,440.5	4.0	5.70
2028	1	1C	**Grading/FormworkTotal**					5.7
2028	1	1D	ConcretePouring	84.194	0.009	32,330.5	3.5	14.72
2028	1	1D	ConcretePouring	0.000	0.000	-	-	0.00
2028	1	1D	**ConcretePouringTotal**					14.7
2028	1	1E	UtilityAdjustment	40.523	0.013	31,121.5	10.1	14.27
2028	1	1E	UtilityAdjustment	148.167	0.007	113,791.9	5.0	51.69
2028	1	1E	UtilityAdjustment	8.419	0.001	6,466.1	0.7	2.94
2028	1	1E	**UtilityAdjustmentTotal**					68.9
2028	1	1F	TreeRemoval	232.285	0.075	89,197.4	28.9	40.91
2028	1	1F	TreeRemoval	26.018	0.276	9,991.0	106.1	6.17
2028	1	1F	TreeRemoval	4.696	0.004	1,803.2	1.5	0.84
2028	1	1F	TreeRemoval	27.001	0.023	10,368.5	8.8	4.84
2028	1	1F	TreeRemoval	39.614	0.013	15,211.6	4.9	6.98
2028	1	1F	**TreeRemovalTotal**					59.7
2028	1	1G	TreePlanting	22.464	0.007	8,626.2	2.8	3.96
2028	1	1G	**TreePlantingTotal**					4.0

Construction Equipment Emissions - Annual GHG Emissions

ProgramYear	Scenario	Phase ID	Phase Name	Equipment	Fuel	Count	HP	LF	Hours/day	Days/Event	Sites/Day	Repairs/Year
2028	2	2A	Mobilization	Compressor	Electric	1	5	0.48	2	5	1	12
2028	2	2A	Mobilization	Small Generator	Diesel	1	8	0.74	8	5	1	12
2028	2	2A	**MobilizationTotal**									
2028	2	2B	TrafficControl/Demo/Removal	Pneumatic Jackhammer	Air	2	N/A		4	1	1	12
2028	2	2B	TrafficControl/Demo/Removal	Concrete Saw	Diesel	2	16	0.73	1	1	1	12
2028	2	2B	TrafficControl/Demo/Removal	Skid-Steer Loader	Diesel	1	49	0.37	4	1	1	12
2028	2	2B	TrafficControl/Demo/Removal	Tractor	Diesel	1	23	0.37	2	1	1	12
2028	2	2B	**TrafficControl/Demo/RemovalTotal**									
2028	2	2C	Grading/Formwork	Roller	Diesel	1	49	0.38	1.5	1	1	12
2028	2	2C	**Grading/FormworkTotal**									
2028	2	2D	ConcretePouring	Concrete Mixer	Diesel	1	20	0.56	6	1	1	12
2028	2	2D	ConcretePouring	Concrete Vibrator	Electric	2	N/A		2	1	1	12
2028	2	2D	**ConcretePouringTotal**									
2028	2	2E	UtilitiesRelocation	Concrete Saw	Diesel	1	81	0.73	4	20	1	12
2028	2	2E	UtilitiesRelocation	Excavator	Diesel	1	350	0.38	6	20	1	12
2028	2	2E	UtilitiesRelocation	Plate Compactor	Gas	1	6	0.43	2	20	1	12
2028	2	2E	UtilitiesRelocation	Asphalt Paver	Diesel	1	46	0.42	2	20	1	12
2028	2	2E	**UtilitiesRelocationTotal**									
2028	2	2F	CrosswalkRepaving	Concrete Saw	Diesel	1	16	0.73	4	2	1	12
2028	2	2F	CrosswalkRepaving	Skid-Steer Loader	Diesel	1	49	0.37	2	2	1	12
2028	2	2F	CrosswalkRepaving	Asphalt Paver	Diesel	1	46	0.42	2	1	1	12
2028	2	2F	CrosswalkRepaving	Line Striper	Diesel	1	6	0.48	2	1	1	12
2028	2	2F	**CrosswalkRepavingTotal**									
2028	2	2G	TreeRemoval	Bucket Truck	Diesel	1	360	0.31	2	1	1	12
2028	2	2G	TreeRemoval	Saw	Diesel	1	6	0.31	1.5	1	1	12
2028	2	2G	TreeRemoval	Wood Chipper	Gas	1	8	0.31	1	1	1	12
2028	2	2G	TreeRemoval	Stump Grinder	Gas	1	23	0.31	2	1	1	12
2028	2	2G	TreeRemoval	Skid-Steer Loader	Diesel	1	46	0.37	2	1	1	12
2028	2	2G	**TreeRemovalTotal**									
2028	2	2H	TreePlanting	Mini Excavator	Diesel	1	17	0.38	3	1	1	12
2028	2	2H	**TreePlantingTotal**									
2033	1	1A	Mobilization	Compressor	Electric	1	5	0.48	2	5	8	445
2033	1	1A	Mobilization	Small Generator	Diesel	1	8	0.74	8	5	8	445
2033	1	1A	**MobilizationTotal**									
2033	1	1B	TrafficControl/Demo/Removal	Pneumatic Jackhammer	Air	2	N/A		4	1	8	445
2033	1	1B	TrafficControl/Demo/Removal	Concrete Saw	Diesel	2	16	0.73	1	1	8	445
2033	1	1B	TrafficControl/Demo/Removal	Skid-Steer Loader	Diesel	1	49	0.37	4	1	8	445
2033	1	1B	TrafficControl/Demo/Removal	Tractor	Diesel	1	23	0.37	2	1	8	445
2033	1	1B	**TrafficControl/Demo/RemovalTotal**									
2033	1	1C	Grading/Formwork	Roller	Diesel	1	49	0.38	1.5	1	8	445
2033	1	1C	**Grading/FormworkTotal**									
2033	1	1D	ConcretePouring	Concrete Mixer	Diesel	1	20	0.56	6	1	8	445
2033	1	1D	ConcretePouring	Concrete Vibrator	Electric	2	N/A		2	1	8	445
2033	1	1D	**ConcretePouringTotal**									
2033	1	1E	UtilityAdjustment	Manhole Cutter	Diesel	1	49	0.36	2	2	8	445
2033	1	1E	UtilityAdjustment	Concrete Saw	Diesel	1	81	0.73	2	2	8	445
2033	1	1E	UtilityAdjustment	Concrete Mixer	Diesel	1	6	0.56	2	2	8	445
2033	1	1E	**UtilityAdjustmentTotal**									
2033	1	1F	TreeRemoval	Bucket Truck	Diesel	1	360	0.31	2	1	4	445
2033	1	1F	TreeRemoval	Saw	Diesel	1	6	0.31	1.5	1	4	445
2033	1	1F	TreeRemoval	Wood Chipper	Gas	1	8	0.31	1	1	4	445
2033	1	1F	TreeRemoval	Stump Grinder	Gas	1	23	0.31	2	1	4	445
2033	1	1F	TreeRemoval	Skid-Steer Loader	Diesel	1	46	0.37	2	1	4	445
2033	1	1F	**TreeRemovalTotal**									
2033	1	1G	TreePlanting	Mini Excavator	Diesel	1	17	0.38	3	1	4	445
2033	1	1G	**TreePlantingTotal**									
2033	2	2A	Mobilization	Compressor	Electric	1	5	0.48	2	5	1	12
2033	2	2A	Mobilization	Small Generator	Diesel	1	8	0.74	8	5	1	12
2033	2	2A	**MobilizationTotal**									
2033	2	2B	TrafficControl/Demo/Removal	Pneumatic Jackhammer	Air	2	N/A		4	1	1	12
2033	2	2B	TrafficControl/Demo/Removal	Concrete Saw	Diesel	2	16	0.73	1	1	1	12
2033	2	2B	TrafficControl/Demo/Removal	Skid-Steer Loader	Diesel	1	49	0.37	4	1	1	12
2033	2	2B	TrafficControl/Demo/Removal	Tractor	Diesel	1	23	0.37	2	1	1	12
2033	2	2B	**TrafficControl/Demo/RemovalTotal**									
2033	2	2C	Grading/Formwork	Roller	Diesel	1	49	0.38	1.5	1	1	12
2033	2	2C	**Grading/FormworkTotal**									
2033	2	2D	ConcretePouring	Concrete Mixer	Diesel	1	20	0.56	6	1	1	12
2033	2	2D	ConcretePouring	Concrete Vibrator	Electric	2	N/A		2	1	1	12
2033	2	2D	**ConcretePouringTotal**									

Construction Equipment Emissions - Annual GHG Emissions

				Daily GHG Emissions (1 Site)		Annual GHG Emissions		
ProgramYear	Scenario	Phase ID	Phase Name	CO2 (lb/day)	CH4 (lb/day)	CO2 lb/year	CH4 lb/year	MTCO2e/year
2028	2	2A	Mobilization	0.000	0.000	-	-	0.00
2028	2	2A	Mobilization	59.337	0.006	3,560.2	0.3	1.62
2028	2	2A	**MobilizationTotal**					1.6
2028	2	2B	TrafficControl/Demo/Removal	0.000	0.000	-	-	0.00
2028	2	2B	TrafficControl/Demo/Removal	29.267	0.003	351.2	0.0	0.16
2028	2	2B	TrafficControl/Demo/Removal	84.394	0.027	1,012.7	0.3	0.46
2028	2	2B	TrafficControl/Demo/Removal	19.279	0.006	231.4	0.1	0.1
2028	2	2B	**TrafficControl/Demo/RemovalTotal**					0.7
2028	2	2C	Grading/Formwork	32.397	0.010	388.8	0.1	0.2
2028	2	2C	**Grading/FormworkTotal**					0.2
2028	2	2D	ConcretePouring	84.194	0.009	1,010.3	0.1	0.5
2028	2	2D	ConcretePouring	0.000	0.000	-	-	0.0
2028	2	2D	**ConcretePouringTotal**					0.5
2028	2	2E	UtilitiesRelocation	296.333	0.013	71,119.9	3.1	32.3
2028	2	2E	UtilitiesRelocation	827.379	0.267	198,571.0	64.2	90.9
2028	2	2E	UtilitiesRelocation	6.465	0.001	1,551.6	0.2	0.7
2028	2	2E	UtilitiesRelocation	44.881	0.014	10,771.4	3.5	4.9
2028	2	2E	**UtilitiesRelocationTotal**					128.8
2028	2	2F	CrosswalkRepaving	58.535	0.006	1,404.8	0.2	0.6
2028	2	2F	CrosswalkRepaving	42.197	0.014	1,012.7	0.3	0.5
2028	2	2F	CrosswalkRepaving	44.881	0.014	538.6	0.2	0.2
2028	2	2F	CrosswalkRepaving	7.217	0.001	86.6	0.0	0.0
2028	2	2F	**CrosswalkRepavingTotal**					1.4
2028	2	2G	TreeRemoval	232.285	0.075	2,787.4	0.9	1.3
2028	2	2G	TreeRemoval	26.018	0.276	312.2	3.3	0.2
2028	2	2G	TreeRemoval	4.696	0.004	56.4	0.0	0.0
2028	2	2G	TreeRemoval	27.001	0.023	324.0	0.3	0.2
2028	2	2G	TreeRemoval	39.614	0.013	475.4	0.2	0.2
2028	2	2G	**TreeRemovalTotal**					1.9
2028	2	2H	TreePlanting	22.464	0.007	269.6	0.1	0.1
2028	2	2H	**TreePlantingTotal**					0.1
2033	1	1A	Mobilization	0.000	0.000	-	-	0.00
2033	1	1A	Mobilization	59.337	0.006	132,024.1	12.3	60.08
2033	1	1A	**MobilizationTotal**					60.08
2033	1	1B	TrafficControl/Demo/Removal	0.000	0.000	-	-	0.00
2033	1	1B	TrafficControl/Demo/Removal	29.267	0.003	13,024.0	1.4	5.93
2033	1	1B	TrafficControl/Demo/Removal	90.859	0.006	40,432.4	2.6	18.38
2033	1	1B	TrafficControl/Demo/Removal	21.324	0.002	9,489.2	1.0	4.32
2033	1	1B	**TrafficControl/Demo/RemovalTotal**					28.6
2033	1	1C	Grading/Formwork	34.993	0.003	15,571.9	1.5	7.09
2033	1	1C	**Grading/FormworkTotal**					7.1
2033	1	1D	ConcretePouring	84.194	0.009	37,466.3	4.0	17.06
2033	1	1D	ConcretePouring	0.000	0.000	-	-	0.00
2033	1	1D	**ConcretePouringTotal**					17.1
2033	1	1E	UtilityAdjustment	44.202	0.006	39,339.6	5.0	17.92
2033	1	1E	UtilityAdjustment	148.166	0.005	131,868.0	4.4	59.88
2033	1	1E	UtilityAdjustment	8.419	0.001	7,493.3	0.8	3.41
2033	1	1E	**UtilityAdjustmentTotal**					81.2
2033	1	1F	TreeRemoval	279.644	0.005	124,441.6	2.4	56.48
2033	1	1F	TreeRemoval	26.018	0.276	11,578.1	122.8	7.15
2033	1	1F	TreeRemoval	4.696	0.004	2,089.7	1.7	0.97
2033	1	1F	TreeRemoval	27.001	0.023	12,015.6	10.1	5.61
2033	1	1F	TreeRemoval	42.648	0.003	18,978.5	1.2	8.63
2033	1	1F	**TreeRemovalTotal**					78.8
2033	1	1G	TreePlanting	24.281	0.003	10,805.0	1.2	4.92
2033	1	1G	**TreePlantingTotal**					4.9
2033	2	2A	Mobilization	0.000	0.000	-	-	0.00
2033	2	2A	Mobilization	59.337	0.006	3,560.2	0.3	1.62
2033	2	2A	**MobilizationTotal**					1.6
2033	2	2B	TrafficControl/Demo/Removal	0.000	0.000	-	-	0.00
2033	2	2B	TrafficControl/Demo/Removal	29.267	0.003	351.2	0.0	0.16
2033	2	2B	TrafficControl/Demo/Removal	90.859	0.006	1,090.3	0.1	0.50
2033	2	2B	TrafficControl/Demo/Removal	21.324	0.002	255.9	0.0	0.1
2033	2	2B	**TrafficControl/Demo/RemovalTotal**					0.8
2033	2	2C	Grading/Formwork	34.993	0.003	419.9	0.0	0.2
2033	2	2C	**Grading/FormworkTotal**					0.2
2033	2	2D	ConcretePouring	84.194	0.009	1,010.3	0.1	0.5
2033	2	2D	ConcretePouring	0.000	0.000	-	-	0.0
2033	2	2D	**ConcretePouringTotal**					0.5

Construction Equipment Emissions - Annual GHG Emissions

ProgramYear	Scenario	Phase ID	Phase Name	Equipment	Fuel	Count	HP	LF	Hours/day	Days/Event	Sites/Day	Repairs/Year
2033	2	2E	UtilitiesRelocation	Concrete Saw	Diesel	1	81	0.73	4	20	1	12
2033	2	2E	UtilitiesRelocation	Excavator	Diesel	1	350	0.38	6	20	1	12
2033	2	2E	UtilitiesRelocation	Plate Compactor	Gas	1	6	0.43	2	20	1	12
2033	2	2E	UtilitiesRelocation	Asphalt Paver	Diesel	1	46	0.42	2	20	1	12
2033	2	2E	**UtilitiesRelocationTotal**									
2033	2	2F	CrosswalkRepaving	Concrete Saw	Diesel	1	16	0.73	4	2	1	12
2033	2	2F	CrosswalkRepaving	Skid-Steer Loader	Diesel	1	49	0.37	2	2	1	12
2033	2	2F	CrosswalkRepaving	Asphalt Paver	Diesel	1	46	0.42	2	1	1	12
2033	2	2F	CrosswalkRepaving	Line Striper	Diesel	1	6	0.48	2	1	1	12
2033	2	2F	**CrosswalkRepavingTotal**									
2033	2	2G	TreeRemoval	Bucket Truck	Diesel	1	360	0.31	2	1	1	12
2033	2	2G	TreeRemoval	Saw	Diesel	1	6	0.31	1.5	1	1	12
2033	2	2G	TreeRemoval	Wood Chipper	Gas	1	8	0.31	1	1	1	12
2033	2	2G	TreeRemoval	Stump Grinder	Gas	1	23	0.31	2	1	1	12
2033	2	2G	TreeRemoval	Skid-Steer Loader	Diesel	1	46	0.37	2	1	1	12
2033	2	2G	**TreeRemovalTotal**									
2033	2	2H	TreePlanting	Mini Excavator	Diesel	1	17	0.38	3	1	1	12
2033	2	2H	**TreePlantingTotal**									
2038	1	1A	Mobilization	Compressor	Electric	1	5	0.48	2	5	10	515
2038	1	1A	Mobilization	Small Generator	Diesel	1	8	0.74	8	5	10	515
2038	1	1A	**MobilizationTotal**									
2038	1	1B	TrafficControl/Demo/Removal	Pneumatic Jackhammer	Air	2	N/A		4	1	10	515
2038	1	1B	TrafficControl/Demo/Removal	Concrete Saw	Diesel	2	16	0.73	1	1	10	515
2038	1	1B	TrafficControl/Demo/Removal	Skid-Steer Loader	Diesel	1	49	0.37	4	1	10	515
2038	1	1B	TrafficControl/Demo/Removal	Tractor	Diesel	1	23	0.37	2	1	10	515
2038	1	1B	**TrafficControl/Demo/RemovalTotal**									
2038	1	1C	Grading/Formwork	Roller	Diesel	1	49	0.38	1.5	1	10	515
2038	1	1C	**Grading/FormworkTotal**									
2038	1	1D	ConcretePouring	Concrete Mixer	Diesel	1	20	0.56	6	1	10	515
2038	1	1D	ConcretePouring	Concrete Vibrator	Electric	2	N/A		2	1	10	515
2038	1	1D	**ConcretePouringTotal**									
2038	1	1E	UtilityAdjustment	Manhole Cutter	Diesel	1	49	0.36	2	2	10	515
2038	1	1E	UtilityAdjustment	Concrete Saw	Diesel	1	81	0.73	2	2	10	515
2038	1	1E	UtilityAdjustment	Concrete Mixer	Diesel	1	6	0.56	2	2	10	515
2038	1	1E	**UtilityAdjustmentTotal**									
2038	1	1F	TreeRemoval	Bucket Truck	Diesel	1	360	0.31	2	1	5	515
2038	1	1F	TreeRemoval	Saw	Diesel	1	6	0.31	1.5	1	5	515
2038	1	1F	TreeRemoval	Wood Chipper	Gas	1	8	0.31	1	1	5	515
2038	1	1F	TreeRemoval	Stump Grinder	Gas	1	23	0.31	2	1	5	515
2038	1	1F	TreeRemoval	Skid-Steer Loader	Diesel	1	46	0.37	2	1	5	515
2038	1	1F	**TreeRemovalTotal**									
2038	1	1G	TreePlanting	Mini Excavator	Diesel	1	17	0.38	3	1	5	515
2038	1	1G	**TreePlantingTotal**									
2038	2	2A	Mobilization	Compressor	Electric	1	5	0.48	2	5	1	12
2038	2	2A	Mobilization	Small Generator	Diesel	1	8	0.74	8	5	1	12
2038	2	2A	**MobilizationTotal**									
2038	2	2B	TrafficControl/Demo/Removal	Pneumatic Jackhammer	Air	2	N/A		4	1	1	12
2038	2	2B	TrafficControl/Demo/Removal	Concrete Saw	Diesel	2	16	0.73	1	1	1	12
2038	2	2B	TrafficControl/Demo/Removal	Skid-Steer Loader	Diesel	1	49	0.37	4	1	1	12
2038	2	2B	TrafficControl/Demo/Removal	Tractor	Diesel	1	23	0.37	2	1	1	12
2038	2	2B	**TrafficControl/Demo/RemovalTotal**									
2038	2	2C	Grading/Formwork	Roller	Diesel	1	49	0.38	1.5	1	1	12
2038	2	2C	**Grading/FormworkTotal**									
2038	2	2D	ConcretePouring	Concrete Mixer	Diesel	1	20	0.56	6	1	1	12
2038	2	2D	ConcretePouring	Concrete Vibrator	Electric	2	N/A		2	1	1	12
2038	2	2D	**ConcretePouringTotal**									
2038	2	2E	UtilitiesRelocation	Concrete Saw	Diesel	1	81	0.73	4	20	1	12
2038	2	2E	UtilitiesRelocation	Excavator	Diesel	1	350	0.38	6	20	1	12
2038	2	2E	UtilitiesRelocation	Plate Compactor	Gas	1	6	0.43	2	20	1	12
2038	2	2E	UtilitiesRelocation	Asphalt Paver	Diesel	1	46	0.42	2	20	1	12
2038	2	2E	**UtilitiesRelocationTotal**									
2038	2	2F	CrosswalkRepaving	Concrete Saw	Diesel	1	16	0.73	4	2	1	12
2038	2	2F	CrosswalkRepaving	Skid-Steer Loader	Diesel	1	49	0.37	2	2	1	12
2038	2	2F	CrosswalkRepaving	Asphalt Paver	Diesel	1	46	0.42	2	1	1	12
2038	2	2F	CrosswalkRepaving	Line Striper	Diesel	1	6	0.48	2	1	1	12
2038	2	2F	**CrosswalkRepavingTotal**									

Construction Equipment Emissions - Annual GHG Emissions

				Daily GHG Emissions (1 Site)		Annual GHG Emissions		
ProgramYear	Scenario	Phase ID	Phase Name	CO2 (lb/day)	CH4 (lb/day)	CO2 lb/year	CH4 lb/year	MTCO2e/year
2033	2	2E	UtilitiesRelocation	296.333	0.010	71,119.8	2.4	32.3
2033	2	2E	UtilitiesRelocation	999.803	0.032	239,952.7	7.6	108.9
2033	2	2E	UtilitiesRelocation	6.465	0.001	1,551.6	0.2	0.7
2033	2	2E	UtilitiesRelocation	48.412	0.006	11,618.8	1.6	5.3
2033	2	2E	**UtilitiesRelocationTotal**					147.2
2033	2	2F	CrosswalkRepaving	58.535	0.006	1,404.8	0.2	0.6
2033	2	2F	CrosswalkRepaving	45.430	0.003	1,090.3	0.1	0.5
2033	2	2F	CrosswalkRepaving	48.412	0.006	580.9	0.1	0.3
2033	2	2F	CrosswalkRepaving	7.217	0.001	86.6	0.0	0.0
2033	2	2F	**CrosswalkRepavingTotal**					1.4
2033	2	2G	TreeRemoval	279.644	0.005	3,355.7	0.1	1.5
2033	2	2G	TreeRemoval	26.018	0.276	312.2	3.3	0.2
2033	2	2G	TreeRemoval	4.696	0.004	56.4	0.0	0.0
2033	2	2G	TreeRemoval	27.001	0.023	324.0	0.3	0.2
2033	2	2G	TreeRemoval	42.648	0.003	511.8	0.0	0.2
2033	2	2G	**TreeRemovalTotal**					2.1
2033	2	2H	TreePlanting	24.281	0.003	291.4	0.0	0.1
2033	2	2H	**TreePlantingTotal**					0.1
2038	1	1A	Mobilization	0.000	0.000	-	-	0.00
2038	1	1A	Mobilization	59.337	0.006	152,791.9	14.2	69.53
2038	1	1A	**MobilizationTotal**					69.53
2038	1	1B	TrafficControl/Demo/Removal	0.000	0.000	-	-	0.00
2038	1	1B	TrafficControl/Demo/Removal	29.267	0.003	15,072.7	1.6	6.86
2038	1	1B	TrafficControl/Demo/Removal	90.859	0.006	46,792.5	3.0	21.27
2038	1	1B	TrafficControl/Demo/Removal	21.324	0.002	10,981.9	1.2	5.00
2038	1	1B	**TrafficControl/Demo/RemovalTotal**					33.1
2038	1	1C	Grading/Formwork	34.993	0.003	18,021.4	1.4	8.20
2038	1	1C	**Grading/FormworkTotal**					8.2
2038	1	1D	ConcretePouring	84.194	0.009	43,359.9	4.7	19.74
2038	1	1D	ConcretePouring	0.000	0.000	-	-	0.00
2038	1	1D	**ConcretePouringTotal**					19.7
2038	1	1E	UtilityAdjustment	44.202	0.005	45,527.9	4.7	20.72
2038	1	1E	UtilityAdjustment	148.166	0.005	152,611.3	4.8	69.30
2038	1	1E	UtilityAdjustment	8.419	0.001	8,672.0	0.9	3.95
2038	1	1E	**UtilityAdjustmentTotal**					94.0
2038	1	1F	TreeRemoval	279.644	0.005	144,016.7	2.5	65.36
2038	1	1F	TreeRemoval	26.018	0.276	13,399.4	142.1	8.27
2038	1	1F	TreeRemoval	4.696	0.004	2,418.4	1.9	1.13
2038	1	1F	TreeRemoval	27.001	0.023	13,905.7	11.7	6.49
2038	1	1F	TreeRemoval	42.648	0.003	21,963.8	1.4	9.98
2038	1	1F	**TreeRemovalTotal**					91.2
2038	1	1G	TreePlanting	24.281	0.003	12,504.7	1.3	5.69
2038	1	1G	**TreePlantingTotal**					5.7
2038	2	2A	Mobilization	0.000	0.000	-	-	0.00
2038	2	2A	Mobilization	59.337	0.006	3,560.2	0.3	1.62
2038	2	2A	**MobilizationTotal**					1.6
2038	2	2B	TrafficControl/Demo/Removal	0.000	0.000	-	-	0.00
2038	2	2B	TrafficControl/Demo/Removal	29.267	0.003	351.2	0.0	0.16
2038	2	2B	TrafficControl/Demo/Removal	90.859	0.006	1,090.3	0.1	0.50
2038	2	2B	TrafficControl/Demo/Removal	21.324	0.002	255.9	0.0	0.1
2038	2	2B	**TrafficControl/Demo/RemovalTotal**					0.8
2038	2	2C	Grading/Formwork	34.993	0.003	419.9	0.0	0.2
2038	2	2C	**Grading/FormworkTotal**					0.2
2038	2	2D	ConcretePouring	84.194	0.009	1,010.3	0.1	0.5
2038	2	2D	ConcretePouring	0.000	0.000	-	-	0.0
2038	2	2D	**ConcretePouringTotal**					0.5
2038	2	2E	UtilitiesRelocation	296.333	0.009	71,119.8	2.3	32.3
2038	2	2E	UtilitiesRelocation	999.803	0.030	239,952.7	7.2	108.9
2038	2	2E	UtilitiesRelocation	6.465	0.001	1,551.6	0.2	0.7
2038	2	2E	UtilitiesRelocation	48.412	0.005	11,618.8	1.3	5.3
2038	2	2E	**UtilitiesRelocationTotal**					147.2
2038	2	2F	CrosswalkRepaving	58.535	0.006	1,404.8	0.2	0.6
2038	2	2F	CrosswalkRepaving	45.430	0.003	1,090.3	0.1	0.5
2038	2	2F	CrosswalkRepaving	48.412	0.005	580.9	0.1	0.3
2038	2	2F	CrosswalkRepaving	7.217	0.001	86.6	0.0	0.0
2038	2	2F	**CrosswalkRepavingTotal**					1.4

Construction Equipment Emissions - Annual GHG Emissions

ProgramYear	Scenario	Phase ID	Phase Name	Equipment	Fuel	Count	HP	LF	Hours/day	Days/Event	Sites/Day	Repairs/Year
2038	2	2G	TreeRemoval	Bucket Truck	Diesel	1	360	0.31	2	1	1	12
2038	2	2G	TreeRemoval	Saw	Diesel	1	6	0.31	1.5	1	1	12
2038	2	2G	TreeRemoval	Wood Chipper	Gas	1	8	0.31	1	1	1	12
2038	2	2G	TreeRemoval	Stump Grinder	Gas	1	23	0.31	2	1	1	12
2038	2	2G	TreeRemoval	Skid-Steer Loader	Diesel	1	46	0.37	2	1	1	12
2038	2	2G	**TreeRemovalTotal**									
2038	2	2H	TreePlanting	Mini Excavator	Diesel	1	17	0.38	3	1	1	12
2038	2	2H	**TreePlantingTotal**									
2043	1	1A	Mobilization	Compressor	Electric	1	5	0.48	2	5	11	595
2043	1	1A	Mobilization	Small Generator	Diesel	1	8	0.74	8	5	11	595
2043	1	1A	**MobilizationTotal**									
2043	1	1B	TrafficControl/Demo/Removal	Pneumatic Jackhammer	Air	2	N/A		4	1	11	595
2043	1	1B	TrafficControl/Demo/Removal	Concrete Saw	Diesel	2	16	0.73	1	1	11	595
2043	1	1B	TrafficControl/Demo/Removal	Skid-Steer Loader	Diesel	1	49	0.37	4	1	11	595
2043	1	1B	TrafficControl/Demo/Removal	Tractor	Diesel	1	23	0.37	2	1	11	595
2043	1	1B	**TrafficControl/Demo/RemovalTotal**									
2043	1	1C	Grading/Formwork	Roller	Diesel	1	49	0.38	1.5	1	11	595
2043	1	1C	**Grading/FormworkTotal**									
2043	1	1D	ConcretePouring	Concrete Mixer	Diesel	1	20	0.56	6	1	11	595
2043	1	1D	ConcretePouring	Concrete Vibrator	Electric	2	N/A		2	1	11	595
2043	1	1D	**ConcretePouringTotal**									
2043	1	1E	UtilityAdjustment	Manhole Cutter	Diesel	1	49	0.36	2	2	11	595
2043	1	1E	UtilityAdjustment	Concrete Saw	Diesel	1	81	0.73	2	2	11	595
2043	1	1E	UtilityAdjustment	Concrete Mixer	Diesel	1	6	0.56	2	2	11	595
2043	1	1E	**UtilityAdjustmentTotal**									
2043	1	1F	TreeRemoval	Bucket Truck	Diesel	1	360	0.31	2	1	5	595
2043	1	1F	TreeRemoval	Saw	Diesel	1	6	0.31	1.5	1	5	595
2043	1	1F	TreeRemoval	Wood Chipper	Gas	1	8	0.31	1	1	5	595
2043	1	1F	TreeRemoval	Stump Grinder	Gas	1	23	0.31	2	1	5	595
2043	1	1F	TreeRemoval	Skid-Steer Loader	Diesel	1	46	0.37	2	1	5	595
2043	1	1F	**TreeRemovalTotal**									
2043	1	1G	TreePlanting	Mini Excavator	Diesel	1	17	0.38	2	1	5	595
2043	1	1G	**TreePlantingTotal**									
2043	2	2A	Mobilization	Compressor	Electric	1	5	0.48	2	5	1	12
2043	2	2A	Mobilization	Small Generator	Diesel	1	8	0.74	8	5	1	12
2043	2	2A	**MobilizationTotal**									
2043	2	2B	TrafficControl/Demo/Removal	Pneumatic Jackhammer	Air	2	N/A		4	1	1	12
2043	2	2B	TrafficControl/Demo/Removal	Concrete Saw	Diesel	2	16	0.73	1	1	1	12
2043	2	2B	TrafficControl/Demo/Removal	Skid-Steer Loader	Diesel	1	49	0.37	4	1	1	12
2043	2	2B	TrafficControl/Demo/Removal	Tractor	Diesel	1	23	0.37	2	1	1	12
2043	2	2B	**TrafficControl/Demo/RemovalTotal**									
2043	2	2C	Grading/Formwork	Roller	Diesel	1	49	0.38	1.5	1	1	12
2043	2	2C	**Grading/FormworkTotal**									
2043	2	2D	ConcretePouring	Concrete Mixer	Diesel	1	20	0.56	6	1	1	12
2043	2	2D	ConcretePouring	Concrete Vibrator	Electric	2	N/A		2	1	1	12
2043	2	2D	**ConcretePouringTotal**									
2043	2	2E	UtilitiesRelocation	Concrete Saw	Diesel	1	81	0.73	4	20	1	12
2043	2	2E	UtilitiesRelocation	Excavator	Diesel	1	350	0.38	6	20	1	12
2043	2	2E	UtilitiesRelocation	Plate Compactor	Gas	1	6	0.43	2	20	1	12
2043	2	2E	UtilitiesRelocation	Asphalt Paver	Diesel	1	46	0.42	2	20	1	12
2043	2	2E	**UtilitiesRelocationTotal**									
2043	2	2F	CrosswalkRepaving	Concrete Saw	Diesel	1	16	0.73	4	2	1	12
2043	2	2F	CrosswalkRepaving	Skid-Steer Loader	Diesel	1	49	0.37	2	2	1	12
2043	2	2F	CrosswalkRepaving	Asphalt Paver	Diesel	1	46	0.42	2	1	1	12
2043	2	2F	CrosswalkRepaving	Line Striper	Diesel	1	6	0.48	2	1	1	12
2043	2	2F	**CrosswalkRepavingTotal**									
2043	2	2G	TreeRemoval	Bucket Truck	Diesel	1	360	0.31	2	1	1	12
2043	2	2G	TreeRemoval	Saw	Diesel	1	6	0.31	1.5	1	1	12
2043	2	2G	TreeRemoval	Wood Chipper	Gas	1	8	0.31	1	1	1	12
2043	2	2G	TreeRemoval	Stump Grinder	Gas	1	23	0.31	2	1	1	12
2043	2	2G	TreeRemoval	Skid-Steer Loader	Diesel	1	46	0.37	2	1	1	12
2043	2	2G	**TreeRemovalTotal**									
2043	2	2H	TreePlanting	Mini Excavator	Diesel	1	17	0.38	2	1	1	12
2043	2	2H	**TreePlantingTotal**									

Construction Equipment Emissions - Annual GHG Emissions

				Daily GHG Emissions (1 Site)		Annual GHG Emissions		
ProgramYear	Scenario	Phase ID	Phase Name	CO2 (lb/day)	CH4 (lb/day)	CO2 lb/year	CH4 lb/year	MTCO2e/year
2038	2	2G	TreeRemoval	279.644	0.005	3,355.7	0.1	1.5
2038	2	2G	TreeRemoval	26.018	0.276	312.2	3.3	0.2
2038	2	2G	TreeRemoval	4.696	0.004	56.4	0.0	0.0
2038	2	2G	TreeRemoval	27.001	0.023	324.0	0.3	0.2
2038	2	2G	TreeRemoval	42.648	0.003	511.8	0.0	0.2
2038	2	2G	**TreeRemovalTotal**					2.1
2038	2	2H	TreePlanting	24.281	0.003	291.4	0.0	0.1
2038	2	2H	**TreePlantingTotal**					0.1
2043	1	1A	Mobilization	0.000	0.000	-	-	0.00
2043	1	1A	Mobilization	59.337	0.006	176,526.6	16.5	80.33
2043	1	1A	**MobilizationTotal**					80.33
2043	1	1B	TrafficControl/Demo/Removal	0.000	0.000	-	-	0.00
2043	1	1B	TrafficControl/Demo/Removal	29.267	0.003	17,414.1	1.9	7.93
2043	1	1B	TrafficControl/Demo/Removal	90.859	0.006	54,061.3	3.5	24.58
2043	1	1B	TrafficControl/Demo/Removal	21.324	0.002	12,687.8	1.4	5.78
2043	1	1B	**TrafficControl/Demo/RemovalTotal**					38.3
2043	1	1C	Grading/Formwork	34.993	0.003	20,820.9	1.5	9.47
2043	1	1C	**Grading/FormworkTotal**					9.5
2043	1	1D	ConcretePouring	84.194	0.009	50,095.4	5.4	22.81
2043	1	1D	ConcretePouring	0.000	0.000	-	-	0.00
2043	1	1D	**ConcretePouringTotal**					22.8
2043	1	1E	UtilityAdjustment	44.202	0.004	52,600.2	4.9	23.93
2043	1	1E	UtilityAdjustment	148.166	0.004	176,317.9	5.3	80.06
2043	1	1E	UtilityAdjustment	8.419	0.001	10,019.1	1.0	4.56
2043	1	1E	**UtilityAdjustmentTotal**					108.6
2043	1	1F	TreeRemoval	279.644	0.005	166,388.3	2.9	75.52
2043	1	1F	TreeRemoval	26.018	0.276	15,480.8	164.1	9.55
2043	1	1F	TreeRemoval	4.696	0.004	2,794.1	2.2	1.30
2043	1	1F	TreeRemoval	27.001	0.023	16,065.8	13.5	7.50
2043	1	1F	TreeRemoval	42.648	0.003	25,375.7	1.7	11.54
2043	1	1F	**TreeRemovalTotal**					105.4
2043	1	1G	TreePlanting	16.187	0.002	9,631.5	1.0	4.38
2043	1	1G	**TreePlantingTotal**					4.4
2043	2	2A	Mobilization	0.000	0.000	-	-	0.00
2043	2	2A	Mobilization	59.337	0.006	3,560.2	0.3	1.62
2043	2	2A	**MobilizationTotal**					1.6
2043	2	2B	TrafficControl/Demo/Removal	0.000	0.000	-	-	0.00
2043	2	2B	TrafficControl/Demo/Removal	29.267	0.003	351.2	0.0	0.16
2043	2	2B	TrafficControl/Demo/Removal	90.859	0.006	1,090.3	0.1	0.50
2043	2	2B	TrafficControl/Demo/Removal	21.324	0.002	255.9	0.0	0.1
2043	2	2B	**TrafficControl/Demo/RemovalTotal**					0.8
2043	2	2C	Grading/Formwork	34.993	0.003	419.9	0.0	0.2
2043	2	2C	**Grading/FormworkTotal**					0.2
2043	2	2D	ConcretePouring	84.194	0.009	1,010.3	0.1	0.5
2043	2	2D	ConcretePouring	0.000	0.000	-	-	0.0
2043	2	2D	**ConcretePouringTotal**					0.5
2043	2	2E	UtilitiesRelocation	296.333	0.009	71,119.8	2.1	32.3
2043	2	2E	UtilitiesRelocation	999.803	0.030	239,952.7	7.2	108.9
2043	2	2E	UtilitiesRelocation	6.465	0.001	1,551.6	0.2	0.7
2043	2	2E	UtilitiesRelocation	48.412	0.005	11,618.8	1.1	5.3
2043	2	2E	**UtilitiesRelocationTotal**					147.2
2043	2	2F	CrosswalkRepaving	58.535	0.006	1,404.8	0.2	0.6
2043	2	2F	CrosswalkRepaving	45.430	0.003	1,090.3	0.1	0.5
2043	2	2F	CrosswalkRepaving	48.412	0.005	580.9	0.1	0.3
2043	2	2F	CrosswalkRepaving	7.217	0.001	86.6	0.0	0.0
2043	2	2F	**CrosswalkRepavingTotal**					1.4
2043	2	2G	TreeRemoval	279.644	0.005	3,355.7	0.1	1.5
2043	2	2G	TreeRemoval	26.018	0.276	312.2	3.3	0.2
2043	2	2G	TreeRemoval	4.696	0.004	56.4	0.0	0.0
2043	2	2G	TreeRemoval	27.001	0.023	324.0	0.3	0.2
2043	2	2G	TreeRemoval	42.648	0.003	511.8	0.0	0.2
2043	2	2G	**TreeRemovalTotal**					2.1
2043	2	2H	TreePlanting	16.187	0.002	194.2	0.0	0.1
2043	2	2H	**TreePlantingTotal**					0.1

Construction Worker and Truck Trips - Annual GHG Emissions

		Activity Summary		Event Duration & Frequency		Workers							
Year	Scenario	Event ID	Event Name	Event Length (Days)	Avg Scenarios/Year	Workers/Site	Miles/Worker* (RT)	Worker Miles/Day	Worker Miles/Year	CO2 (lb/year)	CH4 (lb/year)	N2O (lb/year)	MTCO2e/year
2018	1	1a	Mobilization	5	286	4	30	600	171600	132106.75	7.01	5.28	60.75
2018	1	1b	Traffic Control/Demo/Removal	1	286	4	30	600	34320	26421.35	1.40	1.06	12.15
2018	1	1c	Grading/Formwork	1	286	5	30	750	42900	33026.69	1.75	1.32	15.19
2018	1	1d	Concrete Pouring	1	286	9	30	1350	77220	59448.04	3.16	2.38	27.34
2018	1	1e	Utility Adjustment	2	286	5	30	750	85800	66053.38	3.51	2.64	30.37
2018	1	1f	Tree Removal	1	286	5	30	300	42900	33026.69	1.75	1.32	15.19
2018	1	1g	Tree Planting	1	286	3	30	180	25740	19816.01	1.05	0.79	9.11
2018	1	1h	Cleanup	1	286	3	30	450	25740	19816.01	1.05	0.79	9.11
2018	2	2a	Mobilization	5	12	4	30	120	7200	5542.94	0.29	0.22	2.55
2018	2	2b	Traffic Control/Demo/Removal	1	12	4	30	120	1440	1108.59	0.06	0.04	0.51
2018	2	2c	Grading/Formwork	1	12	5	30	150	1800	1385.74	0.07	0.06	0.64
2018	2	2d	Concrete Pouring	1	12	9	30	270	3240	2494.32	0.13	0.10	1.15
2018	2	2e	Utilities Relocation	20	12	5	30	150	36000	27714.70	1.47	1.11	12.74
2018	2	2f	Crosswalk Repaving	5	12	4	30	120	7200	5542.94	0.29	0.22	2.55
2018	2	2g	Tree Removal	1	12	5	30	150	1800	1385.74	0.07	0.06	0.64
2018	2	2h	Tree Planting	1	12	3	30	90	1080	831.44	0.04	0.03	0.38
2018	2	2i	Cleanup	1	12	4	30	120	1440	1108.59	0.06	0.04	0.51
2023	1	1a	Mobilization	5	332	4	30	720	199200	133107.97	4.91	4.09	61.01
2023	1	1b	Traffic Control/Demo/Removal	1	332	4	30	720	39840	26621.59	0.98	0.82	12.20
2023	1	1c	Grading/Formwork	1	332	5	30	900	49800	33276.99	1.23	1.02	15.25
2023	1	1d	Concrete Pouring	1	332	9	30	1620	89640	59898.59	2.21	1.84	27.45
2023	1	1e	Utility Adjustment	2	332	5	30	900	99600	66553.98	2.45	2.05	30.50
2023	1	1f	Tree Removal	1	332	5	30	450	49800	33276.99	1.23	1.02	15.25
2023	1	1g	Tree Planting	1	332	3	30	270	29880	19966.20	0.74	0.61	9.15
2023	1	1h	Cleanup	1	332	3	30	540	29880	19966.20	0.74	0.61	9.15
2023	2	2a	Mobilization	5	12	4	30	120	7200	4811.13	0.18	0.15	2.21
2023	2	2b	Traffic Control/Demo/Removal	1	12	4	30	120	1440	962.23	0.04	0.03	0.44
2023	2	2c	Grading/Formwork	1	12	5	30	150	1800	1202.78	0.04	0.04	0.55
2023	2	2d	Concrete Pouring	1	12	9	30	270	3240	2165.01	0.08	0.07	0.99
2023	2	2e	Utilities Relocation	20	12	5	30	150	36000	24055.66	0.89	0.74	11.03
2023	2	2f	Crosswalk Repaving	5	12	4	30	120	7200	4811.13	0.18	0.15	2.21
2023	2	2g	Tree Removal	1	12	5	30	150	1800	1202.78	0.04	0.04	0.55
2023	2	2h	Tree Planting	1	12	3	30	90	1080	721.67	0.03	0.02	0.33
2023	2	2i	Cleanup	1	12	4	30	120	1440	962.23	0.04	0.03	0.44
2028	1	1a	Mobilization	5	384	4	30	840	230400	135053.34	3.85	3.70	61.82
2028	1	1b	Traffic Control/Demo/Removal	1	384	4	30	840	46080	27010.67	0.77	0.74	12.36
2028	1	1c	Grading/Formwork	1	384	5	30	1050	57600	33763.34	0.96	0.93	15.45
2028	1	1d	Concrete Pouring	1	384	9	30	1890	103680	60774.00	1.73	1.67	27.82
2028	1	1e	Utility Adjustment	2	384	5	30	1050	115200	67526.67	1.92	1.85	30.91
2028	1	1f	Tree Removal	1	384	5	30	450	57600	33763.34	0.96	0.93	15.45
2028	1	1g	Tree Planting	2	384	4	30	360	92160	54021.34	1.54	1.48	24.73
2028	1	1h	Cleanup	1	384	3	30	630	34560	20258.00	0.58	0.56	9.27
2028	2	2a	Mobilization	5	12	4	30	120	7200	4220.42	0.12	0.12	1.93
2028	2	2b	Traffic Control/Demo/Removal	1	12	4	30	120	1440	844.08	0.02	0.02	0.39
2028	2	2c	Grading/Formwork	1	12	5	30	150	1800	1055.10	0.03	0.03	0.48
2028	2	2d	Concrete Pouring	1	12	9	30	270	3240	1899.19	0.05	0.05	0.87
2028	2	2e	Utilities Relocation	20	12	5	30	150	36000	21102.08	0.60	0.58	9.66
2028	2	2f	Crosswalk Repaving	5	12	4	30	120	7200	4220.42	0.12	0.12	1.93
2028	2	2g	Tree Removal	1	12	5	30	150	1800	1055.10	0.03	0.03	0.48
2028	2	2h	Tree Planting	2	12	4	30	120	2880	1688.17	0.05	0.05	0.77
2028	2	2i	Cleanup	1	12	4	30	120	1440	844.08	0.02	0.02	0.39

Construction Worker and Truck Trips - Annual GHG Emissions

			Activity Summary					Trucks						
Year	Scenario	Event ID	Event Name	Haul Trucks/Site	Miles/Haul (RT)	Water Trucks/Site	Miles/Water (RT)	Truck Miles/Day	Truck Miles/Year	CO2 (lb/year)	CH4 (lb/year)	N2O (lb/year)	MTCO2e/year
2018	1	1a	Mobilization	0	0	0	0	0	0	0.00	0.00	0.00	0.00
2018	1	1b	Traffic Control/Demo/Removal	4	20	1	40	600	34320	129541.13	6.57	20.51	61.63
2018	1	1c	Grading/Formwork	3	20	1	40	500	28600	107950.94	5.47	17.09	51.36
2018	1	1d	Concrete Pouring	4	40	0	0	800	45760	172721.51	8.76	27.35	82.18
2018	1	1e	Utility Adjustment	2	40	0	0	400	45760	172721.51	8.76	27.35	82.18
2018	1	1f	Tree Removal	2	20	0	0	80	11440	43180.38	2.19	6.84	20.54
2018	1	1g	Tree Planting	2	20	0	0	80	11440	43180.38	2.19	6.84	20.54
2018	1	1h	Cleanup	3	10	0	0	150	8580	32385.28	1.64	5.13	15.41
2018	2	2a	Mobilization	0	0	0	0	0	0	0.00	0.00	0.00	0.00
2018	2	2b	Traffic Control/Demo/Removal	4	20	1	40	120	1440	5435.29	0.28	0.86	2.59
2018	2	2c	Grading/Formwork	3	20	1	40	100	1200	4529.41	0.23	0.72	2.15
2018	2	2d	Concrete Pouring	4	40	0	0	160	1920	7247.06	0.37	1.15	3.45
2018	2	2e	Utilities Relocation	2	40	0	0	80	19200	72470.56	3.67	11.47	34.48
2018	2	2f	Crosswalk Repaving	1	40	0	0	40	2400	9058.82	0.46	1.43	4.31
2018	2	2g	Tree Removal	2	20	0	0	40	480	1811.76	0.09	0.29	0.86
2018	2	2h	Tree Planting	2	20	0	0	40	480	1811.76	0.09	0.29	0.86
2018	2	2i	Cleanup	3	10	0	0	30	360	1358.82	0.07	0.22	0.65
2023	1	1a	Mobilization	0	0	0	0	0	0	0.00	0.00	0.00	0.00
2023	1	1b	Traffic Control/Demo/Removal	4	20	1	40	720	39840	131025.33	7.29	20.81	62.36
2023	1	1c	Grading/Formwork	3	20	1	40	600	33200	109187.77	6.08	17.34	51.96
2023	1	1d	Concrete Pouring	4	40	0	0	960	53120	174700.44	9.72	27.75	83.14
2023	1	1e	Utility Adjustment	2	40	0	0	480	53120	174700.44	9.72	27.75	83.14
2023	1	1f	Tree Removal	2	20	0	0	120	13280	43675.11	2.43	6.94	20.79
2023	1	1g	Tree Planting	2	20	0	0	120	13280	43675.11	2.43	6.94	20.79
2023	1	1h	Cleanup	3	10	0	0	180	9960	32756.33	1.82	5.20	15.59
2023	2	2a	Mobilization	0	0	0	0	0	0	0.00	0.00	0.00	0.00
2023	2	2b	Traffic Control/Demo/Removal	4	20	1	40	120	1440	4735.86	0.26	0.75	2.25
2023	2	2c	Grading/Formwork	3	20	1	40	100	1200	3946.55	0.22	0.63	1.88
2023	2	2d	Concrete Pouring	4	40	0	0	160	1920	6314.47	0.35	1.00	3.01
2023	2	2e	Utilities Relocation	2	40	0	0	80	19200	63144.74	3.51	10.03	30.05
2023	2	2f	Crosswalk Repaving	1	40	0	0	40	2400	7893.09	0.44	1.25	3.76
2023	2	2g	Tree Removal	2	20	0	0	40	480	1578.62	0.09	0.25	0.75
2023	2	2h	Tree Planting	2	20	0	0	40	480	1578.62	0.09	0.25	0.75
2023	2	2i	Cleanup	3	10	0	0	30	360	1183.96	0.07	0.19	0.56
2028	1	1a	Mobilization	0	0	0	0	0	0	0.00	0.00	0.00	0.00
2028	1	1b	Traffic Control/Demo/Removal	4	20	1	40	840	46080	138310.79	8.82	22.01	65.85
2028	1	1c	Grading/Formwork	3	20	1	40	700	38400	115258.99	7.35	18.34	54.87
2028	1	1d	Concrete Pouring	4	40	0	0	1120	61440	184414.38	11.76	29.35	87.80
2028	1	1e	Utility Adjustment	2	40	0	0	560	61440	184414.38	11.76	29.35	87.80
2028	1	1f	Tree Removal	2	20	0	0	120	15360	46103.60	2.94	7.34	21.95
2028	1	1g	Tree Planting	2	20	0	0	120	30720	92207.19	5.88	14.67	43.90
2028	1	1h	Cleanup	3	10	0	0	210	11520	34577.70	2.20	5.50	16.46
2028	2	2a	Mobilization	0	0	0	0	0	0	0.00	0.00	0.00	0.00
2028	2	2b	Traffic Control/Demo/Removal	4	20	1	40	120	1440	4322.21	0.28	0.69	2.06
2028	2	2c	Grading/Formwork	3	20	1	40	100	1200	3601.84	0.23	0.57	1.71
2028	2	2d	Concrete Pouring	4	40	0	0	160	1920	5762.95	0.37	0.92	2.74
2028	2	2e	Utilities Relocation	2	40	0	0	80	19200	57629.49	3.67	9.17	27.44
2028	2	2f	Crosswalk Repaving	1	40	0	0	40	2400	7203.69	0.46	1.15	3.43
2028	2	2g	Tree Removal	2	20	0	0	40	480	1440.74	0.09	0.23	0.69
2028	2	2h	Tree Planting	2	20	0	0	40	960	2881.47	0.18	0.46	1.37
2028	2	2i	Cleanup	3	10	0	0	30	360	1080.55	0.07	0.17	0.51

Construction Worker and Truck Trips - Annual GHG Emissions

		Activity Summary		Event Duration & Frequency		Workers							
Year	Scenario	Event ID	Event Name	Event Length (Days)	Avg Scenarios/Year	Workers/Site	Miles/Worker* (RT)	Worker Miles/Day	Worker Miles/Year	CO2 (lb/year)	CH4 (lb/year)	N2O (lb/year)	MTCO2e/year
2033	1	1a	Mobilization	5	445	4	30	960	267000	143616.51	3.29	3.78	65.71
2033	1	1b	Traffic Control/Demo/Removal	1	445	4	30	960	53400	28723.30	0.66	0.76	13.14
2033	1	1c	Grading/Formwork	1	445	5	30	1200	66750	35904.13	0.82	0.95	16.43
2033	1	1d	Concrete Pouring	1	445	9	30	2160	120150	64627.43	1.48	1.70	29.57
2033	1	1e	Utility Adjustment	2	445	5	30	1200	133500	71808.25	1.64	1.89	32.85
2033	1	1f	Tree Removal	1	445	5	30	600	66750	35904.13	0.82	0.95	16.43
2033	1	1g	Tree Planting	2	445	4	30	480	106800	57446.60	1.32	1.51	26.28
2033	1	1h	Cleanup	1	445	3	30	720	40050	21542.48	0.49	0.57	9.86
2033	2	2a	Mobilization	5	12	4	30	120	7200	3872.80	0.09	0.10	1.77
2033	2	2b	Traffic Control/Demo/Removal	1	12	4	30	120	1440	774.56	0.02	0.02	0.35
2033	2	2c	Grading/Formwork	1	12	5	30	150	1800	968.20	0.02	0.03	0.44
2033	2	2d	Concrete Pouring	1	12	9	30	270	3240	1742.76	0.04	0.05	0.80
2033	2	2e	Utilities Relocation	20	12	5	30	150	36000	19364.02	0.44	0.51	8.86
2033	2	2f	Crosswalk Repaving	5	12	4	30	120	7200	3872.80	0.09	0.10	1.77
2033	2	2g	Tree Removal	1	12	5	30	150	1800	968.20	0.02	0.03	0.44
2033	2	2h	Tree Planting	2	12	4	30	120	2880	1549.12	0.04	0.04	0.71
2033	2	2i	Cleanup	1	12	4	30	120	1440	774.56	0.02	0.02	0.35
2038	1	1a	Mobilization	5	515	4	30	1200	309000	158217.32	3.03	4.17	72.38
2038	1	1b	Traffic Control/Demo/Removal	1	515	4	30	1200	61800	31643.46	0.61	0.83	14.48
2038	1	1c	Grading/Formwork	1	515	5	30	1500	77250	39554.33	0.76	1.04	18.09
2038	1	1d	Concrete Pouring	1	515	9	30	2700	139050	71197.79	1.36	1.88	32.57
2038	1	1e	Utility Adjustment	2	515	5	30	1500	154500	79108.66	1.51	2.09	36.19
2038	1	1f	Tree Removal	1	515	5	30	1500	77250	39554.33	0.76	1.04	18.09
2038	1	1g	Tree Planting	2	515	4	30	600	123600	63286.93	1.21	1.67	28.95
2038	1	1h	Cleanup	1	515	3	30	900	46350	23732.60	0.45	0.63	10.86
2038	2	2a	Mobilization	5	12	4	30	120	7200	3686.62	0.07	0.10	1.69
2038	2	2b	Traffic Control/Demo/Removal	1	12	4	30	120	1440	737.32	0.01	0.02	0.34
2038	2	2c	Grading/Formwork	1	12	5	30	150	1800	921.65	0.02	0.02	0.42
2038	2	2d	Concrete Pouring	1	12	9	30	270	3240	1658.98	0.03	0.04	0.76
2038	2	2e	Utilities Relocation	20	12	5	30	150	36000	18433.09	0.35	0.49	8.43
2038	2	2f	Crosswalk Repaving	5	12	4	30	120	7200	3686.62	0.07	0.10	1.69
2038	2	2g	Tree Removal	1	12	5	30	150	1800	921.65	0.02	0.02	0.42
2038	2	2h	Tree Planting	2	12	4	30	120	2880	1474.65	0.03	0.04	0.67
2038	2	2i	Cleanup	1	12	4	30	120	1440	737.32	0.01	0.02	0.34
2043	1	1a	Mobilization	5	595	4	30	1320	357000	178622.01	3.04	4.76	81.71
2043	1	1b	Traffic Control/Demo/Removal	1	595	4	30	1320	71400	35724.40	0.61	0.95	16.34
2043	1	1c	Grading/Formwork	1	595	5	30	1650	89250	44655.50	0.76	1.19	20.43
2043	1	1d	Concrete Pouring	1	595	9	30	2970	160650	80379.91	1.37	2.14	36.77
2043	1	1e	Utility Adjustment	2	595	5	30	1650	178500	89311.01	1.52	2.38	40.86
2043	1	1f	Tree Removal	1	595	5	30	1650	89250	44655.50	0.76	1.19	20.43
2043	1	1g	Tree Planting	1	595	3	30	450	53550	26793.30	0.46	0.71	12.26
2043	1	1h	Cleanup	1	595	3	30	990	53550	26793.30	0.46	0.71	12.26
2043	2	2a	Mobilization	5	12	4	30	120	7200	3602.46	0.06	0.10	1.65
2043	2	2b	Traffic Control/Demo/Removal	1	12	4	30	120	1440	720.49	0.01	0.02	0.33
2043	2	2c	Grading/Formwork	1	12	5	30	150	1800	900.62	0.02	0.02	0.41
2043	2	2d	Concrete Pouring	1	12	9	30	270	3240	1621.11	0.03	0.04	0.74
2043	2	2e	Utilities Relocation	20	12	5	30	150	36000	18012.30	0.31	0.48	8.24
2043	2	2f	Crosswalk Repaving	5	12	4	30	120	7200	3602.46	0.06	0.10	1.65
2043	2	2g	Tree Removal	1	12	5	30	150	1800	900.62	0.02	0.02	0.41
2043	2	2h	Tree Planting	1	12	3	30	90	1080	540.37	0.01	0.01	0.25
2043	2	2i	Cleanup	1	12	4	30	120	1440	720.49	0.01	0.02	0.33

Construction Worker and Truck Trips - Annual GHG Emissions

		Activity Summary		Trucks									
Year	Scenario	Event ID	Event Name	Haul Trucks/Site	Miles/Haul (RT)	Water Trucks/Site	Miles/Water (RT)	Truck Miles/Day	Truck Miles/Year	CO2 (lb/year)	CH4 (lb/year)	N2O (lb/year)	MTCO2e/year
2033	1	1a	Mobilization	0	0	0	0	0	0	0.00	0.00	0.00	0.00
2033	1	1b	Traffic Control/Demo/Removal	4	20	1	40	960	53400	144931.82	10.63	23.10	69.03
2033	1	1c	Grading/Formwork	3	20	1	40	800	44500	120776.52	8.86	19.25	57.52
2033	1	1d	Concrete Pouring	4	40	0	0	1280	71200	193242.43	14.18	30.80	92.04
2033	1	1e	Utility Adjustment	2	40	0	0	640	71200	193242.43	14.18	30.80	92.04
2033	1	1f	Tree Removal	2	20	0	0	160	17800	48310.61	3.54	7.70	23.01
2033	1	1g	Tree Planting	2	20	0	0	160	35600	96621.22	7.09	15.40	46.02
2033	1	1h	Cleanup	3	10	0	0	240	13350	36232.96	2.66	5.78	17.26
2033	2	2a	Mobilization	0	0	0	0	0	0	0.00	0.00	0.00	0.00
2033	2	2b	Traffic Control/Demo/Removal	4	20	1	40	120	1440	3908.27	0.29	0.62	1.86
2033	2	2c	Grading/Formwork	3	20	1	40	100	1200	3256.89	0.24	0.52	1.55
2033	2	2d	Concrete Pouring	4	40	0	0	160	1920	5211.03	0.38	0.83	2.48
2033	2	2e	Utilities Relocation	2	40	0	0	80	19200	52110.32	3.82	8.31	24.82
2033	2	2f	Crosswalk Repaving	1	40	0	0	40	2400	6513.79	0.48	1.04	3.10
2033	2	2g	Tree Removal	2	20	0	0	40	480	1302.76	0.10	0.21	0.62
2033	2	2h	Tree Planting	2	20	0	0	40	960	2605.52	0.19	0.42	1.24
2033	2	2i	Cleanup	3	10	0	0	30	360	977.07	0.07	0.16	0.47
2038	1	1a	Mobilization	0	0	0	0	0	0	0.00	0.00	0.00	0.00
2038	1	1b	Traffic Control/Demo/Removal	4	20	1	40	1200	61800	156032.35	12.47	24.89	74.33
2038	1	1c	Grading/Formwork	3	20	1	40	1000	51500	130026.96	10.39	20.74	61.94
2038	1	1d	Concrete Pouring	4	40	0	0	1600	82400	208043.14	16.62	33.19	99.11
2038	1	1e	Utility Adjustment	2	40	0	0	800	82400	208043.14	16.62	33.19	99.11
2038	1	1f	Tree Removal	2	20	0	0	400	20600	52010.78	4.16	8.30	24.78
2038	1	1g	Tree Planting	2	20	0	0	200	41200	104021.57	8.31	16.59	49.55
2038	1	1h	Cleanup	3	10	0	0	300	15450	39008.09	3.12	6.22	18.58
2038	2	2a	Mobilization	0	0	0	0	0	0	0.00	0.00	0.00	0.00
2038	2	2b	Traffic Control/Demo/Removal	4	20	1	40	120	1440	3635.71	0.29	0.58	1.73
2038	2	2c	Grading/Formwork	3	20	1	40	100	1200	3029.75	0.24	0.48	1.44
2038	2	2d	Concrete Pouring	4	40	0	0	160	1920	4847.61	0.39	0.77	2.31
2038	2	2e	Utilities Relocation	2	40	0	0	80	19200	48476.07	3.87	7.73	23.09
2038	2	2f	Crosswalk Repaving	1	40	0	0	40	2400	6059.51	0.48	0.97	2.89
2038	2	2g	Tree Removal	2	20	0	0	40	480	1211.90	0.10	0.19	0.58
2038	2	2h	Tree Planting	2	20	0	0	40	960	2423.80	0.19	0.39	1.15
2038	2	2i	Cleanup	3	10	0	0	30	360	908.93	0.07	0.14	0.43
2043	1	1a	Mobilization	0	0	0	0	0	0	0.00	0.00	0.00	0.00
2043	1	1b	Traffic Control/Demo/Removal	4	20	1	40	1320	71400	173663.98	14.26	27.71	82.74
2043	1	1c	Grading/Formwork	3	20	1	40	1100	59500	144719.98	11.88	23.09	68.95
2043	1	1d	Concrete Pouring	4	40	0	0	1760	95200	231551.97	19.01	36.94	110.32
2043	1	1e	Utility Adjustment	2	40	0	0	880	95200	231551.97	19.01	36.94	110.32
2043	1	1f	Tree Removal	2	20	0	0	440	23800	57887.99	4.75	9.24	27.58
2043	1	1g	Tree Planting	2	20	0	0	200	23800	57887.99	4.75	9.24	27.58
2043	1	1h	Cleanup	3	10	0	0	330	17850	43416.00	3.56	6.93	20.68
2043	2	2a	Mobilization	0	0	0	0	0	0	0.00	0.00	0.00	0.00
2043	2	2b	Traffic Control/Demo/Removal	4	20	1	40	120	1440	3502.47	0.29	0.56	1.67
2043	2	2c	Grading/Formwork	3	20	1	40	100	1200	2918.72	0.24	0.47	1.39
2043	2	2d	Concrete Pouring	4	40	0	0	160	1920	4669.96	0.38	0.75	2.22
2043	2	2e	Utilities Relocation	2	40	0	0	80	19200	46699.56	3.83	7.45	22.25
2043	2	2f	Crosswalk Repaving	1	40	0	0	40	2400	5837.44	0.48	0.93	2.78
2043	2	2g	Tree Removal	2	20	0	0	40	480	1167.49	0.10	0.19	0.56
2043	2	2h	Tree Planting	2	20	0	0	40	480	1167.49	0.10	0.19	0.56
2043	2	2i	Cleanup	3	10	0	0	30	360	875.62	0.07	0.14	0.42

Street Tree Removal Carbon Sequestration Calculations

Data Request Info

Typical Trees Removed (per 650 feet)		Typical Trees Replaced (per 650 feet)	
Species	Number	Species	Number
Ficus Nitida	1	Pink Trumpet	2 (3 years 11-21)
Pine	1	Australian Willow	2 (3 years 11-21)
Carob	1		

Analysis	Program Year	1	2	3	4	5	6	7	8
	Year	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
Removals (Existing Trees)	Carob Sequestration (kgCO2/tree/year)	69.436	69.436	69.436	69.436	69.436	69.436	69.436	69.436
	Ficus Sequestration (kgCO2/tree/year)	42.914	42.914	42.914	42.914	42.914	42.914	42.914	42.914
	Pine Sequestration (kgCO2/tree/year)	89.365	89.365	89.365	89.365	89.365	89.365	89.365	89.365
	3-Tree-Cluster Sequestration (kgCO2/3trees/year)	**201.715**	**201.715**	**201.715**	**201.715**	**201.715**	**201.715**	**201.715**	**201.715**
	Age	30	30	30	30	30	30	30	30
	Number/Type/Year	97	97	97	97	97	112	112	112
	Total Sequestration Lost (MTCO2e/year)	19.6	39.3	58.9	78.5	98.2	135.6	158.1	180.7
Replacements (New Trees)	Trumpet Sequestration (kgCO2/tree/year)	2.478	2.478	2.478	2.478	2.478	2.478	2.478	2.478
	Willow Sequestration (kgCO2/tree/year)	0.896	0.896	0.896	0.896	0.896	0.896	0.896	0.896
	New 2-Tree-Cluster Sequestration (kgCO2/2trees/year)	**3.373**	**3.373**	**3.373**	**3.373**	**3.373**	**3.373**	**3.373**	**3.373**
	Age	3	3	3	3	3	3	3	3
	Number/Type/Year	292	292	292	292	292	336	336	336
	Total Sequestration Added (MTCO2e/year)	0.985	0.985	0.985	0.985	0.985	1.133	1.133	1.133
Planted Trees Aging	Trumpet Sequestration (kgCO2/tree/year)	2.478	4.875	7.662	10.710	13.935	17.283	20.713	24.195
	Willow Sequestration (kgCO2/tree/year)	0.896	1.519	2.238	3.035	3.901	4.827	5.807	6.837
	2-Tree Sequestration (kgCO2/2trees/year)	3.373	6.394	9.900	13.745	17.836	22.110	26.520	31.032
	Age	3	4	5	6	7	8	9	10
	Number/Type/Year	0	292	292	292	292	292	336	336
	Total Sequestration Added for Planted Trees (MTCO2e/year)	0.000	1.867	2.891	4.014	5.208	6.456	8.911	10.427
	Total Sequestration for Program Trees (MTCO2e/year)	1.0	2.9	5.7	9.8	15.0	21.6	30.5	40.9
	Net Sequestration Change (Annual)	-18.6	-36.4	-53.2	-68.8	-83.2	-114.0	-127.7	-139.8

Street Tree Removal Carbon Sequestration Calculations

Data Request Info

Typical Trees Removed (per 650 feet)		Typical Trees Replaced (per 650 feet)	
Species	Number	Species	Number
Ficus Nitida	1	Pink Trumpet	2 (3 years 11-21)
Pine	1	Australian Willow	2 (3 years 11-21)
Carob	1		

Analysis	Program Year	9	10	11	12	13	14	15	16
	Year	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**
Removals (Existing Trees)	Carob Sequestration (kgCO2/tree/year)	69.436	69.436	69.436	69.436	69.436	69.436	69.436	69.436
	Ficus Sequestration (kgCO2/tree/year)	42.914	42.914	42.914	42.914	42.914	42.914	42.914	42.914
	Pine Sequestration (kgCO2/tree/year)	89.365	89.365	89.365	89.365	89.365	89.365	89.365	89.365
	3-Tree-Cluster Sequestration (kgCO2/3trees/year)	**201.715**	**201.715**	**201.715**	**201.715**	**201.715**	**201.715**	**201.715**	**201.715**
	Age	30	30	30	30	30	30	30	30
	Number/Type/Year	112	112	129	129	129	129	129	149
	Total Sequestration Lost (MTCO2e/year)	203.3	225.9	287.0	313.1	339.2	365.2	391.3	480.9
Replacements (New Trees)	Trumpet Sequestration (kgCO2/tree/year)	2.478	2.478	2.478	2.478	2.478	2.478	2.478	2.478
	Willow Sequestration (kgCO2/tree/year)	0.896	0.896	0.896	0.896	0.896	0.896	0.896	0.896
	New 2-Tree-Cluster Sequestration (kgCO2/2trees/year)	**3.373**	**3.373**	**3.373**	**3.373**	**3.373**	**3.373**	**3.373**	**3.373**
	Age	3	3	3	3	3	3	3	3
	Number/Type/Year	336	336	582	582	582	582	582	671
	Total Sequestration Added (MTCO2e/year)	1.133	1.133	1.963	1.963	1.963	1.963	1.963	2.263
Planted Trees Aging	Trumpet Sequestration (kgCO2/tree/year)	27.705	31.225	34.740	38.237	41.704	45.135	48.519	51.852
	Willow Sequestration (kgCO2/tree/year)	7.913	9.031	10.189	11.385	12.615	13.880	15.176	16.502
	2-Tree Sequestration (kgCO2/2trees/year)	35.618	40.257	44.930	49.621	54.320	59.014	63.695	68.355
	Age	11	12	13	14	15	16	17	18
	Number/Type/Year	336	336	336	582	582	582	582	582
	Total Sequestration Added for Planted Trees (MTCO2e/year)	11.968	13.526	15.096	28.880	31.614	34.346	37.070	39.782
	Total Sequestration for Program Trees (MTCO2e/year)	52.9	66.4	82.3	111.2	142.8	177.2	214.2	254.3
	Net Sequestration Change (Annual)	-150.5	-159.5	-204.6	-201.9	-196.3	-188.1	-177.1	-226.6

Street Tree Removal Carbon Sequestration Calculations

Data Request Info

Typical Trees Removed (per 650 feet)		Typical Trees Replaced (per 650 feet)	
Species	Number	Species	Number
Ficus Nitida	1	Pink Trumpet	2 (3 years 11-21)
Pine	1	Australian Willow	2 (3 years 11-21)
Carob	1		

Analysis	Program Year	17	18	19	20	21	22	23	24
	Year	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**	**2041**
Removals (Existing Trees)	Carob Sequestration (kgCO2/tree/year)	69.436	69.436	69.436	69.436	69.436	69.436	69.436	69.436
	Ficus Sequestration (kgCO2/tree/year)	42.914	42.914	42.914	42.914	42.914	42.914	42.914	42.914
	Pine Sequestration (kgCO2/tree/year)	89.365	89.365	89.365	89.365	89.365	89.365	89.365	89.365
	3-Tree-Cluster Sequestration (kgCO2/3trees/year)	**201.715**	**201.715**	**201.715**	**201.715**	**201.715**	**201.715**	**201.715**	**201.715**
	Age	30	30	30	30	30	30	30	30
	Number/Type/Year	149	149	149	149	172	172	172	172
	Total Sequestration Lost (MTCO2e/year)	510.9	541.0	571.1	601.1	727.2	761.8	796.4	831.1
Replacements (New Trees)	Trumpet Sequestration (kgCO2/tree/year)	2.478	2.478	2.478	2.478	2.478	2.478	2.478	2.478
	Willow Sequestration (kgCO2/tree/year)	0.896	0.896	0.896	0.896	0.896	0.896	0.896	0.896
	New 2-Tree-Cluster Sequestration (kgCO2/2trees/year)	**3.373**	**3.373**	**3.373**	**3.373**	**3.373**	**3.373**	**3.373**	**3.373**
	Age	3	3	3	3	3	3	3	3
	Number/Type/Year	671	671	671	671	567	567	567	567
	Total Sequestration Added (MTCO2e/year)	2.263	2.263	2.263	2.263	1.913	1.913	1.913	1.913
Planted Trees Aging	Trumpet Sequestration (kgCO2/tree/year)	55.128	58.341	61.487	64.564	67.566	70.493	73.340	76.107
	Willow Sequestration (kgCO2/tree/year)	17.858	19.242	20.653	22.089	23.551	25.037	26.547	28.080
	2-Tree Sequestration (kgCO2/2trees/year)	72.986	77.583	82.140	86.653	91.118	95.530	99.888	104.187
	Age	19	20	21	22	23	24	25	26
	Number/Type/Year	671	671	671	671	671	567	567	567
	Total Sequestration Added for Planted Trees (MTCO2e/year)	48.974	52.058	55.116	58.144	61.140	54.166	56.636	59.074
	Total Sequestration for Program Trees (MTCO2e/year)	303.3	355.4	410.5	468.6	529.4	583.6	640.2	699.3
	Net Sequestration Change (Annual)	-207.7	-185.6	-160.6	-132.5	-197.8	-178.2	-156.2	-131.8

Street Tree Removal Carbon Sequestration Calculations

Data Request Info

Typical Trees Removed (per 650 feet)		Typical Trees Replaced (per 650 feet)	
Species	Number	Species	Number
Ficus Nitida	1	Pink Trumpet	2 (3 years 11-21)
Pine	1	Australian Willow	2 (3 years 11-21)
Carob	1		

Analysis	Program Year	25	26	27	28	29	30
	Year	**2042**	**2043**	**2044**	**2045**	**2045**	**2045**
Removals (Existing Trees)	Carob Sequestration (kgCO2/tree/year)	69.436	69.436	69.436	69.436	69.436	69.436
	Ficus Sequestration (kgCO2/tree/year)	42.914	42.914	42.914	42.914	42.914	42.914
	Pine Sequestration (kgCO2/tree/year)	89.365	89.365	89.365	89.365	89.365	89.365
	3-Tree-Cluster Sequestration (kgCO2/3trees/year)	**201.715**	**201.715**	**201.715**	**201.715**	**201.715**	**201.715**
	Age	30	30	30	30	30	30
	Number/Type/Year	172	198	198	198	198	198
	Total Sequestration Lost (MTCO2e/year)	865.7	1038.4	1078.4	1118.3	1158.2	1198.2
Replacements (New Trees)	Trumpet Sequestration (kgCO2/tree/year)	2.478	2.478	2.478	2.478	2.478	2.478
	Willow Sequestration (kgCO2/tree/year)	0.896	0.896	0.896	0.896	0.896	0.896
	New 2-Tree-Cluster Sequestration (kgCO2/2trees/year)	**3.373**	**3.373**	**3.373**	**3.373**	**3.373**	**3.373**
	Age	3	3	3	3	3	3
	Number/Type/Year	567	594	594	594	594	594
	Total Sequestration Added (MTCO2e/year)	1.913	2.004	2.004	2.004	2.004	2.004
Planted Trees Aging	Trumpet Sequestration (kgCO2/tree/year)	78.791	81.390	83.904	86.331	86.331	86.331
	Willow Sequestration (kgCO2/tree/year)	29.634	31.210	32.807	34.425	34.425	34.425
	2-Tree Sequestration (kgCO2/2trees/year)	108.425	112.601	116.711	120.755	120.755	120.755
	Age	27	28	29	30	31	32
	Number/Type/Year	567	567	594	594	594	594
	Total Sequestration Added for Planted Trees (MTCO2e/year)	61.477	63.845	69.327	71.729	71.729	71.729
	Total Sequestration for Program Trees (MTCO2e/year)	760.8	824.7	894.0	965.7	1037.5	1109.2
	Net Sequestration Change (Annual)	-104.9	-213.7	-184.4	-152.6	-120.8	-89.0

CTCC Tree Sequestration Data

Generic Name	CTCC Species	Age (Years)	Height (ft)	CO2 Sequestration (kg/tree/year)	Total CO2 Stored (kg/tree)	Above Ground Biomass (kg/tree)
Carob	Ceratonia siliqua	1	2.8	0.405	0.496	0.211
Carob	Ceratonia siliqua	2	2.8	0.405	0.901	0.211
Carob	Ceratonia siliqua	3	2.8	0.405	1.306	0.211
Carob	Ceratonia siliqua	4	2.8	0.405	1.710	0.211
Carob	Ceratonia siliqua	5	4.3	1.092	2.802	0.675
Carob	Ceratonia siliqua	6	5.8	2.186	4.989	1.605
Carob	Ceratonia siliqua	7	7.2	3.665	8.654	3.162
Carob	Ceratonia siliqua	8	8.5	5.483	14.136	5.493
Carob	Ceratonia siliqua	9	9.8	7.587	21.723	8.718
Carob	Ceratonia siliqua	10	11	9.928	31.652	12.938
Carob	Ceratonia siliqua	11	12.1	12.462	44.114	18.235
Carob	Ceratonia siliqua	12	13.1	15.151	59.265	24.675
Carob	Ceratonia siliqua	13	14.1	17.961	77.226	32.310
Carob	Ceratonia siliqua	14	15	20.866	98.092	41.180
Carob	Ceratonia siliqua	15	15.8	23.843	121.935	51.315
Carob	Ceratonia siliqua	16	16.6	26.873	148.808	62.738
Carob	Ceratonia siliqua	17	17.4	29.941	178.749	75.464
Carob	Ceratonia siliqua	18	18.1	33.033	211.782	89.506
Carob	Ceratonia siliqua	19	18.8	36.138	247.920	104.867
Carob	Ceratonia siliqua	20	19.4	39.248	287.167	121.550
Carob	Ceratonia siliqua	21	20.1	42.354	329.522	139.553
Carob	Ceratonia siliqua	22	20.7	45.452	374.974	158.873
Carob	Ceratonia siliqua	23	21.2	48.535	423.508	179.504
Carob	Ceratonia siliqua	24	21.8	51.599	475.108	201.437
Carob	Ceratonia siliqua	25	22.3	54.641	529.749	224.663
Carob	Ceratonia siliqua	26	22.8	57.658	587.407	249.172
Carob	Ceratonia siliqua	27	23.3	60.648	648.055	274.952
Carob	Ceratonia siliqua	28	23.8	63.609	711.664	301.990
Carob	Ceratonia siliqua	29	24.3	66.538	778.202	330.273
Carob	Ceratonia siliqua	30	24.7	69.436	847.639	359.788
Carob	Ceratonia siliqua	31	25.1	72.301	918.726	390.521
Carob	Ceratonia siliqua	32	25.5	75.133	993.858	422.457
Carob	Ceratonia siliqua	33	25.9	77.930	1071.788	455.583
Carob	Ceratonia siliqua	34	26.3	80.693	1152.481	489.883
Carob	Ceratonia siliqua	35	26.7	83.421	1235.903	525.343
Carob	Ceratonia siliqua	36	27.1	86.115	1322.018	561.948
Carob	Ceratonia siliqua	37	27.4	88.775	1410.793	599.683
Carob	Ceratonia siliqua	38	27.8	91.399	1502.192	638.534
Carob	Ceratonia siliqua	39	28.1	93.990	1596.182	678.486
Carob	Ceratonia siliqua	40	28.4	96.546	1692.728	719.525
Carob	Ceratonia siliqua	41	28.8	99.069	1791.797	761.636
Carob	Ceratonia siliqua	42	29.1	101.558	1893.354	804.805
Carob	Ceratonia siliqua	43	29.4	104.014	1997.368	849.018
Carob	Ceratonia siliqua	44	29.7	106.437	2103.806	894.261
Carob	Ceratonia siliqua	45	30	108.828	2212.634	940.520
Carob	Ceratonia siliqua	46	30.2	111.188	2323.822	987.783
Carob	Ceratonia siliqua	47	30.5	113.516	2437.337	1036.034

CTCC Tree Sequestration Data

Generic Name	CTCC Species	Age (Years)	Height (ft)	CO2 Sequestration (kg/tree/year)	Total CO2 Stored (kg/tree)	Above Ground Biomass (kg/tree)
Carrotwood	Cupaniopsis anacardioides	1	8.5	1.614	1.614	0.686
Carrotwood	Cupaniopsis anacardioides	2	12.8	7.310	8.924	3.793
Carrotwood	Cupaniopsis anacardioides	3	15.3	11.901	20.825	8.852
Carrotwood	Cupaniopsis anacardioides	4	17.1	14.838	35.664	15.159
Carrotwood	Cupaniopsis anacardioides	5	18.3	16.700	52.363	22.258
Carrotwood	Cupaniopsis anacardioides	6	19.3	17.889	70.252	29.862
Carrotwood	Cupaniopsis anacardioides	7	20.2	18.647	88.900	37.788
Carrotwood	Cupaniopsis anacardioides	8	20.8	19.122	108.022	45.917
Carrotwood	Cupaniopsis anacardioides	9	21.4	19.404	127.426	54.165
Carrotwood	Cupaniopsis anacardioides	10	21.9	19.553	146.978	62.476
Carrotwood	Cupaniopsis anacardioides	11	22.4	19.607	166.585	70.810
Carrotwood	Cupaniopsis anacardioides	12	22.8	19.594	186.179	79.139
Carrotwood	Cupaniopsis anacardioides	13	23.2	19.532	205.711	87.441
Carrotwood	Cupaniopsis anacardioides	14	23.5	19.435	225.147	95.703
Carrotwood	Cupaniopsis anacardioides	15	23.8	19.313	244.460	103.912
Carrotwood	Cupaniopsis anacardioides	16	24.1	19.172	263.632	112.062
Carrotwood	Cupaniopsis anacardioides	17	24.3	19.019	282.651	120.146
Carrotwood	Cupaniopsis anacardioides	18	24.6	18.855	301.506	128.161
Carrotwood	Cupaniopsis anacardioides	19	24.8	18.686	320.192	136.103
Carrotwood	Cupaniopsis anacardioides	20	25	18.513	338.705	143.973
Carrotwood	Cupaniopsis anacardioides	21	25.2	18.337	357.042	151.767
Carrotwood	Cupaniopsis anacardioides	22	25.4	18.160	375.202	159.486
Carrotwood	Cupaniopsis anacardioides	23	25.6	17.984	393.186	167.131
Carrotwood	Cupaniopsis anacardioides	24	25.7	17.808	410.994	174.701
Carrotwood	Cupaniopsis anacardioides	25	25.9	17.634	428.628	182.196
Carrotwood	Cupaniopsis anacardioides	26	26	17.462	446.090	189.619
Carrotwood	Cupaniopsis anacardioides	27	26.2	17.292	463.382	196.969
Carrotwood	Cupaniopsis anacardioides	28	26.3	17.124	480.505	204.248
Carrotwood	Cupaniopsis anacardioides	29	26.5	16.959	497.464	211.456
Carrotwood	Cupaniopsis anacardioides	30	26.6	16.797	514.261	218.596
Ficus (Indian Laurel Fig)	Ficus thonningii	1	1.8	0.338	0.338	0.144
Ficus (Indian Laurel Fig)	Ficus thonningii	2	5.1	3.706	4.044	1.719
Ficus (Indian Laurel Fig)	Ficus thonningii	3	7.9	9.230	13.274	5.642
Ficus (Indian Laurel Fig)	Ficus thonningii	4	10.1	14.628	27.901	11.860
Ficus (Indian Laurel Fig)	Ficus thonningii	5	12	19.287	47.188	20.058
Ficus (Indian Laurel Fig)	Ficus thonningii	6	13.7	23.175	70.363	29.909
Ficus (Indian Laurel Fig)	Ficus thonningii	7	15.1	26.394	96.757	41.128
Ficus (Indian Laurel Fig)	Ficus thonningii	8	16.3	29.063	125.820	53.482
Ficus (Indian Laurel Fig)	Ficus thonningii	9	17.4	31.285	157.105	66.780
Ficus (Indian Laurel Fig)	Ficus thonningii	10	18.4	33.143	190.248	80.868
Ficus (Indian Laurel Fig)	Ficus thonningii	11	19.4	34.704	224.952	95.620
Ficus (Indian Laurel Fig)	Ficus thonningii	12	20.2	36.022	260.974	110.932
Ficus (Indian Laurel Fig)	Ficus thonningii	13	21.0	37.138	298.112	126.718
Ficus (Indian Laurel Fig)	Ficus thonningii	14	21.7	38.086	336.198	142.907
Ficus (Indian Laurel Fig)	Ficus thonningii	15	22.4	38.893	375.091	159.439
Ficus (Indian Laurel Fig)	Ficus thonningii	16	23.0	39.581	414.673	176.264
Ficus (Indian Laurel Fig)	Ficus thonningii	17	23.6	40.168	454.841	193.338
Ficus (Indian Laurel Fig)	Ficus thonningii	18	24.2	40.668	495.509	210.625
Ficus (Indian Laurel Fig)	Ficus thonningii	19	24.7	41.094	536.602	228.092

CTCC Tree Sequestration Data

Generic Name	CTCC Species	Age (Years)	Height (ft)	CO2 Sequestration (kg/tree/year)	Total CO2 Stored (kg/tree)	Above Ground Biomass (kg/tree)
Ficus (Indian Laurel Fig)	Ficus thonningii	20	25.2	41.455	578.057	245.714
Ficus (Indian Laurel Fig)	Ficus thonningii	21	25.7	41.761	619.818	263.465
Ficus (Indian Laurel Fig)	Ficus thonningii	22	26.1	42.018	661.836	281.326
Ficus (Indian Laurel Fig)	Ficus thonningii	23	26.6	42.233	704.070	299.278
Ficus (Indian Laurel Fig)	Ficus thonningii	24	27.0	42.411	746.481	317.305
Ficus (Indian Laurel Fig)	Ficus thonningii	25	27.4	42.557	789.038	335.395
Ficus (Indian Laurel Fig)	Ficus thonningii	26	27.8	42.674	831.712	353.534
Ficus (Indian Laurel Fig)	Ficus thonningii	27	28.1	42.765	874.477	371.712
Ficus (Indian Laurel Fig)	Ficus thonningii	28	28.5	42.834	917.310	389.919
Ficus (Indian Laurel Fig)	Ficus thonningii	29	28.8	42.883	960.193	408.147
Ficus (Indian Laurel Fig)	Ficus thonningii	30	29.1	42.914	1003.107	426.389
Ficus (Indian Laurel Fig)	Ficus thonningii	31	29.5	42.929	1046.036	444.636
Ficus (Indian Laurel Fig)	Ficus thonningii	32	29.8	42.930	1088.966	462.885
Ficus (Indian Laurel Fig)	Ficus thonningii	33	30.1	42.919	1131.885	481.128
Ficus (Indian Laurel Fig)	Ficus thonningii	34	30.4	42.896	1174.782	499.362
Ficus (Indian Laurel Fig)	Ficus thonningii	35	30.6	42.864	1217.646	517.582
Ficus (Indian Laurel Fig)	Ficus thonningii	36	30.9	42.822	1260.468	535.785
Ficus (Indian Laurel Fig)	Ficus thonningii	37	31.2	42.772	1303.240	553.966
Ficus (Indian Laurel Fig)	Ficus thonningii	38	31.4	42.715	1345.955	572.123
Ficus (Indian Laurel Fig)	Ficus thonningii	39	31.7	42.652	1388.607	590.252
Ficus (Indian Laurel Fig)	Ficus thonningii	40	31.9	42.582	1431.189	608.353
Ficus (Indian Laurel Fig)	Ficus thonningii	41	32.2	42.508	1473.697	626.421
Ficus (Indian Laurel Fig)	Ficus thonningii	42	32.4	42.428	1516.125	644.456
Ficus (Indian Laurel Fig)	Ficus thonningii	43	32.6	42.345	1558.470	662.456
Ficus (Indian Laurel Fig)	Ficus thonningii	44	32.8	42.257	1600.727	680.418
Ficus (Indian Laurel Fig)	Ficus thonningii	45	33.1	42.167	1642.894	698.342
Ficus (Indian Laurel Fig)	Ficus thonningii	46	33.3	42.073	1684.967	716.226
Ficus (Indian Laurel Fig)	Ficus thonningii	47	33.5	41.977	1726.944	734.069
Pine	Pinus canariensis	1	10.5	1.156	1.156	0.491
Pine	Pinus canariensis	2	20.3	9.683	10.839	4.607
Pine	Pinus canariensis	3	26.8	21.843	32.682	13.892
Pine	Pinus canariensis	4	31.6	33.113	65.795	27.967
Pine	Pinus canariensis	5	35.3	42.612	108.407	46.080
Pine	Pinus canariensis	6	38.3	50.435	158.842	67.519
Pine	Pinus canariensis	7	40.8	56.863	215.705	91.689
Pine	Pinus canariensis	8	42.9	62.164	277.870	118.114
Pine	Pinus canariensis	9	44.7	66.561	344.431	146.407
Pine	Pinus canariensis	10	46.4	70.229	414.660	176.259
Pine	Pinus canariensis	11	47.9	73.305	487.965	207.418
Pine	Pinus canariensis	12	49.2	75.898	563.863	239.680
Pine	Pinus canariensis	13	50.4	78.091	641.954	272.874
Pine	Pinus canariensis	14	51.5	79.952	721.907	306.859
Pine	Pinus canariensis	15	52.5	81.535	803.441	341.517
Pine	Pinus canariensis	16	53.5	82.883	886.324	376.748
Pine	Pinus canariensis	17	54.3	84.031	970.355	412.467
Pine	Pinus canariensis	18	55.2	85.009	1055.364	448.602
Pine	Pinus canariensis	19	55.9	85.841	1141.205	485.090
Pine	Pinus canariensis	20	56.6	86.546	1227.751	521.878
Pine	Pinus canariensis	21	57.3	87.143	1314.894	558.919

CTCC Tree Sequestration Data

Generic Name	CTCC Species	Age (Years)	Height (ft)	CO2 Sequestration (kg/tree/year)	Total CO2 Stored (kg/tree)	Above Ground Biomass (kg/tree)
Pine	Pinus canariensis	22	58	87.644	1402.537	596.174
Pine	Pinus canariensis	23	58.6	88.061	1490.599	633.606
Pine	Pinus canariensis	24	59.2	88.407	1579.005	671.185
Pine	Pinus canariensis	25	59.7	88.688	1667.693	708.883
Pine	Pinus canariensis	26	60.3	88.912	1756.605	746.677
Pine	Pinus canariensis	27	60.8	89.087	1845.692	784.545
Pine	Pinus canariensis	28	61.3	89.217	1934.909	822.468
Pine	Pinus canariensis	29	61.7	89.309	2024.218	860.431
Pine	Pinus canariensis	30	62.2	89.365	2113.583	898.417
Pine	Pinus canariensis	31	62.6	89.390	2202.974	936.414
Pine	Pinus canariensis	32	63	89.388	2292.362	974.410
Pine	Pinus canariensis	33	63.5	89.361	2381.722	1012.394
Pine	Pinus canariensis	34	63.8	89.312	2471.034	1050.358
Pine	Pinus canariensis	35	64.2	89.242	2560.276	1088.292
Pine	Pinus canariensis	36	64.6	89.155	2649.432	1126.189
Pine	Pinus canariensis	37	64.9	89.053	2738.484	1164.042
Pine	Pinus canariensis	38	65.3	88.935	2827.419	1201.846
Pine	Pinus canariensis	39	65.6	88.805	2916.225	1239.594
Pine	Pinus canariensis	40	65.9	88.664	3004.888	1277.282
Pine	Pinus canariensis	41	66.2	88.512	3093.400	1314.906
Pine	Pinus canariensis	42	66.6	88.351	3181.751	1352.461
Pine	Pinus canariensis	43	66.8	88.181	3269.932	1389.944
Pine	Pinus canariensis	44	67.1	88.004	3357.937	1427.352
Pine	Pinus canariensis	45	67.4	87.821	3445.758	1464.682
Pine	Pinus canariensis	46	67.7	87.631	3533.389	1501.931
Pine	Pinus canariensis	47	68	87.437	3620.826	1539.098
Trumpet	Golden Trumpet	1	3.6	0.022	0.022	0.000
Trumpet	Golden Trumpet	2	3.6	0.714	0.737	0.313
Trumpet	Golden Trumpet	3	6.5	2.478	3.214	1.366
Trumpet	Golden Trumpet	4	9.1	4.875	8.089	3.438
Trumpet	Golden Trumpet	5	11.4	7.662	15.751	6.695
Trumpet	Golden Trumpet	6	13.6	10.710	26.461	11.248
Trumpet	Golden Trumpet	7	15.6	13.935	40.396	17.171
Trumpet	Golden Trumpet	8	17.4	17.283	57.679	24.517
Trumpet	Golden Trumpet	9	19.1	20.713	78.391	33.322
Trumpet	Golden Trumpet	10	20.7	24.195	102.586	43.606
Trumpet	Golden Trumpet	11	22.2	27.705	130.291	55.383
Trumpet	Golden Trumpet	12	23.5	31.225	161.516	68.655
Trumpet	Golden Trumpet	13	24.9	34.740	196.256	83.422
Trumpet	Golden Trumpet	14	26.1	38.237	234.493	99.676
Trumpet	Golden Trumpet	15	27.3	41.704	276.198	117.403
Trumpet	Golden Trumpet	16	28.4	45.135	321.332	136.588
Trumpet	Golden Trumpet	17	29.5	48.519	369.852	157.212
Trumpet	Golden Trumpet	18	30.5	51.852	421.704	179.253
Trumpet	Golden Trumpet	19	31.5	55.128	476.832	202.686
Trumpet	Golden Trumpet	20	32.5	58.341	535.173	227.485
Trumpet	Golden Trumpet	21	33.4	61.487	596.660	253.621
Trumpet	Golden Trumpet	22	34.3	64.564	661.224	281.065
Trumpet	Golden Trumpet	23	35.1	67.566	728.790	309.785

CTCC Tree Sequestration Data

Generic Name	CTCC Species	Age (Years)	Height (ft)	CO2 Sequestration (kg/tree/year)	Total CO2 Stored (kg/tree)	Above Ground Biomass (kg/tree)
Trumpet	Golden Trumpet	24	35.9	70.493	799.283	339.750
Trumpet	Golden Trumpet	25	36.7	73.340	872.624	370.924
Trumpet	Golden Trumpet	26	37.5	76.107	948.731	403.275
Trumpet	Golden Trumpet	27	38.2	78.791	1027.522	436.767
Trumpet	Golden Trumpet	28	38.9	81.390	1108.912	471.363
Trumpet	Golden Trumpet	29	39.6	83.904	1192.816	507.028
Trumpet	Golden Trumpet	30	40.3	86.331	1279.147	543.725
Willow	Chilopsis linearis	1	2.3	0.070	0.070	0.030
Willow	Chilopsis linearis	2	4.5	0.394	0.464	0.197
Willow	Chilopsis linearis	3	6.3	0.896	1.360	0.578
Willow	Chilopsis linearis	4	7.8	1.519	2.879	1.224
Willow	Chilopsis linearis	5	9.2	2.238	5.117	2.175
Willow	Chilopsis linearis	6	10.4	3.035	8.152	3.465
Willow	Chilopsis linearis	7	11.5	3.901	12.054	5.124
Willow	Chilopsis linearis	8	12.5	4.827	16.881	7.175
Willow	Chilopsis linearis	9	13.4	5.807	22.688	9.644
Willow	Chilopsis linearis	10	14.2	6.837	29.526	12.550
Willow	Chilopsis linearis	11	15	7.913	37.439	15.914
Willow	Chilopsis linearis	12	15.7	9.031	46.470	19.753
Willow	Chilopsis linearis	13	16.4	10.189	56.660	24.084
Willow	Chilopsis linearis	14	17	11.385	68.044	28.923
Willow	Chilopsis linearis	15	17.6	12.615	80.660	34.286
Willow	Chilopsis linearis	16	18.2	13.880	94.539	40.186
Willow	Chilopsis linearis	17	18.8	15.176	109.715	46.636
Willow	Chilopsis linearis	18	19.3	16.502	126.217	53.651
Willow	Chilopsis linearis	19	19.8	17.858	144.075	61.242
Willow	Chilopsis linearis	20	20.3	19.242	163.317	69.421
Willow	Chilopsis linearis	21	20.7	20.653	183.970	78.200
Willow	Chilopsis linearis	22	21.2	22.089	206.059	87.589
Willow	Chilopsis linearis	23	21.6	23.551	229.611	97.600
Willow	Chilopsis linearis	24	22	25.037	254.648	108.243
Willow	Chilopsis linearis	25	22.4	26.547	281.195	119.527
Willow	Chilopsis linearis	26	22.8	28.080	309.275	131.463
Willow	Chilopsis linearis	27	23.2	29.634	338.909	144.059
Willow	Chilopsis linearis	28	23.6	31.210	370.119	157.326
Willow	Chilopsis linearis	29	23.9	32.807	402.926	171.271
Willow	Chilopsis linearis	30	24.3	34.425	437.351	185.904

CalEEMod Appendix D Default Data - Off-Road Equipment Emission Factors

Year	EquipmentType	Low Hp	High Hp	ROGg/bhp-hr	CO,g/bhp-hr	NOX,g/bhp-hr	SO2,g/bhp-hr	PM10,g/bhp-hr	PM2_5,g/bhp-hr	CO2,g/bhp-hr	CH4,g/bhp-hr
2017	AerialLifts	6	15	0.209	3.16913	3.46956	0.005	0.079	0.073	554.2451	0.17
2017	AerialLifts	16	25	0.209	3.16913	3.46956	0.005	0.079	0.073	554.2451	0.17
2017	AerialLifts	26	50	0.209	3.16913	3.46956	0.005	0.079	0.073	554.2451	0.17
2017	AerialLifts	51	120	0.143	3.18429	2.36368	0.005	0.083	0.077	498.3428	0.153
2017	AerialLifts	251	500	0.246	0.99722	4.6577	0.005	0.105	0.096	498.2798	0.153
2017	AerialLifts	501	750	0.239	1.059	2.68	0.005	0.079	0.079	568.299	0.021
2018	AerialLifts	6	15	0.182	3.11639	3.2101	0.005	0.054	0.05	545.4939	0.17
2018	AerialLifts	16	25	0.182	3.11639	3.2101	0.005	0.054	0.05	545.4939	0.17
2018	AerialLifts	26	50	0.182	3.11639	3.2101	0.005	0.054	0.05	545.4939	0.17
2018	AerialLifts	51	120	0.122	3.16685	2.0636	0.005	0.057	0.052	490.4742	0.153
2018	AerialLifts	251	500	0.062	0.93655	0.63368	0.005	0.009	0.008	490.4122	0.153
2018	AerialLifts	501	750	0.225	1.037	2.385	0.005	0.071	0.071	568.299	0.02
2019	AerialLifts	6	15	0.172	3.11451	3.07945	0.005	0.042	0.038	536.7427	0.17
2019	AerialLifts	16	25	0.172	3.11451	3.07945	0.005	0.042	0.038	536.7427	0.17
2019	AerialLifts	26	50	0.172	3.11451	3.07945	0.005	0.042	0.038	536.7427	0.17
2019	AerialLifts	51	120	0.118	3.17254	1.97658	0.005	0.049	0.045	482.6056	0.153
2019	AerialLifts	251	500	0.066	0.94139	0.63586	0.005	0.009	0.008	482.5446	0.153
2019	AerialLifts	501	750	0.212	1.023	2.117	0.005	0.064	0.064	568.299	0.019
2020	AerialLifts	6	15	0.168	3.09942	2.95486	0.005	0.031	0.028	525.0743	0.17
2020	AerialLifts	16	25	0.168	3.09942	2.95486	0.005	0.031	0.028	525.0743	0.17
2020	AerialLifts	26	50	0.168	3.09942	2.95486	0.005	0.031	0.028	525.0743	0.17
2020	AerialLifts	51	120	0.115	3.1768	1.86859	0.005	0.042	0.038	472.1142	0.153
2020	AerialLifts	251	500	0.069	0.94623	0.63803	0.005	0.009	0.008	472.0545	0.153
2020	AerialLifts	501	750	0.2	1.013	1.868	0.005	0.057	0.057	568.299	0.018
2021	AerialLifts	6	15	0.165	3.11369	2.92238	0.005	0.027	0.024	525.0743	0.17
2021	AerialLifts	16	25	0.165	3.11369	2.92238	0.005	0.027	0.024	525.0743	0.17
2021	AerialLifts	26	50	0.165	3.11369	2.92238	0.005	0.027	0.024	525.0743	0.17
2021	AerialLifts	51	120	0.109	3.17624	1.74368	0.005	0.033	0.031	472.1142	0.153
2021	AerialLifts	251	500	0.072	0.95107	0.64021	0.005	0.009	0.008	472.0545	0.153
2021	AerialLifts	501	750	0.187	1.004	1.61	0.005	0.05	0.05	568.299	0.016
2022	AerialLifts	6	15	0.162	3.11231	2.90676	0.005	0.024	0.022	525.0743	0.17
2022	AerialLifts	16	25	0.162	3.11231	2.90676	0.005	0.024	0.022	525.0743	0.17
2022	AerialLifts	26	50	0.162	3.11231	2.90676	0.005	0.024	0.022	525.0743	0.17
2022	AerialLifts	51	120	0.105	3.17602	1.62659	0.005	0.03	0.028	472.1142	0.153
2022	AerialLifts	251	500	0.075	0.95591	0.64238	0.005	0.009	0.008	472.0545	0.153
2022	AerialLifts	501	750	0.177	0.998	1.424	0.005	0.044	0.044	568.299	0.016
2023	AerialLifts	6	15	0.163	3.12196	2.89722	0.005	0.023	0.021	525.0743	0.17
2023	AerialLifts	16	25	0.163	3.12196	2.89722	0.005	0.023	0.021	525.0743	0.17
2023	AerialLifts	26	50	0.163	3.12196	2.89722	0.005	0.023	0.021	525.0743	0.17
2023	AerialLifts	51	120	0.1	3.17029	1.5481	0.005	0.027	0.025	472.1142	0.153
2023	AerialLifts	251	500	0.079	0.96074	0.64456	0.005	0.009	0.008	472.0545	0.153
2023	AerialLifts	501	750	0.169	0.995	1.265	0.005	0.038	0.038	568.299	0.015
2024	AerialLifts	6	15	0.159	3.11285	2.88821	0.005	0.022	0.02	525.0743	0.17
2024	AerialLifts	16	25	0.159	3.11285	2.88821	0.005	0.022	0.02	525.0743	0.17
2024	AerialLifts	26	50	0.159	3.11285	2.88821	0.005	0.022	0.02	525.0743	0.17
2024	AerialLifts	51	120	0.1	3.17255	1.52789	0.005	0.026	0.024	472.1142	0.153
2024	AerialLifts	251	500	0.082	0.96558	0.64674	0.005	0.009	0.009	472.0545	0.153
2024	AerialLifts	501	750	0.161	0.991	1.115	0.005	0.033	0.033	568.299	0.014
2025	AerialLifts	6	15	0.154	3.08837	2.87882	0.005	0.021	0.019	525.0743	0.17
2025	AerialLifts	16	25	0.154	3.08837	2.87882	0.005	0.021	0.019	525.0743	0.17

CalEEMod Appendix D Default Data - Off-Road Equipment Emission Factors

Year	EquipmentType	Low Hp	High Hp	ROGg/bhp-hr	CO,g/bhp-hr	NOX,g/bhp-hr	SO2,g/bhp-hr	PM10,g/bhp-hr	PM2_5,g/bhp-hr	CO2,g/bhp-hr	CH4,g/bhp-hr
2025	AerialLifts	26	50	0.154	3.08837	2.87882	0.005	0.021	0.019	525.0743	0.17
2025	AerialLifts	51	120	0.099	3.16742	1.51077	0.005	0.026	0.024	472.1142	0.153
2025	AerialLifts	251	500	0.085	0.97042	0.64891	0.005	0.009	0.009	472.0545	0.153
2025	AerialLifts	501	750	0.153	0.989	0.974	0.005	0.028	0.028	568.299	0.013
2030	AerialLifts	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2030	AerialLifts	16	25	0.685	2.339	4.332	0.007	0.162	0.162	568.299	0.061
2030	AerialLifts	26	50	0.339	3.764	3.135	0.007	0.04	0.04	568.3	0.03
2030	AerialLifts	51	120	0.188	3.352	1.657	0.006	0.036	0.036	568.299	0.017
2030	AerialLifts	251	500	0.126	0.986	0.479	0.005	0.016	0.016	568.299	0.011
2030	AerialLifts	501	750	0.126	0.986	0.485	0.005	0.016	0.016	568.299	0.011
2035	AerialLifts	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2035	AerialLifts	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2035	AerialLifts	26	50	0.297	3.726	3.017	0.007	0.019	0.019	568.299	0.026
2035	AerialLifts	51	120	0.166	3.345	1.466	0.006	0.017	0.017	568.299	0.014
2035	AerialLifts	251	500	0.116	0.986	0.33	0.005	0.011	0.011	568.299	0.01
2035	AerialLifts	501	750	0.116	0.986	0.33	0.005	0.011	0.011	568.299	0.01
2040	AerialLifts	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2040	AerialLifts	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2040	AerialLifts	26	50	0.295	3.723	2.966	0.007	0.013	0.013	568.299	0.026
2040	AerialLifts	51	120	0.161	3.344	1.407	0.006	0.012	0.012	568.299	0.014
2040	AerialLifts	251	500	0.112	0.986	0.279	0.005	0.009	0.009	568.299	0.01
2040	AerialLifts	501	750	0.112	0.986	0.279	0.005	0.009	0.009	568.299	0.01
2017	AirCompressors	6	15	0.786	3.599	4.887	0.008	0.272	0.272	568.299	0.07
2017	AirCompressors	16	25	0.83	2.564	4.729	0.007	0.243	0.243	568.299	0.074
2017	AirCompressors	26	50	1.481	5.604	4.871	0.007	0.371	0.371	568.299	0.133
2017	AirCompressors	51	120	0.671	3.772	4.412	0.006	0.35	0.35	568.299	0.06
2017	AirCompressors	121	175	0.477	3.207	3.627	0.006	0.194	0.194	568.299	0.043
2017	AirCompressors	176	250	0.339	1.162	3.163	0.006	0.098	0.098	568.299	0.03
2017	AirCompressors	251	500	0.321	1.123	2.755	0.005	0.092	0.092	568.299	0.029
2017	AirCompressors	501	750	0.323	1.123	2.845	0.005	0.094	0.094	568.299	0.029
2017	AirCompressors	751	1000	0.362	1.246	4.583	0.005	0.121	0.121	568.299	0.032
2018	AirCompressors	6	15	0.766	3.58	4.762	0.008	0.256	0.256	568.299	0.069
2018	AirCompressors	16	25	0.807	2.531	4.661	0.007	0.232	0.232	568.3	0.072
2018	AirCompressors	26	50	1.3	5.439	4.707	0.007	0.329	0.329	568.299	0.117
2018	AirCompressors	51	120	0.603	3.744	4.05	0.006	0.304	0.304	568.3	0.054
2018	AirCompressors	121	175	0.435	3.205	3.228	0.006	0.17	0.17	568.299	0.039
2018	AirCompressors	176	250	0.321	1.146	2.797	0.006	0.087	0.087	568.3	0.029
2018	AirCompressors	251	500	0.307	1.101	2.465	0.005	0.083	0.083	568.299	0.027
2018	AirCompressors	501	750	0.309	1.101	2.533	0.005	0.084	0.084	568.299	0.027
2018	AirCompressors	751	1000	0.343	1.21	4.325	0.005	0.111	0.111	568.299	0.03
2019	AirCompressors	6	15	0.748	3.562	4.647	0.008	0.241	0.241	568.299	0.067
2019	AirCompressors	16	25	0.787	2.501	4.596	0.007	0.222	0.222	568.299	0.071
2019	AirCompressors	26	50	1.129	5.283	4.546	0.007	0.287	0.287	568.299	0.101
2019	AirCompressors	51	120	0.538	3.718	3.706	0.006	0.26	0.26	568.299	0.048
2019	AirCompressors	121	175	0.401	3.204	2.874	0.006	0.15	0.15	568.299	0.036
2019	AirCompressors	176	250	0.304	1.132	2.469	0.006	0.078	0.078	568.299	0.027
2019	AirCompressors	251	500	0.293	1.086	2.193	0.005	0.075	0.075	568.299	0.026
2019	AirCompressors	501	750	0.294	1.086	2.247	0.005	0.076	0.076	568.299	0.026
2019	AirCompressors	751	1000	0.324	1.182	4.073	0.005	0.102	0.102	568.299	0.029
2020	AirCompressors	6	15	0.731	3.546	4.542	0.008	0.227	0.227	568.299	0.066

CalEEMod Appendix D Default Data - Off-Road Equipment Emission Factors

Year	EquipmentType	Low Hp	High Hp	ROGg/bhp-hr	CO,g/bhp-hr	NOX,g/bhp-hr	SO2,g/bhp-hr	PM10,g/bhp-hr	PM2_5,g/bhp-hr	CO2,g/bhp-hr	CH4,g/bhp-hr
2020	AirCompressors	16	25	0.769	2.473	4.538	0.007	0.212	0.212	568.3	0.069
2020	AirCompressors	26	50	1.001	5.164	4.397	0.007	0.25	0.25	568.299	0.09
2020	AirCompressors	51	120	0.489	3.698	3.4	0.006	0.224	0.224	568.299	0.044
2020	AirCompressors	121	175	0.374	3.203	2.558	0.006	0.133	0.133	568.299	0.033
2020	AirCompressors	176	250	0.288	1.121	2.172	0.006	0.069	0.069	568.299	0.026
2020	AirCompressors	251	500	0.279	1.076	1.935	0.005	0.067	0.067	568.299	0.025
2020	AirCompressors	501	750	0.28	1.076	1.982	0.005	0.067	0.067	568.299	0.025
2020	AirCompressors	751	1000	0.306	1.158	3.828	0.005	0.093	0.093	568.3	0.027
2021	AirCompressors	6	15	0.717	3.531	4.462	0.008	0.214	0.214	568.299	0.064
2021	AirCompressors	16	25	0.752	2.446	4.497	0.007	0.201	0.201	568.299	0.067
2021	AirCompressors	26	50	0.887	5.021	4.221	0.007	0.212	0.212	568.299	0.08
2021	AirCompressors	51	120	0.442	3.67	3.083	0.006	0.19	0.19	568.299	0.039
2021	AirCompressors	121	175	0.343	3.192	2.218	0.006	0.115	0.115	568.299	0.03
2021	AirCompressors	176	250	0.268	1.108	1.859	0.006	0.06	0.06	568.299	0.024
2021	AirCompressors	251	500	0.261	1.064	1.663	0.005	0.058	0.058	568.299	0.023
2021	AirCompressors	501	750	0.262	1.064	1.699	0.005	0.058	0.058	568.299	0.023
2021	AirCompressors	751	1000	0.284	1.134	3.565	0.005	0.082	0.082	568.3	0.025
2022	AirCompressors	6	15	0.707	3.519	4.408	0.008	0.203	0.203	568.299	0.063
2022	AirCompressors	16	25	0.739	2.426	4.47	0.007	0.193	0.193	568.299	0.066
2022	AirCompressors	26	50	0.814	4.959	4.093	0.007	0.183	0.183	568.299	0.073
2022	AirCompressors	51	120	0.413	3.662	2.844	0.006	0.165	0.165	568.299	0.037
2022	AirCompressors	121	175	0.322	3.194	1.959	0.006	0.101	0.101	568.299	0.029
2022	AirCompressors	176	250	0.255	1.102	1.617	0.006	0.052	0.052	568.3	0.023
2022	AirCompressors	251	500	0.249	1.059	1.472	0.005	0.051	0.051	568.299	0.022
2022	AirCompressors	501	750	0.25	1.059	1.502	0.005	0.051	0.051	568.299	0.022
2022	AirCompressors	751	1000	0.269	1.117	3.378	0.005	0.075	0.075	568.3	0.024
2023	AirCompressors	6	15	0.698	3.508	4.359	0.008	0.194	0.194	568.299	0.063
2023	AirCompressors	16	25	0.728	2.407	4.447	0.007	0.186	0.186	568.299	0.065
2023	AirCompressors	26	50	0.753	4.913	3.975	0.007	0.156	0.156	568.299	0.067
2023	AirCompressors	51	120	0.387	3.657	2.631	0.006	0.143	0.143	568.299	0.034
2023	AirCompressors	121	175	0.303	3.197	1.748	0.006	0.089	0.089	568.299	0.027
2023	AirCompressors	176	250	0.243	1.099	1.42	0.006	0.045	0.045	568.299	0.021
2023	AirCompressors	251	500	0.238	1.055	1.305	0.005	0.044	0.044	568.299	0.021
2023	AirCompressors	501	750	0.239	1.055	1.331	0.005	0.044	0.044	568.299	0.021
2023	AirCompressors	751	1000	0.256	1.102	3.221	0.005	0.068	0.068	568.299	0.023
2024	AirCompressors	6	15	0.69	3.499	4.316	0.008	0.188	0.188	568.3	0.062
2024	AirCompressors	16	25	0.718	2.39	4.426	0.007	0.181	0.181	568.3	0.064
2024	AirCompressors	26	50	0.702	4.88	3.864	0.007	0.135	0.135	568.299	0.063
2024	AirCompressors	51	120	0.365	3.655	2.461	0.006	0.123	0.123	568.299	0.032
2024	AirCompressors	121	175	0.286	3.202	1.561	0.006	0.077	0.077	568.299	0.025
2024	AirCompressors	176	250	0.232	1.096	1.247	0.006	0.039	0.039	568.299	0.02
2024	AirCompressors	251	500	0.228	1.053	1.148	0.005	0.038	0.038	568.299	0.02
2024	AirCompressors	501	750	0.228	1.053	1.171	0.005	0.038	0.038	568.299	0.02
2024	AirCompressors	751	1000	0.243	1.09	3.082	0.005	0.061	0.061	568.299	0.021
2025	AirCompressors	6	15	0.683	3.491	4.278	0.008	0.183	0.183	568.3	0.061
2025	AirCompressors	16	25	0.709	2.376	4.407	0.007	0.177	0.177	568.299	0.064
2025	AirCompressors	26	50	0.659	4.851	3.755	0.007	0.116	0.116	568.299	0.059
2025	AirCompressors	51	120	0.345	3.653	2.313	0.006	0.104	0.104	568.299	0.031
2025	AirCompressors	121	175	0.269	3.205	1.383	0.006	0.065	0.065	568.299	0.024
2025	AirCompressors	176	250	0.22	1.094	1.086	0.006	0.033	0.033	568.299	0.019

CalEEMod Appendix D Default Data - Off-Road Equipment Emission Factors

Year	EquipmentType	Low Hp	High Hp	ROGg/bhp-hr	CO,g/bhp-hr	NOX,g/bhp-hr	SO2,g/bhp-hr	PM10,g/bhp-hr	PM2_5,g/bhp-hr	CO2,g/bhp-hr	CH4,g/bhp-hr
2025	AirCompressors	251	500	0.217	1.051	1.001	0.005	0.032	0.032	568.299	0.019
2025	AirCompressors	501	750	0.217	1.051	1.021	0.005	0.032	0.032	568.299	0.019
2025	AirCompressors	751	1000	0.231	1.079	2.954	0.005	0.055	0.055	568.299	0.02
2030	AirCompressors	6	15	0.663	3.47	4.164	0.008	0.166	0.166	568.299	0.059
2030	AirCompressors	16	25	0.687	2.34	4.347	0.007	0.165	0.165	568.299	0.061
2030	AirCompressors	26	50	0.506	4.712	3.34	0.007	0.046	0.046	568.299	0.045
2030	AirCompressors	51	120	0.264	3.63	1.729	0.006	0.041	0.041	568.299	0.023
2030	AirCompressors	121	175	0.193	3.205	0.633	0.006	0.027	0.027	568.299	0.017
2030	AirCompressors	176	250	0.179	1.092	0.529	0.006	0.018	0.018	568.299	0.016
2030	AirCompressors	251	500	0.178	1.048	0.499	0.005	0.017	0.017	568.299	0.016
2030	AirCompressors	501	750	0.178	1.048	0.505	0.005	0.017	0.017	568.3	0.016
2030	AirCompressors	751	1000	0.182	1.049	2.6	0.005	0.033	0.033	568.299	0.016
2035	AirCompressors	6	15	0.661	3.469	4.143	0.008	0.162	0.162	568.3	0.059
2035	AirCompressors	16	25	0.685	2.339	4.332	0.007	0.162	0.162	568.299	0.061
2035	AirCompressors	26	50	0.463	4.674	3.215	0.007	0.023	0.023	568.299	0.041
2035	AirCompressors	51	120	0.238	3.623	1.53	0.006	0.02	0.02	568.299	0.021
2035	AirCompressors	121	175	0.17	3.205	0.391	0.006	0.015	0.015	568.3	0.015
2035	AirCompressors	176	250	0.166	1.091	0.347	0.006	0.012	0.012	568.299	0.014
2035	AirCompressors	251	500	0.166	1.048	0.343	0.005	0.012	0.012	568.299	0.014
2035	AirCompressors	501	750	0.166	1.048	0.344	0.005	0.012	0.012	568.299	0.014
2035	AirCompressors	751	1000	0.167	1.048	2.473	0.005	0.026	0.026	568.299	0.015
2040	AirCompressors	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2040	AirCompressors	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.3	0.061
2040	AirCompressors	26	50	0.458	4.659	3.159	0.007	0.016	0.016	568.3	0.041
2040	AirCompressors	51	120	0.232	3.619	1.468	0.006	0.015	0.015	568.299	0.02
2040	AirCompressors	121	175	0.161	3.201	0.307	0.006	0.012	0.012	568.299	0.014
2040	AirCompressors	176	250	0.16	1.09	0.291	0.006	0.01	0.01	568.299	0.014
2040	AirCompressors	251	500	0.16	1.047	0.291	0.005	0.01	0.01	568.3	0.014
2040	AirCompressors	501	750	0.16	1.047	0.291	0.005	0.01	0.01	568.299	0.014
2040	AirCompressors	751	1000	0.16	1.047	2.439	0.005	0.023	0.023	568.299	0.014
2017	CementandMortarMixers	6	15	0.661	3.469	4.145	0.008	0.165	0.165	568.299	0.059
2017	CementandMortarMixers	16	25	0.767	2.466	4.567	0.007	0.216	0.216	568.299	0.069
2018	CementandMortarMixers	6	15	0.661	3.469	4.142	0.008	0.163	0.163	568.299	0.059
2018	CementandMortarMixers	16	25	0.749	2.44	4.504	0.007	0.205	0.205	568.299	0.067
2019	CementandMortarMixers	6	15	0.661	3.469	4.142	0.008	0.162	0.162	568.299	0.059
2019	CementandMortarMixers	16	25	0.735	2.417	4.469	0.007	0.196	0.196	568.299	0.066
2020	CementandMortarMixers	6	15	0.661	3.47	4.142	0.008	0.161	0.161	568.299	0.059
2020	CementandMortarMixers	16	25	0.723	2.397	4.442	0.007	0.187	0.187	568.299	0.065
2021	CementandMortarMixers	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2021	CementandMortarMixers	16	25	0.712	2.381	4.419	0.007	0.18	0.18	568.299	0.064
2022	CementandMortarMixers	6	15	0.661	3.47	4.142	0.008	0.161	0.161	568.299	0.059
2022	CementandMortarMixers	16	25	0.704	2.367	4.399	0.007	0.175	0.175	568.299	0.063
2023	CementandMortarMixers	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2023	CementandMortarMixers	16	25	0.697	2.356	4.382	0.007	0.172	0.172	568.299	0.062
2024	CementandMortarMixers	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2024	CementandMortarMixers	16	25	0.693	2.349	4.369	0.007	0.17	0.17	568.299	0.062
2025	CementandMortarMixers	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2025	CementandMortarMixers	16	25	0.689	2.344	4.357	0.007	0.168	0.168	568.299	0.062
2030	CementandMortarMixers	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2030	CementandMortarMixers	16	25	0.685	2.339	4.333	0.007	0.162	0.162	568.299	0.061

CalEEMod Appendix D Default Data - Off-Road Equipment Emission Factors

Year	EquipmentType	Low Hp	High Hp	ROGg/bhp-hr	CO,g/bhp-hr	NOX,g/bhp-hr	SO2,g/bhp-hr	PM10,g/bhp-hr	PM2_5,g/bhp-hr	CO2,g/bhp-hr	CH4,g/bhp-hr
2035	CementandMortarMixers	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2035	CementandMortarMixers	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2040	CementandMortarMixers	6	15	0.661	3.47	4.142	0.008	0.161	0.161	568.299	0.059
2040	CementandMortarMixers	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2017	Chainsaws	0	2	127.281	346.187	2.909	0.036	0.785	0.785	884.646	7.911
2017	Chainsaws	6	15	731.828	1580.963	13.963	0.174	2.834	2.834	4229.982	45.486
2018	Chainsaws	0	2	125.383	342.558	2.894	0.036	0.741	0.741	884.646	7.793
2018	Chainsaws	6	15	730.055	1578.05	13.946	0.174	2.775	2.775	4229.982	45.376
2019	Chainsaws	0	2	123.704	339.377	2.879	0.036	0.702	0.702	884.646	7.688
2019	Chainsaws	6	15	728.478	1575.487	13.93	0.174	2.723	2.723	4229.983	45.278
2020	Chainsaws	0	2	122.245	336.69	2.866	0.036	0.667	0.667	884.645	7.598
2020	Chainsaws	6	15	727.09	1573.283	13.915	0.174	2.675	2.675	4229.983	45.192
2021	Chainsaws	0	2	121.003	334.39	2.861	0.036	0.636	0.636	884.646	7.52
2021	Chainsaws	6	15	725.905	1571.385	13.911	0.174	2.633	2.633	4229.982	45.118
2022	Chainsaws	0	2	120.084	332.625	2.86	0.036	0.61	0.61	884.646	7.463
2022	Chainsaws	6	15	725.029	1569.887	13.911	0.174	2.597	2.597	4229.982	45.064
2023	Chainsaws	0	2	119.275	331.06	2.859	0.036	0.587	0.587	884.645	7.413
2023	Chainsaws	6	15	724.255	1568.544	13.911	0.174	2.566	2.566	4229.982	45.015
2024	Chainsaws	0	2	118.594	329.785	2.858	0.036	0.567	0.567	884.646	7.371
2024	Chainsaws	6	15	723.595	1567.432	13.91	0.174	2.538	2.538	4229.983	44.974
2025	Chainsaws	0	2	118.058	328.877	2.857	0.036	0.551	0.551	884.646	7.337
2025	Chainsaws	6	15	723.056	1566.61	13.909	0.174	2.515	2.515	4229.983	44.941
2030	Chainsaws	0	2	116.821	327.327	2.847	0.036	0.515	0.515	884.646	7.261
2030	Chainsaws	6	15	721.699	1565.005	13.9	0.174	2.463	2.463	4229.983	44.857
2035	Chainsaws	0	2	116.745	327.292	2.841	0.036	0.514	0.514	884.646	7.256
2035	Chainsaws	6	15	721.61	1564.967	13.892	0.174	2.462	2.462	4229.983	44.851
2040	Chainsaws	0	2	116.734	327.292	2.841	0.036	0.514	0.514	884.646	7.255
2040	Chainsaws	6	15	721.596	1564.968	13.892	0.174	2.462	2.462	4229.983	44.85
2017	Chippers/StumpGrinders	6	15	13.257	531.934	8.832	0.024	7.049	7.049	858.88	0.738
2017	Chippers/StumpGrinders	16	25	13.666	560.455	8.137	0.021	7.049	7.049	858.879	0.761
2018	Chippers/StumpGrinders	6	15	13.054	528.594	8.866	0.024	7.078	7.078	858.879	0.727
2018	Chippers/StumpGrinders	16	25	13.521	557.812	8.176	0.021	7.078	7.078	858.879	0.753
2019	Chippers/StumpGrinders	6	15	12.927	526.488	8.885	0.024	7.103	7.103	858.879	0.72
2019	Chippers/StumpGrinders	16	25	13.43	556.111	8.197	0.021	7.103	7.103	858.879	0.748
2020	Chippers/StumpGrinders	6	15	12.837	524.97	8.898	0.024	7.126	7.126	858.879	0.715
2020	Chippers/StumpGrinders	16	25	13.364	554.86	8.21	0.021	7.126	7.126	858.879	0.744
2021	Chippers/StumpGrinders	6	15	12.749	523.609	8.907	0.024	7.146	7.146	858.879	0.71
2021	Chippers/StumpGrinders	16	25	13.299	553.749	8.22	0.021	7.146	7.146	858.879	0.741
2022	Chippers/StumpGrinders	6	15	12.676	522.437	8.918	0.024	7.161	7.161	858.879	0.706
2022	Chippers/StumpGrinders	16	25	13.245	552.799	8.232	0.021	7.161	7.161	858.88	0.738
2023	Chippers/StumpGrinders	6	15	12.604	521.328	8.93	0.024	7.173	7.173	858.879	0.702
2023	Chippers/StumpGrinders	16	25	13.193	551.905	8.244	0.021	7.173	7.173	858.879	0.735
2024	Chippers/StumpGrinders	6	15	12.541	520.397	8.94	0.024	7.183	7.183	858.879	0.699
2024	Chippers/StumpGrinders	16	25	13.147	551.168	8.255	0.021	7.183	7.183	858.879	0.733
2025	Chippers/StumpGrinders	6	15	12.482	519.536	8.949	0.024	7.191	7.191	858.879	0.696
2025	Chippers/StumpGrinders	16	25	13.104	550.485	8.265	0.021	7.191	7.191	858.879	0.73
2030	Chippers/StumpGrinders	6	15	12.282	516.861	8.977	0.024	7.199	7.199	858.879	0.685
2030	Chippers/StumpGrinders	16	25	12.957	548.436	8.297	0.021	7.199	7.199	858.879	0.722
2035	Chippers/StumpGrinders	6	15	12.235	516.011	8.982	0.024	7.199	7.199	858.879	0.683
2035	Chippers/StumpGrinders	16	25	12.921	547.707	8.303	0.021	7.199	7.199	858.879	0.721

CalEEMod Appendix D Default Data - Off-Road Equipment Emission Factors

Year	EquipmentType	Low Hp	High Hp	ROGg/bhp-hr	CO,g/bhp-hr	NOX,g/bhp-hr	SO2,g/bhp-hr	PM10,g/bhp-hr	PM2_5,g/bhp-hr	CO2,g/bhp-hr	CH4,g/bhp-hr
2040	Chippers/StumpGrinders	6	15	12.225	515.57	8.979	0.024	7.199	7.199	858.879	0.682
2040	Chippers/StumpGrinders	16	25	12.912	547.24	8.3	0.021	7.199	7.199	858.879	0.721
2017	Concrete/IndustrialSaws	16	25	0.685	2.34	4.332	0.007	0.161	0.161	568.299	0.061
2017	Concrete/IndustrialSaws	26	50	1.175	4.894	4.652	0.007	0.313	0.313	568.299	0.106
2017	Concrete/IndustrialSaws	51	120	0.557	3.595	4.086	0.006	0.294	0.294	568.299	0.05
2017	Concrete/IndustrialSaws	121	175	0.395	3.073	3.316	0.006	0.165	0.165	568.299	0.035
2018	Concrete/IndustrialSaws	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2018	Concrete/IndustrialSaws	26	50	1.032	4.766	4.492	0.007	0.277	0.277	568.299	0.093
2018	Concrete/IndustrialSaws	51	120	0.498	3.571	3.754	0.006	0.256	0.256	568.299	0.044
2018	Concrete/IndustrialSaws	121	175	0.359	3.072	2.945	0.006	0.145	0.145	568.299	0.032
2019	Concrete/IndustrialSaws	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2019	Concrete/IndustrialSaws	26	50	0.899	4.645	4.338	0.007	0.242	0.242	568.299	0.081
2019	Concrete/IndustrialSaws	51	120	0.443	3.55	3.441	0.006	0.22	0.22	568.3	0.04
2019	Concrete/IndustrialSaws	121	175	0.33	3.072	2.618	0.006	0.128	0.128	568.299	0.029
2020	Concrete/IndustrialSaws	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2020	Concrete/IndustrialSaws	26	50	0.798	4.552	4.196	0.007	0.212	0.212	568.299	0.072
2020	Concrete/IndustrialSaws	51	120	0.401	3.535	3.163	0.006	0.19	0.19	568.299	0.036
2020	Concrete/IndustrialSaws	121	175	0.306	3.072	2.324	0.006	0.114	0.114	568.299	0.027
2021	Concrete/IndustrialSaws	16	25	0.685	2.34	4.332	0.007	0.161	0.161	568.299	0.061
2021	Concrete/IndustrialSaws	26	50	0.722	4.481	4.063	0.007	0.184	0.184	568.3	0.065
2021	Concrete/IndustrialSaws	51	120	0.369	3.523	2.913	0.006	0.166	0.166	568.299	0.033
2021	Concrete/IndustrialSaws	121	175	0.286	3.072	2.055	0.006	0.101	0.101	568.299	0.025
2022	Concrete/IndustrialSaws	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2022	Concrete/IndustrialSaws	26	50	0.66	4.422	3.936	0.007	0.158	0.158	568.3	0.059
2022	Concrete/IndustrialSaws	51	120	0.343	3.514	2.686	0.006	0.144	0.144	568.299	0.031
2022	Concrete/IndustrialSaws	121	175	0.267	3.072	1.806	0.006	0.089	0.089	568.3	0.024
2023	Concrete/IndustrialSaws	16	25	0.685	2.34	4.332	0.007	0.161	0.161	568.299	0.061
2023	Concrete/IndustrialSaws	26	50	0.606	4.372	3.815	0.007	0.134	0.134	568.299	0.054
2023	Concrete/IndustrialSaws	51	120	0.32	3.507	2.478	0.006	0.123	0.123	568.3	0.028
2023	Concrete/IndustrialSaws	121	175	0.25	3.072	1.599	0.006	0.077	0.077	568.299	0.022
2024	Concrete/IndustrialSaws	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2024	Concrete/IndustrialSaws	26	50	0.561	4.33	3.701	0.007	0.115	0.115	568.3	0.05
2024	Concrete/IndustrialSaws	51	120	0.3	3.5	2.315	0.006	0.106	0.106	568.299	0.027
2024	Concrete/IndustrialSaws	121	175	0.235	3.072	1.418	0.006	0.067	0.067	568.299	0.021
2025	Concrete/IndustrialSaws	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2025	Concrete/IndustrialSaws	26	50	0.525	4.297	3.592	0.007	0.099	0.099	568.299	0.047
2025	Concrete/IndustrialSaws	51	120	0.283	3.495	2.176	0.006	0.089	0.089	568.3	0.025
2025	Concrete/IndustrialSaws	121	175	0.22	3.073	1.249	0.006	0.056	0.056	568.3	0.019
2030	Concrete/IndustrialSaws	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2030	Concrete/IndustrialSaws	26	50	0.409	4.199	3.222	0.007	0.041	0.041	568.299	0.036
2030	Concrete/IndustrialSaws	51	120	0.221	3.48	1.667	0.006	0.036	0.036	568.299	0.019
2030	Concrete/IndustrialSaws	121	175	0.163	3.074	0.59	0.006	0.025	0.025	568.299	0.014
2035	Concrete/IndustrialSaws	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2035	Concrete/IndustrialSaws	26	50	0.375	4.174	3.107	0.007	0.021	0.021	568.3	0.033
2035	Concrete/IndustrialSaws	51	120	0.2	3.476	1.491	0.006	0.018	0.018	568.299	0.018
2035	Concrete/IndustrialSaws	121	175	0.143	3.075	0.374	0.006	0.014	0.014	568.299	0.012
2040	Concrete/IndustrialSaws	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2040	Concrete/IndustrialSaws	26	50	0.373	4.175	3.058	0.007	0.014	0.014	568.299	0.033
2040	Concrete/IndustrialSaws	51	120	0.195	3.477	1.434	0.006	0.013	0.013	568.299	0.017
2040	Concrete/IndustrialSaws	121	175	0.136	3.076	0.297	0.006	0.011	0.011	568.3	0.012

CalEEMod Appendix D Default Data - Off-Road Equipment Emission Factors

Year	EquipmentType	Low Hp	High Hp	ROGg/bhp-hr	CO,g/bhp-hr	NOX,g/bhp-hr	SO2,g/bhp-hr	PM10,g/bhp-hr	PM2_5,g/bhp-hr	CO2,g/bhp-hr	CH4,g/bhp-hr
2017	Excavators	16	25	0.771	4.88904	4.67818	0.005	0.332	0.305	554.9101	0.17
2017	Excavators	26	50	0.771	4.88904	4.67818	0.005	0.332	0.305	554.9101	0.17
2017	Excavators	51	120	0.44	3.63939	4.37952	0.005	0.31	0.285	493.409	0.151
2017	Excavators	121	175	0.334	3.15091	3.69967	0.005	0.182	0.167	498.5222	0.153
2017	Excavators	176	250	0.247	1.24911	3.31872	0.005	0.105	0.097	498.4364	0.153
2017	Excavators	251	500	0.2	1.19852	2.50715	0.005	0.081	0.075	496.8098	0.152
2017	Excavators	501	750	0.21	1.22803	2.71934	0.005	0.09	0.083	494.5496	0.152
2018	Excavators	16	25	0.687	4.70022	4.39518	0.005	0.284	0.261	545.3468	0.17
2018	Excavators	26	50	0.687	4.70022	4.39518	0.005	0.284	0.261	545.3468	0.17
2018	Excavators	51	120	0.368	3.56214	3.76366	0.005	0.25	0.23	486.056	0.151
2018	Excavators	121	175	0.273	3.09338	2.92361	0.005	0.142	0.13	490.6725	0.153
2018	Excavators	176	250	0.202	1.15209	2.59377	0.005	0.079	0.073	490.2569	0.153
2018	Excavators	251	500	0.175	1.13951	2.05045	0.005	0.066	0.061	489.1025	0.152
2018	Excavators	501	750	0.189	1.22359	2.26567	0.005	0.076	0.07	487.6528	0.152
2019	Excavators	16	25	0.637	4.59698	4.19867	0.005	0.25	0.23	536.9132	0.17
2019	Excavators	26	50	0.637	4.59698	4.19867	0.005	0.25	0.23	536.9132	0.17
2019	Excavators	51	120	0.325	3.52421	3.36874	0.005	0.211	0.194	478.2452	0.151
2019	Excavators	121	175	0.246	3.08163	2.53264	0.005	0.122	0.112	482.6838	0.153
2019	Excavators	176	250	0.186	1.12671	2.24187	0.005	0.068	0.063	482.2503	0.153
2019	Excavators	251	500	0.162	1.1135	1.77986	0.005	0.058	0.053	481.2361	0.152
2019	Excavators	501	750	0.176	1.17289	1.98661	0.005	0.067	0.062	479.2876	0.152
2020	Excavators	16	25	0.593	4.50032	4.03131	0.005	0.222	0.204	525.3675	0.17
2020	Excavators	26	50	0.593	4.50032	4.03131	0.005	0.222	0.204	525.3675	0.17
2020	Excavators	51	120	0.299	3.50495	3.08964	0.005	0.185	0.17	468.0546	0.151
2020	Excavators	121	175	0.231	3.08597	2.27838	0.005	0.11	0.102	472.2891	0.153
2020	Excavators	176	250	0.177	1.11778	2.02738	0.005	0.061	0.056	471.8828	0.153
2020	Excavators	251	500	0.153	1.1016	1.57199	0.005	0.052	0.048	470.2956	0.152
2020	Excavators	501	750	0.17	1.14543	1.79718	0.005	0.061	0.056	468.8706	0.152
2021	Excavators	16	25	0.562	4.46094	3.91866	0.005	0.202	0.186	525.3774	0.17
2021	Excavators	26	50	0.562	4.46094	3.91866	0.005	0.202	0.186	525.3774	0.17
2021	Excavators	51	120	0.275	3.49196	2.84891	0.005	0.161	0.148	467.7906	0.151
2021	Excavators	121	175	0.216	3.08975	2.03357	0.005	0.099	0.091	472.3586	0.153
2021	Excavators	176	250	0.163	1.10324	1.70572	0.005	0.052	0.048	471.7931	0.153
2021	Excavators	251	500	0.143	1.08777	1.33174	0.005	0.045	0.041	469.6156	0.152
2021	Excavators	501	750	0.165	1.14978	1.61856	0.005	0.056	0.052	469.547	0.152
2022	Excavators	16	25	0.478	4.27341	3.70039	0.005	0.16	0.147	525.4468	0.17
2022	Excavators	26	50	0.478	4.27341	3.70039	0.005	0.16	0.147	525.4468	0.17
2022	Excavators	51	120	0.252	3.47329	2.60649	0.005	0.138	0.127	467.6256	0.151
2022	Excavators	121	175	0.191	3.074	1.6781	0.005	0.081	0.075	472.1917	0.153
2022	Excavators	176	250	0.148	1.09157	1.38616	0.005	0.044	0.04	472.0412	0.153
2022	Excavators	251	500	0.128	1.06126	1.03988	0.005	0.035	0.032	469.7105	0.152
2022	Excavators	501	750	0.15	1.144	1.2865	0.005	0.047	0.043	469.2892	0.152
2023	Excavators	16	25	0.45	4.23393	3.59356	0.005	0.139	0.128	525.4286	0.17
2023	Excavators	26	50	0.45	4.23393	3.59356	0.005	0.139	0.128	525.4286	0.17
2023	Excavators	51	120	0.23	3.45367	2.38066	0.005	0.116	0.107	467.1573	0.151
2023	Excavators	121	175	0.178	3.07648	1.46245	0.005	0.072	0.066	472.277	0.153
2023	Excavators	176	250	0.142	1.08965	1.20943	0.005	0.039	0.036	472.2131	0.153
2023	Excavators	251	500	0.122	1.05093	0.89311	0.005	0.03	0.028	469.8892	0.152
2023	Excavators	501	750	0.144	1.13199	1.15865	0.005	0.043	0.04	468.6826	0.152
2024	Excavators	16	25	0.416	4.20529	3.50816	0.005	0.12	0.11	525.979	0.17

CalEEMod Appendix D Default Data - Off-Road Equipment Emission Factors

Year	EquipmentType	Low Hp	High Hp	ROGg/bhp-hr	CO,g/bhp-hr	NOX,g/bhp-hr	SO2,g/bhp-hr	PM10,g/bhp-hr	PM2_5,g/bhp-hr	CO2,g/bhp-hr	CH4,g/bhp-hr
2024	Excavators	26	50	0.416	4.20529	3.50816	0.005	0.12	0.11	525.979	0.17
2024	Excavators	51	120	0.217	3.45322	2.24781	0.005	0.102	0.094	467.3843	0.151
2024	Excavators	121	175	0.17	3.08336	1.32479	0.005	0.065	0.06	472.4279	0.153
2024	Excavators	176	250	0.139	1.0899	1.10808	0.005	0.036	0.033	472.4415	0.153
2024	Excavators	251	500	0.121	1.05369	0.83129	0.005	0.029	0.026	469.7108	0.152
2024	Excavators	501	750	0.142	1.13421	1.10467	0.005	0.041	0.037	468.652	0.152
2025	Excavators	16	25	0.403	4.21941	3.45298	0.005	0.107	0.099	525.7772	0.17
2025	Excavators	26	50	0.403	4.21941	3.45298	0.005	0.107	0.099	525.7772	0.17
2025	Excavators	51	120	0.201	3.43876	2.08246	0.005	0.085	0.078	466.7376	0.151
2025	Excavators	121	175	0.158	3.078	1.15367	0.005	0.057	0.052	472.4964	0.153
2025	Excavators	176	250	0.131	1.08136	0.96211	0.005	0.032	0.029	472.5599	0.153
2025	Excavators	251	500	0.115	1.05072	0.72641	0.005	0.026	0.024	470.2915	0.152
2025	Excavators	501	750	0.139	1.13484	1.02571	0.005	0.038	0.035	468.5582	0.152
2030	Excavators	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2030	Excavators	26	50	0.602	5.309	3.393	0.007	0.038	0.038	568.299	0.054
2030	Excavators	51	120	0.301	3.806	1.676	0.006	0.034	0.034	568.299	0.027
2030	Excavators	121	175	0.213	3.362	0.525	0.006	0.023	0.023	568.299	0.019
2030	Excavators	176	250	0.203	1.145	0.452	0.006	0.016	0.016	568.299	0.018
2030	Excavators	251	500	0.202	1.088	0.433	0.005	0.016	0.016	568.299	0.018
2030	Excavators	501	750	0.202	1.088	0.437	0.005	0.016	0.016	568.299	0.018
2035	Excavators	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2035	Excavators	26	50	0.572	5.287	3.323	0.007	0.024	0.024	568.299	0.051
2035	Excavators	51	120	0.284	3.802	1.551	0.006	0.021	0.021	568.299	0.025
2035	Excavators	121	175	0.197	3.363	0.365	0.006	0.015	0.015	568.299	0.017
2035	Excavators	176	250	0.195	1.145	0.342	0.006	0.013	0.013	568.3	0.017
2035	Excavators	251	500	0.195	1.089	0.337	0.005	0.013	0.013	568.299	0.017
2035	Excavators	501	750	0.195	1.088	0.338	0.005	0.013	0.013	568.299	0.017
2040	Excavators	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.3	0.061
2040	Excavators	26	50	0.567	5.283	3.29	0.007	0.019	0.019	568.299	0.051
2040	Excavators	51	120	0.279	3.802	1.507	0.006	0.017	0.017	568.299	0.025
2040	Excavators	121	175	0.193	3.363	0.311	0.006	0.013	0.013	568.299	0.017
2040	Excavators	176	250	0.192	1.145	0.3	0.006	0.011	0.011	568.299	0.017
2040	Excavators	251	500	0.192	1.089	0.3	0.005	0.011	0.011	568.299	0.017
2040	Excavators	501	750	0.192	1.089	0.3	0.005	0.011	0.011	568.299	0.017
2017	GeneratorSets	6	15	0.699	3.599	4.847	0.008	0.25	0.25	568.299	0.063
2017	GeneratorSets	16	25	0.757	2.564	4.729	0.007	0.233	0.233	568.299	0.068
2017	GeneratorSets	26	50	1.017	4.292	4.522	0.007	0.285	0.285	568.299	0.091
2017	GeneratorSets	51	120	0.52	3.442	4.072	0.006	0.274	0.274	568.299	0.046
2017	GeneratorSets	121	175	0.356	2.931	3.347	0.006	0.151	0.151	568.299	0.032
2017	GeneratorSets	176	250	0.245	1.063	2.91	0.006	0.081	0.081	568.299	0.022
2017	GeneratorSets	251	500	0.224	1.048	2.579	0.005	0.076	0.076	568.299	0.02
2017	GeneratorSets	501	750	0.23	1.048	2.66	0.005	0.077	0.077	568.299	0.02
2017	GeneratorSets	1001	9999	0.301	1.161	4.293	0.005	0.104	0.104	568.299	0.027
2018	GeneratorSets	6	15	0.679	3.58	4.728	0.008	0.237	0.237	568.299	0.061
2018	GeneratorSets	16	25	0.744	2.531	4.661	0.007	0.224	0.224	568.299	0.067
2018	GeneratorSets	26	50	0.895	4.182	4.366	0.007	0.253	0.253	568.299	0.08
2018	GeneratorSets	51	120	0.461	3.418	3.752	0.006	0.239	0.239	568.299	0.041
2018	GeneratorSets	121	175	0.319	2.93	2.989	0.006	0.133	0.133	568.299	0.028
2018	GeneratorSets	176	250	0.226	1.048	2.582	0.006	0.072	0.072	568.299	0.02
2018	GeneratorSets	251	500	0.211	1.028	2.31	0.005	0.069	0.069	568.299	0.019

CalEEMod Appendix D Default Data - Off-Road Equipment Emission Factors

Year	EquipmentType	Low Hp	High Hp	ROGg/bhp-hr	CO,g/bhp-hr	NOX,g/bhp-hr	SO2,g/bhp-hr	PM10,g/bhp-hr	PM2_5,g/bhp-hr	CO2,g/bhp-hr	CH4,g/bhp-hr
2018	GeneratorSets	501	750	0.215	1.028	2.37	0.005	0.07	0.07	568.299	0.019
2018	GeneratorSets	1001	9999	0.28	1.128	4.058	0.005	0.095	0.095	568.299	0.025
2019	GeneratorSets	6	15	0.662	3.562	4.617	0.008	0.224	0.224	568.299	0.059
2019	GeneratorSets	16	25	0.731	2.501	4.596	0.007	0.214	0.214	568.299	0.066
2019	GeneratorSets	26	50	0.779	4.076	4.215	0.007	0.222	0.222	568.299	0.07
2019	GeneratorSets	51	120	0.405	3.396	3.446	0.006	0.206	0.206	568.299	0.036
2019	GeneratorSets	121	175	0.29	2.929	2.669	0.006	0.118	0.118	568.299	0.026
2019	GeneratorSets	176	250	0.211	1.036	2.285	0.006	0.064	0.064	568.299	0.019
2019	GeneratorSets	251	500	0.199	1.015	2.056	0.005	0.062	0.062	568.299	0.018
2019	GeneratorSets	501	750	0.202	1.015	2.104	0.005	0.062	0.062	568.299	0.018
2019	GeneratorSets	1001	9999	0.261	1.103	3.829	0.005	0.087	0.087	568.299	0.023
2020	GeneratorSets	6	15	0.646	3.546	4.516	0.008	0.212	0.212	568.299	0.058
2020	GeneratorSets	16	25	0.721	2.473	4.538	0.007	0.205	0.205	568.299	0.065
2020	GeneratorSets	26	50	0.691	3.995	4.075	0.007	0.194	0.194	568.299	0.062
2020	GeneratorSets	51	120	0.364	3.38	3.173	0.006	0.179	0.179	568.299	0.032
2020	GeneratorSets	121	175	0.267	2.93	2.38	0.006	0.105	0.105	568.299	0.024
2020	GeneratorSets	176	250	0.198	1.026	2.016	0.006	0.057	0.057	568.299	0.017
2020	GeneratorSets	251	500	0.188	1.005	1.816	0.005	0.055	0.055	568.299	0.017
2020	GeneratorSets	501	750	0.191	1.005	1.858	0.005	0.056	0.056	568.299	0.017
2020	GeneratorSets	1001	9999	0.242	1.082	3.608	0.005	0.079	0.079	568.3	0.021
2021	GeneratorSets	6	15	0.634	3.531	4.441	0.008	0.201	0.201	568.299	0.057
2021	GeneratorSets	16	25	0.712	2.446	4.497	0.007	0.196	0.196	568.299	0.064
2021	GeneratorSets	26	50	0.613	3.905	3.916	0.007	0.165	0.165	568.299	0.055
2021	GeneratorSets	51	120	0.326	3.361	2.888	0.006	0.153	0.153	568.299	0.029
2021	GeneratorSets	121	175	0.243	2.925	2.068	0.006	0.091	0.091	568.299	0.021
2021	GeneratorSets	176	250	0.183	1.016	1.73	0.006	0.049	0.049	568.299	0.016
2021	GeneratorSets	251	500	0.175	0.996	1.562	0.005	0.048	0.048	568.299	0.015
2021	GeneratorSets	501	750	0.177	0.996	1.596	0.005	0.048	0.048	568.299	0.016
2021	GeneratorSets	1001	9999	0.22	1.06	3.372	0.005	0.07	0.07	568.3	0.019
2022	GeneratorSets	6	15	0.626	3.519	4.39	0.008	0.193	0.193	568.299	0.056
2022	GeneratorSets	16	25	0.706	2.426	4.47	0.007	0.188	0.188	568.299	0.063
2022	GeneratorSets	26	50	0.56	3.858	3.796	0.007	0.143	0.143	568.299	0.05
2022	GeneratorSets	51	120	0.301	3.353	2.671	0.006	0.134	0.134	568.299	0.027
2022	GeneratorSets	121	175	0.226	2.926	1.83	0.006	0.081	0.081	568.299	0.02
2022	GeneratorSets	176	250	0.173	1.01	1.508	0.006	0.043	0.043	568.299	0.015
2022	GeneratorSets	251	500	0.166	0.99	1.384	0.005	0.042	0.042	568.299	0.015
2022	GeneratorSets	501	750	0.168	0.99	1.412	0.005	0.043	0.043	568.299	0.015
2022	GeneratorSets	1001	9999	0.206	1.045	3.202	0.005	0.063	0.063	568.299	0.018
2023	GeneratorSets	6	15	0.618	3.508	4.345	0.008	0.186	0.186	568.299	0.055
2023	GeneratorSets	16	25	0.701	2.407	4.447	0.007	0.182	0.182	568.299	0.063
2023	GeneratorSets	26	50	0.514	3.819	3.685	0.007	0.124	0.124	568.299	0.046
2023	GeneratorSets	51	120	0.279	3.347	2.477	0.006	0.117	0.117	568.299	0.025
2023	GeneratorSets	121	175	0.211	2.927	1.635	0.006	0.071	0.071	568.299	0.019
2023	GeneratorSets	176	250	0.164	1.006	1.328	0.006	0.038	0.038	568.299	0.014
2023	GeneratorSets	251	500	0.158	0.986	1.228	0.005	0.037	0.037	568.299	0.014
2023	GeneratorSets	501	750	0.16	0.986	1.253	0.005	0.037	0.037	568.299	0.014
2023	GeneratorSets	1001	9999	0.194	1.031	3.058	0.005	0.058	0.058	568.299	0.017
2024	GeneratorSets	6	15	0.612	3.499	4.305	0.008	0.181	0.181	568.299	0.055
2024	GeneratorSets	16	25	0.697	2.39	4.426	0.007	0.178	0.178	568.299	0.062
2024	GeneratorSets	26	50	0.475	3.787	3.582	0.007	0.107	0.107	568.299	0.042

CalEEMod Appendix D Default Data - Off-Road Equipment Emission Factors

Year	EquipmentType	Low Hp	High Hp	ROGg/bhp-hr	CO,g/bhp-hr	NOX,g/bhp-hr	SO2,g/bhp-hr	PM10,g/bhp-hr	PM2_5,g/bhp-hr	CO2,g/bhp-hr	CH4,g/bhp-hr
2024	GeneratorSets	51	120	0.26	3.342	2.321	0.006	0.101	0.101	568.299	0.023
2024	GeneratorSets	121	175	0.197	2.929	1.462	0.006	0.062	0.062	568.299	0.017
2024	GeneratorSets	176	250	0.155	1.003	1.169	0.006	0.033	0.033	568.299	0.014
2024	GeneratorSets	251	500	0.151	0.983	1.082	0.005	0.032	0.032	568.3	0.013
2024	GeneratorSets	501	750	0.152	0.983	1.104	0.005	0.032	0.032	568.299	0.013
2024	GeneratorSets	1001	9999	0.183	1.018	2.929	0.005	0.052	0.052	568.3	0.016
2025	GeneratorSets	6	15	0.607	3.491	4.269	0.008	0.178	0.178	568.299	0.054
2025	GeneratorSets	16	25	0.694	2.376	4.407	0.007	0.175	0.175	568.299	0.062
2025	GeneratorSets	26	50	0.44	3.758	3.481	0.007	0.093	0.093	568.3	0.039
2025	GeneratorSets	51	120	0.243	3.338	2.185	0.006	0.087	0.087	568.299	0.021
2025	GeneratorSets	121	175	0.184	2.93	1.297	0.006	0.053	0.053	568.299	0.016
2025	GeneratorSets	176	250	0.147	1	1.02	0.006	0.028	0.028	568.299	0.013
2025	GeneratorSets	251	500	0.144	0.981	0.945	0.005	0.027	0.027	568.3	0.013
2025	GeneratorSets	501	750	0.145	0.981	0.964	0.005	0.027	0.027	568.299	0.013
2025	GeneratorSets	1001	9999	0.173	1.008	2.812	0.005	0.047	0.047	568.299	0.015
2030	GeneratorSets	6	15	0.592	3.47	4.164	0.008	0.166	0.166	568.299	0.053
2030	GeneratorSets	16	25	0.686	2.34	4.347	0.007	0.165	0.165	568.299	0.061
2030	GeneratorSets	26	50	0.315	3.64	3.107	0.007	0.038	0.038	568.299	0.028
2030	GeneratorSets	51	120	0.178	3.316	1.645	0.006	0.034	0.034	568.299	0.016
2030	GeneratorSets	121	175	0.13	2.929	0.601	0.006	0.023	0.023	568.299	0.011
2030	GeneratorSets	176	250	0.12	0.998	0.504	0.006	0.016	0.016	568.299	0.01
2030	GeneratorSets	251	500	0.119	0.978	0.476	0.005	0.015	0.015	568.299	0.01
2030	GeneratorSets	501	750	0.119	0.978	0.482	0.005	0.015	0.015	568.299	0.01
2030	GeneratorSets	1001	9999	0.128	0.979	2.483	0.005	0.029	0.029	568.299	0.011
2035	GeneratorSets	6	15	0.589	3.47	4.143	0.008	0.162	0.162	568.299	0.053
2035	GeneratorSets	16	25	0.685	2.34	4.332	0.007	0.162	0.162	568.299	0.061
2035	GeneratorSets	26	50	0.276	3.607	2.991	0.007	0.018	0.018	568.299	0.024
2035	GeneratorSets	51	120	0.156	3.31	1.458	0.006	0.016	0.016	568.299	0.014
2035	GeneratorSets	121	175	0.113	2.929	0.373	0.006	0.013	0.013	568.299	0.01
2035	GeneratorSets	176	250	0.11	0.998	0.331	0.006	0.011	0.011	568.299	0.009
2035	GeneratorSets	251	500	0.11	0.978	0.328	0.005	0.011	0.011	568.299	0.009
2035	GeneratorSets	501	750	0.11	0.978	0.328	0.005	0.011	0.011	568.299	0.009
2035	GeneratorSets	1001	9999	0.114	0.978	2.362	0.005	0.022	0.022	568.299	0.01
2040	GeneratorSets	6	15	0.589	3.469	4.142	0.008	0.161	0.161	568.299	0.053
2040	GeneratorSets	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2040	GeneratorSets	26	50	0.273	3.601	2.941	0.007	0.012	0.012	568.3	0.024
2040	GeneratorSets	51	120	0.152	3.308	1.399	0.006	0.012	0.012	568.299	0.013
2040	GeneratorSets	121	175	0.107	2.928	0.293	0.006	0.01	0.01	568.299	0.009
2040	GeneratorSets	176	250	0.106	0.997	0.277	0.006	0.009	0.009	568.299	0.009
2040	GeneratorSets	251	500	0.106	0.978	0.277	0.005	0.009	0.009	568.299	0.009
2040	GeneratorSets	501	750	0.106	0.978	0.277	0.005	0.009	0.009	568.3	0.009
2040	GeneratorSets	1001	9999	0.107	0.978	2.33	0.005	0.02	0.02	568.299	0.009
2017	Pavers	16	25	1.731	6.19932	5.43675	0.005	0.54	0.496	556.4528	0.17
2017	Pavers	26	50	1.731	6.19932	5.43675	0.005	0.54	0.496	556.4528	0.17
2017	Pavers	51	120	0.625	3.75882	5.69243	0.005	0.437	0.402	495.9253	0.152
2017	Pavers	121	175	0.389	3.06282	4.35312	0.005	0.214	0.197	498.967	0.153
2017	Pavers	176	250	0.208	1.03652	3.80866	0.005	0.1	0.092	499.5617	0.153
2017	Pavers	251	500	0.168	0.97942	2.48674	0.005	0.087	0.08	491.7843	0.151
2018	Pavers	16	25	1.539	5.8493	5.12103	0.005	0.478	0.44	547.0785	0.17
2018	Pavers	26	50	1.539	5.8493	5.12103	0.005	0.478	0.44	547.0785	0.17

CalEEMod Appendix D Default Data - Off-Road Equipment Emission Factors

Year	EquipmentType	Low Hp	High Hp	ROGg/bhp-hr	CO,g/bhp-hr	NOX,g/bhp-hr	SO2,g/bhp-hr	PM10,g/bhp-hr	PM2_5,g/bhp-hr	CO2,g/bhp-hr	CH4,g/bhp-hr
2018	Pavers	51	120	0.536	3.66032	5.01936	0.005	0.375	0.345	488.1812	0.152
2018	Pavers	121	175	0.339	3.03913	3.7472	0.005	0.183	0.168	491.322	0.153
2018	Pavers	176	250	0.198	1.03446	3.47438	0.005	0.092	0.085	491.543	0.153
2018	Pavers	251	500	0.164	0.98125	2.32002	0.005	0.083	0.076	484.2774	0.151
2019	Pavers	16	25	1.418	5.65687	4.91634	0.005	0.436	0.401	538.3246	0.17
2019	Pavers	26	50	1.418	5.65687	4.91634	0.005	0.436	0.401	538.3246	0.17
2019	Pavers	51	120	0.496	3.62215	4.67048	0.005	0.345	0.318	480.2509	0.152
2019	Pavers	121	175	0.299	3.01323	3.24473	0.005	0.159	0.146	483.3938	0.153
2019	Pavers	176	250	0.187	1.03181	3.11084	0.005	0.084	0.077	483.5743	0.153
2019	Pavers	251	500	0.166	0.98586	2.26992	0.005	0.081	0.075	476.9707	0.151
2020	Pavers	16	25	1.318	5.52345	4.76401	0.005	0.402	0.37	526.2098	0.17
2020	Pavers	26	50	1.318	5.52345	4.76401	0.005	0.402	0.37	526.2098	0.17
2020	Pavers	51	120	0.47	3.60405	4.42718	0.005	0.325	0.299	469.8815	0.152
2020	Pavers	121	175	0.273	3.0097	2.91833	0.005	0.142	0.131	472.7746	0.153
2020	Pavers	176	250	0.176	1.02834	2.77699	0.005	0.076	0.07	472.8337	0.153
2020	Pavers	251	500	0.165	0.98677	2.13394	0.005	0.077	0.071	466.2059	0.151
2021	Pavers	16	25	1.208	5.30162	4.60183	0.005	0.37	0.34	526.5153	0.17
2021	Pavers	26	50	1.208	5.30162	4.60183	0.005	0.37	0.34	526.5153	0.17
2021	Pavers	51	120	0.42	3.56251	4.02622	0.005	0.285	0.262	469.7736	0.152
2021	Pavers	121	175	0.256	3.01647	2.6948	0.005	0.13	0.12	472.5552	0.153
2021	Pavers	176	250	0.165	1.02422	2.4844	0.005	0.07	0.064	472.4765	0.153
2021	Pavers	251	500	0.164	0.9877	2.05298	0.005	0.074	0.068	465.5908	0.151
2022	Pavers	16	25	1.092	5.11433	4.42092	0.005	0.33	0.303	526.8963	0.17
2022	Pavers	26	50	1.092	5.11433	4.42092	0.005	0.33	0.303	526.8963	0.17
2022	Pavers	51	120	0.373	3.52511	3.65932	0.005	0.248	0.228	470.1854	0.152
2022	Pavers	121	175	0.215	2.99478	2.17958	0.005	0.104	0.095	472.7599	0.153
2022	Pavers	176	250	0.14	1.01231	1.89985	0.005	0.055	0.05	472.3718	0.153
2022	Pavers	251	500	0.15	0.98238	1.81028	0.005	0.063	0.058	466.0042	0.151
2023	Pavers	16	25	1.007	5.00667	4.28484	0.005	0.299	0.275	526.8595	0.17
2023	Pavers	26	50	1.007	5.00667	4.28484	0.005	0.299	0.275	526.8595	0.17
2023	Pavers	51	120	0.349	3.50733	3.42661	0.005	0.226	0.208	470.0839	0.152
2023	Pavers	121	175	0.199	2.99398	1.95517	0.005	0.092	0.085	472.7178	0.153
2023	Pavers	176	250	0.13	1.01018	1.6106	0.005	0.047	0.043	472.6051	0.153
2023	Pavers	251	500	0.152	0.98653	1.77101	0.005	0.062	0.057	466.0038	0.151
2024	Pavers	16	25	0.95	4.95625	4.20308	0.005	0.279	0.257	526.8565	0.17
2024	Pavers	26	50	0.95	4.95625	4.20308	0.005	0.279	0.257	526.8565	0.17
2024	Pavers	51	120	0.337	3.50784	3.2771	0.005	0.213	0.196	470.2262	0.152
2024	Pavers	121	175	0.191	3.0042	1.80882	0.005	0.084	0.078	472.6605	0.153
2024	Pavers	176	250	0.119	1.00872	1.34323	0.005	0.041	0.038	473.2362	0.153
2024	Pavers	251	500	0.143	0.98624	1.54798	0.005	0.054	0.049	467.1711	0.151
2025	Pavers	16	25	0.918	4.94451	4.13112	0.005	0.265	0.243	526.8533	0.17
2025	Pavers	26	50	0.918	4.94451	4.13112	0.005	0.265	0.243	526.8533	0.17
2025	Pavers	51	120	0.314	3.49286	3.06788	0.005	0.19	0.175	469.8988	0.152
2025	Pavers	121	175	0.18	3.0071	1.64396	0.005	0.077	0.071	472.485	0.153
2025	Pavers	176	250	0.107	1.00414	1.03493	0.005	0.034	0.031	473.4832	0.153
2025	Pavers	251	500	0.115	0.96892	1.13351	0.005	0.039	0.036	465.8824	0.151
2030	Pavers	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2030	Pavers	26	50	0.845	5.396	3.841	0.007	0.134	0.134	568.299	0.076
2030	Pavers	51	120	0.408	3.8	2.468	0.006	0.121	0.121	568.3	0.036
2030	Pavers	121	175	0.3	3.326	1.425	0.006	0.074	0.074	568.299	0.027

CalEEMod Appendix D Default Data - Off-Road Equipment Emission Factors

Year	EquipmentType	Low Hp	High Hp	ROGg/bhp-hr	CO,g/bhp-hr	NOX,g/bhp-hr	SO2,g/bhp-hr	PM10,g/bhp-hr	PM2_5,g/bhp-hr	CO2,g/bhp-hr	CH4,g/bhp-hr
2030	Pavers	176	250	0.259	1.192	1.246	0.006	0.045	0.045	568.299	0.023
2030	Pavers	251	500	0.253	1.181	1.141	0.005	0.043	0.043	568.299	0.022
2035	Pavers	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2035	Pavers	26	50	0.694	5.26	3.555	0.007	0.076	0.076	568.299	0.062
2035	Pavers	51	120	0.338	3.774	1.986	0.006	0.069	0.069	568.299	0.03
2035	Pavers	121	175	0.244	3.319	0.889	0.006	0.043	0.043	568.299	0.022
2035	Pavers	176	250	0.221	1.157	0.772	0.006	0.027	0.027	568.3	0.019
2035	Pavers	251	500	0.218	1.111	0.722	0.005	0.026	0.026	568.299	0.019
2040	Pavers	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2040	Pavers	26	50	0.618	5.189	3.393	0.007	0.047	0.047	568.299	0.055
2040	Pavers	51	120	0.302	3.763	1.731	0.006	0.043	0.043	568.299	0.027
2040	Pavers	121	175	0.213	3.319	0.583	0.006	0.027	0.027	568.299	0.019
2040	Pavers	176	250	0.2	1.138	0.525	0.006	0.018	0.018	568.299	0.018
2040	Pavers	251	500	0.198	1.085	0.498	0.005	0.018	0.018	568.299	0.017
2018	PavingEquipment	16	25	0.926	4.80403	4.72756	0.005	0.359	0.33	548.6481	0.168
2018	PavingEquipment	26	50	0.926	4.80403	4.72756	0.005	0.359	0.33	548.6481	0.168
2018	PavingEquipment	51	120	0.563	3.74146	5.20745	0.005	0.391	0.359	500.1649	0.153
2018	PavingEquipment	121	175	0.342	3.07321	3.89633	0.005	0.195	0.179	497.148	0.152
2018	PavingEquipment	176	250	0.288	1.333	4.12109	0.005	0.141	0.13	498.7323	0.153
2018	PavingEquipment	16	25	0.737	4.41578	4.31244	0.005	0.286	0.263	540.6115	0.168
2018	PavingEquipment	26	50	0.737	4.41578	4.31244	0.005	0.286	0.263	540.6115	0.168
2018	PavingEquipment	51	120	0.449	3.60743	4.27034	0.005	0.302	0.278	492.1184	0.153
2018	PavingEquipment	121	175	0.284	3.02602	3.17208	0.005	0.155	0.143	489.2024	0.152
2018	PavingEquipment	176	250	0.258	1.28117	3.58656	0.005	0.123	0.113	490.6833	0.153
2019	PavingEquipment	16	25	0.705	4.40798	4.23779	0.005	0.27	0.248	531.8612	0.168
2019	PavingEquipment	26	50	0.705	4.40798	4.23779	0.005	0.27	0.248	531.8612	0.168
2019	PavingEquipment	51	120	0.425	3.59849	4.04152	0.005	0.281	0.258	484.387	0.153
2019	PavingEquipment	121	175	0.254	3.0109	2.6924	0.005	0.134	0.123	481.2251	0.152
2019	PavingEquipment	176	250	0.241	1.24449	3.25106	0.005	0.112	0.103	482.6441	0.153
2020	PavingEquipment	16	25	0.621	4.22322	3.9519	0.005	0.217	0.2	520.1235	0.168
2020	PavingEquipment	26	50	0.621	4.22322	3.9519	0.005	0.217	0.2	520.1235	0.168
2020	PavingEquipment	51	120	0.397	3.58172	3.78064	0.005	0.256	0.235	473.3249	0.153
2020	PavingEquipment	121	175	0.248	3.02393	2.55498	0.005	0.128	0.118	470.7359	0.152
2020	PavingEquipment	176	250	0.243	1.25215	3.2202	0.005	0.111	0.102	472.1514	0.153
2021	PavingEquipment	16	25	0.587	4.21072	3.88226	0.005	0.2	0.184	520.3965	0.168
2021	PavingEquipment	26	50	0.587	4.21072	3.88226	0.005	0.2	0.184	520.3965	0.168
2021	PavingEquipment	51	120	0.355	3.5537	3.45065	0.005	0.219	0.201	473.2205	0.153
2021	PavingEquipment	121	175	0.229	3.03229	2.31505	0.005	0.114	0.105	470.6495	0.152
2021	PavingEquipment	176	250	0.211	1.20904	2.58202	0.005	0.092	0.085	472.151	0.153
2022	PavingEquipment	16	25	0.571	4.24448	3.83611	0.005	0.188	0.173	520.6594	0.168
2022	PavingEquipment	26	50	0.571	4.24448	3.83611	0.005	0.188	0.173	520.6594	0.168
2022	PavingEquipment	51	120	0.296	3.50075	2.99968	0.005	0.171	0.157	473.4475	0.153
2022	PavingEquipment	121	175	0.213	3.03777	2.07331	0.005	0.101	0.093	470.6646	0.152
2022	PavingEquipment	176	250	0.195	1.20363	2.22813	0.005	0.083	0.076	472.169	0.153
2023	PavingEquipment	16	25	0.541	4.24108	3.77446	0.005	0.173	0.159	521.1138	0.169
2023	PavingEquipment	26	50	0.541	4.24108	3.77446	0.005	0.173	0.159	521.1138	0.169
2023	PavingEquipment	51	120	0.278	3.50331	2.83717	0.005	0.152	0.14	473.427	0.153
2023	PavingEquipment	121	175	0.204	3.05059	1.91255	0.005	0.093	0.086	470.663	0.152
2023	PavingEquipment	176	250	0.175	1.16523	1.88495	0.005	0.07	0.065	472.169	0.153
2024	PavingEquipment	16	25	0.523	4.27468	3.74329	0.005	0.164	0.151	521.0575	0.169

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Year	EquipmentType	Low Hp	High Hp	ROGg/bhp-hr	CO,g/bhp-hr	NOX,g/bhp-hr	SO2,g/bhp-hr	PM10,g/bhp-hr	PM2_5,g/bhp-hr	CO2,g/bhp-hr	CH4,g/bhp-hr
2024	PavingEquipment	26	50	0.523	4.27468	3.74329	0.005	0.164	0.151	521.0575	0.169
2024	PavingEquipment	51	120	0.262	3.50288	2.67309	0.005	0.135	0.125	473.1748	0.153
2024	PavingEquipment	121	175	0.197	3.06623	1.78512	0.005	0.086	0.079	470.6614	0.152
2024	PavingEquipment	176	250	0.138	1.11417	1.29567	0.005	0.048	0.044	472.2124	0.153
2025	PavingEquipment	16	25	0.476	4.20347	3.62672	0.005	0.141	0.13	520.9975	0.169
2025	PavingEquipment	26	50	0.476	4.20347	3.62672	0.005	0.141	0.13	520.9975	0.169
2025	PavingEquipment	51	120	0.241	3.48256	2.49628	0.005	0.118	0.108	473.4239	0.153
2025	PavingEquipment	121	175	0.175	3.03837	1.509	0.005	0.075	0.069	470.4844	0.152
2025	PavingEquipment	176	250	0.133	1.11653	1.10952	0.005	0.043	0.04	472.2341	0.153
2030	PavingEquipment	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2030	PavingEquipment	26	50	0.802	5.309	3.809	0.007	0.126	0.126	568.299	0.072
2030	PavingEquipment	51	120	0.39	3.774	2.393	0.006	0.114	0.114	568.3	0.035
2030	PavingEquipment	121	175	0.29	3.306	1.363	0.006	0.07	0.07	568.299	0.026
2030	PavingEquipment	176	250	0.25	1.171	1.176	0.006	0.042	0.042	568.299	0.022
2035	PavingEquipment	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2035	PavingEquipment	26	50	0.664	5.181	3.511	0.007	0.07	0.07	568.3	0.059
2035	PavingEquipment	51	120	0.326	3.753	1.928	0.006	0.064	0.064	568.299	0.029
2035	PavingEquipment	121	175	0.235	3.303	0.832	0.006	0.04	0.04	568.299	0.021
2035	PavingEquipment	176	250	0.212	1.14	0.714	0.006	0.024	0.024	568.299	0.019
2040	PavingEquipment	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2040	PavingEquipment	26	50	0.589	5.111	3.361	0.007	0.042	0.042	568.3	0.053
2040	PavingEquipment	51	120	0.291	3.744	1.687	0.006	0.039	0.039	568.299	0.026
2040	PavingEquipment	121	175	0.205	3.304	0.536	0.006	0.025	0.025	568.299	0.018
2040	PavingEquipment	176	250	0.193	1.127	0.485	0.006	0.017	0.017	568.299	0.017
2017	PlateCompactors	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2018	PlateCompactors	6	15	0.661	3.47	4.142	0.008	0.161	0.161	568.3	0.059
2019	PlateCompactors	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2020	PlateCompactors	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2021	PlateCompactors	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2022	PlateCompactors	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2023	PlateCompactors	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2024	PlateCompactors	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2025	PlateCompactors	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2030	PlateCompactors	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2035	PlateCompactors	6	15	0.661	3.47	4.142	0.008	0.161	0.161	568.299	0.059
2040	PlateCompactors	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2017	Rollers	6	15	1.198	5.14727	5.09771	0.005	0.436	0.401	555.0199	0.17
2017	Rollers	16	25	1.198	5.14727	5.09771	0.005	0.436	0.401	555.0199	0.17
2017	Rollers	26	50	1.198	5.14727	5.09771	0.005	0.436	0.401	555.0199	0.17
2017	Rollers	51	120	0.58	3.71315	5.4114	0.005	0.392	0.361	500.1525	0.153
2017	Rollers	121	175	0.314	2.98069	3.87384	0.005	0.18	0.166	497.9088	0.153
2017	Rollers	176	250	0.274	1.40849	3.92097	0.005	0.129	0.119	499.7021	0.153
2017	Rollers	251	500	0.297	2.68487	3.84047	0.005	0.15	0.138	505.8318	0.155
2018	Rollers	6	15	1.064	4.92335	4.8416	0.005	0.387	0.356	546.2905	0.17
2018	Rollers	16	25	1.064	4.92335	4.8416	0.005	0.387	0.356	546.2905	0.17
2018	Rollers	26	50	1.064	4.92335	4.8416	0.005	0.387	0.356	546.2905	0.17
2018	Rollers	51	120	0.481	3.60981	4.65049	0.005	0.32	0.294	492.2118	0.153
2018	Rollers	121	175	0.265	2.94895	3.18126	0.005	0.147	0.135	490.1805	0.153
2018	Rollers	176	250	0.211	1.24341	2.99492	0.005	0.094	0.086	491.6643	0.153
2018	Rollers	251	500	0.245	2.23145	3.09814	0.005	0.119	0.11	497.9962	0.155

CalEEMod Appendix D Default Data - Off-Road Equipment Emission Factors

Year	EquipmentType	Low Hp	High Hp	ROGg/bhp-hr	CO,g/bhp-hr	NOX,g/bhp-hr	SO2,g/bhp-hr	PM10,g/bhp-hr	PM2_5,g/bhp-hr	CO2,g/bhp-hr	CH4,g/bhp-hr
2019	Rollers	6	15	0.972	4.77841	4.64491	0.005	0.349	0.321	537.546	0.17
2019	Rollers	16	25	0.972	4.77841	4.64491	0.005	0.349	0.321	537.546	0.17
2019	Rollers	26	50	0.972	4.77841	4.64491	0.005	0.349	0.321	537.546	0.17
2019	Rollers	51	120	0.423	3.55726	4.17949	0.005	0.275	0.253	484.3362	0.153
2019	Rollers	121	175	0.231	2.93251	2.69941	0.005	0.124	0.114	482.4531	0.153
2019	Rollers	176	250	0.21	1.24854	2.88327	0.005	0.092	0.084	483.7769	0.153
2019	Rollers	251	500	0.234	2.10142	2.90839	0.005	0.111	0.102	489.9774	0.155
2020	Rollers	6	15	0.926	4.72504	4.53426	0.005	0.329	0.303	525.8798	0.17
2020	Rollers	16	25	0.926	4.72504	4.53426	0.005	0.329	0.303	525.8798	0.17
2020	Rollers	26	50	0.926	4.72504	4.53426	0.005	0.329	0.303	525.8798	0.17
2020	Rollers	51	120	0.388	3.53135	3.88153	0.005	0.247	0.228	473.8594	0.153
2020	Rollers	121	175	0.215	2.93333	2.45176	0.005	0.113	0.104	471.9177	0.153
2020	Rollers	176	250	0.209	1.25343	2.75095	0.005	0.089	0.082	473.3669	0.153
2020	Rollers	251	500	0.235	2.11346	2.82823	0.005	0.109	0.101	479.3254	0.155
2021	Rollers	6	15	0.847	4.59681	4.35097	0.005	0.294	0.27	525.7908	0.17
2021	Rollers	16	25	0.847	4.59681	4.35097	0.005	0.294	0.27	525.7908	0.17
2021	Rollers	26	50	0.847	4.59681	4.35097	0.005	0.294	0.27	525.7908	0.17
2021	Rollers	51	120	0.353	3.50719	3.5889	0.005	0.219	0.202	473.9012	0.153
2021	Rollers	121	175	0.193	2.9256	2.11691	0.005	0.097	0.09	471.9799	0.153
2021	Rollers	176	250	0.196	1.22849	2.49332	0.005	0.081	0.075	473.4704	0.153
2021	Rollers	251	500	0.221	1.94995	2.58936	0.005	0.1	0.092	479.3294	0.155
2022	Rollers	6	15	0.738	4.40241	4.12773	0.005	0.25	0.23	525.691	0.17
2022	Rollers	16	25	0.738	4.40241	4.12773	0.005	0.25	0.23	525.691	0.17
2022	Rollers	26	50	0.738	4.40241	4.12773	0.005	0.25	0.23	525.691	0.17
2022	Rollers	51	120	0.31	3.46973	3.21896	0.005	0.186	0.171	473.9291	0.153
2022	Rollers	121	175	0.164	2.91331	1.71408	0.005	0.079	0.072	471.9475	0.153
2022	Rollers	176	250	0.187	1.22821	2.2116	0.005	0.077	0.071	473.5135	0.153
2022	Rollers	251	500	0.218	1.95495	2.46341	0.005	0.097	0.089	478.9817	0.155
2023	Rollers	6	15	0.661	4.25236	3.9211	0.005	0.212	0.195	525.8616	0.17
2023	Rollers	16	25	0.661	4.25236	3.9211	0.005	0.212	0.195	525.8616	0.17
2023	Rollers	26	50	0.661	4.25236	3.9211	0.005	0.212	0.195	525.8616	0.17
2023	Rollers	51	120	0.287	3.45461	3.00302	0.005	0.165	0.152	473.9363	0.153
2023	Rollers	121	175	0.15	2.90949	1.4833	0.005	0.068	0.062	471.9351	0.153
2023	Rollers	176	250	0.188	1.23448	2.17272	0.005	0.076	0.07	473.5164	0.153
2023	Rollers	251	500	0.211	1.95626	2.29003	0.005	0.093	0.085	478.3028	0.155
2024	Rollers	6	15	0.62	4.20667	3.82449	0.005	0.192	0.177	525.9565	0.17
2024	Rollers	16	25	0.62	4.20667	3.82449	0.005	0.192	0.177	525.9565	0.17
2024	Rollers	26	50	0.62	4.20667	3.82449	0.005	0.192	0.177	525.9565	0.17
2024	Rollers	51	120	0.272	3.45055	2.843	0.005	0.15	0.138	474.0072	0.153
2024	Rollers	121	175	0.141	2.91426	1.32428	0.005	0.061	0.056	472.012	0.153
2024	Rollers	176	250	0.179	1.21417	1.97675	0.005	0.07	0.064	473.512	0.153
2024	Rollers	251	500	0.21	1.96121	2.21612	0.005	0.09	0.083	477.9001	0.155
2025	Rollers	6	15	0.569	4.12543	3.68893	0.005	0.167	0.154	526.1406	0.17
2025	Rollers	16	25	0.569	4.12543	3.68893	0.005	0.167	0.154	526.1406	0.17
2025	Rollers	26	50	0.569	4.12543	3.68893	0.005	0.167	0.154	526.1406	0.17
2025	Rollers	51	120	0.255	3.44432	2.69137	0.005	0.135	0.125	473.851	0.153
2025	Rollers	121	175	0.127	2.90859	1.10088	0.005	0.049	0.045	471.9696	0.153
2025	Rollers	176	250	0.173	1.21477	1.78252	0.005	0.066	0.06	473.6813	0.153
2025	Rollers	251	500	0.212	1.96754	2.19998	0.005	0.09	0.083	477.5732	0.154
2030	Rollers	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059

CalEEMod Appendix D Default Data - Off-Road Equipment Emission Factors

Year	EquipmentType	Low Hp	High Hp	ROGg/bhp-hr	CO,g/bhp-hr	NOX,g/bhp-hr	SO2,g/bhp-hr	PM10,g/bhp-hr	PM2_5,g/bhp-hr	CO2,g/bhp-hr	CH4,g/bhp-hr
2030	Rollers	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2030	Rollers	26	50	0.587	4.784	3.48	0.007	0.073	0.073	568.299	0.053
2030	Rollers	51	120	0.299	3.639	1.95	0.006	0.066	0.066	568.299	0.027
2030	Rollers	121	175	0.223	3.203	0.907	0.006	0.042	0.042	568.299	0.02
2030	Rollers	176	250	0.195	1.099	0.745	0.006	0.024	0.024	568.299	0.017
2030	Rollers	251	500	0.193	1.056	0.697	0.005	0.023	0.023	568.299	0.017
2035	Rollers	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2035	Rollers	16	25	0.685	2.34	4.332	0.007	0.161	0.161	568.3	0.061
2035	Rollers	26	50	0.507	4.711	3.28	0.007	0.038	0.038	568.299	0.045
2035	Rollers	51	120	0.258	3.629	1.65	0.006	0.035	0.035	568.299	0.023
2035	Rollers	121	175	0.184	3.204	0.523	0.006	0.023	0.023	568.299	0.016
2035	Rollers	176	250	0.173	1.091	0.465	0.006	0.016	0.016	568.299	0.015
2035	Rollers	251	500	0.172	1.048	0.442	0.005	0.016	0.016	568.3	0.015
2040	Rollers	6	15	0.661	3.469	4.142	0.008	0.161	0.161	568.299	0.059
2040	Rollers	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2040	Rollers	26	50	0.469	4.682	3.207	0.007	0.024	0.024	568.299	0.042
2040	Rollers	51	120	0.24	3.625	1.525	0.006	0.021	0.021	568.299	0.021
2040	Rollers	121	175	0.168	3.205	0.373	0.006	0.015	0.015	568.299	0.015
2040	Rollers	176	250	0.165	1.092	0.348	0.006	0.012	0.012	568.299	0.014
2040	Rollers	251	500	0.165	1.048	0.341	0.005	0.012	0.012	568.299	0.014
2017	Shredders	3	5	18.008	458.475	7.477	0.029	0.557	0.557	858.879	1.012
2017	Shredders	6	15	16.635	462.285	6.549	0.035	7.199	7.199	858.879	1.033
2018	Shredders	3	5	17.808	455.299	7.491	0.029	0.504	0.504	858.879	1.001
2018	Shredders	6	15	15.12	459.444	6.576	0.035	7.199	7.199	858.879	0.939
2019	Shredders	3	5	17.638	452.882	7.502	0.029	0.473	0.473	858.879	0.992
2019	Shredders	6	15	13.778	457.456	6.599	0.035	7.199	7.199	858.879	0.856
2020	Shredders	3	5	17.489	450.769	7.511	0.029	0.447	0.447	858.879	0.983
2020	Shredders	6	15	12.601	455.916	6.618	0.035	7.199	7.199	858.879	0.783
2021	Shredders	3	5	17.348	449.038	7.516	0.029	0.422	0.422	858.879	0.975
2021	Shredders	6	15	11.563	454.545	6.635	0.035	7.199	7.199	858.879	0.718
2022	Shredders	3	5	17.25	447.183	7.527	0.029	0.399	0.399	858.879	0.97
2022	Shredders	6	15	10.763	453.447	6.649	0.035	7.199	7.199	858.879	0.668
2023	Shredders	3	5	17.154	445.909	7.53	0.029	0.379	0.379	858.879	0.965
2023	Shredders	6	15	10.088	452.461	6.66	0.035	7.199	7.199	858.879	0.627
2024	Shredders	3	5	17.084	444.654	7.537	0.029	0.36	0.36	858.879	0.961
2024	Shredders	6	15	9.575	451.691	6.669	0.035	7.199	7.199	858.879	0.595
2025	Shredders	3	5	17.02	443.666	7.54	0.029	0.343	0.343	858.879	0.957
2025	Shredders	6	15	9.157	451.013	6.676	0.035	7.2	7.2	858.879	0.569
2030	Shredders	3	5	16.911	441.143	7.547	0.029	0.287	0.287	858.879	0.952
2030	Shredders	6	15	8.653	449.536	6.686	0.035	7.199	7.199	858.879	0.537
2035	Shredders	3	5	16.893	440.552	7.546	0.029	0.279	0.279	858.879	0.952
2035	Shredders	6	15	8.648	449.319	6.686	0.035	7.199	7.199	858.879	0.537
2040	Shredders	3	5	16.881	440.169	7.543	0.029	0.279	0.279	858.879	0.952
2040	Shredders	6	15	8.648	449.319	6.686	0.035	7.199	7.199	858.879	0.537
2017	SkidSteerLoaders	16	25	0.568	3.91907	4.11272	0.005	0.217	0.2	556.7144	0.171
2017	SkidSteerLoaders	26	50	0.568	3.91907	4.11272	0.005	0.217	0.2	556.7144	0.171
2017	SkidSteerLoaders	51	120	0.255	3.31863	3.28618	0.005	0.177	0.162	498.3256	0.153
2018	SkidSteerLoaders	16	25	0.487	3.78725	3.88962	0.005	0.178	0.164	547.5575	0.17
2018	SkidSteerLoaders	26	50	0.487	3.78725	3.88962	0.005	0.178	0.164	547.5575	0.17
2018	SkidSteerLoaders	51	120	0.216	3.28204	2.86	0.005	0.14	0.129	490.0935	0.153

CalEEMod Appendix D Default Data - Off-Road Equipment Emission Factors

Year	EquipmentType	Low Hp	High Hp	ROGg/bhp-hr	CO,g/bhp-hr	NOX,g/bhp-hr	SO2,g/bhp-hr	PM10,g/bhp-hr	PM2_5,g/bhp-hr	CO2,g/bhp-hr	CH4,g/bhp-hr
2019	SkidSteerLoaders	16	25	0.446	3.73957	3.75009	0.005	0.154	0.141	539.2667	0.171
2019	SkidSteerLoaders	26	50	0.446	3.73957	3.75009	0.005	0.154	0.141	539.2667	0.171
2019	SkidSteerLoaders	51	120	0.199	3.27736	2.65586	0.005	0.122	0.112	482.3844	0.153
2020	SkidSteerLoaders	16	25	0.439	3.76397	3.69113	0.005	0.145	0.133	527.7577	0.171
2020	SkidSteerLoaders	26	50	0.439	3.76397	3.69113	0.005	0.145	0.133	527.7577	0.171
2020	SkidSteerLoaders	51	120	0.188	3.2771	2.5046	0.005	0.108	0.1	471.9075	0.153
2021	SkidSteerLoaders	16	25	0.409	3.73158	3.57304	0.005	0.126	0.116	527.4501	0.171
2021	SkidSteerLoaders	26	50	0.409	3.73158	3.57304	0.005	0.126	0.116	527.4501	0.171
2021	SkidSteerLoaders	51	120	0.178	3.27687	2.36588	0.005	0.096	0.089	471.9774	0.153
2022	SkidSteerLoaders	16	25	0.365	3.65597	3.43256	0.005	0.103	0.095	527.2726	0.171
2022	SkidSteerLoaders	26	50	0.365	3.65597	3.43256	0.005	0.103	0.095	527.2726	0.171
2022	SkidSteerLoaders	51	120	0.164	3.27037	2.18922	0.005	0.081	0.075	472.4321	0.153
2023	SkidSteerLoaders	16	25	0.353	3.65358	3.37057	0.005	0.093	0.086	527.4231	0.171
2023	SkidSteerLoaders	26	50	0.353	3.65358	3.37057	0.005	0.093	0.086	527.4231	0.171
2023	SkidSteerLoaders	51	120	0.153	3.26613	2.03854	0.005	0.069	0.063	472.656	0.153
2024	SkidSteerLoaders	16	25	0.349	3.67076	3.34552	0.005	0.089	0.082	527.8005	0.171
2024	SkidSteerLoaders	26	50	0.349	3.67076	3.34552	0.005	0.089	0.082	527.8005	0.171
2024	SkidSteerLoaders	51	120	0.147	3.26403	1.94841	0.005	0.063	0.058	472.847	0.153
2025	SkidSteerLoaders	16	25	0.341	3.6601	3.30934	0.005	0.084	0.077	527.8608	0.171
2025	SkidSteerLoaders	26	50	0.341	3.6601	3.30934	0.005	0.084	0.077	527.8608	0.171
2025	SkidSteerLoaders	51	120	0.14	3.25156	1.86736	0.005	0.057	0.052	472.6295	0.153
2030	SkidSteerLoaders	16	25	0.685	2.34	4.332	0.007	0.162	0.162	568.299	0.061
2030	SkidSteerLoaders	26	50	0.411	4.386	3.128	0.007	0.018	0.018	568.299	0.037
2030	SkidSteerLoaders	51	120	0.214	3.538	1.477	0.006	0.017	0.017	568.299	0.019
2035	SkidSteerLoaders	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2035	SkidSteerLoaders	26	50	0.411	4.39	3.097	0.007	0.015	0.015	568.299	0.037
2035	SkidSteerLoaders	51	120	0.211	3.54	1.442	0.006	0.014	0.014	568.299	0.019
2040	SkidSteerLoaders	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2040	SkidSteerLoaders	26	50	0.411	4.392	3.093	0.007	0.014	0.014	568.299	0.037
2040	SkidSteerLoaders	51	120	0.211	3.54	1.435	0.006	0.013	0.013	568.3	0.019
2017	Tractors/Loaders/Backhoes	16	25	1.194	5.68921	5.10958	0.005	0.433	0.398	544.9286	0.167
2017	Tractors/Loaders/Backhoes	26	50	1.194	5.68921	5.10958	0.005	0.433	0.398	544.9286	0.167
2017	Tractors/Loaders/Backhoes	51	120	0.5	3.7818	4.8087	0.005	0.362	0.333	502.7952	0.154
2017	Tractors/Loaders/Backhoes	121	175	0.354	3.19961	3.87876	0.005	0.197	0.181	493.912	0.151
2017	Tractors/Loaders/Backhoes	176	250	0.291	1.30369	4.04062	0.005	0.132	0.121	496.8449	0.152
2017	Tractors/Loaders/Backhoes	251	500	0.272	1.73851	3.48988	0.005	0.122	0.112	497.1129	0.152
2017	Tractors/Loaders/Backhoes	501	750	0.296	1.64567	3.86196	0.005	0.139	0.128	492.9529	0.151
2018	Tractors/Loaders/Backhoes	16	25	0.992	5.31043	4.76441	0.005	0.363	0.334	536.1115	0.167
2018	Tractors/Loaders/Backhoes	26	50	0.992	5.31043	4.76441	0.005	0.363	0.334	536.1115	0.167
2018	Tractors/Loaders/Backhoes	51	120	0.42	3.69155	4.15444	0.005	0.294	0.271	494.1237	0.154
2018	Tractors/Loaders/Backhoes	121	175	0.297	3.13727	3.16806	0.005	0.16	0.147	485.7754	0.151
2018	Tractors/Loaders/Backhoes	176	250	0.259	1.24197	3.45965	0.005	0.112	0.103	489.4562	0.152
2018	Tractors/Loaders/Backhoes	251	500	0.222	1.44545	2.66877	0.005	0.092	0.085	486.2939	0.151
2018	Tractors/Loaders/Backhoes	501	750	0.271	1.60068	3.40235	0.005	0.124	0.114	485.0099	0.151
2019	Tractors/Loaders/Backhoes	16	25	0.92	5.20327	4.60928	0.005	0.33	0.304	527.6843	0.167
2019	Tractors/Loaders/Backhoes	26	50	0.92	5.20327	4.60928	0.005	0.33	0.304	527.6843	0.167
2019	Tractors/Loaders/Backhoes	51	120	0.368	3.63777	3.69257	0.005	0.247	0.227	485.8548	0.154
2019	Tractors/Loaders/Backhoes	121	175	0.27	3.12158	2.78412	0.005	0.14	0.129	477.9151	0.151
2019	Tractors/Loaders/Backhoes	176	250	0.245	1.22027	3.14683	0.005	0.102	0.094	481.4206	0.152
2019	Tractors/Loaders/Backhoes	251	500	0.206	1.38918	2.34458	0.005	0.082	0.075	479.0826	0.152

CalEEMod Appendix D Default Data - Off-Road Equipment Emission Factors

Year	EquipmentType	Low Hp	High Hp	ROGg/bhp-hr	CO,g/bhp-hr	NOX,g/bhp-hr	SO2,g/bhp-hr	PM10,g/bhp-hr	PM2_5,g/bhp-hr	CO2,g/bhp-hr	CH4,g/bhp-hr
2019	Tractors/Loaders/Backhoes	501	750	0.262	1.6025	3.12046	0.005	0.117	0.107	478.9216	0.152
2020	Tractors/Loaders/Backhoes	16	25	0.83	5.03491	4.39784	0.005	0.288	0.265	515.874	0.167
2020	Tractors/Loaders/Backhoes	26	50	0.83	5.03491	4.39784	0.005	0.288	0.265	515.874	0.167
2020	Tractors/Loaders/Backhoes	51	120	0.331	3.60147	3.32571	0.005	0.21	0.193	475.1543	0.154
2020	Tractors/Loaders/Backhoes	121	175	0.246	3.10518	2.41467	0.005	0.122	0.112	467.5132	0.151
2020	Tractors/Loaders/Backhoes	176	250	0.225	1.19592	2.73794	0.005	0.09	0.083	470.4998	0.152
2020	Tractors/Loaders/Backhoes	251	500	0.194	1.35815	2.07976	0.005	0.073	0.067	468.2447	0.151
2020	Tractors/Loaders/Backhoes	501	750	0.268	1.60984	3.11926	0.005	0.117	0.108	468.6602	0.152
2021	Tractors/Loaders/Backhoes	16	25	0.756	4.90172	4.22643	0.005	0.254	0.234	515.1213	0.167
2021	Tractors/Loaders/Backhoes	26	50	0.756	4.90172	4.22643	0.005	0.254	0.234	515.1213	0.167
2021	Tractors/Loaders/Backhoes	51	120	0.296	3.57072	2.995	0.005	0.177	0.162	475.3621	0.154
2021	Tractors/Loaders/Backhoes	121	175	0.221	3.0907	2.06221	0.005	0.104	0.096	467.5285	0.151
2021	Tractors/Loaders/Backhoes	176	250	0.209	1.18606	2.36922	0.005	0.08	0.074	470.5716	0.152
2021	Tractors/Loaders/Backhoes	251	500	0.179	1.34147	1.776	0.005	0.064	0.059	469.3025	0.152
2021	Tractors/Loaders/Backhoes	501	750	0.247	1.43254	2.75417	0.005	0.104	0.096	466.4564	0.151
2022	Tractors/Loaders/Backhoes	16	25	0.688	4.75954	4.03024	0.005	0.218	0.2	514.4613	0.166
2022	Tractors/Loaders/Backhoes	26	50	0.688	4.75954	4.03024	0.005	0.218	0.2	514.4613	0.166
2022	Tractors/Loaders/Backhoes	51	120	0.26	3.53551	2.64718	0.005	0.142	0.131	475.8975	0.154
2022	Tractors/Loaders/Backhoes	121	175	0.2	3.07944	1.75274	0.005	0.089	0.082	467.8004	0.151
2022	Tractors/Loaders/Backhoes	176	250	0.187	1.16248	1.94251	0.005	0.067	0.062	470.1236	0.152
2022	Tractors/Loaders/Backhoes	251	500	0.16	1.28026	1.43694	0.005	0.053	0.049	469.2562	0.152
2022	Tractors/Loaders/Backhoes	501	750	0.232	1.35272	2.4532	0.005	0.094	0.087	466.6327	0.151
2023	Tractors/Loaders/Backhoes	16	25	0.621	4.62935	3.85698	0.005	0.185	0.17	513.7962	0.166
2023	Tractors/Loaders/Backhoes	26	50	0.621	4.62935	3.85698	0.005	0.185	0.17	513.7962	0.166
2023	Tractors/Loaders/Backhoes	51	120	0.239	3.52504	2.42607	0.005	0.12	0.11	476.4307	0.154
2023	Tractors/Loaders/Backhoes	121	175	0.184	3.0777	1.52095	0.005	0.077	0.07	468.821	0.152
2023	Tractors/Loaders/Backhoes	176	250	0.169	1.14809	1.58768	0.005	0.058	0.053	469.7518	0.152
2023	Tractors/Loaders/Backhoes	251	500	0.152	1.27923	1.24708	0.005	0.047	0.043	469.4652	0.152
2023	Tractors/Loaders/Backhoes	501	750	0.234	1.36081	2.41861	0.005	0.095	0.087	466.6756	0.151
2024	Tractors/Loaders/Backhoes	16	25	0.59	4.60899	3.76811	0.005	0.166	0.153	513.8517	0.166
2024	Tractors/Loaders/Backhoes	26	50	0.59	4.60899	3.76811	0.005	0.166	0.153	513.8517	0.166
2024	Tractors/Loaders/Backhoes	51	120	0.227	3.5318	2.28795	0.005	0.105	0.097	476.7313	0.154
2024	Tractors/Loaders/Backhoes	121	175	0.176	3.08913	1.37643	0.005	0.068	0.063	469.4029	0.152
2024	Tractors/Loaders/Backhoes	176	250	0.168	1.15125	1.49113	0.005	0.054	0.05	469.9143	0.152
2024	Tractors/Loaders/Backhoes	251	500	0.15	1.277	1.16321	0.005	0.044	0.041	470.0841	0.152
2024	Tractors/Loaders/Backhoes	501	750	0.221	1.31051	2.21548	0.005	0.085	0.079	466.6381	0.151
2025	Tractors/Loaders/Backhoes	16	25	0.55	4.55974	3.66186	0.005	0.145	0.133	513.8025	0.166
2025	Tractors/Loaders/Backhoes	26	50	0.55	4.55974	3.66186	0.005	0.145	0.133	513.8025	0.166
2025	Tractors/Loaders/Backhoes	51	120	0.209	3.52242	2.10918	0.005	0.085	0.079	477.188	0.154
2025	Tractors/Loaders/Backhoes	121	175	0.162	3.08323	1.18039	0.005	0.058	0.054	469.3289	0.152
2025	Tractors/Loaders/Backhoes	176	250	0.154	1.14554	1.23458	0.005	0.047	0.044	470.5976	0.152
2025	Tractors/Loaders/Backhoes	251	500	0.144	1.23405	1.04575	0.005	0.039	0.036	470.9102	0.152
2025	Tractors/Loaders/Backhoes	501	750	0.187	1.26139	1.64868	0.005	0.067	0.062	466.4517	0.151
2030	Tractors/Loaders/Backhoes	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2030	Tractors/Loaders/Backhoes	26	50	0.539	4.966	3.299	0.007	0.033	0.033	568.299	0.048
2030	Tractors/Loaders/Backhoes	51	120	0.272	3.705	1.624	0.006	0.03	0.03	568.299	0.024
2030	Tractors/Loaders/Backhoes	121	175	0.193	3.273	0.485	0.006	0.02	0.02	568.299	0.017
2030	Tractors/Loaders/Backhoes	176	250	0.183	1.115	0.418	0.006	0.014	0.014	568.299	0.016
2030	Tractors/Loaders/Backhoes	251	500	0.182	1.066	0.403	0.006	0.014	0.014	568.299	0.016
2030	Tractors/Loaders/Backhoes	501	750	0.182	1.066	0.407	0.006	0.014	0.014	568.299	0.016

CalEEMod Appendix D Default Data - Off-Road Equipment Emission Factors

Year	EquipmentType	Low Hp	High Hp	ROGg/bhp-hr	CO,g/bhp-hr	NOX,g/bhp-hr	SO2,g/bhp-hr	PM10,g/bhp-hr	PM2_5,g/bhp-hr	CO2,g/bhp-hr	CH4,g/bhp-hr
2035	Tractors/Loaders/Backhoes	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2035	Tractors/Loaders/Backhoes	26	50	0.515	4.949	3.244	0.007	0.022	0.022	568.299	0.046
2035	Tractors/Loaders/Backhoes	51	120	0.258	3.703	1.521	0.006	0.02	0.02	568.299	0.023
2035	Tractors/Loaders/Backhoes	121	175	0.179	3.275	0.348	0.006	0.015	0.015	568.299	0.016
2035	Tractors/Loaders/Backhoes	176	250	0.177	1.115	0.331	0.006	0.012	0.012	568.299	0.016
2035	Tractors/Loaders/Backhoes	251	500	0.177	1.066	0.326	0.006	0.012	0.012	568.299	0.015
2035	Tractors/Loaders/Backhoes	501	750	0.177	1.066	0.327	0.006	0.012	0.012	568.299	0.015
2040	Tractors/Loaders/Backhoes	16	25	0.685	2.339	4.332	0.007	0.161	0.161	568.299	0.061
2040	Tractors/Loaders/Backhoes	26	50	0.508	4.946	3.22	0.007	0.018	0.018	568.299	0.045
2040	Tractors/Loaders/Backhoes	51	120	0.254	3.703	1.485	0.006	0.016	0.016	568.299	0.022
2040	Tractors/Loaders/Backhoes	121	175	0.175	3.276	0.305	0.006	0.012	0.012	568.299	0.015
2040	Tractors/Loaders/Backhoes	176	250	0.174	1.116	0.297	0.006	0.011	0.011	568.3	0.015
2040	Tractors/Loaders/Backhoes	251	500	0.174	1.066	0.297	0.006	0.011	0.011	568.299	0.015
2040	Tractors/Loaders/Backhoes	501	750	0.174	1.066	0.297	0.006	0.011	0.011	568.299	0.015

EMFAC2017 On-Road Vehicle Emission Rate Calculations

calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2018	Annual	Los Angeles (SC)	HHDT	Dsl	CH4	0.0827	6221998.3003	0.0121	
2018	Annual	Los Angeles (SC)	HHDT	Gas	CH4	0.0013	5894.6769	0.1955	
2018	Annual	Los Angeles (SC)	HHDT	NG	CH4	0.5193	77453.0337	6.0823	0.086790
2018	Annual	Los Angeles (SC)	LDA	Dsl	CH4	0.0019	1030226.7312	0.0017	
2018	Annual	Los Angeles (SC)	LDA	Gas	CH4	2.3520	152352408.3387	0.0140	0.013922
2018	Annual	Los Angeles (SC)	LDT1	Dsl	CH4	0.0001	9678.8484	0.0112	
2018	Annual	Los Angeles (SC)	LDT1	Gas	CH4	0.4518	15417610.8716	0.0266	0.026574
2018	Annual	Los Angeles (SC)	LDT2	Dsl	CH4	0.0004	247931.8140	0.0014	
2018	Annual	Los Angeles (SC)	LDT2	Gas	CH4	1.0999	50345385.8197	0.0198	0.019728
2018	Annual	Los Angeles (SC)	LHDT1	Dsl	CH4	0.0098	1981420.1402	0.0045	
2018	Annual	Los Angeles (SC)	LHDT1	Gas	CH4	0.1272	4057201.8898	0.0284	0.020573
2018	Annual	Los Angeles (SC)	LHDT2	Dsl	CH4	0.0037	772852.4144	0.0044	
2018	Annual	Los Angeles (SC)	LHDT2	Gas	CH4	0.0183	620060.9911	0.0267	0.014317
2018	Annual	Los Angeles (SC)	MHDT	Dsl	CH4	0.0448	3646765.8291	0.0111	
2018	Annual	Los Angeles (SC)	MHDT	Gas	CH4	0.0448	791158.0454	0.0513	0.018300
2018	Annual	Los Angeles (SC)	HHDT	Dsl	CO	8.3803	6221998.3003	1.2219	
2018	Annual	Los Angeles (SC)	HHDT	Gas	CO	0.3542	5894.6769	54.5092	
2018	Annual	Los Angeles (SC)	HHDT	NG	CO	1.0960	77453.0337	12.8367	1.414363
2018	Annual	Los Angeles (SC)	LDA	Dsl	CO	0.4187	1030226.7312	0.3687	
2018	Annual	Los Angeles (SC)	LDA	Gas	CO	232.6997	152352408.3387	1.3856	1.378782
2018	Annual	Los Angeles (SC)	LDT1	Dsl	CO	0.0141	9678.8484	1.3214	
2018	Annual	Los Angeles (SC)	LDT1	Gas	CO	46.4257	15417610.8716	2.7317	2.730837
2018	Annual	Los Angeles (SC)	LDT2	Dsl	CO	0.0535	247931.8140	0.1957	
2018	Annual	Los Angeles (SC)	LDT2	Gas	CO	108.7589	50345385.8197	1.9598	1.951106
2018	Annual	Los Angeles (SC)	LHDT1	Dsl	CO	1.1757	1981420.1402	0.5383	
2018	Annual	Los Angeles (SC)	LHDT1	Gas	CO	10.6645	4057201.8898	2.3846	1.778764
2018	Annual	Los Angeles (SC)	LHDT2	Dsl	CO	0.4412	772852.4144	0.5178	
2018	Annual	Los Angeles (SC)	LHDT2	Gas	CO	1.4387	620060.9911	2.1048	1.224292
2018	Annual	Los Angeles (SC)	MHDT	Dsl	CO	3.2476	3646765.8291	0.8079	
2018	Annual	Los Angeles (SC)	MHDT	Gas	CO	5.3777	791158.0454	6.1664	1.763159
2018	Annual	Los Angeles (SC)	HHDT	Dsl	CO2	11569.3749	6221998.3003	1686.8458	
2018	Annual	Los Angeles (SC)	HHDT	Gas	CO2	15.0653	5894.6769	2318.5322	
2018	Annual	Los Angeles (SC)	HHDT	NG	CO2	315.3510	77453.0337	3693.6114	1712.086881
2018	Annual	Los Angeles (SC)	LDA	Dsl	CO2	273.3776	1030226.7312	240.7274	
2018	Annual	Los Angeles (SC)	LDA	Gas	CO2	52673.1988	152352408.3387	313.6431	313.153356
2018	Annual	Los Angeles (SC)	LDT1	Dsl	CO2	5.1701	9678.8484	484.5895	
2018	Annual	Los Angeles (SC)	LDT1	Gas	CO2	6190.9464	15417610.8716	364.2800	364.355495

EMFAC2017 On-Road Vehicle Emission Rate Calculations

calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2018	Annual	Los Angeles (SC)	LDT2	Dsl	CO2	90.0322	247931.8140	329.4283	
2018	Annual	Los Angeles (SC)	LDT2	Gas	CO2	22559.9215	50345385.8197	406.5119	406.134180
2018	Annual	Los Angeles (SC)	LHDT1	Dsl	CO2	1089.3129	1981420.1402	498.7369	
2018	Annual	Los Angeles (SC)	LHDT1	Gas	CO2	3828.1227	4057201.8898	855.9623	738.747831
2018	Annual	Los Angeles (SC)	LHDT2	Dsl	CO2	471.8091	772852.4144	553.8156	
2018	Annual	Los Angeles (SC)	LHDT2	Gas	CO2	672.1270	620060.9911	983.3595	745.028768
2018	Annual	Los Angeles (SC)	MHDT	Dsl	CO2	4281.5979	3646765.8291	1065.1074	
2018	Annual	Los Angeles (SC)	MHDT	Gas	CO2	1560.2206	791158.0454	1789.0322	1194.162962
2018	Annual	Los Angeles (SC)	HHDT	Dsl	N2O	1.8185	6221998.3003	0.2651	
2018	Annual	Los Angeles (SC)	HHDT	Gas	N2O	0.0013	5894.6769	0.2051	
2018	Annual	Los Angeles (SC)	HHDT	NG	N2O	0.0643	77453.0337	0.7530	0.271085
2018	Annual	Los Angeles (SC)	LDA	Dsl	N2O	0.0430	1030226.7312	0.0378	
2018	Annual	Los Angeles (SC)	LDA	Gas	N2O	1.7400	152352408.3387	0.0104	0.010545
2018	Annual	Los Angeles (SC)	LDT1	Dsl	N2O	0.0008	9678.8484	0.0762	
2018	Annual	Los Angeles (SC)	LDT1	Gas	N2O	0.3127	15417610.8716	0.0184	0.018438
2018	Annual	Los Angeles (SC)	LDT2	Dsl	N2O	0.0142	247931.8140	0.0518	
2018	Annual	Los Angeles (SC)	LDT2	Gas	N2O	0.8969	50345385.8197	0.0162	0.016336
2018	Annual	Los Angeles (SC)	LHDT1	Dsl	N2O	0.1712	1981420.1402	0.0784	
2018	Annual	Los Angeles (SC)	LHDT1	Gas	N2O	0.1624	4057201.8898	0.0363	0.050117
2018	Annual	Los Angeles (SC)	LHDT2	Dsl	N2O	0.0742	772852.4144	0.0871	
2018	Annual	Los Angeles (SC)	LHDT2	Gas	N2O	0.0262	620060.9911	0.0383	0.065364
2018	Annual	Los Angeles (SC)	MHDT	Dsl	N2O	0.6730	3646765.8291	0.1674	
2018	Annual	Los Angeles (SC)	MHDT	Gas	N2O	0.0454	791158.0454	0.0520	0.146846
2018	Annual	Los Angeles (SC)	HHDT	Dsl	NOx	42.8522	6221998.3003	6.2480	
2018	Annual	Los Angeles (SC)	HHDT	Gas	NOx	0.0450	5894.6769	6.9246	
2018	Annual	Los Angeles (SC)	HHDT	NG	NOx	0.5246	77453.0337	6.1446	6.247336
2018	Annual	Los Angeles (SC)	LDA	Dsl	NOx	0.1916	1030226.7312	0.1687	
2018	Annual	Los Angeles (SC)	LDA	Gas	NOx	17.4296	152352408.3387	0.1038	0.104221
2018	Annual	Los Angeles (SC)	LDT1	Dsl	NOx	0.0134	9678.8484	1.2538	
2018	Annual	Los Angeles (SC)	LDT1	Gas	NOx	4.4522	15417610.8716	0.2620	0.262590
2018	Annual	Los Angeles (SC)	LDT2	Dsl	NOx	0.0204	247931.8140	0.0745	
2018	Annual	Los Angeles (SC)	LDT2	Gas	NOx	11.7157	50345385.8197	0.2111	0.210438
2018	Annual	Los Angeles (SC)	LHDT1	Dsl	NOx	5.6306	1981420.1402	2.5779	
2018	Annual	Los Angeles (SC)	LHDT1	Gas	NOx	2.4423	4057201.8898	0.5461	1.212783
2018	Annual	Los Angeles (SC)	LHDT2	Dsl	NOx	2.0704	772852.4144	2.4303	
2018	Annual	Los Angeles (SC)	LHDT2	Gas	NOx	0.3919	620060.9911	0.5734	1.603668
2018	Annual	Los Angeles (SC)	MHDT	Dsl	NOx	17.9767	3646765.8291	4.4720	

EMFAC2017 On-Road Vehicle Emission Rate Calculations

calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2018	Annual	Los Angeles (SC)	MHDT	Gas	NOx	0.9384	791158.0454	1.0760	3.866561
2018	Annual	Los Angeles (SC)	HHDT	Dsl	PM10	1.2977	6221998.3003	0.1892	
2018	Annual	Los Angeles (SC)	HHDT	Gas	PM10	0.0006	5894.6769	0.0849	
2018	Annual	Los Angeles (SC)	HHDT	NG	PM10	0.0094	77453.0337	0.1100	0.188139
2018	Annual	Los Angeles (SC)	LDA	Dsl	PM10	0.0736	1030226.7312	0.0648	
2018	Annual	Los Angeles (SC)	LDA	Elec	PM10	0.0793	1607385.5710	0.0447	
2018	Annual	Los Angeles (SC)	LDA	Gas	PM10	7.9025	152352408.3387	0.0471	0.047150
2018	Annual	Los Angeles (SC)	LDT1	Dsl	PM10	0.0024	9678.8484	0.2271	
2018	Annual	Los Angeles (SC)	LDT1	Elec	PM10	0.0015	31333.3981	0.0447	
2018	Annual	Los Angeles (SC)	LDT1	Gas	PM10	0.8299	15417610.8716	0.0488	0.048936
2018	Annual	Los Angeles (SC)	LDT2	Dsl	PM10	0.0153	247931.8140	0.0559	
2018	Annual	Los Angeles (SC)	LDT2	Elec	PM10	0.0085	171904.9306	0.0447	
2018	Annual	Los Angeles (SC)	LDT2	Gas	PM10	2.6206	50345385.8197	0.0472	0.047255
2018	Annual	Los Angeles (SC)	LHDT1	Dsl	PM10	0.2390	1981420.1402	0.1094	
2018	Annual	Los Angeles (SC)	LHDT1	Gas	PM10	0.3857	4057201.8898	0.0862	0.052214
2018	Annual	Los Angeles (SC)	LHDT2	Dsl	PM10	0.1046	772852.4144	0.1228	
2018	Annual	Los Angeles (SC)	LHDT2	Gas	PM10	0.0675	620060.9911	0.0988	0.092854
2018	Annual	Los Angeles (SC)	MHDT	Dsl	PM10	1.1063	3646765.8291	0.2752	
2018	Annual	Los Angeles (SC)	MHDT	Gas	PM10	0.1255	791158.0454	0.1439	0.233024
2018	Annual	Los Angeles (SC)	HHDT	Dsl	PM2_5	0.8481	6221998.3003	0.1237	
2018	Annual	Los Angeles (SC)	HHDT	Gas	PM2_5	0.0002	5894.6769	0.0344	
2018	Annual	Los Angeles (SC)	HHDT	NG	PM2_5	0.0040	77453.0337	0.0472	0.122631
2018	Annual	Los Angeles (SC)	LDA	Dsl	PM2_5	0.0420	1030226.7312	0.0370	
2018	Annual	Los Angeles (SC)	LDA	Elec	PM2_5	0.0315	1607385.5710	0.0177	
2018	Annual	Los Angeles (SC)	LDA	Gas	PM2_5	3.3370	152352408.3387	0.0199	0.019962
2018	Annual	Los Angeles (SC)	LDT1	Dsl	PM2_5	0.0021	9678.8484	0.1922	
2018	Annual	Los Angeles (SC)	LDT1	Elec	PM2_5	0.0006	31333.3981	0.0177	
2018	Annual	Los Angeles (SC)	LDT1	Gas	PM2_5	0.3655	15417610.8716	0.0215	0.021605
2018	Annual	Los Angeles (SC)	LDT2	Dsl	PM2_5	0.0078	247931.8140	0.0284	
2018	Annual	Los Angeles (SC)	LDT2	Elec	PM2_5	0.0034	171904.9306	0.0177	
2018	Annual	Los Angeles (SC)	LDT2	Gas	PM2_5	1.1112	50345385.8197	0.0200	0.020056
2018	Annual	Los Angeles (SC)	LHDT1	Dsl	PM2_5	0.1219	1981420.1402	0.0558	
2018	Annual	Los Angeles (SC)	LHDT1	Gas	PM2_5	0.1629	4057201.8898	0.0364	0.022461
2018	Annual	Los Angeles (SC)	LHDT2	Dsl	PM2_5	0.0527	772852.4144	0.0619	
2018	Annual	Los Angeles (SC)	LHDT2	Gas	PM2_5	0.0285	620060.9911	0.0417	0.040635
2018	Annual	Los Angeles (SC)	MHDT	Dsl	PM2_5	0.7476	3646765.8291	0.1860	
2018	Annual	Los Angeles (SC)	MHDT	Gas	PM2_5	0.0525	791158.0454	0.0603	0.148617

EMFAC2017 On-Road Vehicle Emission Rate Calculations

calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2018	Annual	Los Angeles (SC)	HHDT	Dsl	ROG	1.7799	6221998.3003	0.2595	
2018	Annual	Los Angeles (SC)	HHDT	Gas	ROG	0.0109	5894.6769	1.6743	
2018	Annual	Los Angeles (SC)	HHDT	NG	ROG	0.0500	77453.0337	0.5857	0.264839
2018	Annual	Los Angeles (SC)	LDA	Dsl	ROG	0.0408	1030226.7312	0.0359	
2018	Annual	Los Angeles (SC)	LDA	Elec	ROG	0.0025	1607385.5710	0.0014	
2018	Annual	Los Angeles (SC)	LDA	Gas	ROG	21.6503	152352408.3387	0.1289	0.126977
2018	Annual	Los Angeles (SC)	LDT1	Dsl	ROG	0.0026	9678.8484	0.2416	
2018	Annual	Los Angeles (SC)	LDT1	Elec	ROG	0.0001	31333.3981	0.0017	
2018	Annual	Los Angeles (SC)	LDT1	Gas	ROG	5.5319	15417610.8716	0.3255	0.324790
2018	Annual	Los Angeles (SC)	LDT2	Dsl	ROG	0.0080	247931.8140	0.0293	
2018	Annual	Los Angeles (SC)	LDT2	Elec	ROG	0.0003	171904.9306	0.0015	
2018	Annual	Los Angeles (SC)	LDT2	Gas	ROG	10.7911	50345385.8197	0.1944	0.192987
2018	Annual	Los Angeles (SC)	LHDT1	Dsl	ROG	0.2105	1981420.1402	0.0964	
2018	Annual	Los Angeles (SC)	LHDT1	Gas	ROG	2.6872	4057201.8898	0.6009	0.220245
2018	Annual	Los Angeles (SC)	LHDT2	Dsl	ROG	0.0798	772852.4144	0.0937	
2018	Annual	Los Angeles (SC)	LHDT2	Gas	ROG	0.4132	620060.9911	0.6045	0.529359
2018	Annual	Los Angeles (SC)	MHDT	Dsl	ROG	0.9635	3646765.8291	0.2397	
2018	Annual	Los Angeles (SC)	MHDT	Gas	ROG	0.4661	791158.0454	0.5345	0.330520
2018	Annual	Los Angeles (SC)	HHDT	Dsl	SOx	0.1093	6221998.3003	0.0159	
2018	Annual	Los Angeles (SC)	HHDT	Gas	SOx	0.0001	5894.6769	0.0229	0.015943
2018	Annual	Los Angeles (SC)	LDA	Dsl	SOx	0.0026	1030226.7312	0.0023	
2018	Annual	Los Angeles (SC)	LDA	Gas	SOx	0.5212	152352408.3387	0.0031	0.003098
2018	Annual	Los Angeles (SC)	LDT1	Dsl	SOx	0.0000	9678.8484	0.0046	
2018	Annual	Los Angeles (SC)	LDT1	Gas	SOx	0.0613	15417610.8716	0.0036	0.003605
2018	Annual	Los Angeles (SC)	LDT2	Dsl	SOx	0.0009	247931.8140	0.0031	
2018	Annual	Los Angeles (SC)	LDT2	Gas	SOx	0.2232	50345385.8197	0.0040	0.004018
2018	Annual	Los Angeles (SC)	LHDT1	Dsl	SOx	0.0103	1981420.1402	0.0047	
2018	Annual	Los Angeles (SC)	LHDT1	Gas	SOx	0.0379	4057201.8898	0.0085	0.007238
2018	Annual	Los Angeles (SC)	LHDT2	Dsl	SOx	0.0045	772852.4144	0.0052	
2018	Annual	Los Angeles (SC)	LHDT2	Gas	SOx	0.0067	620060.9911	0.0097	0.007237
2018	Annual	Los Angeles (SC)	MHDT	Dsl	SOx	0.0405	3646765.8291	0.0101	
2018	Annual	Los Angeles (SC)	MHDT	Gas	SOx	0.0154	791158.0454	0.0177	0.011425
2023	Annual	Los Angeles (SC)	HHDT	Dsl	CH4	0.0206	6949256.2028	0.0027	
2023	Annual	Los Angeles (SC)	HHDT	Gas	CH4	0.0006	5904.5109	0.0952	
2023	Annual	Los Angeles (SC)	HHDT	NG	CH4	0.6258	113851.6430	4.9867	0.083040
2023	Annual	Los Angeles (SC)	LDA	Dsl	CH4	0.0014	1426244.8152	0.0009	
2023	Annual	Los Angeles (SC)	LDA	Gas	CH4	1.4350	149418105.5947	0.0087	0.008638

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calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2023	Annual	Los Angeles (SC)	LDT1	Dsl	CH4	0.0001	6132.9220	0.0085	
2023	Annual	Los Angeles (SC)	LDT1	Gas	CH4	0.2872	17372474.5967	0.0150	0.014996
2023	Annual	Los Angeles (SC)	LDT2	Dsl	CH4	0.0005	404272.1374	0.0010	
2023	Annual	Los Angeles (SC)	LDT2	Gas	CH4	0.7187	52162943.3579	0.0125	0.012412
2023	Annual	Los Angeles (SC)	LHDT1	Dsl	CH4	0.0095	2893383.1066	0.0030	
2023	Annual	Los Angeles (SC)	LHDT1	Gas	CH4	0.0811	3800052.4079	0.0194	0.012280
2023	Annual	Los Angeles (SC)	LHDT2	Dsl	CH4	0.0037	1126544.0266	0.0030	
2023	Annual	Los Angeles (SC)	LHDT2	Gas	CH4	0.0126	625878.5235	0.0183	0.008430
2023	Annual	Los Angeles (SC)	MHDT	Dsl	CH4	0.0020	4246866.4962	0.0004	
2023	Annual	Los Angeles (SC)	MHDT	Gas	CH4	0.0267	797300.0842	0.0303	0.005147
2023	Annual	Los Angeles (SC)	HHDT	Dsl	CO	5.9317	6949256.2028	0.7744	
2023	Annual	Los Angeles (SC)	HHDT	Gas	CO	0.2181	5904.5109	33.5164	
2023	Annual	Los Angeles (SC)	HHDT	NG	CO	1.7631	113851.6430	14.0489	1.015498
2023	Annual	Los Angeles (SC)	LDA	Dsl	CO	0.4420	1426244.8152	0.2812	
2023	Annual	Los Angeles (SC)	LDA	Gas	CO	156.5973	149418105.5947	0.9508	0.944441
2023	Annual	Los Angeles (SC)	LDT1	Dsl	CO	0.0073	6132.9220	1.0747	
2023	Annual	Los Angeles (SC)	LDT1	Gas	CO	30.4194	17372474.5967	1.5885	1.588306
2023	Annual	Los Angeles (SC)	LDT2	Dsl	CO	0.0860	404272.1374	0.1931	
2023	Annual	Los Angeles (SC)	LDT2	Gas	CO	73.6860	52162943.3579	1.2815	1.273128
2023	Annual	Los Angeles (SC)	LHDT1	Dsl	CO	1.0450	2893383.1066	0.3277	
2023	Annual	Los Angeles (SC)	LHDT1	Gas	CO	6.5420	3800052.4079	1.5618	1.028300
2023	Annual	Los Angeles (SC)	LHDT2	Dsl	CO	0.4029	1126544.0266	0.3244	
2023	Annual	Los Angeles (SC)	LHDT2	Gas	CO	0.9342	625878.5235	1.3540	0.692166
2023	Annual	Los Angeles (SC)	MHDT	Dsl	CO	0.5330	4246866.4962	0.1139	
2023	Annual	Los Angeles (SC)	MHDT	Gas	CO	2.8370	797300.0842	3.2280	0.606086
2023	Annual	Los Angeles (SC)	HHDT	Dsl	CO2	11176.8921	6949256.2028	1459.0767	
2023	Annual	Los Angeles (SC)	HHDT	Gas	CO2	13.3156	5904.5109	2045.8396	
2023	Annual	Los Angeles (SC)	HHDT	NG	CO2	434.0350	113851.6430	3458.4445	1491.768076
2023	Annual	Los Angeles (SC)	LDA	Dsl	CO2	329.4658	1426244.8152	209.5615	
2023	Annual	Los Angeles (SC)	LDA	Gas	CO2	45485.2571	149418105.5947	276.1613	275.531589
2023	Annual	Los Angeles (SC)	LDT1	Dsl	CO2	3.1168	6132.9220	461.0326	
2023	Annual	Los Angeles (SC)	LDT1	Gas	CO2	6140.8908	17372474.5967	320.6750	320.724509
2023	Annual	Los Angeles (SC)	LDT2	Dsl	CO2	126.9347	404272.1374	284.8406	
2023	Annual	Los Angeles (SC)	LDT2	Gas	CO2	19609.0677	52162943.3579	341.0282	340.596043
2023	Annual	Los Angeles (SC)	LHDT1	Dsl	CO2	1469.0295	2893383.1066	460.5958	
2023	Annual	Los Angeles (SC)	LHDT1	Gas	CO2	3404.7600	3800052.4079	812.8161	660.561220
2023	Annual	Los Angeles (SC)	LHDT2	Dsl	CO2	635.0480	1126544.0266	511.3918	

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calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2023	Annual	Los Angeles (SC)	LHDT2	Gas	CO2	643.7927	625878.5235	933.1499	662.022882
2023	Annual	Los Angeles (SC)	MHDT	Dsl	CO2	4332.3858	4246866.4962	925.4520	
2023	Annual	Los Angeles (SC)	MHDT	Gas	CO2	1476.6739	797300.0842	1680.1892	1044.748605
2023	Annual	Los Angeles (SC)	HHDT	Dsl	N2O	1.7569	6949256.2028	0.2293	
2023	Annual	Los Angeles (SC)	HHDT	Gas	N2O	0.0010	5904.5109	0.1463	
2023	Annual	Los Angeles (SC)	HHDT	NG	N2O	0.0885	113851.6430	0.7050	0.236938
2023	Annual	Los Angeles (SC)	LDA	Dsl	N2O	0.0518	1426244.8152	0.0329	
2023	Annual	Los Angeles (SC)	LDA	Gas	N2O	1.2220	149418105.5947	0.0074	0.007661
2023	Annual	Los Angeles (SC)	LDT1	Dsl	N2O	0.0005	6132.9220	0.0725	
2023	Annual	Los Angeles (SC)	LDT1	Gas	N2O	0.2190	17372474.5967	0.0114	0.011460
2023	Annual	Los Angeles (SC)	LDT2	Dsl	N2O	0.0200	404272.1374	0.0448	
2023	Annual	Los Angeles (SC)	LDT2	Gas	N2O	0.5872	52162943.3579	0.0102	0.010478
2023	Annual	Los Angeles (SC)	LHDT1	Dsl	N2O	0.2309	2893383.1066	0.0724	
2023	Annual	Los Angeles (SC)	LHDT1	Gas	N2O	0.1166	3800052.4079	0.0278	0.047106
2023	Annual	Los Angeles (SC)	LHDT2	Dsl	N2O	0.0998	1126544.0266	0.0804	
2023	Annual	Los Angeles (SC)	LHDT2	Gas	N2O	0.0202	625878.5235	0.0292	0.062121
2023	Annual	Los Angeles (SC)	MHDT	Dsl	N2O	0.6810	4246866.4962	0.1455	
2023	Annual	Los Angeles (SC)	MHDT	Gas	N2O	0.0274	797300.0842	0.0312	0.127407
2023	Annual	Los Angeles (SC)	HHDT	Dsl	NOx	25.8961	6949256.2028	3.3806	
2023	Annual	Los Angeles (SC)	HHDT	Gas	NOx	0.0257	5904.5109	3.9562	
2023	Annual	Los Angeles (SC)	HHDT	NG	NOx	0.4242	113851.6430	3.3800	3.381048
2023	Annual	Los Angeles (SC)	LDA	Dsl	NOx	0.1018	1426244.8152	0.0647	
2023	Annual	Los Angeles (SC)	LDA	Gas	NOx	9.6405	149418105.5947	0.0585	0.058590
2023	Annual	Los Angeles (SC)	LDT1	Dsl	NOx	0.0067	6132.9220	0.9876	
2023	Annual	Los Angeles (SC)	LDT1	Gas	NOx	2.5937	17372474.5967	0.1354	0.135742
2023	Annual	Los Angeles (SC)	LDT2	Dsl	NOx	0.0202	404272.1374	0.0454	
2023	Annual	Los Angeles (SC)	LDT2	Gas	NOx	6.2371	52162943.3579	0.1085	0.107987
2023	Annual	Los Angeles (SC)	LHDT1	Dsl	NOx	3.4333	2893383.1066	1.0765	
2023	Annual	Los Angeles (SC)	LHDT1	Gas	NOx	1.6139	3800052.4079	0.3853	0.684056
2023	Annual	Los Angeles (SC)	LHDT2	Dsl	NOx	1.2940	1126544.0266	1.0420	
2023	Annual	Los Angeles (SC)	LHDT2	Gas	NOx	0.2758	625878.5235	0.3997	0.812623
2023	Annual	Los Angeles (SC)	MHDT	Dsl	NOx	7.5454	4246866.4962	1.6118	
2023	Annual	Los Angeles (SC)	MHDT	Gas	NOx	0.4588	797300.0842	0.5221	1.439539
2023	Annual	Los Angeles (SC)	HHDT	Dsl	PM10	0.8858	6949256.2028	0.1156	
2023	Annual	Los Angeles (SC)	HHDT	Gas	PM10	0.0005	5904.5109	0.0831	
2023	Annual	Los Angeles (SC)	HHDT	NG	PM10	0.0132	113851.6430	0.1049	0.115433
2023	Annual	Los Angeles (SC)	LDA	Dsl	PM10	0.0835	1426244.8152	0.0531	

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calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2023	Annual	Los Angeles (SC)	LDA	Elec	PM10	0.1878	3806341.9367	0.0447	
2023	Annual	Los Angeles (SC)	LDA	Gas	PM10	7.6856	149418105.5947	0.0467	0.046675
2023	Annual	Los Angeles (SC)	LDT1	Dsl	PM10	0.0012	6132.9220	0.1805	
2023	Annual	Los Angeles (SC)	LDT1	Elec	PM10	0.0097	196781.6242	0.0447	
2023	Annual	Los Angeles (SC)	LDT1	Gas	PM10	0.9103	17372474.5967	0.0475	0.047551
2023	Annual	Los Angeles (SC)	LDT2	Dsl	PM10	0.0226	404272.1374	0.0507	
2023	Annual	Los Angeles (SC)	LDT2	Elec	PM10	0.0288	584568.8418	0.0447	
2023	Annual	Los Angeles (SC)	LDT2	Gas	PM10	2.6903	52162943.3579	0.0468	0.046795
2023	Annual	Los Angeles (SC)	LHDT1	Dsl	PM10	0.3227	2893383.1066	0.1012	
2023	Annual	Los Angeles (SC)	LHDT1	Gas	PM10	0.3601	3800052.4079	0.0860	0.051992
2023	Annual	Los Angeles (SC)	LHDT2	Dsl	PM10	0.1443	1126544.0266	0.1162	
2023	Annual	Los Angeles (SC)	LHDT2	Gas	PM10	0.0680	625878.5235	0.0986	0.093508
2023	Annual	Los Angeles (SC)	MHDT	Dsl	PM10	0.6998	4246866.4962	0.1495	
2023	Annual	Los Angeles (SC)	MHDT	Gas	PM10	0.1262	797300.0842	0.1436	0.143035
2023	Annual	Los Angeles (SC)	HHDT	Dsl	PM2_5	0.4077	6949256.2028	0.0532	
2023	Annual	Los Angeles (SC)	HHDT	Gas	PM2_5	0.0002	5904.5109	0.0328	
2023	Annual	Los Angeles (SC)	HHDT	NG	PM2_5	0.0053	113851.6430	0.0423	0.053031
2023	Annual	Los Angeles (SC)	LDA	Dsl	PM2_5	0.0405	1426244.8152	0.0257	
2023	Annual	Los Angeles (SC)	LDA	Elec	PM2_5	0.0745	3806341.9367	0.0177	
2023	Annual	Los Angeles (SC)	LDA	Gas	PM2_5	3.2132	149418105.5947	0.0195	0.019523
2023	Annual	Los Angeles (SC)	LDT1	Dsl	PM2_5	0.0010	6132.9220	0.1476	
2023	Annual	Los Angeles (SC)	LDT1	Elec	PM2_5	0.0039	196781.6242	0.0177	
2023	Annual	Los Angeles (SC)	LDT1	Gas	PM2_5	0.3890	17372474.5967	0.0203	0.020327
2023	Annual	Los Angeles (SC)	LDT2	Dsl	PM2_5	0.0104	404272.1374	0.0234	
2023	Annual	Los Angeles (SC)	LDT2	Elec	PM2_5	0.0114	584568.8418	0.0177	
2023	Annual	Los Angeles (SC)	LDT2	Gas	PM2_5	1.1284	52162943.3579	0.0196	0.019632
2023	Annual	Los Angeles (SC)	LHDT1	Dsl	PM2_5	0.1529	2893383.1066	0.0480	
2023	Annual	Los Angeles (SC)	LHDT1	Gas	PM2_5	0.1514	3800052.4079	0.0362	0.022084
2023	Annual	Los Angeles (SC)	LHDT2	Dsl	PM2_5	0.0690	1126544.0266	0.0556	
2023	Annual	Los Angeles (SC)	LHDT2	Gas	PM2_5	0.0286	625878.5235	0.0415	0.040694
2023	Annual	Los Angeles (SC)	MHDT	Dsl	PM2_5	0.3075	4246866.4962	0.0657	
2023	Annual	Los Angeles (SC)	MHDT	Gas	PM2_5	0.0528	797300.0842	0.0600	0.062224
2023	Annual	Los Angeles (SC)	HHDT	Dsl	ROG	0.4440	6949256.2028	0.0580	
2023	Annual	Los Angeles (SC)	HHDT	Gas	ROG	0.0040	5904.5109	0.6142	
2023	Annual	Los Angeles (SC)	HHDT	NG	ROG	0.0392	113851.6430	0.3121	0.062513
2023	Annual	Los Angeles (SC)	LDA	Dsl	ROG	0.0295	1426244.8152	0.0188	
2023	Annual	Los Angeles (SC)	LDA	Elec	ROG	0.0055	3806341.9367	0.0013	

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calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2023	Annual	Los Angeles (SC)	LDA	Gas	ROG	14.5006	149418105.5947	0.0880	0.085266
2023	Annual	Los Angeles (SC)	LDT1	Dsl	ROG	0.0012	6132.9220	0.1826	
2023	Annual	Los Angeles (SC)	LDT1	Elec	ROG	0.0003	196781.6242	0.0013	
2023	Annual	Los Angeles (SC)	LDT1	Gas	ROG	3.8871	17372474.5967	0.2030	0.200716
2023	Annual	Los Angeles (SC)	LDT2	Dsl	ROG	0.0100	404272.1374	0.0225	
2023	Annual	Los Angeles (SC)	LDT2	Elec	ROG	0.0011	584568.8418	0.0017	
2023	Annual	Los Angeles (SC)	LDT2	Gas	ROG	7.9529	52162943.3579	0.1383	0.135928
2023	Annual	Los Angeles (SC)	LHDT1	Dsl	ROG	0.2043	2893383.1066	0.0641	
2023	Annual	Los Angeles (SC)	LHDT1	Gas	ROG	1.9668	3800052.4079	0.4695	0.156046
2023	Annual	Los Angeles (SC)	LHDT2	Dsl	ROG	0.0789	1126544.0266	0.0636	
2023	Annual	Los Angeles (SC)	LHDT2	Gas	ROG	0.3070	625878.5235	0.4450	0.384409
2023	Annual	Los Angeles (SC)	MHDT	Dsl	ROG	0.0421	4246866.4962	0.0090	
2023	Annual	Los Angeles (SC)	MHDT	Gas	ROG	0.2976	797300.0842	0.3386	0.103476
2023	Annual	Los Angeles (SC)	HHDT	Dsl	SOx	0.1056	6949256.2028	0.0138	
2023	Annual	Los Angeles (SC)	HHDT	Gas	SOx	0.0001	5904.5109	0.0202	0.047198
2023	Annual	Los Angeles (SC)	LDA	Dsl	SOx	0.0031	1426244.8152	0.0020	
2023	Annual	Los Angeles (SC)	LDA	Gas	SOx	0.4501	149418105.5947	0.0027	0.002726
2023	Annual	Los Angeles (SC)	LDT1	Dsl	SOx	0.0000	6132.9220	0.0044	
2023	Annual	Los Angeles (SC)	LDT1	Gas	SOx	0.0608	17372474.5967	0.0032	0.003174
2023	Annual	Los Angeles (SC)	LDT2	Dsl	SOx	0.0012	404272.1374	0.0027	
2023	Annual	Los Angeles (SC)	LDT2	Gas	SOx	0.1940	52162943.3579	0.0034	0.003370
2023	Annual	Los Angeles (SC)	LHDT1	Dsl	SOx	0.0139	2893383.1066	0.0044	
2023	Annual	Los Angeles (SC)	LHDT1	Gas	SOx	0.0337	3800052.4079	0.0080	0.006449
2023	Annual	Los Angeles (SC)	LHDT2	Dsl	SOx	0.0060	1126544.0266	0.0048	
2023	Annual	Los Angeles (SC)	LHDT2	Gas	SOx	0.0064	625878.5235	0.0092	0.006406
2023	Annual	Los Angeles (SC)	MHDT	Dsl	SOx	0.0409	4246866.4962	0.0087	
2023	Annual	Los Angeles (SC)	MHDT	Gas	SOx	0.0146	797300.0842	0.0166	0.009989
2028	Annual	Los Angeles (SC)	HHDT	Dsl	CH4	0.0225	7602762.1115	0.0027	
2028	Annual	Los Angeles (SC)	HHDT	Gas	CH4	0.0006	6900.3896	0.0757	
2028	Annual	Los Angeles (SC)	HHDT	NG	CH4	0.7189	145761.8800	4.4745	0.086791
2028	Annual	Los Angeles (SC)	LDA	Dsl	CH4	0.0009	1628613.7736	0.0005	
2028	Annual	Los Angeles (SC)	LDA	Gas	CH4	0.9843	146491484.1051	0.0061	0.006034
2028	Annual	Los Angeles (SC)	LDT1	Dsl	CH4	0.0000	3717.6202	0.0044	
2028	Annual	Los Angeles (SC)	LDT1	Gas	CH4	0.1929	18569860.9744	0.0094	0.009424
2028	Annual	Los Angeles (SC)	LDT2	Dsl	CH4	0.0006	495817.5553	0.0010	
2028	Annual	Los Angeles (SC)	LDT2	Gas	CH4	0.5250	53762862.3362	0.0089	0.008787
2028	Annual	Los Angeles (SC)	LHDT1	Dsl	CH4	0.0095	3465344.1978	0.0025	

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calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2028	Annual	Los Angeles (SC)	LHDT1	Gas	CH4	0.0562	3691681.4796	0.0138	0.008316
2028	Annual	Los Angeles (SC)	LHDT2	Dsl	CH4	0.0037	1352695.5490	0.0025	
2028	Annual	Los Angeles (SC)	LHDT2	Gas	CH4	0.0092	626221.8181	0.0133	0.005936
2028	Annual	Los Angeles (SC)	MHDT	Dsl	CH4	0.0021	4683919.8002	0.0004	
2028	Annual	Los Angeles (SC)	MHDT	Gas	CH4	0.0210	822297.8140	0.0232	0.003813
2028	Annual	Los Angeles (SC)	HHDT	Dsl	CO	6.5425	7602762.1115	0.7807	
2028	Annual	Los Angeles (SC)	HHDT	Gas	CO	0.2302	6900.3896	30.2670	
2028	Annual	Los Angeles (SC)	HHDT	NG	CO	2.3551	145761.8800	14.6575	1.067717
2028	Annual	Los Angeles (SC)	LDA	Dsl	CO	0.4475	1628613.7736	0.2493	
2028	Annual	Los Angeles (SC)	LDA	Gas	CO	124.3544	146491484.1051	0.7701	0.764368
2028	Annual	Los Angeles (SC)	LDT1	Dsl	CO	0.0029	3717.6202	0.7058	
2028	Annual	Los Angeles (SC)	LDT1	Gas	CO	22.4001	18569860.9744	1.0943	1.094224
2028	Annual	Los Angeles (SC)	LDT2	Dsl	CO	0.1153	495817.5553	0.2110	
2028	Annual	Los Angeles (SC)	LDT2	Gas	CO	60.3326	53762862.3362	1.0180	1.010666
2028	Annual	Los Angeles (SC)	LHDT1	Dsl	CO	0.9996	3465344.1978	0.2617	
2028	Annual	Los Angeles (SC)	LHDT1	Gas	CO	4.8090	3691681.4796	1.1817	0.736262
2028	Annual	Los Angeles (SC)	LHDT2	Dsl	CO	0.3970	1352695.5490	0.2663	
2028	Annual	Los Angeles (SC)	LHDT2	Gas	CO	0.7148	626221.8181	1.0355	0.509678
2028	Annual	Los Angeles (SC)	MHDT	Dsl	CO	0.6214	4683919.8002	0.1204	
2028	Annual	Los Angeles (SC)	MHDT	Gas	CO	1.9515	822297.8140	2.1530	0.423904
2028	Annual	Los Angeles (SC)	HHDT	Dsl	CO2	11115.6549	7602762.1115	1326.3527	
2028	Annual	Los Angeles (SC)	HHDT	Gas	CO2	13.8723	6900.3896	1823.7670	
2028	Annual	Los Angeles (SC)	HHDT	NG	CO2	509.5662	145761.8800	3171.4072	1361.472788
2028	Annual	Los Angeles (SC)	LDA	Dsl	CO2	334.8733	1628613.7736	186.5339	
2028	Annual	Los Angeles (SC)	LDA	Gas	CO2	39330.2866	146491484.1051	243.5623	242.935287
2028	Annual	Los Angeles (SC)	LDT1	Dsl	CO2	1.6944	3717.6202	413.4698	
2028	Annual	Los Angeles (SC)	LDT1	Gas	CO2	5848.1382	18569860.9744	285.6961	285.721705
2028	Annual	Los Angeles (SC)	LDT2	Dsl	CO2	138.4264	495817.5553	253.2750	
2028	Annual	Los Angeles (SC)	LDT2	Gas	CO2	17322.1495	53762862.3362	292.2906	291.934030
2028	Annual	Los Angeles (SC)	LHDT1	Dsl	CO2	1625.9112	3465344.1978	425.6433	
2028	Annual	Los Angeles (SC)	LHDT1	Gas	CO2	3076.9024	3691681.4796	756.1098	596.101989
2028	Annual	Los Angeles (SC)	LHDT2	Dsl	CO2	705.7995	1352695.5490	473.3438	
2028	Annual	Los Angeles (SC)	LHDT2	Gas	CO2	600.3720	626221.8181	869.7363	598.780887
2028	Annual	Los Angeles (SC)	MHDT	Dsl	CO2	4405.7553	4683919.8002	853.3090	
2028	Annual	Los Angeles (SC)	MHDT	Gas	CO2	1399.1527	822297.8140	1543.5879	956.395121
2028	Annual	Los Angeles (SC)	HHDT	Dsl	N2O	1.7472	7602762.1115	0.2085	
2028	Annual	Los Angeles (SC)	HHDT	Gas	N2O	0.0010	6900.3896	0.1301	

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2028	Annual	Los Angeles (SC)	HHDT	NG	N2O	0.1039	145761.8800	0.6465	0.216647
2028	Annual	Los Angeles (SC)	LDA	Dsl	N2O	0.0526	1628613.7736	0.0293	
2028	Annual	Los Angeles (SC)	LDA	Gas	N2O	0.9946	146491484.1051	0.0062	0.006414
2028	Annual	Los Angeles (SC)	LDT1	Dsl	N2O	0.0003	3717.6202	0.0650	
2028	Annual	Los Angeles (SC)	LDT1	Gas	N2O	0.1705	18569860.9744	0.0083	0.008340
2028	Annual	Los Angeles (SC)	LDT2	Dsl	N2O	0.0218	495817.5553	0.0398	
2028	Annual	Los Angeles (SC)	LDT2	Gas	N2O	0.4558	53762862.3362	0.0077	0.007985
2028	Annual	Los Angeles (SC)	LHDT1	Dsl	N2O	0.2556	3465344.1978	0.0669	
2028	Annual	Los Angeles (SC)	LHDT1	Gas	N2O	0.0896	3691681.4796	0.0220	0.043750
2028	Annual	Los Angeles (SC)	LHDT2	Dsl	N2O	0.1109	1352695.5490	0.0744	
2028	Annual	Los Angeles (SC)	LHDT2	Gas	N2O	0.0160	626221.8181	0.0232	0.058193
2028	Annual	Los Angeles (SC)	MHDT	Dsl	N2O	0.6925	4683919.8002	0.1341	
2028	Annual	Los Angeles (SC)	MHDT	Gas	N2O	0.0213	822297.8140	0.0235	0.117606
2028	Annual	Los Angeles (SC)	HHDT	Dsl	NOx	27.6343	7602762.1115	3.2974	
2028	Annual	Los Angeles (SC)	HHDT	Gas	NOx	0.0233	6900.3896	3.0637	
2028	Annual	Los Angeles (SC)	HHDT	NG	NOx	0.3295	145761.8800	2.0508	3.273763
2028	Annual	Los Angeles (SC)	LDA	Dsl	NOx	0.0461	1628613.7736	0.0257	
2028	Annual	Los Angeles (SC)	LDA	Gas	NOx	6.8181	146491484.1051	0.0422	0.042041
2028	Annual	Los Angeles (SC)	LDT1	Dsl	NOx	0.0021	3717.6202	0.5162	
2028	Annual	Los Angeles (SC)	LDT1	Gas	NOx	1.6653	18569860.9744	0.0814	0.081440
2028	Annual	Los Angeles (SC)	LDT2	Dsl	NOx	0.0205	495817.5553	0.0374	
2028	Annual	Los Angeles (SC)	LDT2	Gas	NOx	4.0970	53762862.3362	0.0691	0.068843
2028	Annual	Los Angeles (SC)	LHDT1	Dsl	NOx	1.9713	3465344.1978	0.5161	
2028	Annual	Los Angeles (SC)	LHDT1	Gas	NOx	1.1178	3691681.4796	0.2747	0.391550
2028	Annual	Los Angeles (SC)	LHDT2	Dsl	NOx	0.7908	1352695.5490	0.5304	
2028	Annual	Los Angeles (SC)	LHDT2	Gas	NOx	0.1980	626221.8181	0.2869	0.453332
2028	Annual	Los Angeles (SC)	MHDT	Dsl	NOx	8.6311	4683919.8002	1.6717	
2028	Annual	Los Angeles (SC)	MHDT	Gas	NOx	0.2807	822297.8140	0.3097	1.468270
2028	Annual	Los Angeles (SC)	HHDT	Dsl	PM10	0.9680	7602762.1115	0.1155	
2028	Annual	Los Angeles (SC)	HHDT	Gas	PM10	0.0006	6900.3896	0.0830	
2028	Annual	Los Angeles (SC)	HHDT	NG	PM10	0.0165	145761.8800	0.1028	0.115242
2028	Annual	Los Angeles (SC)	LDA	Dsl	PM10	0.0859	1628613.7736	0.0478	
2028	Annual	Los Angeles (SC)	LDA	Elec	PM10	0.3353	6797709.6158	0.0447	
2028	Annual	Los Angeles (SC)	LDA	Gas	PM10	7.4778	146491484.1051	0.0463	0.046256
2028	Annual	Los Angeles (SC)	LDT1	Dsl	PM10	0.0004	3717.6202	0.0993	
2028	Annual	Los Angeles (SC)	LDT1	Elec	PM10	0.0228	462505.0388	0.0447	
2028	Annual	Los Angeles (SC)	LDT1	Gas	PM10	0.9569	18569860.9744	0.0467	0.046707

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2028	Annual	Los Angeles (SC)	LDT2	Dsl	PM10	0.0270	495817.5553	0.0495	
2028	Annual	Los Angeles (SC)	LDT2	Elec	PM10	0.0569	1152885.1585	0.0447	
2028	Annual	Los Angeles (SC)	LDT2	Gas	PM10	2.7507	53762862.3362	0.0464	0.046407
2028	Annual	Los Angeles (SC)	LHDT1	Dsl	PM10	0.3741	3465344.1978	0.0979	
2028	Annual	Los Angeles (SC)	LHDT1	Gas	PM10	0.3496	3691681.4796	0.0859	0.051738
2028	Annual	Los Angeles (SC)	LHDT2	Dsl	PM10	0.1715	1352695.5490	0.1150	
2028	Annual	Los Angeles (SC)	LHDT2	Gas	PM10	0.0680	626221.8181	0.0985	0.094237
2028	Annual	Los Angeles (SC)	MHDT	Dsl	PM10	0.7723	4683919.8002	0.1496	
2028	Annual	Los Angeles (SC)	MHDT	Gas	PM10	0.1302	822297.8140	0.1437	0.143574
2028	Annual	Los Angeles (SC)	HHDT	Dsl	PM2_5	0.4448	7602762.1115	0.0531	
2028	Annual	Los Angeles (SC)	HHDT	Gas	PM2_5	0.0002	6900.3896	0.0327	
2028	Annual	Los Angeles (SC)	HHDT	NG	PM2_5	0.0065	145761.8800	0.0403	0.052820
2028	Annual	Los Angeles (SC)	LDA	Dsl	PM2_5	0.0372	1628613.7736	0.0207	
2028	Annual	Los Angeles (SC)	LDA	Elec	PM2_5	0.1330	6797709.6158	0.0177	
2028	Annual	Los Angeles (SC)	LDA	Gas	PM2_5	3.0976	146491484.1051	0.0192	0.019136
2028	Annual	Los Angeles (SC)	LDT1	Dsl	PM2_5	0.0003	3717.6202	0.0700	
2028	Annual	Los Angeles (SC)	LDT1	Elec	PM2_5	0.0090	462505.0388	0.0177	
2028	Annual	Los Angeles (SC)	LDT1	Gas	PM2_5	0.4009	18569860.9744	0.0196	0.019549
2028	Annual	Los Angeles (SC)	LDT2	Dsl	PM2_5	0.0122	495817.5553	0.0223	
2028	Annual	Los Angeles (SC)	LDT2	Elec	PM2_5	0.0226	1152885.1585	0.0177	
2028	Annual	Los Angeles (SC)	LDT2	Gas	PM2_5	1.1426	53762862.3362	0.0193	0.019275
2028	Annual	Los Angeles (SC)	LHDT1	Dsl	PM2_5	0.1713	3465344.1978	0.0448	
2028	Annual	Los Angeles (SC)	LHDT1	Gas	PM2_5	0.1469	3691681.4796	0.0361	0.021754
2028	Annual	Los Angeles (SC)	LHDT2	Dsl	PM2_5	0.0812	1352695.5490	0.0544	
2028	Annual	Los Angeles (SC)	LHDT2	Gas	PM2_5	0.0286	626221.8181	0.0415	0.041070
2028	Annual	Los Angeles (SC)	MHDT	Dsl	PM2_5	0.3397	4683919.8002	0.0658	
2028	Annual	Los Angeles (SC)	MHDT	Gas	PM2_5	0.0545	822297.8140	0.0601	0.062538
2028	Annual	Los Angeles (SC)	HHDT	Dsl	ROG	0.4835	7602762.1115	0.0577	
2028	Annual	Los Angeles (SC)	HHDT	Gas	ROG	0.0031	6900.3896	0.4053	
2028	Annual	Los Angeles (SC)	HHDT	NG	ROG	0.0288	145761.8800	0.1795	0.060297
2028	Annual	Los Angeles (SC)	LDA	Dsl	ROG	0.0201	1628613.7736	0.0112	
2028	Annual	Los Angeles (SC)	LDA	Elec	ROG	0.0100	6797709.6158	0.0013	
2028	Annual	Los Angeles (SC)	LDA	Gas	ROG	11.2150	146491484.1051	0.0695	0.065850
2028	Annual	Los Angeles (SC)	LDT1	Dsl	ROG	0.0004	3717.6202	0.0947	
2028	Annual	Los Angeles (SC)	LDT1	Elec	ROG	0.0007	462505.0388	0.0013	
2028	Annual	Los Angeles (SC)	LDT1	Gas	ROG	2.9091	18569860.9744	0.1421	0.138687
2028	Annual	Los Angeles (SC)	LDT2	Dsl	ROG	0.0119	495817.5553	0.0218	

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2028	Annual	Los Angeles (SC)	LDT2	Elec	ROG	0.0024	1152885.1585	0.0019	
2028	Annual	Los Angeles (SC)	LDT2	Gas	ROG	6.5823	53762862.3362	0.1111	0.107998
2028	Annual	Los Angeles (SC)	LHDT1	Dsl	ROG	0.2035	3465344.1978	0.0533	
2028	Annual	Los Angeles (SC)	LHDT1	Gas	ROG	1.6232	3691681.4796	0.3989	0.125223
2028	Annual	Los Angeles (SC)	LHDT2	Dsl	ROG	0.0805	1352695.5490	0.0540	
2028	Annual	Los Angeles (SC)	LHDT2	Gas	ROG	0.2235	626221.8181	0.3238	0.308325
2028	Annual	Los Angeles (SC)	MHDT	Dsl	ROG	0.0457	4683919.8002	0.0088	
2028	Annual	Los Angeles (SC)	MHDT	Gas	ROG	0.2345	822297.8140	0.2587	0.074508
2028	Annual	Los Angeles (SC)	HHDT	Dsl	SOx	0.1050	7602762.1115	0.0125	
2028	Annual	Los Angeles (SC)	HHDT	Gas	SOx	0.0001	6900.3896	0.0180	0.036541
2028	Annual	Los Angeles (SC)	LDA	Dsl	SOx	0.0032	1628613.7736	0.0018	
2028	Annual	Los Angeles (SC)	LDA	Gas	SOx	0.3892	146491484.1051	0.0024	0.002403
2028	Annual	Los Angeles (SC)	LDT1	Dsl	SOx	0.0000	3717.6202	0.0039	
2028	Annual	Los Angeles (SC)	LDT1	Gas	SOx	0.0579	18569860.9744	0.0028	0.002827
2028	Annual	Los Angeles (SC)	LDT2	Dsl	SOx	0.0013	495817.5553	0.0024	
2028	Annual	Los Angeles (SC)	LDT2	Gas	SOx	0.1714	53762862.3362	0.0029	0.002888
2028	Annual	Los Angeles (SC)	LHDT1	Dsl	SOx	0.0154	3465344.1978	0.0040	
2028	Annual	Los Angeles (SC)	LHDT1	Gas	SOx	0.0304	3691681.4796	0.0075	0.005808
2028	Annual	Los Angeles (SC)	LHDT2	Dsl	SOx	0.0067	1352695.5490	0.0045	
2028	Annual	Los Angeles (SC)	LHDT2	Gas	SOx	0.0059	626221.8181	0.0086	0.005782
2028	Annual	Los Angeles (SC)	MHDT	Dsl	SOx	0.0416	4683919.8002	0.0081	
2028	Annual	Los Angeles (SC)	MHDT	Gas	SOx	0.0138	822297.8140	0.0153	0.009139
2033	Annual	Los Angeles (SC)	HHDT	Dsl	CH4	0.0233	8139884.4474	0.0026	
2033	Annual	Los Angeles (SC)	HHDT	Gas	CH4	0.0006	7638.6406	0.0746	
2033	Annual	Los Angeles (SC)	HHDT	NG	CH4	0.8045	171673.1890	4.2512	0.090334
2033	Annual	Los Angeles (SC)	LDA	Dsl	CH4	0.0007	1734692.0749	0.0004	
2033	Annual	Los Angeles (SC)	LDA	Gas	CH4	0.7530	145368419.8802	0.0047	0.004648
2033	Annual	Los Angeles (SC)	LDT1	Dsl	CH4	0.0000	3012.0570	0.0017	
2033	Annual	Los Angeles (SC)	LDT1	Gas	CH4	0.1346	19369391.8594	0.0063	0.006304
2033	Annual	Los Angeles (SC)	LDT2	Dsl	CH4	0.0006	544244.0431	0.0010	
2033	Annual	Los Angeles (SC)	LDT2	Gas	CH4	0.4129	55051434.3756	0.0068	0.006747
2033	Annual	Los Angeles (SC)	LHDT1	Dsl	CH4	0.0096	3862319.2420	0.0023	
2033	Annual	Los Angeles (SC)	LHDT1	Gas	CH4	0.0419	3685925.9339	0.0103	0.006192
2033	Annual	Los Angeles (SC)	LHDT2	Dsl	CH4	0.0039	1508341.5176	0.0023	
2033	Annual	Los Angeles (SC)	LHDT2	Gas	CH4	0.0073	634799.7321	0.0105	0.004739
2033	Annual	Los Angeles (SC)	MHDT	Dsl	CH4	0.0022	4973128.9809	0.0004	
2033	Annual	Los Angeles (SC)	MHDT	Gas	CH4	0.0199	847102.4609	0.0213	0.003443

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2033	Annual	Los Angeles (SC)	HHDT	Dsl	CO	6.8373	8139884.4474	0.7620	
2033	Annual	Los Angeles (SC)	HHDT	Gas	CO	0.2611	7638.6406	31.0107	
2033	Annual	Los Angeles (SC)	HHDT	NG	CO	2.8258	171673.1890	14.9325	1.082202
2033	Annual	Los Angeles (SC)	LDA	Dsl	CO	0.4425	1734692.0749	0.2314	
2033	Annual	Los Angeles (SC)	LDA	Gas	CO	110.7387	145368419.8802	0.6911	0.685654
2033	Annual	Los Angeles (SC)	LDT1	Dsl	CO	0.0012	3012.0570	0.3587	
2033	Annual	Los Angeles (SC)	LDT1	Gas	CO	17.7938	19369391.8594	0.8334	0.833316
2033	Annual	Los Angeles (SC)	LDT2	Dsl	CO	0.1333	544244.0431	0.2223	
2033	Annual	Los Angeles (SC)	LDT2	Gas	CO	54.2195	55051434.3756	0.8935	0.886904
2033	Annual	Los Angeles (SC)	LHDT1	Dsl	CO	1.0130	3862319.2420	0.2379	
2033	Annual	Los Angeles (SC)	LHDT1	Gas	CO	3.7906	3685925.9339	0.9330	0.577319
2033	Annual	Los Angeles (SC)	LHDT2	Dsl	CO	0.4093	1508341.5176	0.2462	
2033	Annual	Los Angeles (SC)	LHDT2	Gas	CO	0.6396	634799.7321	0.9140	0.444000
2033	Annual	Los Angeles (SC)	MHDT	Dsl	CO	0.6765	4973128.9809	0.1234	
2033	Annual	Los Angeles (SC)	MHDT	Gas	CO	1.6714	847102.4609	1.7900	0.365962
2033	Annual	Los Angeles (SC)	HHDT	Dsl	CO2	10718.2214	8139884.4474	1194.5377	
2033	Annual	Los Angeles (SC)	HHDT	Gas	CO2	14.1627	7638.6406	1681.9989	
2033	Annual	Los Angeles (SC)	HHDT	NG	CO2	557.0943	171673.1890	2943.8904	1231.084574
2033	Annual	Los Angeles (SC)	LDA	Dsl	CO2	333.9959	1734692.0749	174.6683	
2033	Annual	Los Angeles (SC)	LDA	Gas	CO2	35955.3121	145368419.8802	224.3822	223.795943
2033	Annual	Los Angeles (SC)	LDT1	Dsl	CO2	1.2259	3012.0570	369.2067	
2033	Annual	Los Angeles (SC)	LDT1	Gas	CO2	5643.3959	19369391.8594	264.3138	264.330155
2033	Annual	Los Angeles (SC)	LDT2	Dsl	CO2	141.2429	544244.0431	235.4336	
2033	Annual	Los Angeles (SC)	LDT2	Gas	CO2	16038.1399	55051434.3756	264.2900	264.007521
2033	Annual	Los Angeles (SC)	LHDT1	Dsl	CO2	1719.8199	3862319.2420	403.9524	
2033	Annual	Los Angeles (SC)	LHDT1	Gas	CO2	2895.0123	3685925.9339	712.5235	554.632482
2033	Annual	Los Angeles (SC)	LHDT2	Dsl	CO2	746.9263	1508341.5176	449.2348	
2033	Annual	Los Angeles (SC)	LHDT2	Gas	CO2	574.2577	634799.7321	820.6642	559.252452
2033	Annual	Los Angeles (SC)	MHDT	Dsl	CO2	4377.5644	4973128.9809	798.5428	
2033	Annual	Los Angeles (SC)	MHDT	Gas	CO2	1348.6224	847102.4609	1444.2747	892.525500
2033	Annual	Los Angeles (SC)	HHDT	Dsl	N2O	1.6848	8139884.4474	0.1878	
2033	Annual	Los Angeles (SC)	HHDT	Gas	N2O	0.0011	7638.6406	0.1307	
2033	Annual	Los Angeles (SC)	HHDT	NG	N2O	0.1136	171673.1890	0.6001	0.196222
2033	Annual	Los Angeles (SC)	LDA	Dsl	N2O	0.0525	1734692.0749	0.0275	
2033	Annual	Los Angeles (SC)	LDA	Gas	N2O	0.9190	145368419.8802	0.0057	0.005991
2033	Annual	Los Angeles (SC)	LDT1	Dsl	N2O	0.0002	3012.0570	0.0580	
2033	Annual	Los Angeles (SC)	LDT1	Gas	N2O	0.1449	19369391.8594	0.0068	0.006795

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calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2033	Annual	Los Angeles (SC)	LDT2	Dsl	N2O	0.0222	544244.0431	0.0370	
2033	Annual	Los Angeles (SC)	LDT2	Gas	N2O	0.4020	55051434.3756	0.0066	0.006923
2033	Annual	Los Angeles (SC)	LHDT1	Dsl	N2O	0.2703	3862319.2420	0.0635	
2033	Annual	Los Angeles (SC)	LHDT1	Gas	N2O	0.0762	3685925.9339	0.0188	0.041647
2033	Annual	Los Angeles (SC)	LHDT2	Dsl	N2O	0.1174	1508341.5176	0.0706	
2033	Annual	Los Angeles (SC)	LHDT2	Gas	N2O	0.0139	634799.7321	0.0199	0.055579
2033	Annual	Los Angeles (SC)	MHDT	Dsl	N2O	0.6881	4973128.9809	0.1255	
2033	Annual	Los Angeles (SC)	MHDT	Gas	N2O	0.0200	847102.4609	0.0214	0.110367
2033	Annual	Los Angeles (SC)	HHDT	Dsl	NOx	28.1993	8139884.4474	3.1428	
2033	Annual	Los Angeles (SC)	HHDT	Gas	NOx	0.0252	7638.6406	2.9877	
2033	Annual	Los Angeles (SC)	HHDT	NG	NOx	0.2769	171673.1890	1.4633	3.107989
2033	Annual	Los Angeles (SC)	LDA	Dsl	NOx	0.0281	1734692.0749	0.0147	
2033	Annual	Los Angeles (SC)	LDA	Gas	NOx	5.8328	145368419.8802	0.0364	0.036144
2033	Annual	Los Angeles (SC)	LDT1	Dsl	NOx	0.0008	3012.0570	0.2369	
2033	Annual	Los Angeles (SC)	LDT1	Gas	NOx	1.0970	19369391.8594	0.0514	0.051406
2033	Annual	Los Angeles (SC)	LDT2	Dsl	NOx	0.0219	544244.0431	0.0366	
2033	Annual	Los Angeles (SC)	LDT2	Gas	NOx	3.1254	55051434.3756	0.0515	0.051357
2033	Annual	Los Angeles (SC)	LHDT1	Dsl	NOx	1.1369	3862319.2420	0.2670	
2033	Annual	Los Angeles (SC)	LHDT1	Gas	NOx	0.8444	3685925.9339	0.2078	0.238124
2033	Annual	Los Angeles (SC)	LHDT2	Dsl	NOx	0.5107	1508341.5176	0.3071	
2033	Annual	Los Angeles (SC)	LHDT2	Gas	NOx	0.1556	634799.7321	0.2224	0.282024
2033	Annual	Los Angeles (SC)	MHDT	Dsl	NOx	9.2765	4973128.9809	1.6922	
2033	Annual	Los Angeles (SC)	MHDT	Gas	NOx	0.2267	847102.4609	0.2427	1.481238
2033	Annual	Los Angeles (SC)	HHDT	Dsl	PM10	1.0281	8139884.4474	0.1146	
2033	Annual	Los Angeles (SC)	HHDT	Gas	PM10	0.0007	7638.6406	0.0830	
2033	Annual	Los Angeles (SC)	HHDT	NG	PM10	0.0193	171673.1890	0.1019	0.114292
2033	Annual	Los Angeles (SC)	LDA	Dsl	PM10	0.0885	1734692.0749	0.0463	
2033	Annual	Los Angeles (SC)	LDA	Elec	PM10	0.4158	8429344.4772	0.0447	
2033	Annual	Los Angeles (SC)	LDA	Gas	PM10	7.3575	145368419.8802	0.0459	0.045856
2033	Annual	Los Angeles (SC)	LDT1	Dsl	PM10	0.0002	3012.0570	0.0603	
2033	Annual	Los Angeles (SC)	LDT1	Elec	PM10	0.0313	634616.8868	0.0447	
2033	Annual	Los Angeles (SC)	LDT1	Gas	PM10	0.9849	19369391.8594	0.0461	0.046088
2033	Annual	Los Angeles (SC)	LDT2	Dsl	PM10	0.0297	544244.0431	0.0495	
2033	Annual	Los Angeles (SC)	LDT2	Elec	PM10	0.0752	1524213.6743	0.0447	
2033	Annual	Los Angeles (SC)	LDT2	Gas	PM10	2.7914	55051434.3756	0.0460	0.045999
2033	Annual	Los Angeles (SC)	LHDT1	Dsl	PM10	0.4100	3862319.2420	0.0963	
2033	Annual	Los Angeles (SC)	LHDT1	Gas	PM10	0.3489	3685925.9339	0.0859	0.051450

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calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2033	Annual	Los Angeles (SC)	LHDT2	Dsl	PM10	0.1907	1508341.5176	0.1147	
2033	Annual	Los Angeles (SC)	LHDT2	Gas	PM10	0.0690	634799.7321	0.0985	0.094709
2033	Annual	Los Angeles (SC)	MHDT	Dsl	PM10	0.8196	4973128.9809	0.1495	
2033	Annual	Los Angeles (SC)	MHDT	Gas	PM10	0.1342	847102.4609	0.1437	0.143739
2033	Annual	Los Angeles (SC)	HHDT	Dsl	PM2_5	0.4681	8139884.4474	0.0522	
2033	Annual	Los Angeles (SC)	HHDT	Gas	PM2_5	0.0003	7638.6406	0.0327	
2033	Annual	Los Angeles (SC)	HHDT	NG	PM2_5	0.0075	171673.1890	0.0395	0.051892
2033	Annual	Los Angeles (SC)	LDA	Dsl	PM2_5	0.0367	1734692.0749	0.0192	
2033	Annual	Los Angeles (SC)	LDA	Elec	PM2_5	0.1649	8429344.4772	0.0177	
2033	Annual	Los Angeles (SC)	LDA	Gas	PM2_5	3.0160	145368419.8802	0.0188	0.018768
2033	Annual	Los Angeles (SC)	LDT1	Dsl	PM2_5	0.0001	3012.0570	0.0327	
2033	Annual	Los Angeles (SC)	LDT1	Elec	PM2_5	0.0124	634616.8868	0.0177	
2033	Annual	Los Angeles (SC)	LDT1	Gas	PM2_5	0.4061	19369391.8594	0.0190	0.018981
2033	Annual	Los Angeles (SC)	LDT2	Dsl	PM2_5	0.0134	544244.0431	0.0223	
2033	Annual	Los Angeles (SC)	LDT2	Elec	PM2_5	0.0298	1524213.6743	0.0177	
2033	Annual	Los Angeles (SC)	LDT2	Gas	PM2_5	1.1468	55051434.3756	0.0189	0.018900
2033	Annual	Los Angeles (SC)	LHDT1	Dsl	PM2_5	0.1843	3862319.2420	0.0433	
2033	Annual	Los Angeles (SC)	LHDT1	Gas	PM2_5	0.1465	3685925.9339	0.0361	0.021414
2033	Annual	Los Angeles (SC)	LHDT2	Dsl	PM2_5	0.0901	1508341.5176	0.0542	
2033	Annual	Los Angeles (SC)	LHDT2	Gas	PM2_5	0.0290	634799.7321	0.0415	0.041341
2033	Annual	Los Angeles (SC)	MHDT	Dsl	PM2_5	0.3603	4973128.9809	0.0657	
2033	Annual	Los Angeles (SC)	MHDT	Gas	PM2_5	0.0561	847102.4609	0.0601	0.062603
2033	Annual	Los Angeles (SC)	HHDT	Dsl	ROG	0.5010	8139884.4474	0.0558	
2033	Annual	Los Angeles (SC)	HHDT	Gas	ROG	0.0032	7638.6406	0.3759	
2033	Annual	Los Angeles (SC)	HHDT	NG	ROG	0.0228	171673.1890	0.1207	0.057467
2033	Annual	Los Angeles (SC)	LDA	Dsl	ROG	0.0157	1734692.0749	0.0082	
2033	Annual	Los Angeles (SC)	LDA	Elec	ROG	0.0134	8429344.4772	0.0014	
2033	Annual	Los Angeles (SC)	LDA	Gas	ROG	9.1638	145368419.8802	0.0572	0.053620
2033	Annual	Los Angeles (SC)	LDT1	Dsl	ROG	0.0001	3012.0570	0.0375	
2033	Annual	Los Angeles (SC)	LDT1	Elec	ROG	0.0010	634616.8868	0.0014	
2033	Annual	Los Angeles (SC)	LDT1	Gas	ROG	2.0447	19369391.8594	0.0958	0.092765
2033	Annual	Los Angeles (SC)	LDT2	Dsl	ROG	0.0132	544244.0431	0.0220	
2033	Annual	Los Angeles (SC)	LDT2	Elec	ROG	0.0035	1524213.6743	0.0021	
2033	Annual	Los Angeles (SC)	LDT2	Gas	ROG	5.4366	55051434.3756	0.0896	0.086610
2033	Annual	Los Angeles (SC)	LHDT1	Dsl	ROG	0.2074	3862319.2420	0.0487	
2033	Annual	Los Angeles (SC)	LHDT1	Gas	ROG	1.2220	3685925.9339	0.3008	0.099500
2033	Annual	Los Angeles (SC)	LHDT2	Dsl	ROG	0.0831	1508341.5176	0.0500	

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calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2033	Annual	Los Angeles (SC)	LHDT2	Gas	ROG	0.1655	634799.7321	0.2365	0.228875
2033	Annual	Los Angeles (SC)	MHDT	Dsl	ROG	0.0478	4973128.9809	0.0087	
2033	Annual	Los Angeles (SC)	MHDT	Gas	ROG	0.2114	847102.4609	0.2264	0.059677
2033	Annual	Los Angeles (SC)	HHDT	Dsl	SOx	0.1013	8139884.4474	0.0113	
2033	Annual	Los Angeles (SC)	HHDT	Gas	SOx	0.0001	7638.6406	0.0166	0.031547
2033	Annual	Los Angeles (SC)	LDA	Dsl	SOx	0.0032	1734692.0749	0.0017	
2033	Annual	Los Angeles (SC)	LDA	Gas	SOx	0.3558	145368419.8802	0.0022	0.002214
2033	Annual	Los Angeles (SC)	LDT1	Dsl	SOx	0.0000	3012.0570	0.0035	
2033	Annual	Los Angeles (SC)	LDT1	Gas	SOx	0.0558	19369391.8594	0.0026	0.002616
2033	Annual	Los Angeles (SC)	LDT2	Dsl	SOx	0.0013	544244.0431	0.0022	
2033	Annual	Los Angeles (SC)	LDT2	Gas	SOx	0.1587	55051434.3756	0.0026	0.002612
2033	Annual	Los Angeles (SC)	LHDT1	Dsl	SOx	0.0163	3862319.2420	0.0038	
2033	Annual	Los Angeles (SC)	LHDT1	Gas	SOx	0.0286	3685925.9339	0.0071	0.005397
2033	Annual	Los Angeles (SC)	LHDT2	Dsl	SOx	0.0071	1508341.5176	0.0042	
2033	Annual	Los Angeles (SC)	LHDT2	Gas	SOx	0.0057	634799.7321	0.0081	0.005394
2033	Annual	Los Angeles (SC)	MHDT	Dsl	SOx	0.0414	4973128.9809	0.0075	
2033	Annual	Los Angeles (SC)	MHDT	Gas	SOx	0.0133	847102.4609	0.0143	0.008526
2038	Annual	Los Angeles (SC)	HHDT	Dsl	CH4	0.0245	8707332.6391	0.0026	
2038	Annual	Los Angeles (SC)	HHDT	Gas	CH4	0.0007	7982.4206	0.0760	
2038	Annual	Los Angeles (SC)	HHDT	NG	CH4	0.8731	190240.7560	4.1635	0.091507
2038	Annual	Los Angeles (SC)	LDA	Dsl	CH4	0.0006	1785778.9926	0.0003	
2038	Annual	Los Angeles (SC)	LDA	Gas	CH4	0.6202	145200708.4495	0.0039	0.003832
2038	Annual	Los Angeles (SC)	LDT1	Dsl	CH4	0.0000	2921.3872	0.0013	
2038	Annual	Los Angeles (SC)	LDT1	Gas	CH4	0.1026	19925767.6125	0.0047	0.004673
2038	Annual	Los Angeles (SC)	LDT2	Dsl	CH4	0.0006	566687.6514	0.0010	
2038	Annual	Los Angeles (SC)	LDT2	Gas	CH4	0.3378	55739058.9392	0.0055	0.005453
2038	Annual	Los Angeles (SC)	LHDT1	Dsl	CH4	0.0099	4138479.9757	0.0022	
2038	Annual	Los Angeles (SC)	LHDT1	Gas	CH4	0.0370	3716206.8371	0.0090	0.005420
2038	Annual	Los Angeles (SC)	LHDT2	Dsl	CH4	0.0040	1616892.7907	0.0022	
2038	Annual	Los Angeles (SC)	LHDT2	Gas	CH4	0.0065	647177.5510	0.0091	0.004204
2038	Annual	Los Angeles (SC)	MHDT	Dsl	CH4	0.0023	5241312.0472	0.0004	
2038	Annual	Los Angeles (SC)	MHDT	Gas	CH4	0.0202	864424.5407	0.0212	0.003346
2038	Annual	Los Angeles (SC)	HHDT	Dsl	CO	7.2298	8707332.6391	0.7532	
2038	Annual	Los Angeles (SC)	HHDT	Gas	CO	0.2774	7982.4206	31.5288	
2038	Annual	Los Angeles (SC)	HHDT	NG	CO	3.1549	190240.7560	15.0444	1.086114
2038	Annual	Los Angeles (SC)	LDA	Dsl	CO	0.4382	1785778.9926	0.2226	
2038	Annual	Los Angeles (SC)	LDA	Gas	CO	103.7672	145200708.4495	0.6483	0.643144

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calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2038	Annual	Los Angeles (SC)	LDT1	Dsl	CO	0.0009	2921.3872	0.2839	
2038	Annual	Los Angeles (SC)	LDT1	Gas	CO	15.5466	19925767.6125	0.7078	0.707744
2038	Annual	Los Angeles (SC)	LDT2	Dsl	CO	0.1419	566687.6514	0.2272	
2038	Annual	Los Angeles (SC)	LDT2	Gas	CO	50.1599	55739058.9392	0.8164	0.810451
2038	Annual	Los Angeles (SC)	LHDT1	Dsl	CO	1.0533	4138479.9757	0.2309	
2038	Annual	Los Angeles (SC)	LHDT1	Gas	CO	3.6171	3716206.8371	0.8830	0.539408
2038	Annual	Los Angeles (SC)	LHDT2	Dsl	CO	0.4274	1616892.7907	0.2398	
2038	Annual	Los Angeles (SC)	LHDT2	Gas	CO	0.6403	647177.5510	0.8975	0.427825
2038	Annual	Los Angeles (SC)	MHDT	Dsl	CO	0.7157	5241312.0472	0.1239	
2038	Annual	Los Angeles (SC)	MHDT	Gas	CO	1.6113	864424.5407	1.6910	0.345751
2038	Annual	Los Angeles (SC)	HHDT	Dsl	CO2	10643.0692	8707332.6391	1108.8611	
2038	Annual	Los Angeles (SC)	HHDT	Gas	CO2	14.1265	7982.4206	1605.4502	
2038	Annual	Los Angeles (SC)	HHDT	NG	CO2	585.1572	190240.7560	2790.3864	1145.226968
2038	Annual	Los Angeles (SC)	LDA	Dsl	CO2	332.0494	1785778.9926	168.6826	
2038	Annual	Los Angeles (SC)	LDA	Gas	CO2	34337.5596	145200708.4495	214.5340	213.976911
2038	Annual	Los Angeles (SC)	LDT1	Dsl	CO2	1.1013	2921.3872	341.9784	
2038	Annual	Los Angeles (SC)	LDT1	Gas	CO2	5536.7049	19925767.6125	252.0761	252.089294
2038	Annual	Los Angeles (SC)	LDT2	Dsl	CO2	140.8195	566687.6514	225.4313	
2038	Annual	Los Angeles (SC)	LDT2	Gas	CO2	15311.7571	55739058.9392	249.2073	248.968020
2038	Annual	Los Angeles (SC)	LHDT1	Dsl	CO2	1787.1754	4138479.9757	391.7614	
2038	Annual	Los Angeles (SC)	LHDT1	Gas	CO2	2815.2002	3716206.8371	687.2342	531.555434
2038	Annual	Los Angeles (SC)	LHDT2	Dsl	CO2	776.2846	1616892.7907	435.5471	
2038	Annual	Los Angeles (SC)	LHDT2	Gas	CO2	564.3402	647177.5510	791.0663	537.171193
2038	Annual	Los Angeles (SC)	MHDT	Dsl	CO2	4423.6998	5241312.0472	765.6689	
2038	Annual	Los Angeles (SC)	MHDT	Gas	CO2	1323.4252	864424.5407	1388.8895	853.901853
2038	Annual	Los Angeles (SC)	HHDT	Dsl	N2O	1.6729	8707332.6391	0.1743	
2038	Annual	Los Angeles (SC)	HHDT	Gas	N2O	0.0012	7982.4206	0.1338	
2038	Annual	Los Angeles (SC)	HHDT	NG	N2O	0.1193	190240.7560	0.5688	0.182689
2038	Annual	Los Angeles (SC)	LDA	Dsl	N2O	0.0522	1785778.9926	0.0265	
2038	Annual	Los Angeles (SC)	LDA	Gas	N2O	0.9009	145200708.4495	0.0056	0.005883
2038	Annual	Los Angeles (SC)	LDT1	Dsl	N2O	0.0002	2921.3872	0.0538	
2038	Annual	Los Angeles (SC)	LDT1	Gas	N2O	0.1384	19925767.6125	0.0063	0.006308
2038	Annual	Los Angeles (SC)	LDT2	Dsl	N2O	0.0221	566687.6514	0.0354	
2038	Annual	Los Angeles (SC)	LDT2	Gas	N2O	0.3769	55739058.9392	0.0061	0.006430
2038	Annual	Los Angeles (SC)	LHDT1	Dsl	N2O	0.2809	4138479.9757	0.0616	
2038	Annual	Los Angeles (SC)	LHDT1	Gas	N2O	0.0707	3716206.8371	0.0173	0.040609
2038	Annual	Los Angeles (SC)	LHDT2	Dsl	N2O	0.1220	1616892.7907	0.0685	

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calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2038	Annual	Los Angeles (SC)	LHDT2	Gas	N2O	0.0129	647177.5510	0.0181	0.054069
2038	Annual	Los Angeles (SC)	MHDT	Dsl	N2O	0.6953	5241312.0472	0.1204	
2038	Annual	Los Angeles (SC)	MHDT	Gas	N2O	0.0201	864424.5407	0.0211	0.106306
2038	Annual	Los Angeles (SC)	HHDT	Dsl	NOx	29.2672	8707332.6391	3.0492	
2038	Annual	Los Angeles (SC)	HHDT	Gas	NOx	0.0271	7982.4206	3.0847	
2038	Annual	Los Angeles (SC)	HHDT	NG	NOx	0.2575	190240.7560	1.2281	3.010363
2038	Annual	Los Angeles (SC)	LDA	Dsl	NOx	0.0228	1785778.9926	0.0116	
2038	Annual	Los Angeles (SC)	LDA	Gas	NOx	5.4941	145200708.4495	0.0343	0.034050
2038	Annual	Los Angeles (SC)	LDT1	Dsl	NOx	0.0004	2921.3872	0.1329	
2038	Annual	Los Angeles (SC)	LDT1	Gas	NOx	0.9168	19925767.6125	0.0417	0.041754
2038	Annual	Los Angeles (SC)	LDT2	Dsl	NOx	0.0228	566687.6514	0.0365	
2038	Annual	Los Angeles (SC)	LDT2	Gas	NOx	2.5704	55739058.9392	0.0418	0.041781
2038	Annual	Los Angeles (SC)	LHDT1	Dsl	NOx	0.6981	4138479.9757	0.1530	
2038	Annual	Los Angeles (SC)	LHDT1	Gas	NOx	0.7215	3716206.8371	0.1761	0.163960
2038	Annual	Los Angeles (SC)	LHDT2	Dsl	NOx	0.3538	1616892.7907	0.1985	
2038	Annual	Los Angeles (SC)	LHDT2	Gas	NOx	0.1336	647177.5510	0.1872	0.195290
2038	Annual	Los Angeles (SC)	MHDT	Dsl	NOx	9.7402	5241312.0472	1.6859	
2038	Annual	Los Angeles (SC)	MHDT	Gas	NOx	0.2158	864424.5407	0.2265	1.479250
2038	Annual	Los Angeles (SC)	HHDT	Dsl	PM10	1.0955	8707332.6391	0.1141	
2038	Annual	Los Angeles (SC)	HHDT	Gas	PM10	0.0007	7982.4206	0.0831	
2038	Annual	Los Angeles (SC)	HHDT	NG	PM10	0.0213	190240.7560	0.1016	0.113837
2038	Annual	Los Angeles (SC)	LDA	Dsl	PM10	0.0902	1785778.9926	0.0458	
2038	Annual	Los Angeles (SC)	LDA	Elec	PM10	0.4602	9330033.0600	0.0447	
2038	Annual	Los Angeles (SC)	LDA	Gas	PM10	7.3069	145200708.4495	0.0457	0.045600
2038	Annual	Los Angeles (SC)	LDT1	Dsl	PM10	0.0002	2921.3872	0.0530	
2038	Annual	Los Angeles (SC)	LDT1	Elec	PM10	0.0365	740741.0414	0.0447	
2038	Annual	Los Angeles (SC)	LDT1	Gas	PM10	1.0058	19925767.6125	0.0458	0.045755
2038	Annual	Los Angeles (SC)	LDT2	Dsl	PM10	0.0310	566687.6514	0.0496	
2038	Annual	Los Angeles (SC)	LDT2	Elec	PM10	0.0854	1731075.5461	0.0447	
2038	Annual	Los Angeles (SC)	LDT2	Gas	PM10	2.8081	55739058.9392	0.0457	0.045712
2038	Annual	Los Angeles (SC)	LHDT1	Dsl	PM10	0.4354	4138479.9757	0.0954	
2038	Annual	Los Angeles (SC)	LHDT1	Gas	PM10	0.3517	3716206.8371	0.0858	0.051286
2038	Annual	Los Angeles (SC)	LHDT2	Dsl	PM10	0.2044	1616892.7907	0.1147	
2038	Annual	Los Angeles (SC)	LHDT2	Gas	PM10	0.0703	647177.5510	0.0986	0.095024
2038	Annual	Los Angeles (SC)	MHDT	Dsl	PM10	0.8635	5241312.0472	0.1494	
2038	Annual	Los Angeles (SC)	MHDT	Gas	PM10	0.1370	864424.5407	0.1437	0.143844
2038	Annual	Los Angeles (SC)	HHDT	Dsl	PM2_5	0.4965	8707332.6391	0.0517	

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calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2038	Annual	Los Angeles (SC)	HHDT	Gas	PM2_5	0.0003	7982.4206	0.0327	
2038	Annual	Los Angeles (SC)	HHDT	NG	PM2_5	0.0082	190240.7560	0.0392	0.051439
2038	Annual	Los Angeles (SC)	LDA	Dsl	PM2_5	0.0369	1785778.9926	0.0188	
2038	Annual	Los Angeles (SC)	LDA	Elec	PM2_5	0.1826	9330033.0600	0.0177	
2038	Annual	Los Angeles (SC)	LDA	Gas	PM2_5	2.9737	145200708.4495	0.0186	0.018532
2038	Annual	Los Angeles (SC)	LDT1	Dsl	PM2_5	0.0001	2921.3872	0.0257	
2038	Annual	Los Angeles (SC)	LDT1	Elec	PM2_5	0.0145	740741.0414	0.0177	
2038	Annual	Los Angeles (SC)	LDT1	Gas	PM2_5	0.4109	19925767.6125	0.0187	0.018674
2038	Annual	Los Angeles (SC)	LDT2	Dsl	PM2_5	0.0140	566687.6514	0.0223	
2038	Annual	Los Angeles (SC)	LDT2	Elec	PM2_5	0.0339	1731075.5461	0.0177	
2038	Annual	Los Angeles (SC)	LDT2	Gas	PM2_5	1.1444	55739058.9392	0.0186	0.018637
2038	Annual	Los Angeles (SC)	LHDT1	Dsl	PM2_5	0.1937	4138479.9757	0.0425	
2038	Annual	Los Angeles (SC)	LHDT1	Gas	PM2_5	0.1477	3716206.8371	0.0361	0.021195
2038	Annual	Los Angeles (SC)	LHDT2	Dsl	PM2_5	0.0965	1616892.7907	0.0541	
2038	Annual	Los Angeles (SC)	LHDT2	Gas	PM2_5	0.0296	647177.5510	0.0415	0.041536
2038	Annual	Los Angeles (SC)	MHDT	Dsl	PM2_5	0.3794	5241312.0472	0.0657	
2038	Annual	Los Angeles (SC)	MHDT	Gas	PM2_5	0.0573	864424.5407	0.0602	0.062641
2038	Annual	Los Angeles (SC)	HHDT	Dsl	ROG	0.5277	8707332.6391	0.0550	
2038	Annual	Los Angeles (SC)	HHDT	Gas	ROG	0.0034	7982.4206	0.3875	
2038	Annual	Los Angeles (SC)	HHDT	NG	ROG	0.0204	190240.7560	0.0972	0.056176
2038	Annual	Los Angeles (SC)	LDA	Dsl	ROG	0.0140	1785778.9926	0.0071	
2038	Annual	Los Angeles (SC)	LDA	Elec	ROG	0.0158	9330033.0600	0.0015	
2038	Annual	Los Angeles (SC)	LDA	Gas	ROG	7.7543	145200708.4495	0.0484	0.045175
2038	Annual	Los Angeles (SC)	LDT1	Dsl	ROG	0.0001	2921.3872	0.0270	
2038	Annual	Los Angeles (SC)	LDT1	Elec	ROG	0.0013	740741.0414	0.0016	
2038	Annual	Los Angeles (SC)	LDT1	Gas	ROG	1.5750	19925767.6125	0.0717	0.069187
2038	Annual	Los Angeles (SC)	LDT2	Dsl	ROG	0.0138	566687.6514	0.0222	
2038	Annual	Los Angeles (SC)	LDT2	Elec	ROG	0.0043	1731075.5461	0.0022	
2038	Annual	Los Angeles (SC)	LDT2	Gas	ROG	4.3950	55739058.9392	0.0715	0.068982
2038	Annual	Los Angeles (SC)	LHDT1	Dsl	ROG	0.2137	4138479.9757	0.0469	
2038	Annual	Los Angeles (SC)	LHDT1	Gas	ROG	0.8281	3716206.8371	0.2021	0.077558
2038	Annual	Los Angeles (SC)	LHDT2	Dsl	ROG	0.0859	1616892.7907	0.0482	
2038	Annual	Los Angeles (SC)	LHDT2	Gas	ROG	0.1404	647177.5510	0.1968	0.159937
2038	Annual	Los Angeles (SC)	MHDT	Dsl	ROG	0.0498	5241312.0472	0.0086	
2038	Annual	Los Angeles (SC)	MHDT	Gas	ROG	0.2074	864424.5407	0.2176	0.053409
2038	Annual	Los Angeles (SC)	HHDT	Dsl	SOx	0.1006	8707332.6391	0.0105	
2038	Annual	Los Angeles (SC)	HHDT	Gas	SOx	0.0001	7982.4206	0.0159	0.029173

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calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2038	Annual	Los Angeles (SC)	LDA	Dsl	SOx	0.0031	1785778.9926	0.0016	
2038	Annual	Los Angeles (SC)	LDA	Gas	SOx	0.3398	145200708.4495	0.0021	0.002117
2038	Annual	Los Angeles (SC)	LDT1	Dsl	SOx	0.0000	2921.3872	0.0032	
2038	Annual	Los Angeles (SC)	LDT1	Gas	SOx	0.0548	19925767.6125	0.0025	0.002495
2038	Annual	Los Angeles (SC)	LDT2	Dsl	SOx	0.0013	566687.6514	0.0021	
2038	Annual	Los Angeles (SC)	LDT2	Gas	SOx	0.1515	55739058.9392	0.0025	0.002463
2038	Annual	Los Angeles (SC)	LHDT1	Dsl	SOx	0.0169	4138479.9757	0.0037	
2038	Annual	Los Angeles (SC)	LHDT1	Gas	SOx	0.0279	3716206.8371	0.0068	0.005169
2038	Annual	Los Angeles (SC)	LHDT2	Dsl	SOx	0.0073	1616892.7907	0.0041	
2038	Annual	Los Angeles (SC)	LHDT2	Gas	SOx	0.0056	647177.5510	0.0078	0.005178
2038	Annual	Los Angeles (SC)	MHDT	Dsl	SOx	0.0418	5241312.0472	0.0072	
2038	Annual	Los Angeles (SC)	MHDT	Gas	SOx	0.0131	864424.5407	0.0137	0.008155
2043	Annual	Los Angeles (SC)	HHDT	Dsl	CH4	0.0262	9303767.1296	0.0026	
2043	Annual	Los Angeles (SC)	HHDT	Gas	CH4	0.0007	8121.8675	0.0765	
2043	Annual	Los Angeles (SC)	HHDT	NG	CH4	0.9231	204164.8454	4.1017	0.090567
2043	Annual	Los Angeles (SC)	LDA	Dsl	CH4	0.0006	1807803.2434	0.0003	
2043	Annual	Los Angeles (SC)	LDA	Gas	CH4	0.5577	145530461.3969	0.0035	0.003437
2043	Annual	Los Angeles (SC)	LDT1	Dsl	CH4	0.0000	2894.3023	0.0011	
2043	Annual	Los Angeles (SC)	LDT1	Gas	CH4	0.0863	20276874.9669	0.0039	0.003861
2043	Annual	Los Angeles (SC)	LDT2	Dsl	CH4	0.0007	578191.1561	0.0010	
2043	Annual	Los Angeles (SC)	LDT2	Gas	CH4	0.2940	56145990.6440	0.0048	0.004713
2043	Annual	Los Angeles (SC)	LHDT1	Dsl	CH4	0.0102	4304016.1137	0.0021	
2043	Annual	Los Angeles (SC)	LHDT1	Gas	CH4	0.0348	3745175.4234	0.0084	0.005069
2043	Annual	Los Angeles (SC)	LHDT2	Dsl	CH4	0.0041	1684330.2971	0.0022	
2043	Annual	Los Angeles (SC)	LHDT2	Gas	CH4	0.0061	657887.0092	0.0085	0.003964
2043	Annual	Los Angeles (SC)	MHDT	Dsl	CH4	0.0024	5510451.0780	0.0004	
2043	Annual	Los Angeles (SC)	MHDT	Gas	CH4	0.0207	874226.8199	0.0214	0.003280
2043	Annual	Los Angeles (SC)	HHDT	Dsl	CO	7.7540	9303767.1296	0.7561	
2043	Annual	Los Angeles (SC)	HHDT	Gas	CO	0.2853	8121.8675	31.8636	
2043	Annual	Los Angeles (SC)	HHDT	NG	CO	3.4006	204164.8454	15.1104	1.090591
2043	Annual	Los Angeles (SC)	LDA	Dsl	CO	0.4364	1807803.2434	0.2190	
2043	Annual	Los Angeles (SC)	LDA	Gas	CO	100.8470	145530461.3969	0.6286	0.623618
2043	Annual	Los Angeles (SC)	LDT1	Dsl	CO	0.0008	2894.3023	0.2572	
2043	Annual	Los Angeles (SC)	LDT1	Gas	CO	14.6166	20276874.9669	0.6539	0.653887
2043	Annual	Los Angeles (SC)	LDT2	Dsl	CO	0.1463	578191.1561	0.2296	
2043	Annual	Los Angeles (SC)	LDT2	Gas	CO	47.6674	56145990.6440	0.7702	0.764680
2043	Annual	Los Angeles (SC)	LHDT1	Dsl	CO	1.0871	4304016.1137	0.2291	

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calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2043	Annual	Los Angeles (SC)	LHDT1	Gas	CO	3.6212	3745175.4234	0.8772	0.530648
2043	Annual	Los Angeles (SC)	LHDT2	Dsl	CO	0.4438	1684330.2971	0.2390	
2043	Annual	Los Angeles (SC)	LHDT2	Gas	CO	0.6555	657887.0092	0.9039	0.425801
2043	Annual	Los Angeles (SC)	MHDT	Dsl	CO	0.7534	5510451.0780	0.1240	
2043	Annual	Los Angeles (SC)	MHDT	Gas	CO	1.6140	874226.8199	1.6749	0.336390
2043	Annual	Los Angeles (SC)	HHDT	Dsl	CO2	10950.9151	9303767.1296	1067.7927	
2043	Annual	Los Angeles (SC)	HHDT	Gas	CO2	14.0900	8121.8675	1573.8061	
2043	Annual	Los Angeles (SC)	HHDT	NG	CO2	607.7946	204164.8454	2700.6682	1103.257597
2043	Annual	Los Angeles (SC)	LDA	Dsl	CO2	331.2065	1807803.2434	166.2046	
2043	Annual	Los Angeles (SC)	LDA	Gas	CO2	33787.9254	145530461.3969	210.6216	210.076660
2043	Annual	Los Angeles (SC)	LDT1	Dsl	CO2	1.0381	2894.3023	325.3874	
2043	Annual	Los Angeles (SC)	LDT1	Gas	CO2	5485.9491	20276874.9669	245.4404	245.451859
2043	Annual	Los Angeles (SC)	LDT2	Dsl	CO2	141.0186	578191.1561	221.2587	
2043	Annual	Los Angeles (SC)	LDT2	Gas	CO2	15003.1369	56145990.6440	242.4146	242.198921
2043	Annual	Los Angeles (SC)	LHDT1	Dsl	CO2	1823.9419	4304016.1137	384.4435	
2043	Annual	Los Angeles (SC)	LHDT1	Gas	CO2	2779.6902	3745175.4234	673.3171	518.852283
2043	Annual	Los Angeles (SC)	LHDT2	Dsl	CO2	793.8311	1684330.2971	427.5592	
2043	Annual	Los Angeles (SC)	LHDT2	Gas	CO2	560.9971	657887.0092	773.5791	524.749972
2043	Annual	Los Angeles (SC)	MHDT	Dsl	CO2	4527.4264	5510451.0780	745.3489	
2043	Annual	Los Angeles (SC)	MHDT	Gas	CO2	1312.7452	874226.8199	1362.2340	829.816375
2043	Annual	Los Angeles (SC)	HHDT	Dsl	N2O	1.7213	9303767.1296	0.1678	
2043	Annual	Los Angeles (SC)	HHDT	Gas	N2O	0.0012	8121.8675	0.1335	
2043	Annual	Los Angeles (SC)	HHDT	NG	N2O	0.1239	204164.8454	0.5505	0.176024
2043	Annual	Los Angeles (SC)	LDA	Dsl	N2O	0.0521	1807803.2434	0.0261	
2043	Annual	Los Angeles (SC)	LDA	Gas	N2O	0.9065	145530461.3969	0.0057	0.005902
2043	Annual	Los Angeles (SC)	LDT1	Dsl	N2O	0.0002	2894.3023	0.0511	
2043	Annual	Los Angeles (SC)	LDT1	Gas	N2O	0.1381	20276874.9669	0.0062	0.006184
2043	Annual	Los Angeles (SC)	LDT2	Dsl	N2O	0.0222	578191.1561	0.0348	
2043	Annual	Los Angeles (SC)	LDT2	Gas	N2O	0.3662	56145990.6440	0.0059	0.006211
2043	Annual	Los Angeles (SC)	LHDT1	Dsl	N2O	0.2867	4304016.1137	0.0604	
2043	Annual	Los Angeles (SC)	LHDT1	Gas	N2O	0.0786	3745175.4234	0.0190	0.041173
2043	Annual	Los Angeles (SC)	LHDT2	Dsl	N2O	0.1248	1684330.2971	0.0672	
2043	Annual	Los Angeles (SC)	LHDT2	Gas	N2O	0.0143	657887.0092	0.0198	0.053884
2043	Annual	Los Angeles (SC)	MHDT	Dsl	N2O	0.7116	5510451.0780	0.1172	
2043	Annual	Los Angeles (SC)	MHDT	Gas	N2O	0.0204	874226.8199	0.0211	0.104010
2043	Annual	Los Angeles (SC)	HHDT	Dsl	NOx	31.0582	9303767.1296	3.0284	
2043	Annual	Los Angeles (SC)	HHDT	Gas	NOx	0.0280	8121.8675	3.1300	

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calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2043	Annual	Los Angeles (SC)	HHDT	NG	NOx	0.2416	204164.8454	1.0736	2.986545
2043	Annual	Los Angeles (SC)	LDA	Dsl	NOx	0.0206	1807803.2434	0.0103	
2043	Annual	Los Angeles (SC)	LDA	Gas	NOx	5.4452	145530461.3969	0.0339	0.033654
2043	Annual	Los Angeles (SC)	LDT1	Dsl	NOx	0.0002	2894.3023	0.0731	
2043	Annual	Los Angeles (SC)	LDT1	Gas	NOx	0.8634	20276874.9669	0.0386	0.038634
2043	Annual	Los Angeles (SC)	LDT2	Dsl	NOx	0.0232	578191.1561	0.0364	
2043	Annual	Los Angeles (SC)	LDT2	Gas	NOx	2.2684	56145990.6440	0.0367	0.036650
2043	Annual	Los Angeles (SC)	LHDT1	Dsl	NOx	0.4744	4304016.1137	0.1000	
2043	Annual	Los Angeles (SC)	LHDT1	Gas	NOx	0.8133	3745175.4234	0.1970	0.145129
2043	Annual	Los Angeles (SC)	LHDT2	Dsl	NOx	0.2717	1684330.2971	0.1463	
2043	Annual	Los Angeles (SC)	LHDT2	Gas	NOx	0.1494	657887.0092	0.2060	0.163102
2043	Annual	Los Angeles (SC)	MHDT	Dsl	NOx	10.2140	5510451.0780	1.6815	
2043	Annual	Los Angeles (SC)	MHDT	Gas	NOx	0.2167	874226.8199	0.2249	1.482078
2043	Annual	Los Angeles (SC)	HHDT	Dsl	PM10	1.1702	9303767.1296	0.1141	
2043	Annual	Los Angeles (SC)	HHDT	Gas	PM10	0.0007	8121.8675	0.0831	
2043	Annual	Los Angeles (SC)	HHDT	NG	PM10	0.0228	204164.8454	0.1013	0.113802
2043	Annual	Los Angeles (SC)	LDA	Dsl	PM10	0.0909	1807803.2434	0.0456	
2043	Annual	Los Angeles (SC)	LDA	Elec	PM10	0.4803	9737694.3049	0.0447	
2043	Annual	Los Angeles (SC)	LDA	Gas	PM10	7.3028	145530461.3969	0.0455	0.045476
2043	Annual	Los Angeles (SC)	LDT1	Dsl	PM10	0.0002	2894.3023	0.0510	
2043	Annual	Los Angeles (SC)	LDT1	Elec	PM10	0.0394	798994.1037	0.0447	
2043	Annual	Los Angeles (SC)	LDT1	Gas	PM10	1.0197	20276874.9669	0.0456	0.045588
2043	Annual	Los Angeles (SC)	LDT2	Dsl	PM10	0.0316	578191.1561	0.0496	
2043	Annual	Los Angeles (SC)	LDT2	Elec	PM10	0.0899	1822523.2434	0.0447	
2043	Annual	Los Angeles (SC)	LDT2	Gas	PM10	2.8195	56145990.6440	0.0456	0.045571
2043	Annual	Los Angeles (SC)	LHDT1	Dsl	PM10	0.4503	4304016.1137	0.0949	
2043	Annual	Los Angeles (SC)	LHDT1	Gas	PM10	0.3545	3745175.4234	0.0859	0.051217
2043	Annual	Los Angeles (SC)	LHDT2	Dsl	PM10	0.2133	1684330.2971	0.1149	
2043	Annual	Los Angeles (SC)	LHDT2	Gas	PM10	0.0715	657887.0092	0.0986	0.095270
2043	Annual	Los Angeles (SC)	MHDT	Dsl	PM10	0.9075	5510451.0780	0.1494	
2043	Annual	Los Angeles (SC)	MHDT	Gas	PM10	0.1385	874226.8199	0.1438	0.143952
2043	Annual	Los Angeles (SC)	HHDT	Dsl	PM2_5	0.5301	9303767.1296	0.0517	
2043	Annual	Los Angeles (SC)	HHDT	Gas	PM2_5	0.0003	8121.8675	0.0327	
2043	Annual	Los Angeles (SC)	HHDT	NG	PM2_5	0.0087	204164.8454	0.0389	0.051394
2043	Annual	Los Angeles (SC)	LDA	Dsl	PM2_5	0.0370	1807803.2434	0.0186	
2043	Annual	Los Angeles (SC)	LDA	Elec	PM2_5	0.1905	9737694.3049	0.0177	
2043	Annual	Los Angeles (SC)	LDA	Gas	PM2_5	2.9615	145530461.3969	0.0185	0.018418

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calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2043	Annual	Los Angeles (SC)	LDT1	Dsl	PM2_5	0.0001	2894.3023	0.0237	
2043	Annual	Los Angeles (SC)	LDT1	Elec	PM2_5	0.0156	798994.1037	0.0177	
2043	Annual	Los Angeles (SC)	LDT1	Gas	PM2_5	0.4146	20276874.9669	0.0186	0.018520
2043	Annual	Los Angeles (SC)	LDT2	Dsl	PM2_5	0.0143	578191.1561	0.0224	
2043	Annual	Los Angeles (SC)	LDT2	Elec	PM2_5	0.0357	1822523.2434	0.0177	
2043	Annual	Los Angeles (SC)	LDT2	Gas	PM2_5	1.1444	56145990.6440	0.0185	0.018507
2043	Annual	Los Angeles (SC)	LHDT1	Dsl	PM2_5	0.1991	4304016.1137	0.0420	
2043	Annual	Los Angeles (SC)	LHDT1	Gas	PM2_5	0.1489	3745175.4234	0.0361	0.021090
2043	Annual	Los Angeles (SC)	LHDT2	Dsl	PM2_5	0.1009	1684330.2971	0.0543	
2043	Annual	Los Angeles (SC)	LHDT2	Gas	PM2_5	0.0301	657887.0092	0.0415	0.041712
2043	Annual	Los Angeles (SC)	MHDT	Dsl	PM2_5	0.3985	5510451.0780	0.0656	
2043	Annual	Los Angeles (SC)	MHDT	Gas	PM2_5	0.0580	874226.8199	0.0602	0.062686
2043	Annual	Los Angeles (SC)	HHDT	Dsl	ROG	0.5647	9303767.1296	0.0551	
2043	Annual	Los Angeles (SC)	HHDT	Gas	ROG	0.0035	8121.8675	0.3952	
2043	Annual	Los Angeles (SC)	HHDT	NG	ROG	0.0185	204164.8454	0.0821	0.055928
2043	Annual	Los Angeles (SC)	LDA	Dsl	ROG	0.0133	1807803.2434	0.0067	
2043	Annual	Los Angeles (SC)	LDA	Elec	ROG	0.0173	9737694.3049	0.0016	
2043	Annual	Los Angeles (SC)	LDA	Gas	ROG	7.0328	145530461.3969	0.0438	0.040794
2043	Annual	Los Angeles (SC)	LDT1	Dsl	ROG	0.0001	2894.3023	0.0242	
2043	Annual	Los Angeles (SC)	LDT1	Elec	ROG	0.0015	798994.1037	0.0017	
2043	Annual	Los Angeles (SC)	LDT1	Gas	ROG	1.3139	20276874.9669	0.0588	0.056615
2043	Annual	Los Angeles (SC)	LDT2	Dsl	ROG	0.0142	578191.1561	0.0222	
2043	Annual	Los Angeles (SC)	LDT2	Elec	ROG	0.0047	1822523.2434	0.0024	
2043	Annual	Los Angeles (SC)	LDT2	Gas	ROG	3.7420	56145990.6440	0.0605	0.058275
2043	Annual	Los Angeles (SC)	LHDT1	Dsl	ROG	0.2190	4304016.1137	0.0462	
2043	Annual	Los Angeles (SC)	LHDT1	Gas	ROG	0.7472	3745175.4234	0.1810	0.066533
2043	Annual	Los Angeles (SC)	LHDT2	Dsl	ROG	0.0881	1684330.2971	0.0475	
2043	Annual	Los Angeles (SC)	LHDT2	Gas	ROG	0.1353	657887.0092	0.1865	0.144638
2043	Annual	Los Angeles (SC)	MHDT	Dsl	ROG	0.0520	5510451.0780	0.0086	
2043	Annual	Los Angeles (SC)	MHDT	Gas	ROG	0.2122	874226.8199	0.2201	0.051455
2043	Annual	Los Angeles (SC)	HHDT	Dsl	SOx	0.1035	9303767.1296	0.0101	
2043	Annual	Los Angeles (SC)	HHDT	Gas	SOx	0.0001	8121.8675	0.0156	0.028121
2043	Annual	Los Angeles (SC)	LDA	Dsl	SOx	0.0031	1807803.2434	0.0016	
2043	Annual	Los Angeles (SC)	LDA	Gas	SOx	0.3344	145530461.3969	0.0021	0.002078
2043	Annual	Los Angeles (SC)	LDT1	Dsl	SOx	0.0000	2894.3023	0.0031	
2043	Annual	Los Angeles (SC)	LDT1	Gas	SOx	0.0543	20276874.9669	0.0024	0.002429
2043	Annual	Los Angeles (SC)	LDT2	Dsl	SOx	0.0013	578191.1561	0.0021	

EMFAC2017 On-Road Vehicle Emission Rate Calculations

calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	emission	vmt	g/mile	aggregate EF (g/mi)
2043	Annual	Los Angeles (SC)	LDT2	Gas	SOx	0.1485	56145990.6440	0.0024	0.002396
2043	Annual	Los Angeles (SC)	LHDT1	Dsl	SOx	0.0172	4304016.1137	0.0036	
2043	Annual	Los Angeles (SC)	LHDT1	Gas	SOx	0.0275	3745175.4234	0.0067	0.005044
2043	Annual	Los Angeles (SC)	LHDT2	Dsl	SOx	0.0075	1684330.2971	0.0040	
2043	Annual	Los Angeles (SC)	LHDT2	Gas	SOx	0.0056	657887.0092	0.0077	0.005057
2043	Annual	Los Angeles (SC)	MHDT	Dsl	SOx	0.0428	5510451.0780	0.0070	
2043	Annual	Los Angeles (SC)	MHDT	Gas	SOx	0.0130	874226.8199	0.0135	0.007923

Appendix I

Draft Hydrology and Water Quality Technical Memorandum

Watearth™
Water Resources + Green Infrastructure

CITY OF LOS ANGELES
BUREAU OF ENGINEERING

Sidewalk Repair Program
Hydrology and Water Quality
Technical Memorandum

DRAFT

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July 1, 2018

Watearth™
Water Resources + Green Infrastructure

Contents

1. Introduction

This memorandum documents hydrologic and water quality modeling results for city-wide Los Angeles Sidewalk Repair Project (Project). The Project area encompasses the entire city limits and elements will occur over a 30-year period from 2018 to 2048. The Project elements include sidewalk repair, curb ramp installation and repairs, minor and major utility work, cross-walk repaving, street tree root pruning, and street tree removal and replacement. Individual site projects will vary based on site conditions. Repair sites for the Project are not known in advance as the majority of work is by request. Details on the Project sidewalk repairs, street tree removal and replacement ordinance, and anticipated construction scenarios are provided in Chapter 2 of the Los Angeles Sidewalk Repair Program EIR (EIR). The Program is based on the settlement terms for *Willits v. City of Los Angeles* (Settlement), also described in Chapter 2 of the EIR, and an existing program of sidewalk repair by the City.

Changes in hydrology and water quality post-construction were analyzed on a site-specific and city-wide scale across the 30-year lifespan of the Project. Trees are considered fully mature 15 years after planting, so hydrology and water quality analysis included 15 years post project, which is year 45. The technical analysis evaluated two conditions; representative sites to evaluate site specific and city-wide operational impacts over the life of the project. Site specific impacts were modeled for a series of different fixed site parameters such as soil type and slope as well as post-construction parameters such as representative trees species that will be planted including growth rates, canopy sizes, and leaf type. The model variables evaluated operational conditions for Construction Scenario 1 and 2 with the assumption that there would be no net increase or appreciable change in the impervious surface due to the project.

Modeling also evaluated potential impacts during the life of the project (year 0-45) and city-wide for hydrology and water quality. For this modeling, no net increase or appreciable change in the impervious surface due to the project. Therefore, potential city-wide impacts to hydrology and water quality are due to the removal and replacement of trees. The proposed Project includes a proposed tree replacement of 2 (planted): 1 (removed) for years 1-10, 3:1 for years 11-20, and 2:1 for years 21-30. Green Infrastructure (GI) was not specifically analyzed for the project but is discussed in general terms.

The goals established for this Project include:

1. Comply with the requirements of the Settlement, and amend the existing program, as needed, for sidewalk and curb ramp repairs within the city, in accordance with applicable accessibility requirements. Street tree removal and replacement, as well as utility relocation, may occur, as necessary, for implementation.
2. Identify criteria for street tree preservation as well as removal and replacement requirements where street trees are the cause of sidewalk damage and recommend policies and/or an ordinance related to these criteria to implement the proposed Project.
3. Consider the City's sustainability goals when implementing the Sidewalk Repair Program.

The goals for this memorandum were to document changes to hydrology and water quality for proposed conditions, determine the water supply needed for replacement trees over the life of the project, and to provide hydrology and water quality mitigation recommendations, if needed.

2. Existing Conditions

As seen in Exhibit 1 and Exhibit 2, the Project area is the City of Los Angeles. Exhibit 5B shows the project zones as described in Chapter 2 of the EIR but are not used in this Technical Memorandum. The City covers 321,727 acres with approximately 300,159 acres of land and 21,760 of water. The City includes a combination of steep mountainous hillsides and gently sloping valley bottoms. Much of the City is highly developed with 76% with impervious surface as seen by the impervious surface in Exhibit 7. The remaining 24% is undeveloped terrain, primarily mountains and steep hillslopes. The impervious surface values correspond to many of the land use types associated with sidewalks such as residential, retail/commercial, and government. According to the City, streets comprise 15% of all the land within the city.[1] According to the EIR Project Description, LABOE manages approximately 11,000 miles sidewalks. Excluding the undeveloped terrain, the majority of the City streets are located in areas with less than a 10% slope (Exhibit 4B). However, there are a few exceptions, such as Eldred Street with a slope of 33% at the steepest point. Elevations across the city range from near zero at the coast up to 2,000 feet in the mountains. The majority of the urban areas are less than 1,000 feet elevation (Exhibit 4A).

2.1 Street Trees and Canopy

The existing tree canopy cover in the Project area is approximately 52,500 acres, or 20.8%, excluding undeveloped mountainous terrain.[2] There is a wide variety of trees found in the Project area ranging in size and character. A list of common trees in Los Angeles from Tree Map LA can be found in Appendix A. While a variety of tree species may be removed over the Project 30-year span, four tree species were identified as the most common to cause damage to sidewalks and to likely require removal because they typically grow very large and have extensive roots that buckle adjacent sidewalks. The two evergreen broadleaf tree species include *Ficus m. nitidia* (Indian Laurel Fig) and *Ceratonia siliqua* (Carob Tree). The two conifer species (pine trees) commonly found in the City are *Pinus canariensis* (Canary Island Pine) and *Pinus pinea* (Italian Stone Pine).[3]

2.2 Hydrology

2.2.1 Watersheds and Surface Waters

The Project consists of four watersheds with numerous subsheds (Exhibit 5A). The watersheds are the Los Angeles River Watershed, the Ballona Creek Watershed, the Santa Monica Bay Watershed, and the Dominguez Creek Watershed. The Los Angeles River Watershed is 531,790 acres with 183,784 acres within the proposed Project. The Los Angeles River subsheds within the Project area are Big Tujunga

[1] City of Los Angeles Bureau of Street Services. 2018. *Special Projects Division.* Available: http://bss.lacity.org/SpecialProjects/About.htm. Accessed: February 2, 2018.

[2] McPherson, E.G., et al. Million Trees Los Angeles Canopy Cover and Benefit Assessment. Pacific Southwest Research Station in *Landscape and urban* 99: 40-50, 2011. https://doi.org/10.1016/j.landurbplan.2010.08.011.

[3] Treepeople.org, *Common Trees of Los Angeles*. unknown date. https://www.treepeople.org/sites/default/files/pdf/treemap/Common%20Trees%20of%20LA.pdf.

Creek, Upper Los Angeles River, and Lower Los Angeles River. The Ballona Creek Watershed is 81,978 acres with 68,176 acres included in the proposed Project. Ballona Creek does not consist of any subsheds. The Santa Monica Bay Watershed is 184,168 acres, with 29,611 acres included in the proposed Project. The subsheds located within the Project area are Garapito Creek-Frontal Santa Monica Bay, Frontal Santa Monica Bay-San Pedro Bay, and Dominguez Channel. The Dominguez Creek Watershed is 78,929 acres, with 17,174 acres included in the proposed Project. The subsheds located within the Project area are Dominguez Channel and Frontal Santa Monica Bay-San Pedro Bay.

Flooding Hazards

Due to urbanization and increased conveyance through storm drain systems and concrete lining of drainage, stream and river channels, the 100-year event floodplain areas that exceed channel banks within the Project area are not common (Exhibit 3). The larger 100-year floodplain areas are primarily restricted to the northeast and to the south along the coast.

2.2.2. Groundwater

As shown in Exhibit 9, there are eight groundwater basins with numerous wells located throughout the Project area: San Fernando, Sylmar, Verdugo, Eagle Rock, Santa Monica, Hollywood, Central Basin and West Coast basins. Each groundwater basin and the range of depths to groundwater are provided in Table 1. Recharge occurs via spreading grounds (Exhibit 12), precipitation percolation and surface water percolation in washes.

Fernando, Sylmar, Verdugo and Eagle Rock basins are managed by the Upper Los Angeles River Area (ULARA) Watermaster. The San Fernando Basin is 112,000 acres and has a total storage area of approximately 3.67 million acre-feet (af) with and annual yield of 43,660 af/yr.[4] The spreading grounds include the Pacoima, Tujunga, Tujunga Gallery, Bradford, Headworks and Hansen spreading grounds. The Sylmar basin is 5,600 acres and has a total storage area of approximately 310,000 af with an annual yield of 6,210 af/yr.[5] Recharge occurs via the Lopez Spreading Ground and precipitation percolation. The Verdugo Basin is 4,400 acres and has a total storage area of approximately 160,000 af with an annual yield of 7,150 af/yr. The Eagle Rock Basin is 800 acres and has an unknown total storage area. Recharge for Verdugo and Eagle Rock basins is primarily through precipitation percolation. Urban development for all ULARA groundwater basins has reduced groundwater recharge by reducing pervious cover, increasing impervious cover, and routing precipitation into storm drains and lined channels that discharge to the Los Angeles River, which limits soil percolation.

The Santa Monica Basin, Hollywood Basin, West Coast Basin and Central Basin are subbasins of the Coastal Plain of Los Angeles Groundwater Basin. The basins are managed by various agencies. The Santa Monica Basin is 32,100 acres and has a total storage capacity of approximately 1.1 million acre-feet (af).[6] Recharge of the Santa Monica Basin is primarily through precipitation and surface runoff percolation from the Santa Monica Mountains. The Hollywood Basin is 10,500 acres and has a total

[4] ULARA. Upper Los Angeles River Area Watermaster. http://ularawatermaster.com/index.html?page_id=931 Accessed 6/24/2018 and California Department of Water Resources Bulletin No. 118, Interim Update 2016.

[5] ULARA. Upper Los Angeles River Area Watermaster. http://ularawatermaster.com/index.html?page_id=931 Accessed 6/24/2018.

[6] ULARA. Upper Los Angeles River Area Watermaster. http://ularawatermaster.com/index.html?page_id=931 Accessed 6/24/2018.

storage area of approximately 200,000 af (CA GW Bulletin). Recharge of the Hollywood Basin is through precipitation and streamflow percolation from the steeper areas to the north. Recharge has been depleted through street paving and lining drainage channels.

The Central Basin is 177,000 acres and has a total storage of approximately 13.8 million af.[7] Recharge is through subsurface flow and percolation of precipitation, stream flow and applied water. Natural recharge is primarily from surface flow through the Wittier Narrows from the San Gabriel Valley. Recharge within the city is diminished due to paving and development. Imported water is purchased by local agencies from the Metropolitan Water District and recycled water from the Whittier and San Jose Treatment Plants, which are used for artificial recharge at the Rio Hondo and San Gabriel River spreading grounds (located outside of the Project area). Saltwater intrusion has become a concern for the Central Basin in areas where river systems have eroded through the southwest basin boundary, the Newport Inglewood uplift. Water barriers to reduce saltwater intrusion are created via injection wells along the Alamitos Gap.

The West Coast Basin is 91,300 acres and has a total storage of approximately 6.5 million ac-ft.[8] Due to paving and development, natural recharge is primarily restricted to subsurface flow from the Central Basin through and over the Newport Inglewood fault zone. Seawater intrusion is a concern as some aquifers within the basin are exposed to the Pacific Ocean. Freshwater barriers are created via injection wells along the West Coast Basin Barrier and the Dominguez Gap Barrier.

[7] ULARA. Upper Los Angeles River Area Watermaster. http://ularawatermaster.com/index.html?page_id=931 Accessed 6/24/2018.

[8] ULARA. Upper Los Angeles River Area Watermaster. http://ularawatermaster.com/index.html?page_id=931 Accessed 6/24/2018.

Table 1 Depths to Groundwater

Groundwater Basin	Groundwater Depths Below Ground Surface (bgs)
Fernando[1]	20 ft Western area
	5 to 50 ft Eastern area
	250 to 400 ft Northern area
	150 to 200 ft Southern area
Sylmar[1]	50 to 150 ft
Verdugo[1]	100 ft
Eagle Rock[1]	5 to 20 ft
Santa Monica[2]	Up to 500 ft
Hollywood[3]	7 to 30 ft
Central Basin[4]	5 to 25 ft
West Coast Basin[5]	100 to 500 ft

[1] Annual Report: Watermaster Service in the Upper Los Angeles River Area (ULARA), Los Angeles County, California, December 2016

[2] 2010 City of Santa Monica Urban Water Management Plan

[3] Recirculated Draft Environmental Impact Report Melrose Triangle, City of West Hollywood, January 2014

[4] California's Groundwater Bulletin 118, *Coastal Plain of Los Angeles Groundwater Basin, Central Subbasin.* Groundwater Basin 4-11.04, updated 2/27/2004

[5]Watermaster Service in the West Coast Basin, Los Angeles County, California Department of Water Resources, September 2014

2.3 Surface Water Quality

This section addresses the existing conditions for surface water quality including typical pollutants, receiving water impairment, and total maximum daily loads (TMDL) within the proposed Project.

2.3.1 Typical Pollutants

Pollutants will vary from site to site within the Project area. In general, most sidewalk repair sites will be located within residential and commercial areas and all sidewalk repair will occur within roadway right-of-way (ROW) except in unique circumstances. Table 2 provides common pollutants of concern for the most common land uses in the proposed Project Area. The table summarizes pollutants identified in the February, 2014 County of Los Angeles Department of Public Works Low Impact Development Standards Manual. This table also includes other pollutants that the U.S. EPA recognizes to be typically associated with land use present in the Project area.

Table 2 Pollutants of Concern by Land Use

Land Use	Pollutants of Concern											
	Suspended Solids[2]	Total Phosphorus[2]	Total Nitrogen[2]	Total Kjedahl Nitrogen[2]	Cadmium, Total[2]	Chromium, Total[2]	Copper Total[2]	Lead Total[2]	Zinc, Total[2]	Fecal Coliform[5]	Hydrocarbons[5]	Trash[5]
High Density Single Family Residential	x	x	x	x	(4)	(4)	x	x	x			x
Multi-Family Residential	x	x	x	x	(4)	(4)	x	x	x			x
Mixed Residential	x	x	x	x	(4)	(4)	x	x	x			x
Commercial	x	x	x	x	(4)	(4)	x	x	x			x
Industrial		x	x	x	(4)	(4)	x	x	x		x	x
Transportation (streets, roads)	x	x	x	x	(4)	(4)	x	x	x	x	x	x
Institutional (educational facilities)	x				(4)	(4)	x		x			x
Vacant/Undeveloped[(5)]	x	x	x	x				x	x			

[(1)] Adapted from Table A-3 of the *Technical Manual for Stormwater Best Management Practices in the County of Los Angeles* (February 2004) and the Southern California Coastal Water Research Project Land Use Specific Storm Water Monitoring Data. X= exceedance of "standard" by observed median/average concentration; blank = no exceedance of "standard" by observed median/average concentration. Sourced in County of Los Angeles *Low Impact Development Standards Manual*, February 2014.
[(2)] Derived from Table 11 of the 2012 Los Angeles County MS4 Permit (page 104).
[(3)] Critical facilities include automobile dismantling (SIC 50xx), automobile repair (SIC 75xx), metal fabrication (SIC 34xx), motor freight (SIC 42xx), automobile dealerships (SIC 55xx), chemical manufacturing (SIC 28xx), and machinery manufacturing (SIC 35xx).
[(4)] No available date to determine if these pollutants of concern originate from this land use. Pollutant is assumed to be produced by this land use unless otherwise proven by the project applicant.
[(5)] Based on 2006 U.S. EPA *Guide to Stormwater Pollutant Concentrations*.

2.3.2 Pollutants of Concern Based on Receiving Water Impairment

The Clean Water Act (CWA) requires that states adopt water quality standards for receiving waters. Water quality standards designate beneficial uses for the receiving water and include criteria required to

support those beneficial uses. Water quality criteria are either narrative statements related to the quality of water to support a particular use or maximum concentrations of levels of pollutants (i.e., bacteria, etc.). As part of the CWA, when monitoring data indicates that a pollutant is exceeded, the receiving water is classified as impaired and placed on the CWA Section 303(d) List of Water Quality Limited Segments Requiring TMDLs (303(d) List). A Total Maximum Daily Load (TMDL) is then developed for the pollutant(s) causing the impairment. The purpose of the TMDL is to limit the amount of pollutant(s) discharged to the receiving water from all sources (i.e., stormwater runoff, wastewater, agriculture).

There are several pollutants of concern related to the receiving body of water and include those pollutants with a developed TMDL requirement, other pollutants listed on the 303(d) List, and pollutants of concern for the various watersheds within the Project area. Table 3 summarizes the water quality pollutants within the proposed Project Area.

Table 3 Summary of Potential Pollutants and Pollutants of Concern Across All Land Uses (California Integrated Clean Water Report)

Nutrients	Metals	Organics	Other	Pathogens	Sediment/Solids	Inorganics
Algae	Aluminum	BOD	Chloride	Coliform Bacteria	Suspended Solids	Cyanide
Ammonia	Cadmium	COD	Hydrocarbons	Viruses	Total Dissolved Solids	
Organic Nitrogen	Chromium	Polycyclic Aromatic Hydrocarbons	pH		Turbidity	
Total Nitrogen	Copper	Polychlorinated biphenyls	Sulfate			
Total Phosphorous	Lead		Trash			
	Mercury		Chlordane			
	Selenium		DDT			
	Silver					
	Zinc					

2.3.3 Total Maximum Daily Loads

A total maximum daily load (TMDL) is a regulatory term in the U.S. Clean Water Act (CWA), describing the value of the maximum amount of a pollutant that may enter a water body while still meeting water quality standards. The TMDL is based on the idea that if all discharges are at or below the TMDL for a pollutant of concern then water quality will improve for that particular pollutant. All watersheds in the proposed Project's study area have some degree of impairment, as summarized in Table 4.

The proposed Project is required to meet the discharge limits for construction and operational phases. As discussed in more detail in the Hydrology and Water Quality section of the EIR, there are multiple

regulations and policies the project must meet to remain in compliance with water quality regulations, including but not limited to the Clean Water Act.

Table 4 Study Area Water Quality Impairments[9]

Watershed	Water Body Name	Pollutant Category	Potential Sources	EPA TMDL (2014/2016)[10]
Los Angeles River	Aliso Canyon Wash	Metals Bacteria	Unknown non-Point	2005/2008 2012
	Arroyo Seco Reach 1	Bacteria Trash	Unknown and urban runoff/ storm sewers	2012 2008
	Bell Creek	Bacteria	Unknown	2012
	Bull Creek	Bacteria	Unknown	2012
	Burbank Western Channel	Bacteria Metals Trash Other inorganics	Unknown and urban runoff/ storm sewers	2012 2005 2008 2019*
	Dry Canyon Creek	Bacteria Metals	Unknown/ Non-point	2027* 2005
	Los Angeles River Reach 2	Nutrients Bacteria Metals Trash Nuisance	Unknown and urban runoff/ storm sewers Natural	2004 2009* 2005 2008 2019*
	Los Angeles River Reach 3	Nutrients Metals Trash Toxicity Bacteria	Unknown and urban runoff/ storm sewers	2004 2005 2008 2027* 2012
	Los Angeles River Reach 4	Nutrients Bacteria Toxicity Trash	Unknown and urban runoff/ storm sewers	2004 2019* 2027* 2004

[9] State Water Resources Control Board. 2018. *Impaired Water Bodies*. Available: https://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2014_2016.shtml. Accessed: June 28, 2018.

[10] Dates marked with an * are proposed TMDLs.

Watershed	Water Body Name	Pollutant Category	Potential Sources	EPA TMDL (2014/2016)[10]
	Los Angeles River Reach 5	Nutrients Metals Trash Nuisance Toxicity Miscellaneous	Unknown and urban runoff/ storm sewers	2004 2005 2008 2019* 2027* 2025*
	Los Angeles River Reach 6	Bacteria Metals Toxicity	Unknown	2012 2005/2008 2027*
	McCoy Canyon Creek	Bacteria Nutrients Metals	Unknown and urban runoff/ storm sewers	2027* 2003 2005
	Tujunga Wash	Nutrients Bacteria Metals Trash	Unknown and urban runoff/ storm sewers	2004 2012 2005 2008
	Verdugo Wash Reach 1	Bacteria Metals Trash	Unknown and urban runoff/ storm sewers	2019* 2021* 2008
	Verdugo Wash Reach 2	Bacteria Trash	Unknown and urban runoff/ storm sewers	2012 2008
Santa Monica Bay (18070104)	Dockweiler Beach	Bacteria	Nonpoint	2003
	Royal Palms Beach	Pesticides Other organics	Unknown/ Nonpoint	2012 2012
	Santa Monica Beach	Bacteria	Non-point	2003
	Santa Monica Canyon	Bacteria Metals	Unknown/ Nonpoint	2003 2019*
	Topanga Canyon Creek	Metals	Unknown	2019*
	Venice Beach	Bacteria	Nonpoint	2003
	Whites Point Beach	Pesticides Bacteria Other organics	Unknown/ Nonpoint	2012 2003 2012
	Will Rogers Beach	Bacteria	Nonpoint	2003
Ballona Creek – Santa Monica Bay (180070104)	Ballona Creek	Metals Bacteria Toxicity Trash	Unknown point source or unknown nonpoint source	2005 2007 2005 2001

Watershed	Water Body Name	Pollutant Category	Potential Sources	EPA TMDL (2014/2016)[10]
		Other inorganics		2019*
	Ballona Creek Estuary	Metals Pesticides Bacteria Toxicity Other organics	Unknown point source or unknown nonpoint source	2005 2005 2007 2005 2005
Dominguez Channel – Santa Monica Bay (180070104)	Dominguez Channel	Bacteria Metals Toxicity	Unknown/ Nonpoint	2007 2012 2012
	Torrance Carson Channel	Bacteria Metals	Unknown	2007* 2012
	Wilmington Drain	Bacteria	Unknown	2007*
Watershed	**Water Body Name**	**Listed Impairments**	**Potential Sources**	**EPA TMDL (2012)[11]**
Los Angeles River	Aliso Canyon Wash	Metals Bacteria	Unknown non-Point	Metals 2005
	Arroyo Seco Reach 1	Bacteria Trash Miscellaneous	Unknown and urban runoff/ storm sewers	2009* 2008 2021*
	Bell Creek	Bacteria	Unknown	2009*
	Bull Creek	Bacteria	Unknown	2021*
	Burbank Western Channel	Bacteria Metals Trash Other inorganics	Unknown and urban runoff/ storm sewers	2021* 2005 2008 2019*
	Dry Canyon Creek	Bacteria Metals	Unknown/ Non-point	2009* 2005
	Los Angeles River Reach 2	Nutrients Bacteria Metals Trash	Unknown and urban runoff/ storm sewers	2004 2009* 2005 2008
	Los Angeles River Reach 3	Nutrients Metals Trash	Unknown and urban runoff/ storm sewers	2004 2005 2008
	Los Angeles River Reach 4	Nutrients Bacteria Metals	Unknown and urban runoff/ storm sewers	2004 2019* 2005

[11] Dates marked with an * are proposed TMDLs.

Watershed	Water Body Name	Pollutant Category	Potential Sources	EPA TMDL (2014/2016)[10]
		Trash		2004
	Los Angeles River Reach 5	Nutrients Metals Trash Nuisance	Unknown and urban runoff/ storm sewers	2004 2005 2008 2019*
	Los Angeles River Reach 6	Bacteria Metals	Unknown	2015* 2005
	McCoy Canyon Creek	Bacteria Nutrients Metals	Unknown and urban runoff/ storm sewers	2015* 2019* 2005
	Tujunga Wash	Nutrients Bacteria Metals Trash	Unknown and urban runoff/ storm sewers	2004 2009* 2005 2008
	Verdugo Wash Reach 1	Bacteria Metals Trash	Unknown and urban runoff/ storm sewers	2019* 2021* 2008
	Verdugo Wash Reach 2	Bacteria Trash	Unknown and urban runoff/ storm sewers	2009* 2008
Santa Monica Bay (18070104)	Dockweiler Beach	Bacteria	Nonpoint	2003
	Royal Palms Beach	Pesticides Bacteria Other organics	Unknown/ Nonpoint	2019* 2003 2019*
	Santa Monica Beach	Bacteria	Non-point	2003
	Santa Monica Canyon	Bacteria Metals	Unknown/ Nonpoint	2003 2019*
	Topanga Canyon Creek	Metals	Unknown	2019*
	Venice Beach	Bacteria	Nonpoint	2003
	Whites Point Beach	Pesticides Bacteria Other organics	Unknown/ Nonpoint	2019* 2003 2019*
	Will Rogers Beach	Bacteria	Nonpoint	2003
Ballona Creek – Santa Monica Bay (180070104)	Ballona Creek	Metals Bacteria Toxicity Trash Other inorganics	Unknown point source or unknown nonpoint source	2005 2007 2005 2001 2019*
	Ballona Creek Estuary	Metals Pesticides	Unknown point source or unknown	2005 2005

Watershed	Water Body Name	Pollutant Category	Potential Sources	EPA TMDL (2014/2016)[10]
		Bacteria Toxicity Other organics Miscellaneous	nonpoint source	2007 2005 2005 2006
Dominguez Channel – Santa Monica Bay (180070104)	Dominguez Channel	Bacteria Nutrients Metals Pesticides Toxicity	Unknown/ Nonpoint	2007 2019* 2019* 2021* 2021*
	Torrance Carson Channel	Bacteria Metals	Unknown	2007* 2019*
	Wilmington Drain	Bacteria Metals	Unknown	2007* 2019*

Source: SWRCB 303(d) list, Final 2014/2016 California Integrated Report (Clean Water Act Section 303(d) List / 305(b) Report)..

3. Hydrology, Water Quality and Water Supply Analyses

The hydrologic analysis covers site-specific design storm events and city-wide continuous simulation analysis. The site-specific analysis is performed in United State Environmental Protection Agency (*US EPA) Stormwater Management Model (SWMM) version 5.1* and examines potential impacts to peak flow, infiltration, and surface runoff due to changes in tree rainfall storage. The city-wide analysis is performed in *i-Tree Hydro* version Beta 6.0 and examines potential water quality and stormwater volume impacts due to changes in canopy cover throughout the 30-year program. Based on Los Angeles Bureau of Engineering (LABOE) input, it was assumed that there would be no increase in impervious cover due to sidewalk repair activities because, even though sidewalk replacements may widen existing sidewalks in some locations, widening is anticipated to replace existing impervious surfaces. Additionally, the proposed Project does not provide new sidewalks in areas where they are not currently located.

3.1 Baseline Conditions

The baseline year is the 2016-2017 Fiscal Year (July 2016 – June 2017). The baseline year is the first year of the Sidewalk Repair Program implementation. During the baseline year (Year 1), 178 existing street trees were removed, and 166 new street trees were planted. There was also 591,241 square feet of sidewalk repaired, or approximately 22 linear feet of sidewalk (assuming a 5-foot-wide sidewalk). Data for the baseline year and proposed Project tree removal and replacement throughout the 30-year program was provided by LA BOE and can be found in Appendix B. The city-wide canopy cover baseline condition was the 20.8% canopy cover identified in the Million Trees Los Angeles Canopy Cover and

Benefit Assessment (Million Trees LA), adjusted for the canopy loss and replacement during the 2016-2017 Fiscal Year.[12]

3.2 Site-Specific Design Storm Analysis

This section addresses the site-specific, post-construction impacts methodology to assess hydrology impacts associated with the proposed Project for the representative site. Watearth used *EPA SWMM 5.1* to evaluate a range of potential site conditions that could be found throughout the City for both construction scenarios.

3.2.1 Site-Specific Scenarios Modeling

Modeling for the proposed Project required evaluating numerous combinations of site condition variables. The site conditions that were considered include type of tree (evergreen broadleaf, conifer, or deciduous), soil, gradient, and rainfall. As noted above, three different categories of trees were identified for modeling due to the role trees play in rainwater interception, which is discussed in more detail below. For purposes of the hydrologic modeling, the post-construction condition between Scenario 1 and 2 were not significant so a single representative site was used in the model.

Proposed Project Construction Scenarios (EIR Project Description)

1 – includes sidewalk repairs, along with curb ramp repairs, street tree removal and replacement, and minor utility work

2 - includes sidewalk repairs, along with curb ramp repairs, crosswalk repaving, street tree removal and replacement, and major utility work

3.2.1.1 Trees

There are numerous existing street tree species throughout the City. LA BOE identified three species that are commonly found to damage sidewalks.[13] They are *Ficus m. nitidia* (Indian Laurel Fig), *Pinus spp.*(Pine), and *Ceratonia siliqua* (Carob Tree). The *Ficus m. nitidia* and *Ceratonia siliqua* are evergreen broadleaf trees and the *Pinus spp.* are conifers.

Representative Trees for Modeling

Removed	
Ficus m. nitidia (Indian Laurel Fig),	Evergreen broadleaf
Pinus spp., (Pine)	Conifer
Ceratonia siliqua (Carob Tree)	Evergreen broadleaf
Replacement	
Tabebuia impetiginosa (Pink Trumpet Tree)	Deciduous broadleaf
Geijera parviflora (Native Willow)	Evergreen broadleaf

Based on the City Urban Forestry Division, there are 150 approved street trees.[14] However, many require a parkway width of greater than six feet. Out of the 150 approved trees, 67 require a parkway width of less than six feet and 23 require a parkway width of less than four feet. *Tabebuia impetiginosa* (Pink Trumpet Tree) and *Geijera parviflora*

[12] McPherson, E.G., et al. Million Trees Los Angeles Canopy Cover and Benefit Assessment. Pacific Southwest Research Station in *Landscape and urban* 99: 40-50, 2011. https://doi.org/10.1016/j.landurbplan.2010.08.011

[13] AQ-GHG Data Request - LABOE Citywide Sidewalk Repair - MARRS v14 to ICF 20180612

[14] City of Los Angeles Bureau of Street Services, Urban Forestry Division, *Street Tree Selection Guide.* Bss.lacity.org/urbanforestry/streettreeselectionguide.htm

(Australian Willow) were identified as potential replacement species.[15] *Tabebuia impetiginosa* is a deciduous broadleaf tree with a slow to moderate growth rate of 12 to 24 inches per year[16] and moderate canopy (30 feet diameter)[17]. *Geijera parviflora* is an evergreen broadleaf tree with a faster growth rate at 24 to 36 inches per year[18] and a smaller canopy (20 feet diameter)[19].

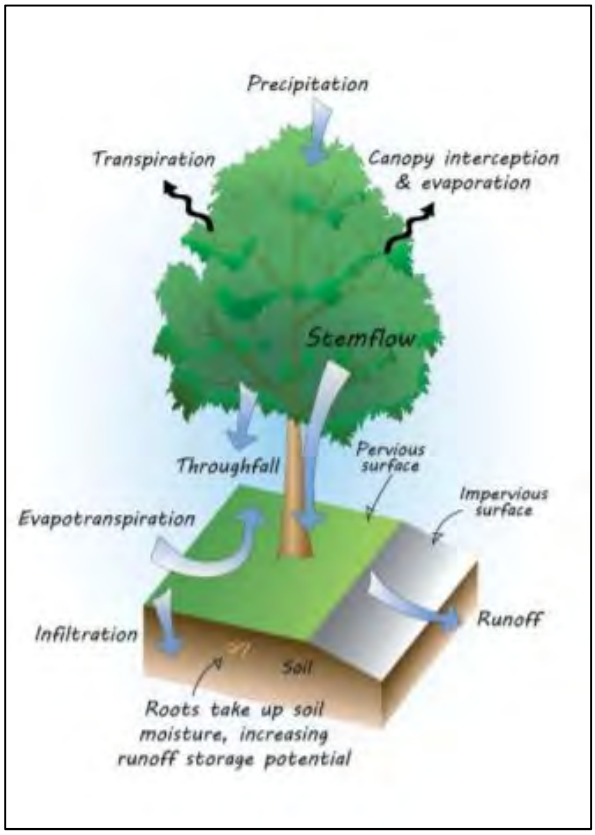

Figure 1 The Different Components of Street Tree Hydrology[20]

[15] AQ-GHG Data Request - LABOE Citywide Sidewalk Repair - MARRS v14 to ICF 20180612

[16] Urban Forest Ecosystem Institute, CalPoly San Luis Obispo, https://selectree.calpoly.edu/search/.

[17] Perry, Robert. *Landscape Plants for California Gardens* 1st Edition. 2010.

[18] Urban Forest Ecosystem Institute, CalPoly San Luis Obispo, https://selectree.calpoly.edu/search/.

[19] Perry, Robert. *Landscape Plants for California Gardens* 1st Edition. 2010

[20] 2006 U.S. EPA *Guide to Stormwater Pollutant Concentrations*

Tree interception is dependent upon differences in tree canopy size, leaf canopy architecture, leave area, leaf and branch angles, leaf smoothness, and bark thickness and roughness[21],[22],[23]. Due to the Mediterranean climate in California, whether a tree is deciduous or evergreen plays a significant role in storage and interception. The majority of rainfall occurs in winter and early spring when deciduous trees are not in a stage of leaf-out. Thus, rainfall interception for deciduous trees is primarily determined by the bark storage capacity, which is significantly lower than tree storage during the leaf-out period in the late spring and summer. Xiao and McPherson (2016) found that bark storage capacity accounted for only 10 to 20% of the total capacity of deciduous trees when compared to leaf-out storage.[24]

In the SWMM modeling for site specific analysis, described in more detail in section 3.2.3 below, a single representative tree for each tree category (evergreen and deciduous) was selected. Tree species that have characteristics representative of trees that will be removed include *Ficus m. nitidia* (Indian Laurel Fig), *Pinus spp.*(Pine), and *Ceratonia siliqua* (Carob Tree). Trees with characteristics representative of trees that will be planted (replacement) include *Tabebuia impetiginosa* (Pink Trumpet Tree) and *Geijera parviflora* (Native Willow).

Three proposed tree replacement scenarios were analyzed for the site-specific analyses. One assumed all replaced trees were evergreen, which would result in the maximum amount of tree storage replacement. The other assumed all replaced trees were deciduous, which would result in the lowest amount of tree storage replacement. The third assumed one of each was planted. The existing tree selection was based on the existing common species with the highest rainfall storage capacity to present the worst case scenario in terms of lost rainfall storage and interception from existing tree removal.

3.2.1.2 Soil

All hydrologic soil types are found within the City (Exhibit 8A). The majority of soils within the City urban regions are types A, B and C with type D restricted to primarily the mountainous regions. The mapped soil unit textures range from fine sand to clay loam and the most common soil map unit texture within the urban regions is sandy loam (Exhibit 8B). The site-specific analysis examined scenarios for hydrologic soil types A, B and C. The city-wide analysis assumed a sandy loam soil condition based on the most common urban region mapped soil texture.

Soils are classified into **hydrologic groups** by the US Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) based on the soil's runoff potential. Soil classifications range from Type A with low runoff potential/high infiltration rate to Type D with high runoff potential/low infiltration rate.

[21] Van Stan II, J., D. F. Levia Jr. & R. B. Jenkins (2015) *Forest Canopy Interception Loss Across Temporal Scales: Implications for Urban Greening Initiatives*, The Professional Geographer, 67:1, 41-51, DOI: 10.1080/00330124.2014.888628. http://dx.doi.org/10.1080/00330124.2014.888628.

[22] Xiao, Q. and E.G. McPherson. 2011. "Rainfall interception of three trees in Oakland, California". Urban Ecosystems, 14: 755-769.

[23] Xiao, Q., E.G. McPherson, S. Ustin, M. Grismer, and J. Simpson. *Winter rainfall interception by two mature open-grown trees in Davis, California.* Hydrological Processes, 14, 763-784 (2000).

[24] Xiao, Qingfu, and E. Gregory McPherson. "Surface Water Storage Capacity of Twenty Tree Species in Davis, California." *Journal of Environment Quality*, vol. 45, no. 1, 11 Jan. 2016, pp. 188–198.

3.2.1.3 Street Gradient

The slope throughout the City boundary reaches grades over 100% (Exhibit 4A). The steepest streets in Los Angeles reach 32% grade, such as Echo Park Street.[25] However, due to the low occurrence of street grades that steep, a maximum grade of 10% was analyzed. The minimum street gradient analyzed was 0.5%, which is the lowest gradient allowed according to AASHTO's Green Book design guidelines.[26]

3.2.1.4 Rainfall

As seen in Exhibit 6A through 6D, rainfall varies across the City with the maximum values occurring in the mountains. Precipitation frequency data from the National Oceanographic and Atmospheric Institute (NOAA) Atlas 14 Volume 6 Precipitation Frequency Data Server stations were analyzed throughout the City. A station representing low rainfall values[27] and a station representing high rainfall values[28] were selected for the 24-hour design-storm event rainfall scenarios. The precipitation frequency values from the stations were used to create the design storm event precipitation hydrographs using the precipitation unit hydrograph in accordance with the Los Angeles County Hydrology Manual (2006).[29] Refer to Tables C-1 and C-2 in Appendix C for the NOAA precipitation frequency data. Figure 2 shows the 2-year, 50-year and 100-year design-storm event precipitation hydrographs for the low rainfall and high rainfall scenarios.

[25] Ralston, D. LA Weekly. *This Super Steep Echo Park Street is Hell on Earth for Cars.* January 13, 2017.

[26] American Association of State Highway Transportation Officials (AASHTO). A Policy on Geometric Design of Highways and Streets, 6th Edition (commonly referred to at the Green Book). https://bookstore.transportation.org/collection_detail.aspx?ID=110

[27] NOAA Atlas 14, Volume 6, Version 2 NORTH HOLLYWOOD-LAKESIDE Station ID: 97-0032, located in North Hollywood, California. https://hdsc.nws.noaa.gov/hdsc/pfds/ Accessed February 8, 2018.

[28] NOAA Atlas 14, Volume 6, Version 2 Los Angeles-USC Station ID: 97-0620, located in Los Angeles, California. https://hdsc.nws.noaa.gov/hdsc/pfds/ Accessed February 8, 2018.

[29] County of Los Angeles, Department of Public Works, *Hydrology Manual*. January 2006

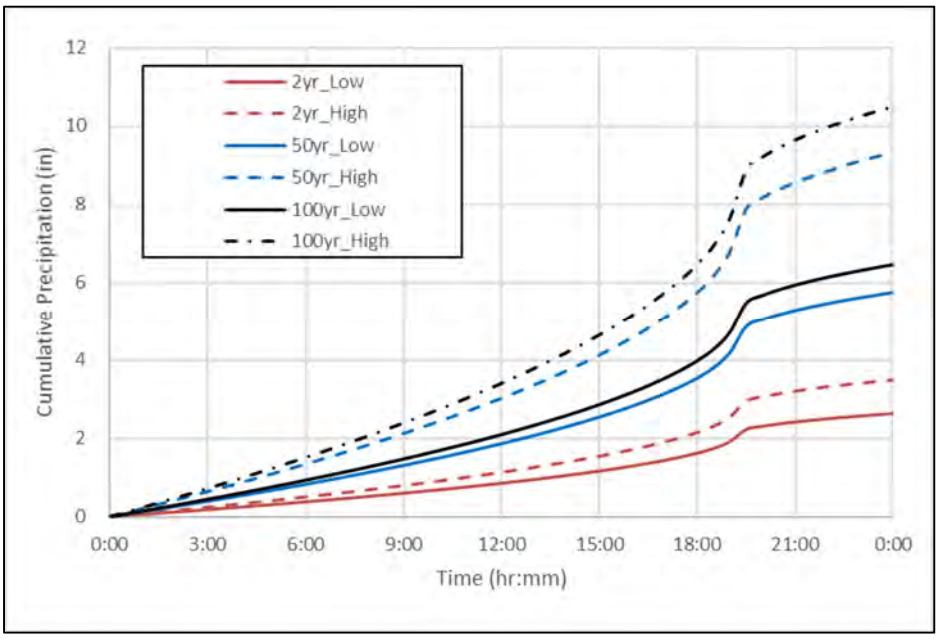

Figure 2 Low rainfall and high rainfall 24-hour design storm event precipitation hydrographs for the 2-year, 50-year and 100-year events.

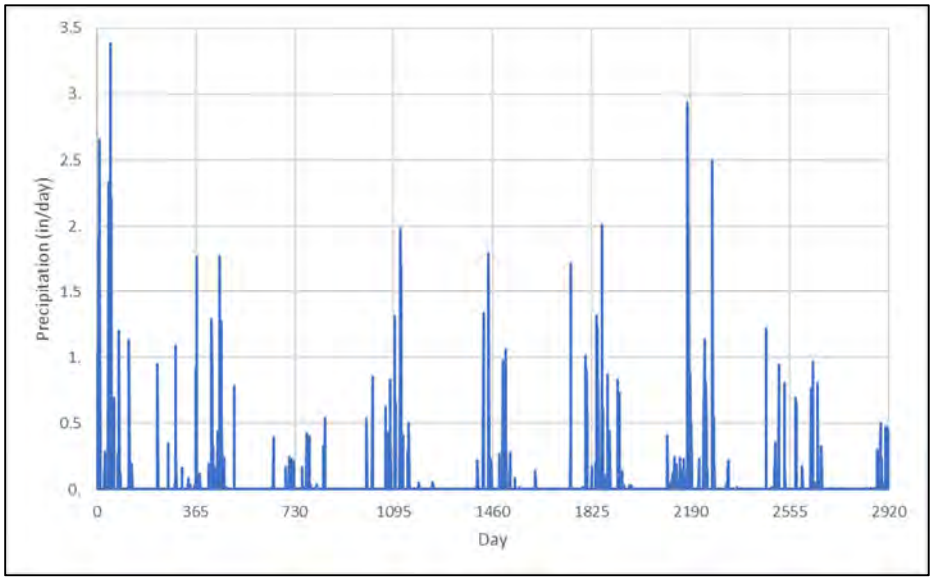

Figure 3 Daily precipitation values from 2005 through 2012 city-wide continuous simulation modeling.

3.2.2 Tree Storage Calculations

When considering a rain event over tree canopy, the total amount of rain, or gross precipitation, is a function of the amount of rainfall intercepted by the canopy, the amount of water that flows down the stems and trunk to the ground, and the amount that falls through directly or drips to the ground from the canopy (Equation 1).

$$P_G = I + S + T \quad (1)$$

Where P_G is gross precipitation,
I is infiltration,
S is stem flow, and
T is throughfall.

The amount of interception by tree canopy is dependent upon the amount of water required to saturated the tree. According to the Gash Modified Model (Equation 2), the amount of rainfall required to saturated a tree is a function of the average rainfall intensity, the canopy evaporation rate, the tree storage capacity, and the canopy cover.[30] When analyzing an individual storm for one tree, the amount of rain required to saturate is the storage capacity of the tree. Evaporation (E_c in Equation 2) is not considered during a 24-hour design storm event. However, evaporation plays a significant role for water loss from the tree canopy and bark in between storm events. For a single storm event, rainfall that exceeds the tree storage capacity will drip to the ground from the canopy or flow down the stems and trunk to the ground.

$$P_g = -\frac{R}{Ec} * \frac{S}{c} \ln\left(1 - \frac{Ec}{R}\right) \quad (2)$$

Where P_g is gross precipitation required to saturate the canopy,
R is the average rainfall intensity,
E_c is the average canopy evaporation rate,
S is the storage, and
c is the canopy cover.

30 Cui, Y. and L. Jia. A Modified Gash Model for Estimating Rainfall Interception Loss of Forest Using Remote Sensing Observations at Regional Scale. Water 2014, 6, 993-1012; doi:10.3390/w6040993.

As shown in Equation 3, the storage can be split into two components—leaf storage and bark storage. The leaf storage is the amount of water that can be stored on the leaf surface. Leaf storage is primarily a factor of Leaf Area Index (LAI), which is a measure of green leaf area per unit ground area. Trees with large leaves, dense canopy, and multi-layered canopy will have high LAI values. Bark storage is determined by bark thickness and roughness, branch and trunk surface area, and branch geometry.

$$S = S_L LAI + S_b BAI \quad (3)$$

Where S is the total storage of a tree in unit length,
S_L is the specific leaf storage,
LAI is Leaf Area Index,
S_b is the specific bark storage, and
BAI is the Bark Area Index.

The LAI and bark storage for the three tree species representing common tree species to be removed and two common tree species to be planted was determined from literature (Table 5). Specific bark storage (S_b) and BAI were not found in the literature. Instead, the total amount of bark storage (S_b*BAI) was obtained from the literature to represent each tree species. Bark storage values were obtained from Xiao and McPherson (2016), which analyzed tree storage for 20 different tree species.[31] Values were selected from tree species with similar (mature) size, tree structure and bark roughness as the tree species for this project.

[31] Xiao, Qingfu, and E. Gregory McPherson. "Surface Water Storage Capacity of Twenty Tree Species in Davis, California." *Journal of Environment Quality*, vol. 45, no. 1, 11 Jan. 2016, pp. 188–198.

Table 5 Tree Storage Values per species for leaf-on conditions

Tree Species	Common Name	Removed or Planted	Type[1]	LAI (leaf-on)[2]	Bark Storage (S_b*BAI) (in)	Canopy Diameter[3] (ft)	Canopy Area[4] (ft^2)
Ficus m. nitidia	Indian Laurel	Removed	BE	6.5	0.011	42.5	1,419
Pinus spp.	Pine	Removed	CE	7.35	0.022	20 to 40	800
Ceratonia siliqua	Carob Tree	Removed	BE	6.5	0.013	25	491
Tabebuia impetiginosa	Pink Trumpet Tree	Planted	BD	4.5	0.012	30	707
Geijera parviflora	Native Willow	Planted	BE	4.5	0.012	20	314

1. BE = broadleaf evergreen, CE = conifer evergreen, BD = broadleaf deciduous
2. LAI sources
3. Mature canopy diameter from *Landscape Plants for California Gardens* (Perry, 2010).
4. *Pinus spp.* canopy shape irregular. Canopy cover calculated as minimum radius multiplied by maximum radius. All other trees have rounded canopy shape. Canopy cover calculated as surface area with πr^2.

The specific leaf storage (S_L) values used to calculate total tree storage from Equation 3 was 0.008 inches for all trees, which was based on values reported in Wang et al. (2008).[32] LAI values were pulled from various sources. LAI is generally greater in larger trees with thick canopy, such as *Ficus m. nitidia* and *Ceratonia siliqua*, and in conifers, such as *Pinus spp.* Storage per tree was analyzed for leaf-off, which is in the winter for broadleaf deciduous trees. Broadleaf evergreens and conifers do not have leaf-off and leaf-on periods. Leaf-off was used for analysis since the majority of rainfall in Los Angeles occurs in the winter months, particularly the large storm events. The leaf-off storage per tree ranged from 0.012 inches (*Tabebuia impetiginosa*, broadleaf deciduous) to 0.08 inches (*Pinus spp*., conifer evergreen). Table 6 shows the storage values for the representative tree species. The storage values for *Tabebuia impetiginosa* only reflects bark storage since the LAI is zero during leaf-off.

32 Wang, J., T.A. Endreny, and D.J. Nowak. 2008. Mechanistic simulation of tree effects in an urban water balance model. J. Am. Water Resour. Assoc. 44:75–85. doi:10.1111/j.1752-1688.2007.00139.x. Available at https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1752-1688.2007.00139.x.

Table 6 Tree storage values per species for leaf-off conditions

Tree Species	Common Name	Removed or Planted	Type[1]	S per tree[2] (in)	S_L (in)[3]	LAI (leaf-off)[4]	Bark Storage (S_b*BAI[5]) (in)
Ficus m. nitidia	Indian Laurel	Removed	BE	0.062	0.008	6.5	0.011
Pinus spp.	Pine	Removed	CE	0.080	0.008	7.35	0.022
Ceratonia siliqua	Carob Tree	Removed	BE	0.064	0.008	6.5	0.013
Tabebuia impetiginosa	Pink Trumpet Tree	Planted	BD	0.012	0.008	0.0	0.012
Geijera parviflora	Native Willow	Planted	BE	0.048	0.008	4.5	0.012

1. BE = broadleaf evergreen, CE = conifer evergreen, BD = broadleaf deciduous.
2. S values are for leaf-off conditions. During leaf-on *Tabebuia impetiginosa* has the same storage value and LAI as *Geijera parviflora*.
3. S_L values from Lefrancois, C. *Designing Effective Stormwater Management Policies: The role of the urban forest and impervious cover in Vancouver, B.C.*, The University of British Columbia, 2015.
4. LAI values from LAI reference 1.
5. Bark storage values from Xiao, Qingfu, and E. Gregory McPherson. "Surface Water Storage Capacity of Twenty Tree Species in Davis, California." *Journal of Environment Quality*, vol. 45, no. 1, 11 Jan. 2016, pp. 188–198..

The majority of urban tree studies analyze mature trees. The bark and leaf storage values in Table 5 and Table 6 represent mature trees. The trees being removed throughout the 30-year project are assumed to be mature trees. Thus, their storage values will not change. The replacement trees will not be planted at maturity and thus changes in storage with tree age were taken into consideration. McPherson and Xiao (2016) examined how crown diameter and leaf area change with the age of the tree.[33] Their growth curves were used to create LAI growth curves. The majority of tree species have a rate of approximately 0.39 increase in LAI per year for the first five years of growth. After that the rate of change in LAI decrease by an order of magnitude to 0.03 increase in LAI per year. It was assumed LAI would reach the mature value after 15 years based on the growth rates from McPherson and Xiao (2016).[34]

Based on data from the EIR, the baseline (Year 0) mix of trees is comprised a tree canopy with 62% evergreens, 5% conifers, and 23% deciduous. The replacement history for the City since Year 0 is summarized in Table 7. Using City of Los Angeles tree database and GIS, the calculated baseline tree

[33] Xiao, Qingfu, and E. Gregory McPherson. "Surface Water Storage Capacity of Twenty Tree Species in Davis, California." *Journal of Environment Quality*, vol. 45, no. 1, 11 Jan. 2016, pp. 188–198.

[34] Xiao, Qingfu, and E. Gregory McPherson. "Surface Water Storage Capacity of Twenty Tree Species in Davis, California." *Journal of Environment Quality*, vol. 45, no. 1, 11 Jan. 2016, pp. 188–198.

canopy is 75% evergreen (broadleaf and conifer) and 25% deciduous, which is consistent with the EIR biological assumptions.

Table 7 Proposed Project recent replacement history.

Percent of Total Street Tree Canopy Removed	
Percent Canopy of Conifers Removed	1.7%
Percent Canopy of Broadleaf Evergreen Removed	60.8%
Percent Canopy of Deciduous Removed	37.5%
Percent of Total Street Tree Canopy Planted	
Percent Canopy of Conifers Planted	15.6%
Percent Canopy of Broadleaf Evergreen Planted	36.0%
Percent Canopy of Deciduous Planted	48.5%

The proposed Project will remove and replace trees with the following ratios: 2 (replaced): 1 (removed) ratio for years 0-10, 3:1 for years 11-20, and 2:1 for years 21-30. The evaluation period for post-construction impacts runs through year 30 of the proposed Project. Tree replacement modeling scenarios were run using the above removal/replace ratios to determine post-construction impacts to hydrology for the representative construction site and city-wide and water quality for city-wide.

For purposes of modeling, representative trees were selected, as described above in Section 3.2.1.1. Evergreen conifers are a very small potential portion of the replacement trees, but also have the highest storage potential, so are grouped with the broadleaf evergreen representative tree to be conservative and simplify the modeling effort. Additionally, the city-wide *i-Tree model* treats broadleaf evergreens and conifers as a single category. Using the proposed Project removal and replacement ratios described and the representative tree species for broadleaf evergreen and broadleaf deciduous, results in three potential Replacement Scenarios. Tree Replacement Scenario 1 assumes two *Tabebuia impetiginosa* (broadleaf deciduous) are planted per tree removed. Tree Replacement Scenario 2 assumes two *Geijera parviflora* (broadleaf evergreen) are planted per tree removed. Tree Replacement Scenario 3 assumes one of each tree is planted. For analyses purposes, the existing tree with the highest storage was selected for existing conditions to represent the worst-case scenario in terms of tree storage lost. Year 1, 5, 10, 15, 30 and tree storage maturity were analyzed (Table 8). The existing tree with the largest storage was *Pinus spp*. at 0.08 inches. Tree Replacement Scenario 2 is the only scenario where the mature storage of two replacement trees will meet or exceed the storage lost from a *Pinus spp*. Appendix D provides detailed tree replacement and changes in canopy size calculations.

Table 8 A sample of tree storage analyzed for proposed conditions during various stages of tree maturity for Post-Construction Impacts

Year after Planting	Tree Replacement Scenario 1[1] (in)	Tree Replacement Scenario 2[2] (in)	Tree Replacement Scenario 3[3] (in)
1	0.002	0.006	0.004
5	0.011	0.044	0.028
10	0.021	0.082	0.051
15	0.024	0.095	0.060
30	0.024	0.095	0.060
Mature[4]	0.024	0.095	0.060

1. Tree Replacement Scenario 1 assumes both replacement trees are *Tabebuia impetiginosa (broadleaf deciduous)*.
2. Tree Replacement Scenario 2 assumes both replacement trees are *Geijera parviflora (broadleaf evergreen).*
3. Tree Replacement Scenario 3 assumes one replacement tree is *Tabebuia impetiginosa* and one replacement tree is *Geijera parviflora*.
4. For purposes of this project, trees are considered mature 15 years after planting. This is described in the Biological section of the EIR and takes into consideration the proposed tree species maturity rates.

3.2.3 Design Storm Model

The U.S. Environmental Protection Agency's (EPA)'s Storm Water Management Model (SWMM) 5.1 was utilized for the site-specific 24-hour storm event analyses to analyze potential impacts in peak flow due to street tree removal and replacement. SWMM is a dynamic hydrology-hydraulic simulation model with LID capabilities that allows for changes in tree storage to be accounted for via modifications to the depression storage parameter

3.2.3.1 Representative Site

According to the Million Trees LA, 65% of Los Angeles is residential area (low, medium and high density), excluding mountainous area.[35] Based on the majority of land area being residential and statements during coordination meetings with LA BOE, the majority of sidewalk repair requests have been in residential areas, the representative site for analysis was based on residential characteristics. Figure 4 and Figure 5 provide the representative site conditions used for the design storm event analyses in SWMM.

[35] McPherson, E.G., et al. Million Trees Los Angeles Canopy Cover and Benefit Assessment. Pacific Southwest Research Station in *Landscape and urban* 99: 40-50, 2011. https://doi.org/10.1016/j.landurbplan.2010.08.011

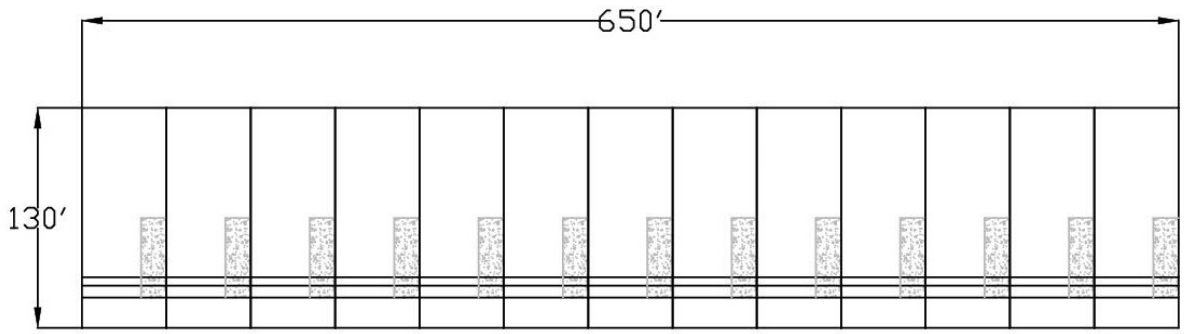

Figure 4 Planar view diagram of one lot within the representative modeled site.

A length of 650 ft was selected based on the LA BOE provided data that at a sidewalk repair site, one tree will be removed every 650 ft and replaced with two trees. It was assumed that the 650-foot street length and adjacent lots from back to front drained to one storm drain inlet and there was no additional contributing area upslope or off-site. The project has two construction scenarios. However, both scenarios will not result in changes to the impervious cover and it is assumed the drainage pattern will not be changed. Thus, the same representative site is considered for both construction scenarios. Table 9 provides the dimensions, area and impervious cover for each feature within the representative site.

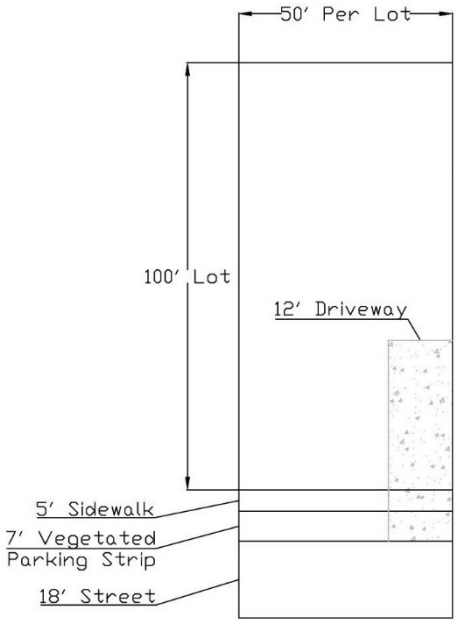

Figure 5 Planar view diagram of one lot within the representative modeled site.

Table 9 Land Use for the Representative Sites

Land Use Unit	Length (ft)	Depth (ft)	Area (ac)	Impervious Cover (%)
Residential Lots[1]	650	100	1.49	42
Sidewalk[2]	650	5	0.07	100
Vegetated Parking Strip[3]	650	7	0.10	0
Driveway Access[4]	156	5	0.02	100
Road[5]	650	18	0.26	100
Total[6]	650	130	1.93	51

1. Residential lots are 100 ft deep based on standard lot length values in the LACDPW 2006 Hydrology Manual. Each lot is 50 ft wide based on the 5,000 square foot minimum single-family housing residential lot requirements by the City of Los Angeles Department of City Planning Chapter VI - Street Designations and Standards. There are 13 lots per representative construction site.
2. Sidewalk depth is based on LA BOE project assumptions and the City Department of City Planning Complete Streets Draft Manual.
3. Vegetated parking strip depths are based on the Department of City Planning Complete Streets Draft Manual for local non-arterial streets. Removed and replaced street trees occur in the vegetated parking strip.
4. Loss of pervious cover in the parking strip due to driveway access was accounted for assuming a 12 ft wide driveway per lot.
5. The road depth is for half of the road because it was assumed one half of the road flows to one side of the street and drains to one storm drain inlet and the other half of the road drains to a different storm drain inlet. The road depth was based on the Department of City Planning Complete Streets Draft Manual for local non-arterial streets.
6. The total site length is 650 ft and the total site depth is 130 ft, which is 1.93 ac. The area-weighted average site impervious cover is 51%.

3.2.3.2 Modeled Scenarios and Parameters

The various modeled scenarios are found in Table 10. The letters in the scenario codes represent rainfall, slope and soil hydrologic type. Each listed scenario in Table 10 was analyzed for each storm event, and each of the three tree replacement scenarios provided in Table 8 and for the first year of planting, five years after planting, 10 years after planting, 15 years after planting and 30 years after planting.

Scenario Code

Rainfall – Low (L) or High (H) rainfall rates
Slope – Low (0.5%) or High (10%) gradient
Soil Hydrologic Type – A, B, or C with A having the lowest runoff/highest infiltration rating.

Table 10 Site-specific post-construction scenario hydrologic parameters

Scenario	Hydrologic Parameters[1]										
	Area (ac)	24-hr Rainfall Data (in.)[2]			Soil Hydrologic Type	Impervious Cover (%)	Overland Flow Length (ft)	Width (A/L) (ft)	Slope	Manning's n-value Impervious[3]	Manning's n-value Pervious[3]
		2-yr	50-yr	100-yr							
HHA	2.38	3.48	9.31	10.5	A	0.51	100	200	10%	0.012	0.04
HHB	2.38	3.48	9.31	10.5	B	0.51	100	200	10%	0.012	0.04
HHC	2.38	3.48	9.31	10.5	C	0.51	100	200	10%	0.012	0.04
LLA	2.38	2.63	5.75	6.45	A	0.51	100	200	0.5%	0.012	0.04
LLB	2.38	2.63	5.75	6.45	B	0.51	100	200	0.5%	0.012	0.04
LLC	2.38	2.63	5.75	6.45	C	0.51	100	200	0.5%	0.012	0.04
LHA	2.38	2.63	5.75	6.45	A	0.51	100	200	10%	0.012	0.04
LHB	2.38	2.63	5.75	6.45	B	0.51	100	200	10%	0.012	0.04
LHC	2.38	2.63	5.75	6.45	C	0.51	100	200	10%	0.012	0.04
HLA	2.38	3.48	9.31	10.5	A	0.51	100	200	0.5%	0.012	0.04
HLB	2.38	3.48	9.31	10.5	B	0.51	100	200	0.5%	0.012	0.04
HLC	2.38	3.48	9.31	10.5	C	0.51	100	200	0.5%	0.012	0.04

1. The listed parameters did not change between existing and proposed conditions
2. NOAA Atlas 14, Volume 6, Version 2. https://hdsc.nws.noaa.gov/hdsc/pfds/ Accessed February 8, 2018.
3. The impervious and pervious n-values are from the LADPW 2006 Hydrology Manual and represent asphalt and residential surface cover, respectively. The pervious n-value is also consistent with the Sacramento County Drainage Manual n-values for isolated trees and mowed grass. The maximum width was held to 200 feet based on standard urban modeling practice.

The Green-Ampt infiltration parameters used for each soil hydrologic type are provided in Table 11.

Table 11 Green-Ampt Soil Infiltration Parameters

Soil Type	Native Soil Green-Ampt Infiltration Parameters		
	Suction Head (in)	Conductivity (in/hr)	Initial Deficit
Soil Type A	1.930	4.740	0.404
Soil Type B	4.330	0.430	0.358
Soil Type C	8.270	0.040	0.267

Source: *EPA SUSTAIN User's Manual.*

Impervious depression storage was used to account for changes in tree storage between existing and proposed conditions in SWMM. The tree storage for the existing tree was added to existing impervious depression storage and the tree storage for the replacement tree planting scenario was added to proposed impervious depression storage. Once the leaf and bark storage capacity on a tree is reached during a storm the remaining water will reach the ground as direct throughfall, drip from the canopy to the ground, or reach the ground at the tree base through stem flow. Stemflow values have been reported ranging from zero to 30% of gross precipitation (Parker, 1995). Tree storage was added to impervious depression storage to simulate the primary method of water loss from the tree is due to evaporation (pervious depression storage is susceptible to evaporation and infiltration). This is consistent with the recommendations in SWMM Hydrology Reference Manual (2016).[36] The change in proposed impervious depression storage over time for each planting scenario is provided in Table 12. Tree storage depths were converted to depths over entire impervious area and added to the 0.06-inch base impervious depression storage value. Typical pervious depression storage values of 0.25 inches were used consistently in all scenarios as other vegetation is not planned to be replaced.[37] Note that all tree replacements as part of the proposed Project will be completed by year, therefore none of the tree replacement scenarios have the same tree configuration as assumed existing conditions but Scenario 3 approximates existing conditions.

Tree Replacement Scenario 1 assumes both replacement trees in a 2:1 ratio are Tabebuia impetiginosa (broadleaf deciduous).

Tree Replacement Scenario 2 assumes both replacement trees in a 2:1 ratio are Geijera parviflora (broadleaf evergreen).

Tree Replacement Scenario 3 assumes one replacement tree is *Tabebuia impetiginosa* and one replacement tree is *Geijera parviflora.*

[36] United State Environmental Protection Agency (*US EPA) Stormwater Management Model (SWMM) Hydrology Reference Manual.* https://www.epa.gov/water-research/storm-water-management-model-swmm

[37] United State Environmental Protection Agency (*US EPA) Stormwater Management Model (SWMM) Hydrology Reference Manual.* https://www.epa.gov/water-research/storm-water-management-model-swmm

Table 12 Changes to impervious cover storage for each tree planting scenario and selected program years

Depression Storage (in)			
Year	**Pervious**	**Existing Impervious**	**Proposed Impervious**
Tree Replacement Scenario 1			
Year 1	0.25	0.0612	0.0600
Year 5	0.25	0.0612	0.0600
Year 10	0.25	0.0612	0.0601
Year 15	0.25	0.0612	0.0602
Year 30	0.25	0.0612	0.0605
Tree Replacement Scenario 2			
Year 1	0.25	0.0612	0.0600
Year 5	0.25	0.0612	0.0601
Year 10	0.25	0.0612	0.0605
Year 15	0.25	0.0612	0.0611
Year 30	0.25	0.0612	0.0611
Tree Replacement Scenario 3			
Year 1	0.25	0.0612	0.0600
Year 5	0.25	0.0612	0.0601
Year 10	0.25	0.0612	0.0603
Year 15	0.25	0.0612	0.0606
Year 30	0.25	0.0612	0.0608

3.2.4 Design Storm Results for Site-Specific Impacts

All scenarios were analyzed for the identified program years and for each storm event. A sub-set of the results are provided in Table 13 through Table 14 below. See Appendix B for a full summary of the modeling results. None of the analyzed scenarios resulted in impacts to peak flow or surface runoff volume.

Table 13 Results for Scenario LLC-DD-1 (Low rain, low slope, type C soil, two deciduous replacement trees, one year after planting.

Scenario Name: LLC-DD-1

	2-yr, 24-hr Design Storm			**50-yr, 24-hr Design Storm**			**100-yr, 24-hr Design Storm**		
System Results	**Exist.**	**Prop**	**Exist. Vs. Prop.**	**Exist.**	**Prop**	**Exist. Vs. Prop.**	**Exist.**	**Prop**	**Exist. Vs. Prop.**
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.11	1.11	0%	1.40	1.40	0%	1.42	1.42	0%
Surface Runoff (in)	1.50	1.50	0%	4.33	4.33	0%	5.01	5.01	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.27	1.27	0%	3.07	3.07	0%	3.51	3.51	0%

Table 14 Results for Scenario LLC-DD-30 (Low rain, low slope, type C soil, two deciduous replacement trees, 30 years after planting.

Scenario Name: LLC-DD-30

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.11	1.11	0%	1.40	1.40	0%	1.42	1.42	0%
Surface Runoff (in)	1.50	1.50	0%	4.33	4.33	0%	5.01	5.01	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.27	1.27	0%	3.07	3.07	0%	3.51	3.51	0%

3.3 City-Wide Continuous Simulation for Operational Impacts Analysis

The U.S. Forest Service model *i-Tree Hydro* (version 6.0 beta) was used to perform continuous simulation for runoff and water quality across the City with changes to canopy due to street tree removal and replacement over the 30-year project period. Changes in canopy cover were calculated based on the trees outline in section 3.2.1.1. The model *i-Tree Hydro* is one of the few urban hydrology models to incorporate canopy parameters. It was designed to model urban tree cover and land cover changes for watershed and non-watershed areas. It is part of the *i-Tree* suite of models, such as *i-Tree Streets* which was used to analyze the structure, function and value of urban canopy across California.[38]

i-Tree Hydro is a stand-alone application designed to simulate the effects of changes in urban tree cover and impervious surfaces on the hydrological cycle, including streamflow and water quality, for watershed and non-watershed areas. It is the first vegetation-specific urban hydrology model, developed to model urban vegetation effects so natural resource managers and urban planners can quantify the impacts of changes in tree and impervious cover on local hydrology to aid in management and planning decisions.[39]

3.3.1 Tree Canopy Calculations

The majority of published urban tree studies analyze mature trees. The canopy values for each tree in Table 15 represent mature trees. The trees being removed throughout the 30-year project are assumed to be mature trees. Thus, the canopy lost per tree each year of the program from tree removal will be fairly consistent. The replacement trees will not be planted at maturity and thus changes in canopy with

38 McPherson, E.G., et al. Million Trees Los Angeles Canopy Cover and Benefit Assessment. Pacific Southwest Research Station in Landscape and urban 99: 40-50, 2011. https://doi.org/10.1016/j.landurbplan.2010.08.011
39 U.S. Forest Service, i-Tree Hydro V6.1 Beta User's Manual, 6/14/2018. https://www.itreetools.org/hydro/

tree age were taken into consideration. Xiao and McPherson (2016) examined how crown diameter and leaf area change with the age of the tree.[40] Their growth curves were used to create growth estimates for *Tabebuia impetiginosa* and *Geijera parviflora*. *Tabebuia impetiginosa* mature canopy is larger than *Geijera parviflora*, but grows at half the speed (12 to 24 inches per year versus 24 to 36 inches per year). Based on growth rates and canopy data, it was assumed *Geijera parviflora* would reach mature canopy 15 years after planting and *Tabebuia impetiginosa* would reach mature canopy 30 years after planting.

The baseline canopy cover was 20.80 %, or 52,888 ac. The City-wide canopy cover area was derived from the values provided in the Million Trees LA.[41] Percent change in canopy cover from the baseline to year 30 was calculated. Canopy removed, canopy added and percent canopy cover for the baseline year (2016-2017), Year 10, Year 20 and Year 30 of the program are provided in Table 15.

Table 15 A sample of changes in percent tree canopy cover across the City for the lifetime of the program

Year	Canopy Removed (ac)	Canopy Added (ac)	Canopy Cover (%)	Change in Canopy Cover (%)[1]
0 (Baseline)	0	0	20.80	0.00
10	84.00	34.57	20.80	0.00
20	195.64	159.38	20.80	0.00
30	344.11	344.20	20.80	0.00

1. Note that *iTree Hydro* canopy cover inputs are limited to two decimal points. The changes in canopy cover and specifically the types of trees, over the life of the project and post-construction are not represented, only the overall change in canopy cover.

3.3.2 Parameters

The parameters used in *i-Tree Hydro* were taken from the Million Trees LA[42] or based on calculated values and literature review. The model has pre-existing digital elevation models (DEM) or Topographic Index (TI) files for watersheds and urban areas across the U.S. The pre-processed TI generated from *i-Tree* is pre-clipped to the Los Angeles Municipality and was used as a non-watershed area, representing the City area minus the mountainous regions, or 252,385 ac.

The continuous simulation was performed from 2005 through 2012 using available climate data from the climate station located at the University of Southern California near downtown Los Angeles. The soil type used in the model was sandy loam as it is representative of the majority of soils within the City being sandy loam (Exhibit 8A).

The parameters used for baseline conditions are in Table 16. There are no changes in the model from baseline conditions due to insignificant changes in overall tree canopy in the City. Thus, although 62.5% of the trees removed are evergreen and 37.5% are deciduous and replacement trees were planted

40 Xiao, Qingfu, and E. Gregory McPherson. "Surface Water Storage Capacity of Twenty Tree Species in Davis, California." Journal of Environment Quality, vol. 45, no. 1, 11 Jan. 2016, pp. 188–198.

41 McPherson, E.G., et al. Million Trees Los Angeles Canopy Cover and Benefit Assessment. Pacific Southwest Research Station in *Landscape and urban* 99: 40-50, 2011. https://doi.org/10.1016/j.landurbplan.2010.08.011

42 McPherson, E.G., et al. Million Trees Los Angeles Canopy Cover and Benefit Assessment. Pacific Southwest Research Station in *Landscape and urban* 99: 40-50, 2011. https://doi.org/10.1016/j.landurbplan.2010.08.011

51.6% evergreen to 48.5% deciduous, the overall tree canopy and evergreen tree canopy does not change to two significant figures. Impervious cover was not added or removed as a result of sidewalk repair.

Table 16 Continuous Simulation Model i-Tree Hydro parameters

Percent Cover (%)							
Scenario	Canopy[1]	Herbaceous[2]	Water[3]	Impervious[4]	Bare Soil[4]	DCIA[5]	Evergreen Tree Canopy[6]
Baseline	20.80	12.00	0.00	61.00	6.20	51.39	75.00
Year 10	20.80	12.00	0.00	61.00	6.20	51.39	75.00
Year 20	20.80	12.00	0.00	61.00	6.20	51.39	75.00
Year 30	20.80	12.00	0.00	61.00	6.20	51.39	75.00

1. Canopy cover change was calculated using the methods described in section 3.3.1. Shrub canopy cover is included with canopy and assumed to remain constant.
2. Herbaceous values are from the 2008 USDA 1 Million Trees Assessment.[43]
3. Water was included in the impervious cover percentage from 2008 USDA 1 Million Trees Assessment.[44]
4. Impervious and base soil baseline values from 2008 USDA 1 Million Trees Assessment.[45] Soil cover was not assumed to change. Changes in impervious cover is due to calculated loss of canopy.
5. DCIA is Directly Connected Impervious Area representing total impervious area connected to the project area's outlets and is calculated using the Sutherland method based on weighted land use assumptions.
6. Evergreen tree canopy was assumed to start at 75% and decrease slightly year to year as all trees removed are assumed to be evergreen (62.5% evergreen/conifer) and replaced with 51.6% evergreen. 2:1 Tree replacement for 10 years (2017-2027) and replacement with current tree sizing practices (30.48' D), Expanding ratio to 3:1 beginning at Year 11, and dropping to 2:1 at Year 22 (meeting YR 30) (30,404 Trees).

The rainfall for each year of the continuous simulation is in Figure 3 in section 3.2.1.4. The directly connected impervious area (DCIA) was calculated using the Sutherland equations for various land uses.[46] A weighted average based on the 2008 USDA 1 Million Trees Assessment City land use areas was used to determine DCIA.[47]

43 McPherson, E. Gregory; Simpson, James R.; Xiao, Qingfu; Wu, Chunxia. 2008. Los Angeles 1-million tree canopy cover assessment. Gen. Tech. Rep. PSW-GTR-207. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 52 p.

44 McPherson, E. Gregory; Simpson, James R.; Xiao, Qingfu; Wu, Chunxia. 2008. Los Angeles 1-million tree canopy cover assessment. Gen. Tech. Rep. PSW-GTR-207. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 52 p.

45 McPherson, E. Gregory; Simpson, James R.; Xiao, Qingfu; Wu, Chunxia. 2008. Los Angeles 1-million tree canopy cover assessment. Gen. Tech. Rep. PSW-GTR-207. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 52 p.

46 U.S. Forest Service, i-Tree Hydro V6 Beta, https://www.itreetools.org/hydro/

47 McPherson, E. Gregory; Simpson, James R.; Xiao, Qingfu; Wu, Chunxia. 2008. Los Angeles 1-million tree canopy cover assessment. Gen. Tech. Rep. PSW-GTR-207. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 52 p.

The city-wide analysis used data selected from a list of stations imbedded within the *i-Tree Hydro* model that meet the model requirements. The weather station data requirements were hourly logged data correctly formatted for wind direction and speed, cloud ceiling, sky cover, temperature, dewpoint, altimeter setting, pressure, and precipitation. The weather station (722874-93134) is in the middle of Los Angeles with data records from 2005 through 2012 was selected.

3.3.3 Results for City-Wide Operational Impacts

3.3.3.1 Tree Hydrology

Changes in percent canopy interception for the continuous simulation is in Table 17 with more detailed results in Appendix D. The simulation years represent the modeled years from the weather station data. There is no change in interception between the base year 0 of the program to year 30 of the program. Canopy interception decreased for all analyzed program years and for all simulation years. The simulation precipitation ranged from approximately six to 30 inches per year, with an average of 15 inches. The simulation annual rainfall values are consistent with the range in precipitation values seen in Los Angeles since 1890.[48]

[48] NOAA's National Weather Service, Hydrometeorological Design Studies Center, Precipitation Frequency Data Service (PFDS). https://hdsc.nws.noaa.gov/hdsc/pfds/

Table 17 Change in canopy interception for program years 10, 20 and 30 versus the baseline.

Program Year 10 vs. Baseline		
Simulation Year	Precipitation (in)	% Change in Interception
2005	29.98	0.00%
2006	12.78	0.00%
2007	6.15	0.00%
2008	15.19	0.00%
2009	10.23	0.00%
2010	24.91	0.00%
2011	12.92	0.00%
2012	8.67	0.00%
Program Year 20 vs. Baseline		
Simulation Year	Precipitation (in)	% Change in Interception
2005	29.98	0.00%
2006	12.78	0.00%
2007	6.15	0.00%
2008	15.19	0.00%
2009	10.23	0.00%
2010	24.91	0.00%
2011	12.92	0.00%
2012	8.67	0.00%
Program Year 30 vs. Baseline		
Simulation Year	Precipitation (in)	% Change in Interception
2005	29.98	0.00%
2006	12.78	0.00%
2007	6.15	0.00%
2008	15.19	0.00%
2009	10.23	0.00%
2010	24.91	0.00%
2011	12.92	0.00%
2012	8.67	0.00%

Table 18 provides the change in tree canopy interception volume for simulation years 2010 and 2007, which represent the highest and lowest values, respectively. Interception does not change from base year conditions.

Table 18 Simulation years with minimum and maximum change in interception volume for program years 10, 20 and 30 versus baseline conditions.

Simulation Year	Program Year	Interception Change (gal/year)
10	2010	0.00%
20	2010	0.00%
30	2010	0.00%
10	2007	0.00%
20	2007	0.00%
30	2007	0.00%

3.3.3.2 Stormwater Flow

The model results in no changes in total system flow, baseline flow, pervious runoff and impervious runoff as shown in Table 19. Flow in all four categories remained constant through program year 30 compared to baseline conditions.

Table 19 Change in flow for program years 10, 20 and 30 versus the baseline.

Program Year 10 vs. Baseline					
Rain Gauge Year	Precipitation (in/year)	% Change Total Flow	% Change Base Flow	% Change Pervious Runoff	% Change Impervious Runoff
2005	29.98	0.000%	0.000%	0.000%	0.000%
2006	12.78	0.000%	0.000%	0.000%	0.000%
2007	6.15	0.000%	0.000%	0.000%	0.000%
2008	15.19	0.000%	0.000%	0.000%	0.000%
2009	10.23	0.000%	0.000%	0.000%	0.000%
2010	24.91	0.000%	0.000%	0.000%	0.000%
2011	12.92	0.000%	0.000%	0.000%	0.000%
2012	8.67	0.000%	0.000%	0.000%	0.000%
Program Year 20 vs. Baseline					
Rain Gauge Year	Precipitation (in/year)	% Change Total Flow	% Change Base Flow	% Change Pervious Runoff	% Change Impervious Runoff
2005	29.98	0.000%	0.000%	0.000%	0.000%
2006	12.78	0.000%	0.000%	0.000%	0.000%
2007	6.15	0.000%	0.000%	0.000%	0.000%
2008	15.19	0.000%	0.000%	0.000%	0.000%
2009	10.23	0.000%	0.000%	0.000%	0.000%
2010	24.91	0.000%	0.000%	0.000%	0.000%
2011	12.92	0.000%	0.000%	0.000%	0.000%
2012	8.67	0.000%	0.000%	0.000%	0.000%
Program Year 30 vs. Baseline					
Rain Gauge Year	Precipitation (in/year)	% Change Total Flow	% Change Base Flow	% Change Pervious Runoff	% Change Impervious Runoff
2005	29.98	0.000%	0.000%	0.000%	0.000%
2006	12.78	0.000%	0.000%	0.000%	0.000%
2007	6.15	0.000%	0.000%	0.000%	0.000%
2008	15.19	0.000%	0.000%	0.000%	0.000%
2009	10.23	0.000%	0.000%	0.000%	0.000%
2010	24.91	0.000%	0.000%	0.000%	0.000%
2011	12.92	0.000%	0.000%	0.000%	0.000%
2012	8.67	0.000%	0.000%	0.000%	0.000%

Table 20 provides the simulation results for no change in impervious runoff volume through year 30 of the program. Impervious runoff similarly remains the same entering the City storm drain system.

Table 20 Maximum and minimum simulation years for no change in impervious runoff volume through year 30 of the program.

Simulation Year	Program Year	ΔImpervious Runoff (ft³/year)
2010	10	0.000
2010	20	0.000
2010	30	0.000
2007	10	0.000
2007	20	0.000
2007	30	0.000

3.3.3.3 Water Quality

Median and mean concentrations for total suspended solids (TSS), biological oxygen demand (BOD), chemical oxygen demand (COD), total phosphorous (TP), soluble phosphorous (SolP)—i.e. phosphate—total Kjeldahl nitrogen (TKN), total nitrite and nitrate (NO2-, N03-), copper (Cu), lead (Pb) and zinc Zn) were modeled. The model uses event mean concentration (EMC) values based on the Nationwide Urban Runoff Program (NURP), the U.S. Geological Survey (USGS) and the National Pollutant Discharge Elimination System (NPDES). Table 2-Table 4 summarize pollutants of concern and water body impairments in the project area. The difference in tons per year from the baseline for program years 10, 20 and 30 for the lowest and highest simulation years are provided in Table 21. The proposed Project does not result in a statistical change in typical water quality pollutants. While fecal coliform was not included in the model, levels are closely associated with TSS and therefore is not expected to change from existing conditions. Trash is another significant concern in the project area but no change is anticipated from existing conditions as the project elements are unlikely to directly contribute to additional trash generation.

Table 21 Minimum and maximum changes in pollutant loadings for program years 10, 20 and 30 compared to the baseline.

Difference from Baseline in Tons per Year											
Simulation Year	Program Year	Tss	BOD	COD	TP	SolP	TKN	$NO^{2-, 3-}$	Cu	Pb	Zn
2010	10	0	0	0	0	0	0	0	0	0	0
2010	20	0	0	0	0	0	0	0	0	0	0
2010	30	0	0	0	0	0	0	0	0	0	0
2007	10	0	0	0	0	0	0	0	0	0	0
2007	20	0	0	0	0	0	0	0	0	0	0
2007	30	0	0	0	0	0	0	0	0	0	0

3.3.3.4 Continuous Simulation Summary for Operational Impacts

Continuous simulation evaluates hydrology and potential pollutant loading over the life of the project (year 1-30). The model did not show statistically significant changes in pollutant loading due to the removal and replacement of trees and there is no change in canopy interception. Change in canopy

cover was projected past year 30 to determine how long it would take for the replacement tree canopy to catch up to the removed canopy as the planted trees continued to mature.

As noted, there were not statistically significant changes in pollutant loading due to the proposed Project. An evaluation of the data indicates very slight increase, which would be anticipated with reduced canopy size of recently planted trees. Green Infrastructure (see Appendix E) is a project element and will result in less than significant impacts to water quality and hydrology.

3.4 Water Supply Assessment Requirements

The replacement trees will be watered with a Treegator© or similar refillable slow-release watering bag. Using the double-bag system for four- to five-inch trunk diameter trees, approximately 30 gallons will be applied 33 times per year. The newly planted trees will require weekly watering for three years after planting. A total of 2,970 gallons of water would be required over 3 years per tree. This results in average water use of 7.8 AFY or a total of 234 AF for the proposed project. Construction/sidewalk repair will require 164 AF over the 30-year period or an average of 5.5 AF per year. The project would use a total of 398 AF for construction and operation over the 30-year period or approximately 13.3 AFY for construction and operation.

In order for this project to require an SB-610 Water Supply Assessment (WSA), the annual amount of water used must not exceed 123 ac-ft per year (AFY) based on the 500-unit residential building equivalent (City of Los Angeles). Proposed sidewalk water usage per year for both construction and operation (13.3 AFY) is below the typical AFY consumption rate of an LADWP 500-unit project per year (123 AFY). Thus, a WSA would not be necessary.

4. Conclusions

4.1 Summary

The results of modeling at the site-specific level and city-wide level indicate no statistical impacts to hydrology and water quality due to the proposed Project. While not directly included in the modeling, Green Infrastructure features such as microbasins and tree boxes (See Appendix E) negate the negligible increase in hydrologic parameters and impacts to water quality.

4.1.1 Construction Impacts

Construction impacts modeling is outside the scope of this technical memorandum and would be unlikely to provide proposed Project specific results or recommendations outside of the typical construction BMPs due to the size and typical construction window for both Construction Scenarios. The mechanisms and causes of hydrologic and water quality impacts due to construction are well known so implementation of typical erosion control and spill control practices is recommended. Construction Scenario 1 activities associated with sidewalk improvements are not anticipated to be subject to the Construction General Permit because the permit does not include regular maintenance activities performed to restore the original line, grade, or capacity of a facility, such as activities associated with the proposed Project. Construction Scenario 2 activities associated with sidewalk improvements are not

anticipated to be subject to the Construction General Permit because no site would require more than one-acre of soil disturbance for the relocation of utilities and require trenching.

While the proposed Project is not anticipated to require development of a stormwater pollution prevention plan and construction phase inspections and monitoring in compliance with the Construction General Permit (CGP) for the individual construction sites, as detailed above, project implementation of construction BMPs is recommended to minimize the risk of impacts to hydrology and/or water quality during construction. Several recommendations are listed in Appendix E and include utilization of a checklist (similar to the Washington State Department of Transportation, Construction Spill Prevention, Control, and Countermeasures (SPCC) Plan, which is modeled after the facility SPCC plan contractors are familiar with.

Watearth observed several active construction sites of a similar scale as the proposed Project's construction scenarios. While not comprehensive, the list below is indicative of the types of BMPs typical for construction projects to minimize risk to hydrology and water quality:

1. Storm drain inlet protection; *
2. Mulching (straw or wood) on slopes with exposed soil;
3. Avoid temporary restroom facilities located near storm drain inlets, receiving waters, or in an area that will collect water;
4. Sand bag, fiber roll, or silt fence barriers downslope of exposed soil to provide temporary sediment and storm water barrier; *
5. Cover and berm inactive stockpiles;
6. Install stabilized construction exits to remove sediment from trucks leaving construction sites;
7. Hand sweeping as needed to remove sediment that leaves the project site.

*Any sediment accumulated by storm drain inlet protection and sand bag barriers should be properly disposed of to prevent sediment from entering the storm drain system or nearby channel.

4.1.2 Site Specific Operational Impacts

Site-specific operational impacts were modeled using *EPA SWMM v5.1* to ascertain the hydrologic and water quality impacts across the City over the 30-year life of the project, including 15 years post project for maturation of the trees replaced in year 30. There was no statistical difference from the baseline conditions at any point of the life of the project (e.g. year 10, 20, and 30). Site-specific operational impact modeling did not result in a statistical difference between baseline conditions and various model site conditions used to simulate likely sites throughout the City.

The project design feature to water newly planted trees for up to three years is intended to minimize tree mortality so that anticipated canopy replacement occurs. Tree gators are a watering device to ensure slow and continuous watering of trees. While these bags are very durable, they can burst due to a variety of reasons including age, manufacturing error, and operator error. Watering with Tree gator bags could result in sudden release of water (maximum of 30 gallons if both bags are full and both break), which has a potential for erosion near the base of the newly planted tree. Application of gorilla-mulch (shredded redwood) or similar non-animal waste mulch would minimize risk of erosion and reduce evaporation so that the tree receives the greatest quantity of water possible and improve the

soil health thus leading to improved tree survival. Bark mulch is not recommended as it tends to float and does not include the beneficial soil building properties of a shredded redwood or similar mulch.

4.1.3 City-Wide Operational Impacts

City-wide operational impacts were modeled using *iTree Hydro* and did not result in a statistically significant difference in total tree canopy coverage due to the proposed Project. This result is due in part to *i-Tree Hydro* limits on total citywide canopy cover and percent evergreen canopy cover input being limited to two decimal places. However, the project Green Infrastructure design features including microbasins and tree boxes for hydrology and water quality minimize the negligible impacts. The project design feature of the tree gator watering system results in minimizing the negligible impacts as well due to improving mortality rates and potentially speeding growth in the three years after planting. Low mortality and vigorous post-planting tree growth and establishment are assumptions in the proposed Project so the use of tree gators is intended to ensure maximum tree canopy during the life of the project and the expected no net change at the end of the proposed Project.

4.2 Recommendations

As an element of construction and during the post-construction watering of trees, Watearth recommends using a shredded hardwood mulch (like gorilla mulch) that builds the health of the soil without adding excess nutrients and protects soil at the base of the tree from erosion. This is also true in the case of the sudden release from tree bags during the first three years after planting. Animal manure-based mulch is not recommended as it can contribute excess nutrients to stormwater runoff.

The modeling for the proposed Project did not include construction impacts, however, the typical potential hydrologic and water quality impacts due to construction are well known and can be managed by following Best Management Practices (BMPs) found in the CGP and other LABOE policies. Watearth anticipates most of the construction sites will not require obtaining the due to their small size, unless the entire project is considered a single permitted project. Not following construction BMPs at the individual construction sites would likely result in hydrological and/or water quality impacts in the aggregate.

Modeling for operational impacts did not identify hydrology or water quality impacts due to the proposed Project. To be consistent with local, state, and federal laws and policies as well as City policies and agreements, several Green Infrastructure features are included as project design features including microbasins, tree boxes, and tree gators. Other suitable Green Infrastructure techniques include permeable sidewalks, bioretention, and vegetated swales. See Appendix E for detailed information regarding the recommended Green Infrastructure project elements. Table 22 outlines some typical pollutant removal rates for some green infrastructure features.

An O&M Manual is strongly recommended to ensure project design features and elements are maintained throughout the life of the project. The proper maintenance of the project design features as well as other potential Green Infrastructure features is critical for the proper operation and longevity of the feature. For example, the O&M Manual would provide maintenance schedules for type and schedule for replacing mulch and if mowing is appropriate for a swale and if so, how often.

Table 22 Typical Pollutant Removal Rates[1] for Green Infrastructure Features

LID Features	Pollutant Percent Removal				
	TSS	Nitrogen	Phosphorus	Bacteria	Heavy Metals
Infiltration Basin[4]	50-80	50-80	50-80	65-100	50-80
Permeable Pavement[4]	65-100	65-100	30-65	65-100	65-100
Swales[4]	30-65	15-45	15-45	<30	15-45
Vegetated Filter Strips[4]	50-80	50-80	50-80	<30	30-65
Bioretention[2,3,5]	85[5]	32-99[3]	72[5]	70-92[3]	54-99[3]

[1]Ranges varying with particle size, pollutant loading and site conditions.
[2]Bioretention rates anticipated to be applicable for Rain Gardens and Micro-Depressions/Microbasins (if vegetated).
[3]From selected field and laboratory studies summarized in Davis, A., W. Hunt, R. Traver, and M Clar. *Bioretention Technology: Overview of Current Practice and Future Needs,* March, 2009. ASCE Journal of Environmental Engineering.
[4]LID percent removal numbers were obtained from the U.S. EPA *Handbook Urban Runoff and Pollution Prevention Planning.*
[5]National Pollutant Removal Database/Other Sources Summarized by Weiss, P., J. Gulliver, and A. Erickson. *Cost and Pollutant Removal of Storm-water Treatment Practices.* May/June, 2007 *ASCE Journal of Water Resources Planning and Management*.

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6. Exhibits

List of Exhibits

Number	Title
1	Vicinity
2	Aerial
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4B	Gradient
5A	Watershed
5B	Project Zones
6A	Rainfall 2-year
6B	Rainfall 10-year
6C	Rainfall 50-year
6D	Rainfall 100-year
7	Land Use by Percent Impervious Surface
8A	Soils
8B	Soil Map with Hydrologic Group
9	Groundwater
10	Spreading Grounds

1 " = 80,000 Feet
0 80,000
Feet

Datum: NAD83
Units: US Feet

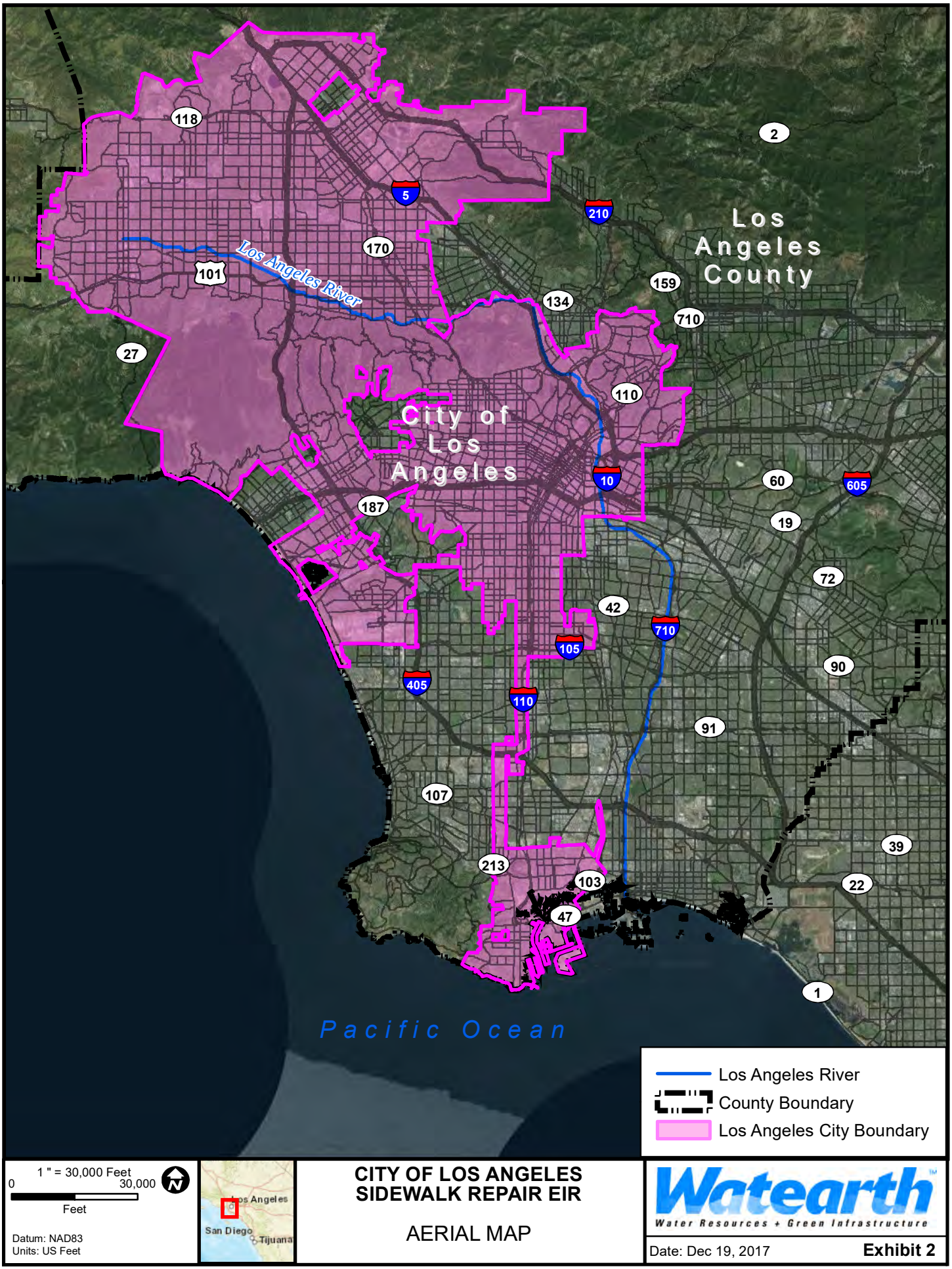
CITY OF LOS ANGELES SIDEWALK REPAIR EIR

VICINITY MAP

Watearth
Water Resources + Green Infrastructure

Date: Dec 19, 2017

Exhibit 1



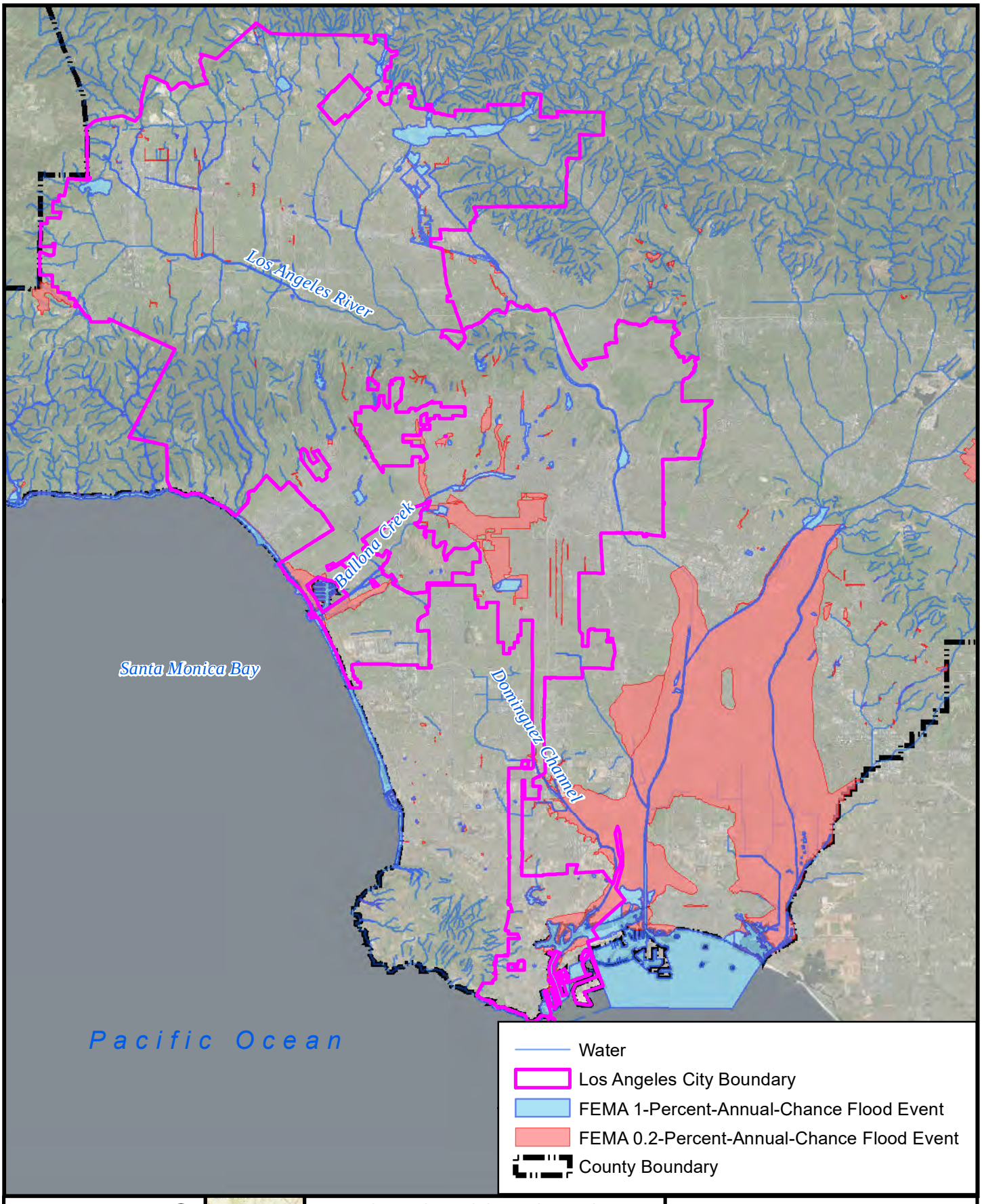
CITY OF LOS ANGELES SIDEWALK REPAIR EIR

AERIAL MAP

Watearth
Water Resources + Green Infrastructure

Date: Dec 19, 2017

Exhibit 2



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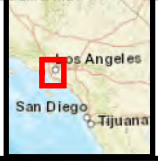


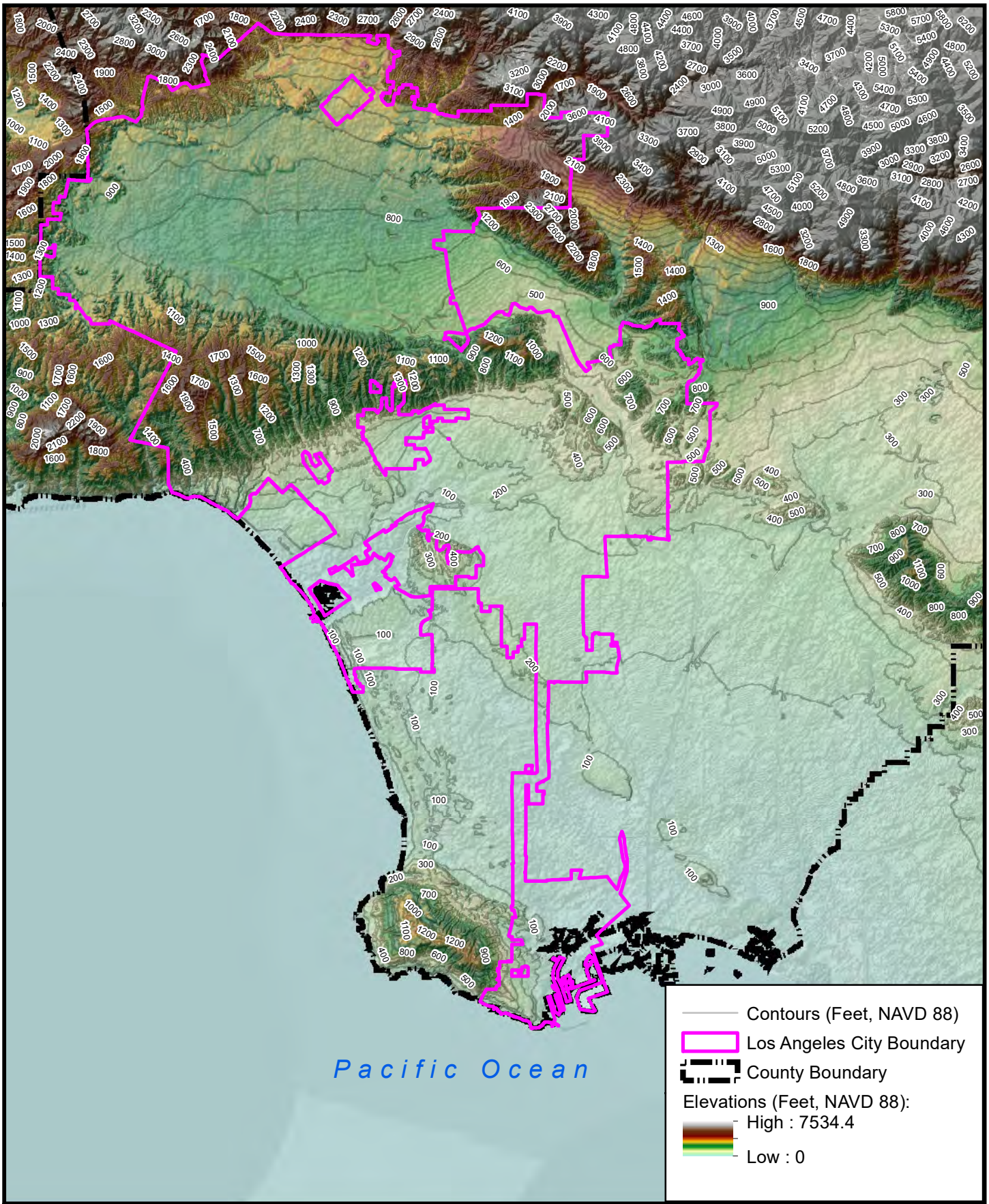
CITY OF LOS ANGELES SIDEWALK REPAIR EIR

FEMA FIRM MAP

Watearth
Water Resources + Green Infrastructure

Date: Feb 08, 2018

Exhibit 3



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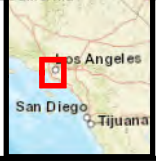


CITY OF LOS ANGELES SIDEWALK REPAIR EIR

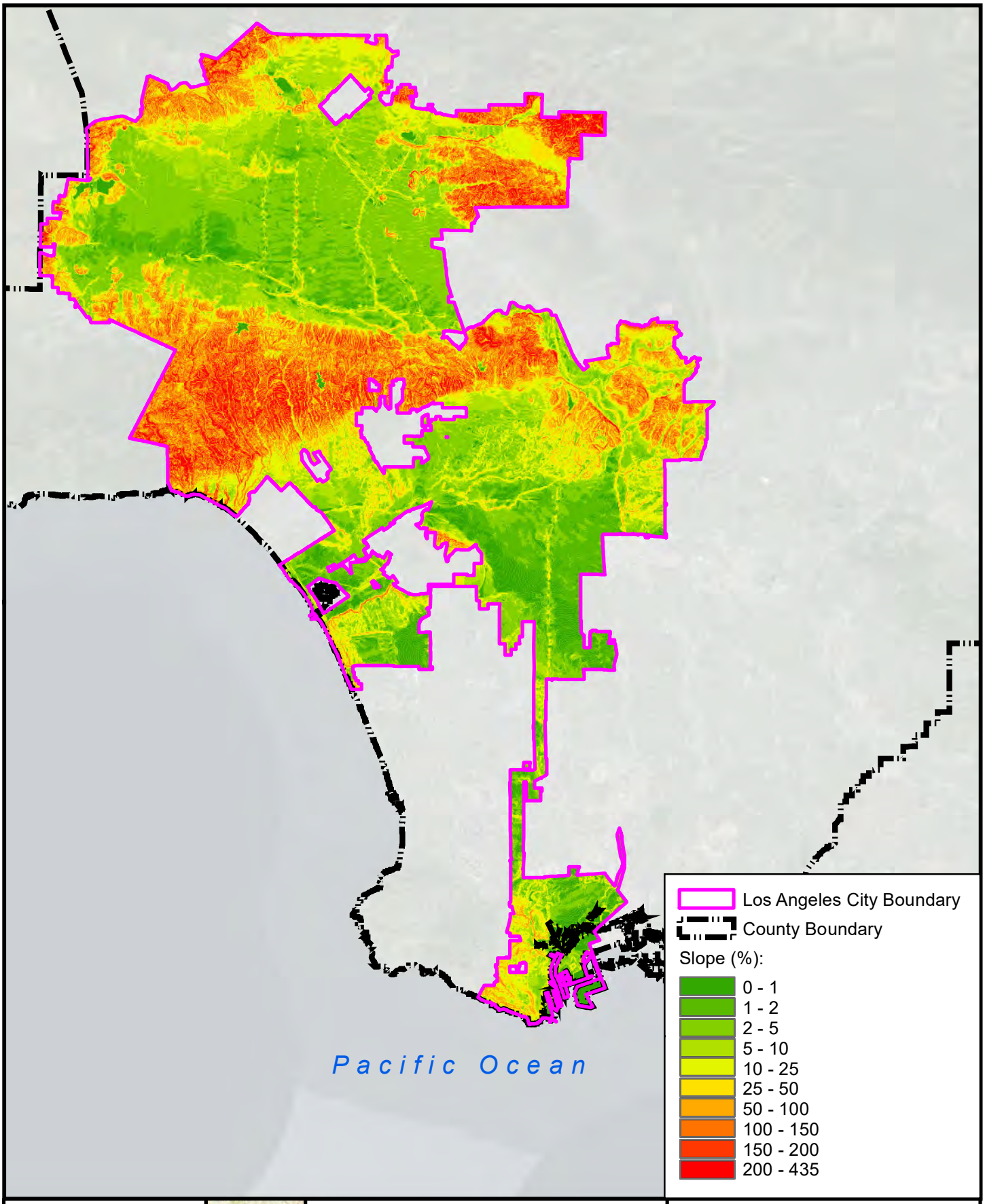
TOPOGRAPHIC MAP

Elevation data from USGS National Elevation Dataset

Watearth
Water Resources + Green Infrastructure

Date: Dec 19, 2017

Exhibit 4A



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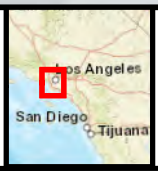


CITY OF LOS ANGELES SIDEWALK REPAIR EIR

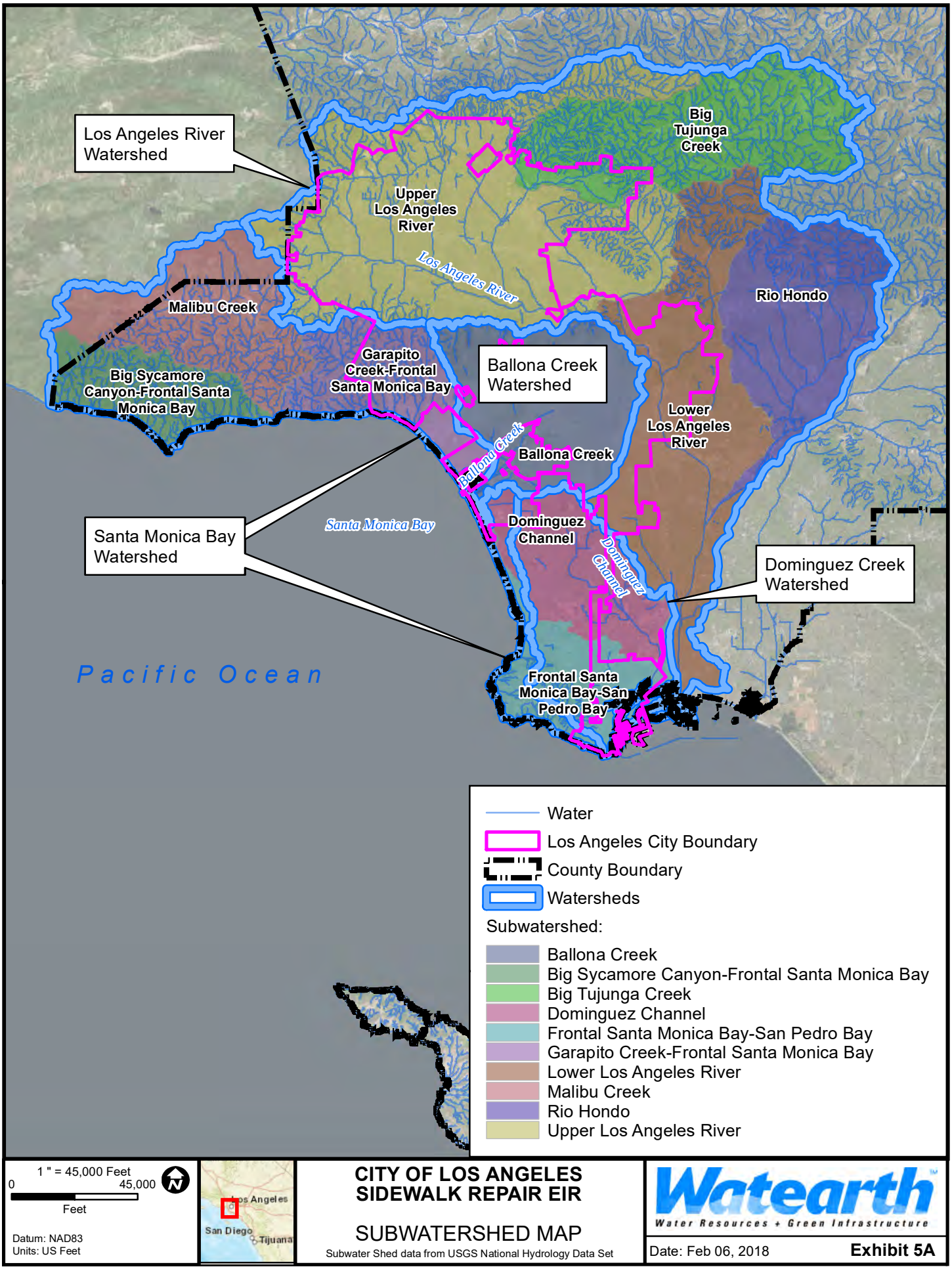
GRADIENT MAP

Elevation data from USGS National Elevation Dataset

Watearth
Water Resources + Green Infrastructure

Date: Dec 19, 2017

Exhibit 4B



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Feet

Datum: NAD83
Units: US Feet

San Diego
Tijuana

CITY OF LOS ANGELES SIDEWALK REPAIR EIR

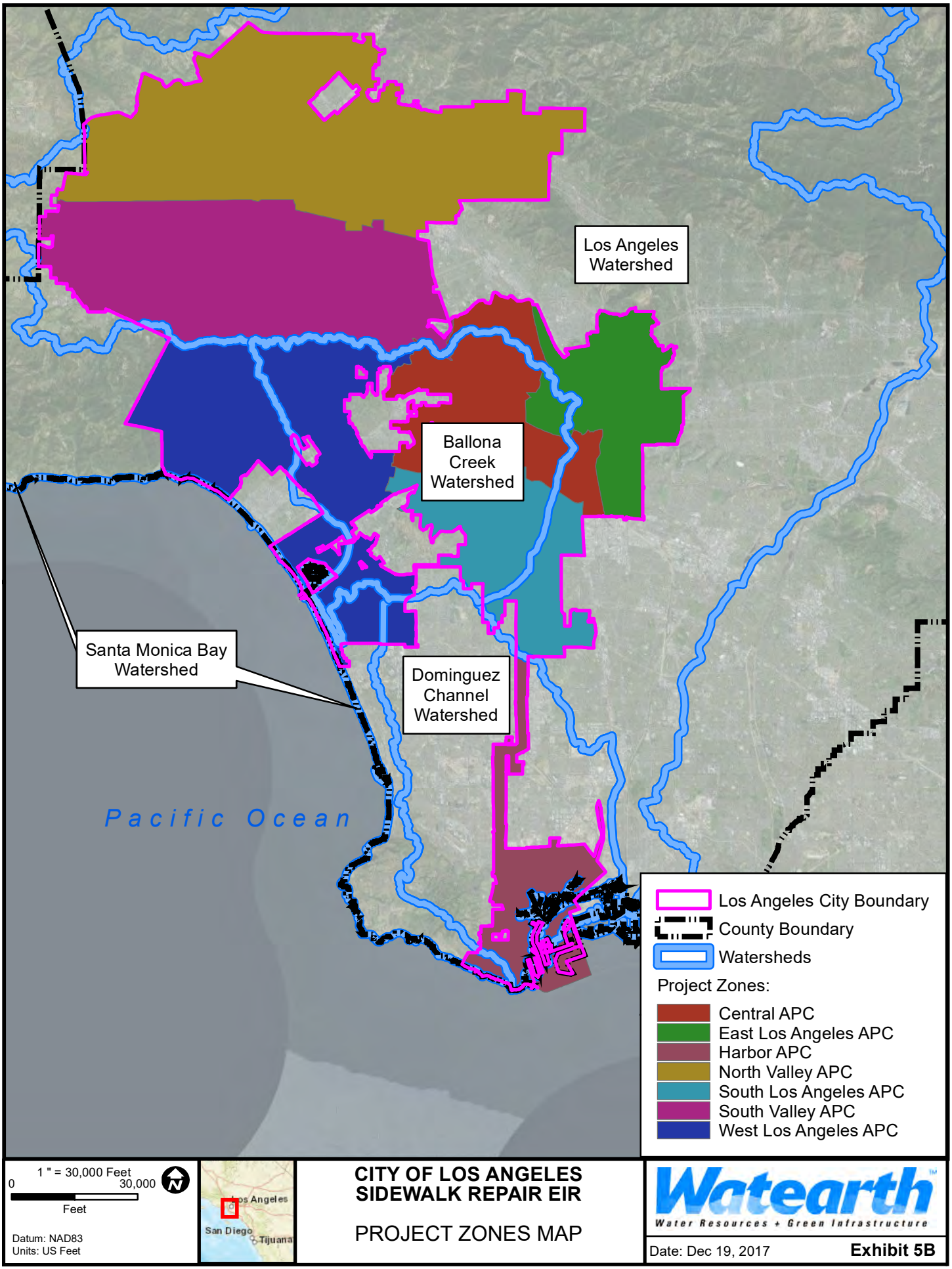
SUBWATERSHED MAP

Subwater Shed data from USGS National Hydrology Data Set

Watearth
Water Resources + Green Infrastructure

Date: Feb 06, 2018

Exhibit 5A



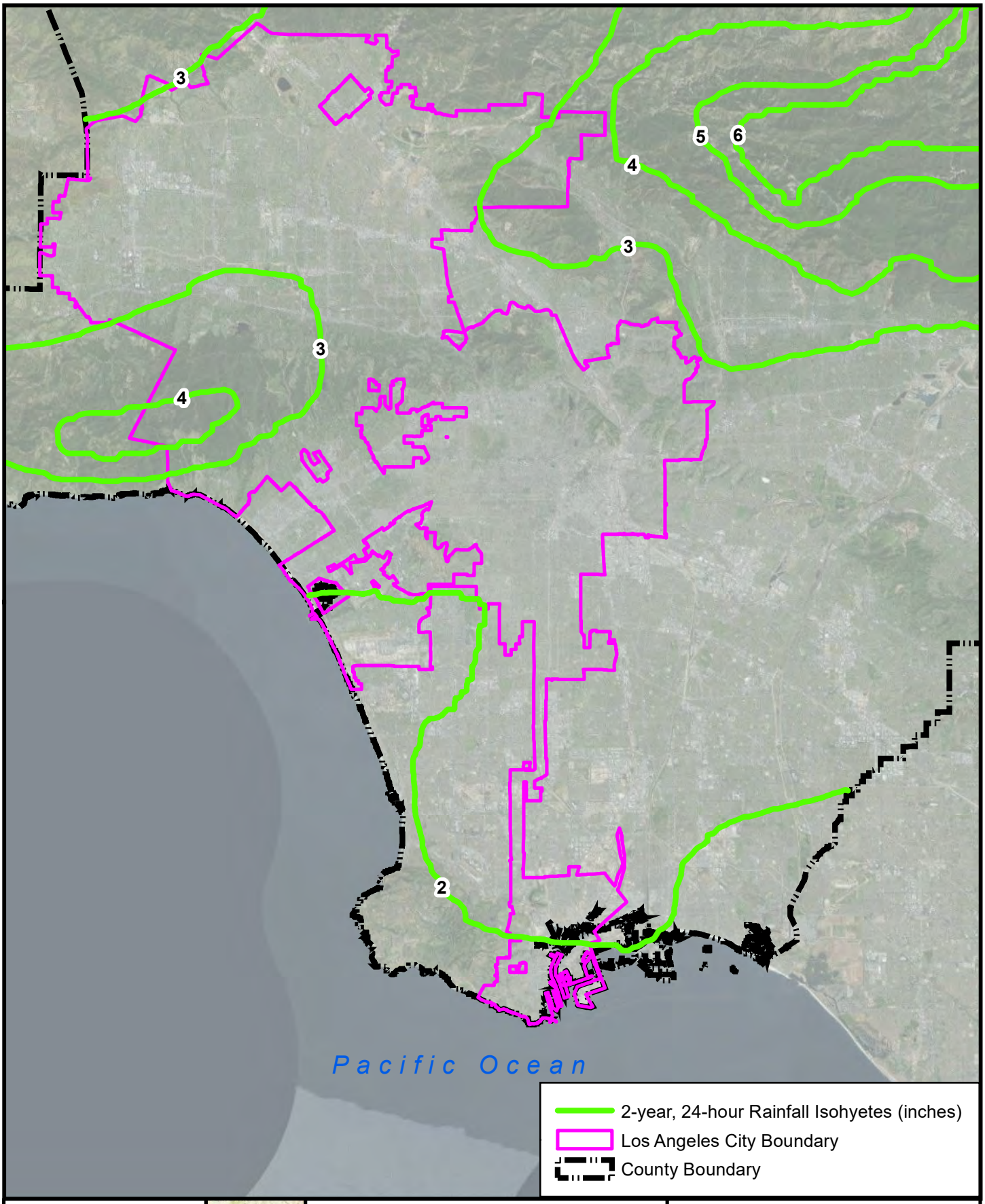
CITY OF LOS ANGELES SIDEWALK REPAIR EIR

PROJECT ZONES MAP

Watearth
Water Resources + Green Infrastructure

Date: Dec 19, 2017

Exhibit 5B



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Feet

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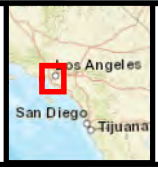


CITY OF LOS ANGELES SIDEWALK REPAIR EIR

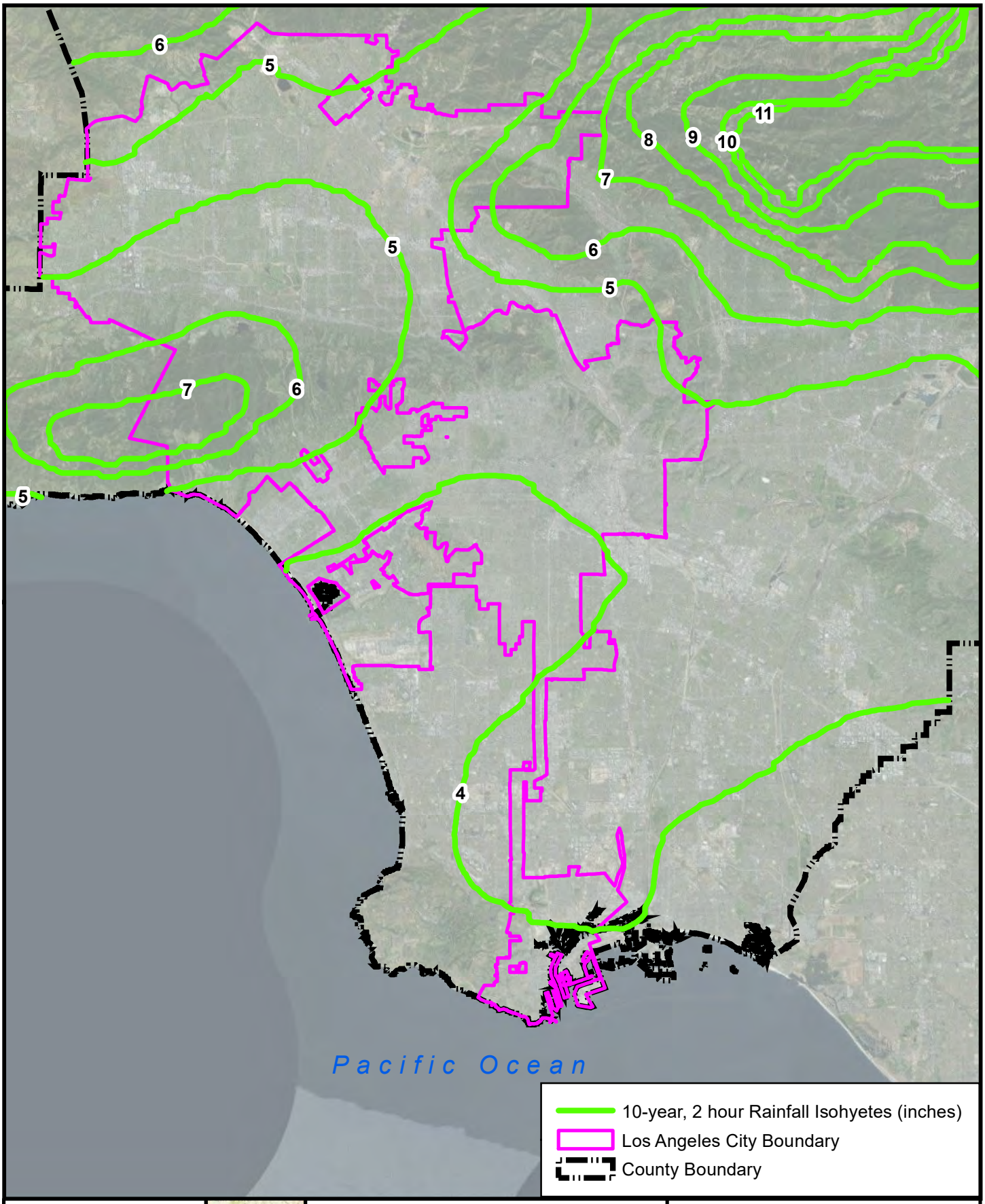
RAINFALL 2-YEAR

Rainfall data from Los Angeles County Department of Public Works

Watearth
Water Resources + Green Infrastructure

Date: Dec 19, 2017

Exhibit 6A



1 " = 30,000 Feet
0 30,000
Feet

Datum: NAD83
Units: US Feet

San Diego
Tijuana

CITY OF LOS ANGELES
SIDEWALK REPAIR EIR

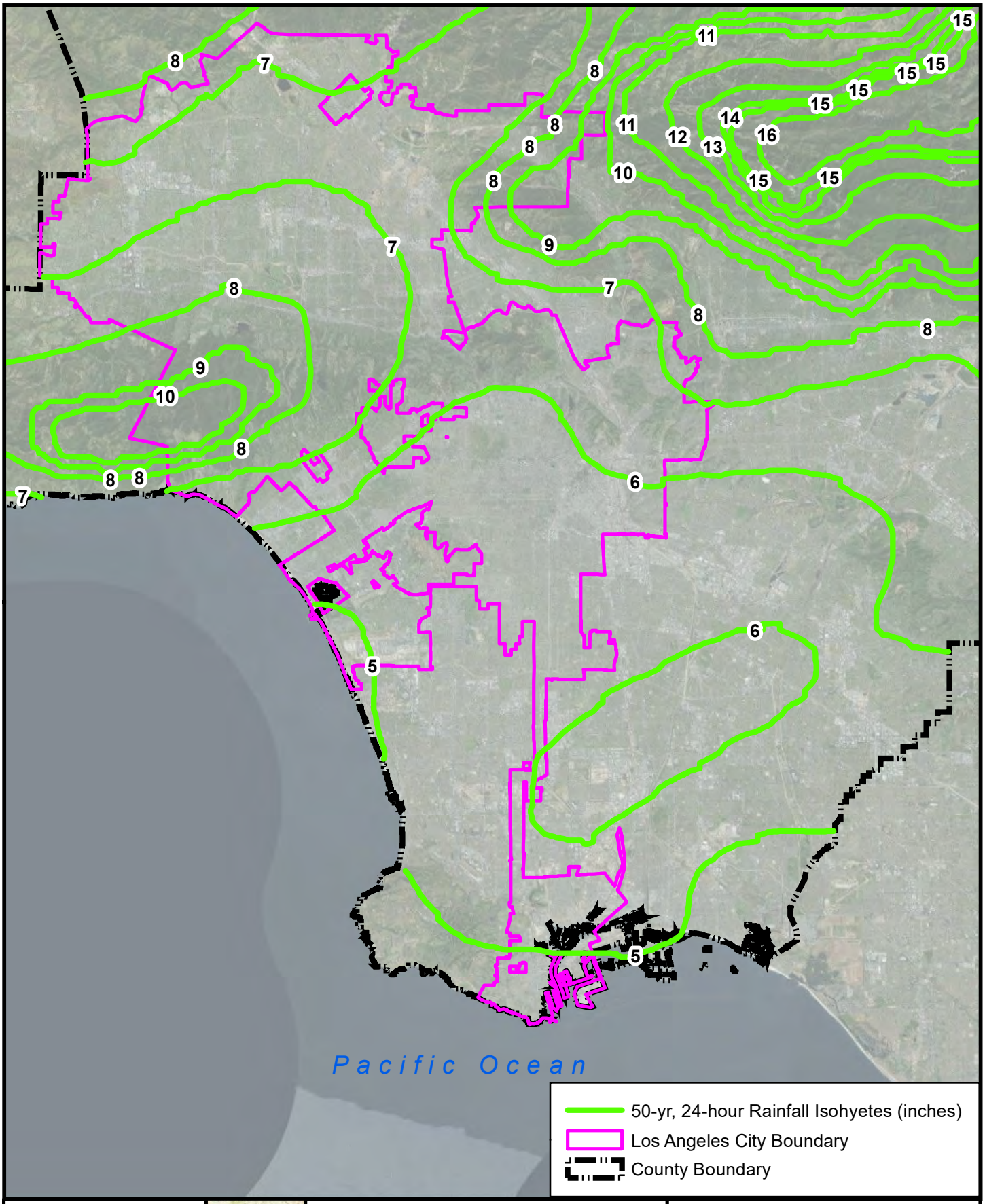
RAINFALL 10-YEAR

Rainfall data from Los Angeles County Department of Public Works

Watearth
Water Resources + Green Infrastructure

Date: Dec 19, 2017

Exhibit 6B



CITY OF LOS ANGELES SIDEWALK REPAIR EIR

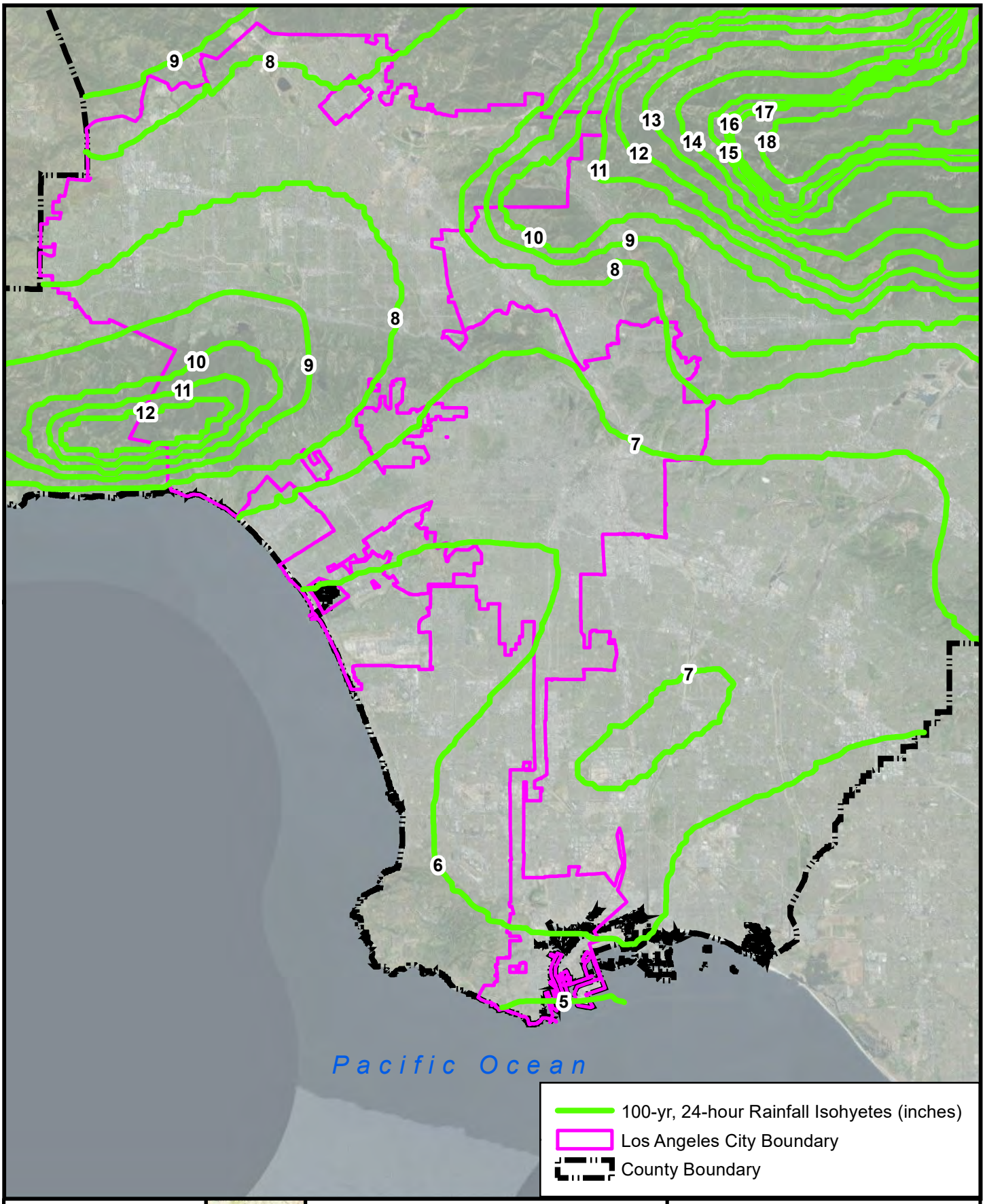
RAINFALL 50-YEAR

Rainfall data from Los Angeles County Department of Public Works

Watearth
Water Resources + Green Infrastructure

Date: Dec 19, 2017

Exhibit 6C



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Feet

Datum: NAD83
Units: US Feet

Los Angeles
San Diego
Tijuana

CITY OF LOS ANGELES
SIDEWALK REPAIR EIR

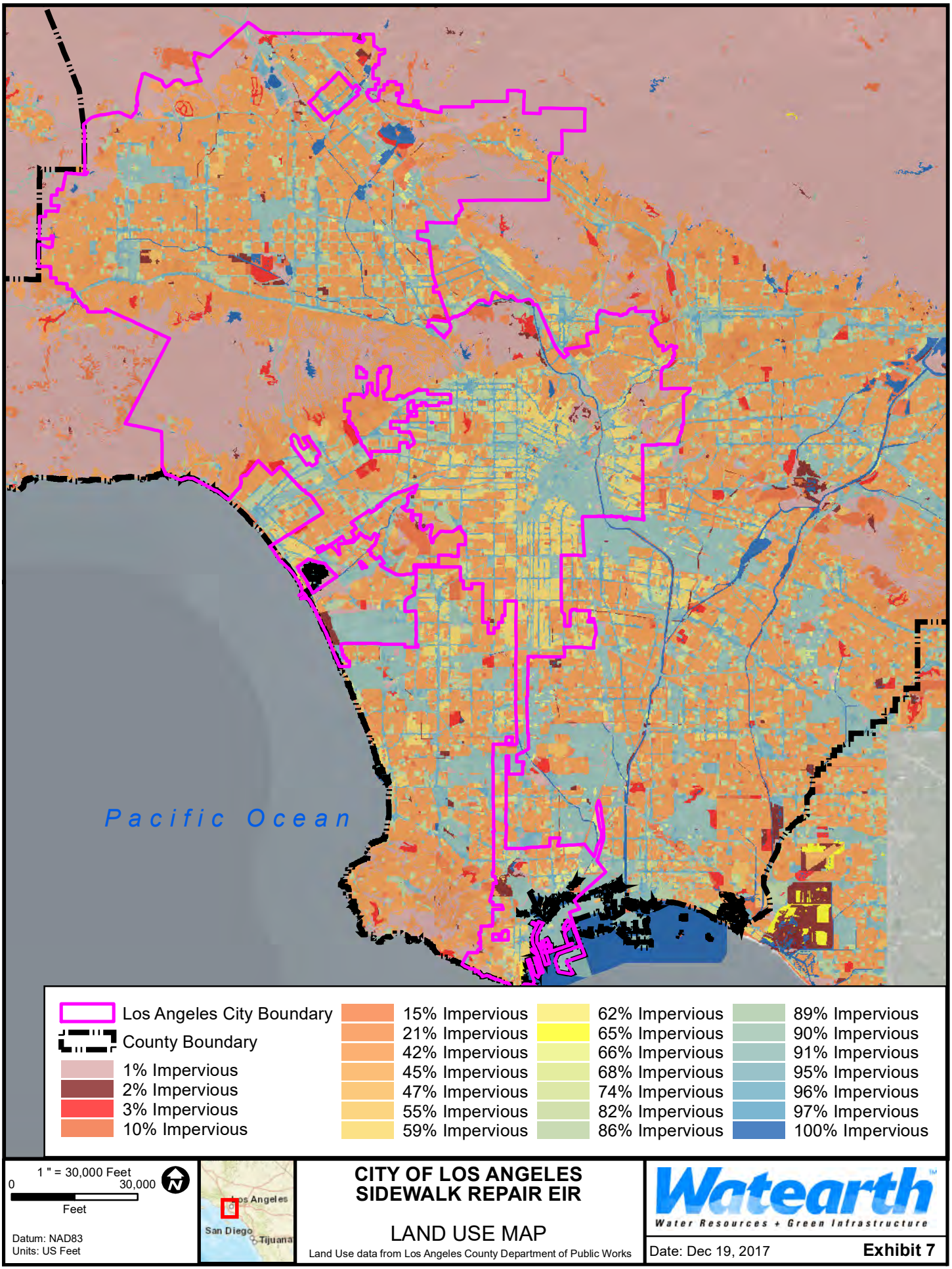
RAINFALL 100-YEAR

Rainfall data from Los Angeles County Department of Public Works

Watearth
Water Resources + Green Infrastructure

Date: Dec 19, 2017

Exhibit 6D



CITY OF LOS ANGELES SIDEWALK REPAIR EIR

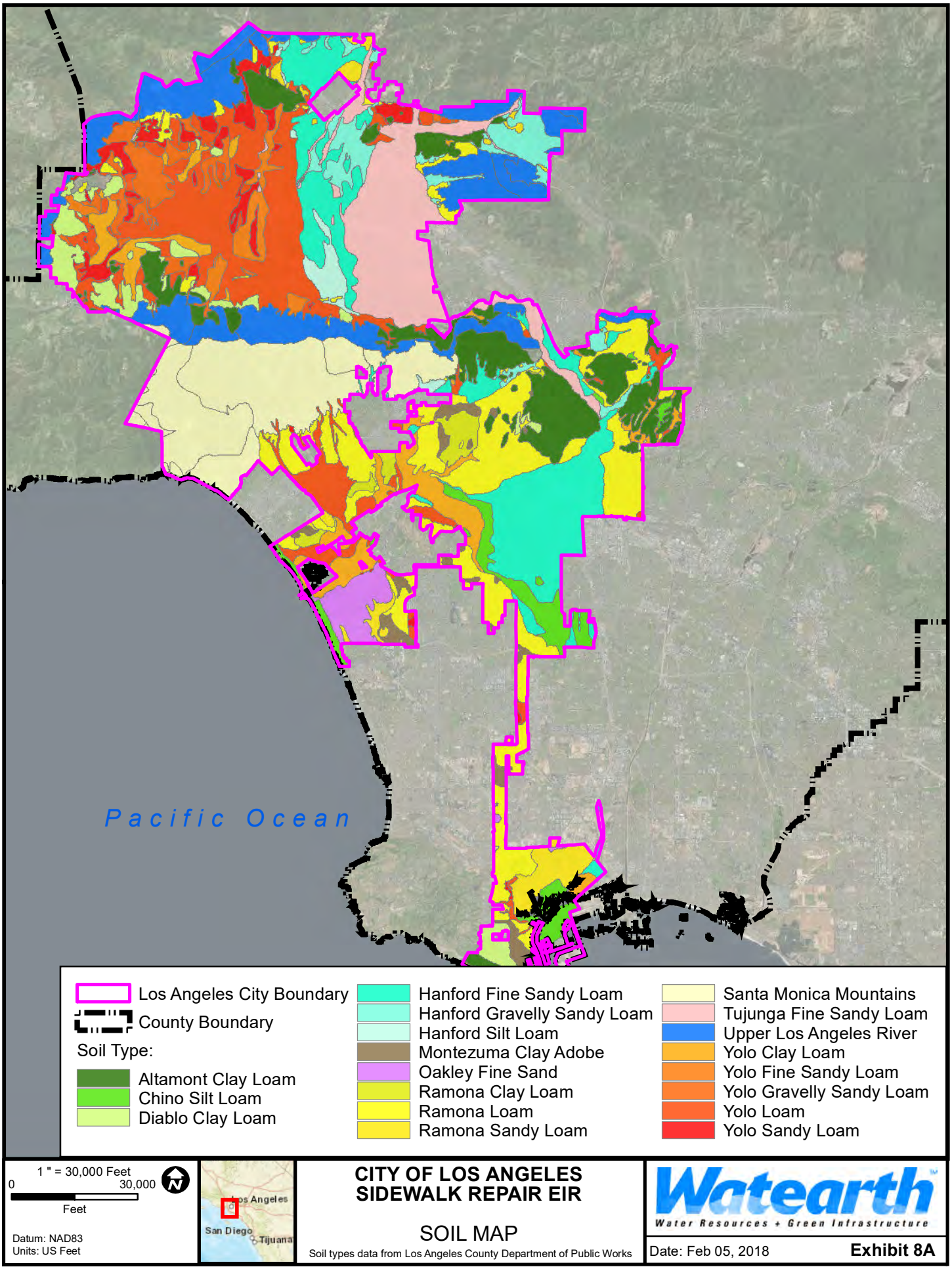
LAND USE MAP

Land Use data from Los Angeles County Department of Public Works

Watearth
Water Resources + Green Infrastructure

Date: Dec 19, 2017

Exhibit 7



CITY OF LOS ANGELES SIDEWALK REPAIR EIR

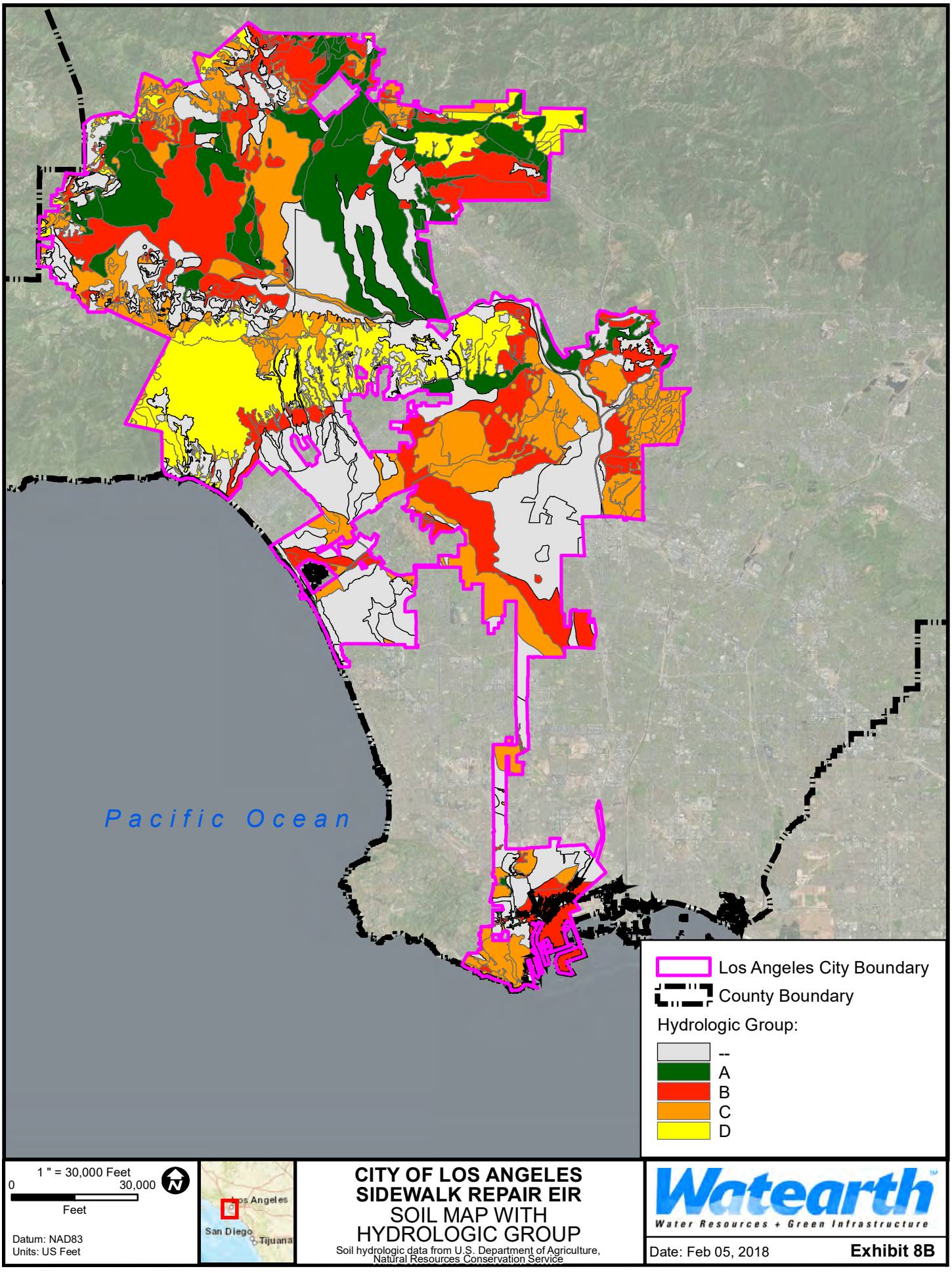
SOIL MAP

Soil types data from Los Angeles County Department of Public Works

Watearth
Water Resources + Green Infrastructure

Date: Feb 05, 2018

Exhibit 8A



CITY OF LOS ANGELES SIDEWALK REPAIR EIR

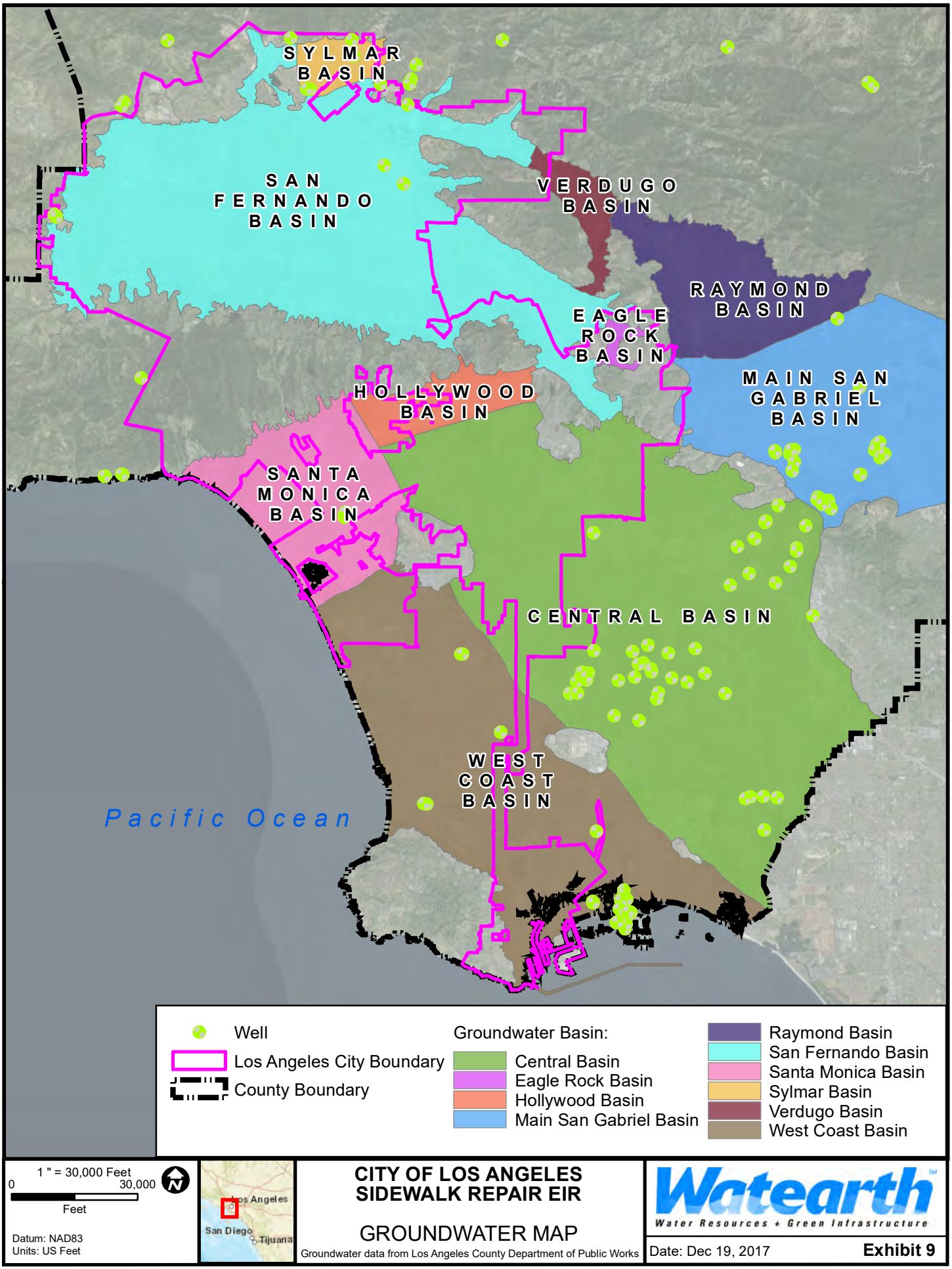
SOIL MAP WITH HYDROLOGIC GROUP

Soil hydrologic data from U.S. Department of Agriculture, Natural Resources Conservation Service

Watearth
Water Resources + Green Infrastructure

Date: Feb 05, 2018

Exhibit 8B



CITY OF LOS ANGELES SIDEWALK REPAIR EIR

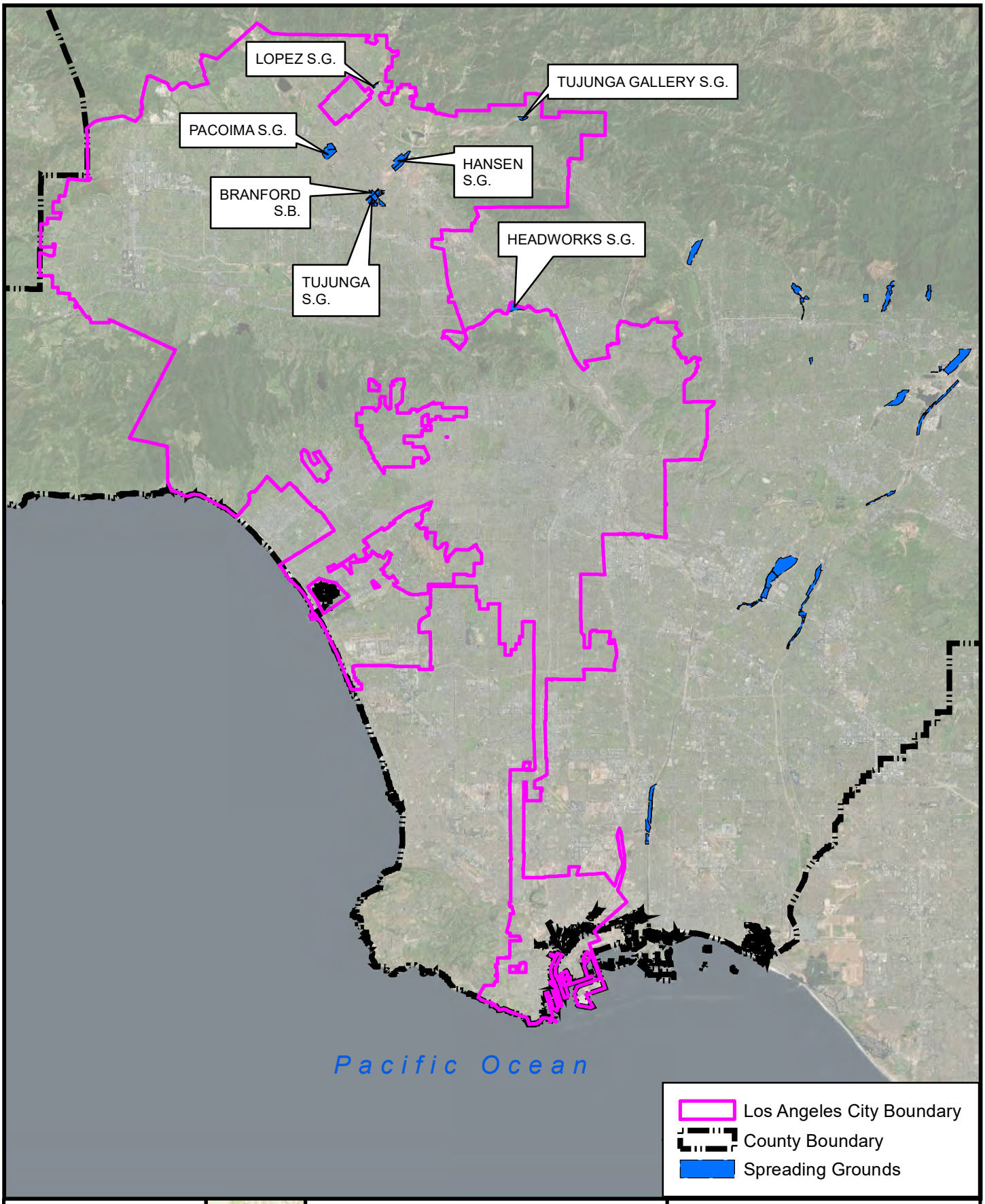
GROUNDWATER MAP

Groundwater data from Los Angeles County Department of Public Works

Watearth™
Water Resources + Green Infrastructure

Date: Dec 19, 2017

Exhibit 9



1 " = 30,000 Feet
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Feet

Datum: NAD83
Units: US Feet

Los Angeles
San Diego
Tijuana

CITY OF LOS ANGELES SIDEWALK REPAIR EIR
STORMWATER SPREADING GROUNDS

Spreading Grounds data from Los Angeles Co. Department of Public Works

Watearth
Water Resources + Green Infrastructure

Date: Jul 02, 2018

Exhibit 10

7. Appendices

List of Appendices

Number	Title
A	Common Trees
B	Hydrologic Modeling
C	NOAA Precipitation Data
D	Tree Replacement and Canopy Calculations
E	Green Infrastructure Memorandum

TREE MAP LA
SEE HOW TREES + WATER ADD UP

Appendix A

Common Trees of Los Angeles

***Acacia baileyana* (Bailey acacia)**

Evergreen. 25’ x 30’. Medium tree with gray-green, fern-like leaves and showy, feathery yellow flowers in spring. Seedpod is thin with green to brown husk. Gray, furrowed bark.

***Afrocarpus falcatus* (Fern pine)**

Evergreen. 60’ x 45’. Thin leaves: blue-gray-green to dark green. Cherry-sized fruits, blue-gray at first, ripening to a pale yellow-orange. Variegated, flaking bark, grey to brown.

***Albizia julibrissin* (Mimosa)**

Deciduous. 40’ x 40’. Medium sized tree with bright green, fern-like leaves. Very showy, 1” rounded clusters of wispy light pink flowers grouped at the ends of twigs. Brown, pea-like leguminous seedpods.

***Araucaria heterophylla* (Norfolk Island pine)**

Evergreen. 100’ x 60’. Very large conifer with waxy, scale-like, dark green leaves and distinctive silhouette. Not a true pine, but a conifer, with large spiny cones. Rough, gray-brown bark.

***Arbutus* ‘Marina’ (Marina arbutus)**

Evergreen tree. 20-40’ x 15-30’. Hybrid of unknown *Arbutus* species. Single or multi-trunk tree. Leathery, serrate leaves. Red flaking bark in smooth underneath. Clusters of rosy-pink urn-shaped flowers. Round, red, bumpy, edible fruit.

***Bauhinia variegata* (Purple orchid tree)**

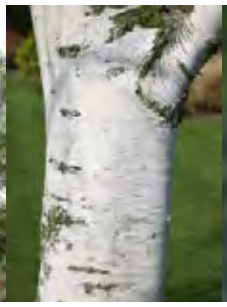
Semi-evergreen tree. 20-35’ x 20-35’. Native to SE Asia. Showy variegated flowers (3-4”), pink to white. Two-lobed leaves. **Tip:** Similar to Redbud—look for two-lobed leaf, folding in the middle.

TREE MAP LA
SEE HOW TREES + WATER ADD UP

Common Trees of Los Angeles

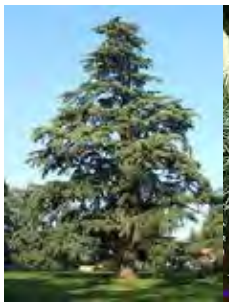
***Betula pendula* (European white birch)**

Deciduous. 40’ x 20’. Medium-sized tree often planted in residential areas. Medium green, teardrop-shaped leaves with toothed edges, turning yellow in fall. Striking white bark with areas of dark gray or black. Small, brown, cone-like fruit in summer.


***Cedrus deodara* (Deodar cedar)**

Evergreen. 60’ x 30’. Large conifer tree with blue-green needles. Often drooping at top of tree. Egg-shaped, fur-rowed cone, green to light brown. Dark gray fissured bark.



***Calocedrus decurrens* (Incense cedar)**

Evergreen. 75-90’ x 40’. CA native. Large tree with fragrant, scale-like medium-green leaves, arranged in flat sprays. Small, winged “cones.” Fibrous, reddish-brown bark.



***Ceiba speciosa* (Floss silk tree)**

Semi-Deciduous. 40-60’ x 20-40’. Large thorns on the greenish trunk and branches. Large showy dark pink flowers, followed by large green seed pods that split open to release white flossy hairs.



***Cassia leptophylla* (Gold medallion tree)**

Semi-Evergreen. 25’ x 20’. Medium tree with bi-pinnate medium green leaves, with pointed tips and no terminal leaf. Terminal clusters of large yellow flowers, followed by long, bean-like green or brown seedpods. **Tip:** Similar to Tipu tree—look for leaves with pointed tips and no terminal leaf, or long bean-like seedpod.



***Ceratonia siliqua* (Carob)**

Evergreen. 30’ x 25’. Glossy green bipinnate leaves and thick trunk with rough, sinewy gray-brown bark. 3-4” seed pods, green when young, turning hard and brown when ripe. **Tip:** Similar to Carrotwood—look for circular leaflets and long, thin seed pod.



TREE MAP LA
SEE HOW TREES + WATER ADD UP

Common Trees of Los Angeles

***Cercis candensis* (Eastern redbud)**

Deciduous tree. 25'x15'-20'. Native to eastern US. Heart-shaped leaf. Magenta flowers and dark brown seed pods. **Tip:** Similar to Purple Orchid Tree and Western Redbud—look for true heart-shaped leaf.



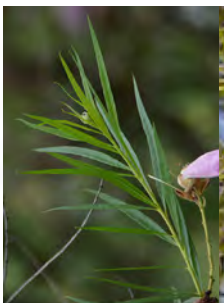
***Cercis occidentalis* (Western redbud)**

Deciduous. 25' x 15'-20'. CA native. Heart-shaped leaves with rounded lower edge. Magenta flowers and dark brown seed pods. **Tip:** Similar to Purple Orchid Tree and Eastern Redbud—look for rounded lower edge of leaf.



***Chilopsis linearis* (Desert willow)**

Deciduous. 20' x 20'. CA native. Small, drought-tolerant tree, usually low-branching or multi-trunked. Thin, medium-green leaves and showy, pink trumpet-shaped flowers in late spring. Long, very thin tan seed capsule. Smooth gray bark.


***Chitalpa tashkentensis* (Chitalpa)**

Deciduous. 35' x 30'. Small tree, often planted along streets. Spear-shaped, medium-green leaves. Showy pink trumpet-shaped flowers in spring.


***Cinnamomum camphora* (Camphor tree)**

Evergreen. 50' x 50'. Teardrop-shaped leaves. New growth is red, then turns yellow-green. Massive tree with extra wide canopy. Often cause sidewalk damage.



***Corymbia citriodora* (Lemon-scented gum)**

Evergreen. 100' x 50'. Very tall, slender tree with ghostly, smooth white bark. Leaves are narrow and yellowish-to-medium green, with red stems and smell strongly of lemons or citronella when crushed.



TREE MAP LA
SEE HOW TREES + WATER ADD UP

Common Trees of Los Angeles

***Corymbia ficifolia* (Red fl wering gum)**

Evergreen. 25-40’ x 25-40’. Spear-shaped gray-green leaves. Wispy red flowers, giving way to brownish, urn-shaped seeds. Shaggy, peeling brown-gray bark. **Tip:** Similar to White Ironbark—look for spear-shaped leaves and shaggy, peeling bark.

***Eriobotrya deflexa* (Bronze loquat)**

Evergreen. 25’ x 25’. Juvenile leaves are bronze colored before maturing into leathery, dark green, sharply toothed leaves. Small white fragrant flowers appear in winter.

***Cupaniopsis anacardioides* (Carrotwood)**

Evergreen, 35’. Carrotwood is native to Australia. Waxy, dark-green oval shaped leaves. Light gray, undulating bark. Yellow garbanzo-shaped seed pods with bright orange seeds. **Tip:** Similar to Carob tree—look for oval-shaped leaflets and garbanzo-shaped seed pods.

***Erythrina caffra* (South African coral tree)**

Briefly deciduous. 30’ x 40’. Native to eastern South Africa. Drops its trifoliate leaves in winter, followed by bright orange-red flowers. Smooth grey bark. Spines can occur on leaf petioles, trunk and branches. Seeds are poisonous if eaten. Official tree of the City of Los Angeles.

***Cupressus sempervirens* (Italian cypress)**

Evergreen. 20-30’ X 3-5’. Very narrow, medium-sized tree, often grown in rows as a hedge. Dark green, scale-like leaves. Fibrous, peeling brown-gray bark.

***Eucalyptus camaldulensis* (River red gum)**

Evergreen tree. 60-100’ x 40-60’. Native to Australia. Long blue-green leaves with red stems. Cream-colored flowers in late fall. Bark peels off leaving a mottled white, tan and grey trunk and branches.

TREE MAP LA
SEE HOW TREES + WATER ADD UP

Common Trees of Los Angeles

Eucalyptus globulus **(Blue gum eucalyptus)**

Evergreen. 60-120’ x 40-60’. Native to Australia. Smooth bark sheds in strips. Adult leaves are 8-12” long, sickle-shaped and dull green. White flowers and white pods occur singly.

Eucalyptus leucoxylon **(White Iron bark)**

Evergreen. 65’ x 45’. Native to Australia. Tall, fast-growing tree with long, lance-shaped gray-green leaves. Wispy pink flowers, giving way to small brown seed capsules. Smooth, cream-colored bark with spare areas of peeling gray or brown bark.

Eucalyptus polyanthemos **(Silver dollar gum eucalyptus)**

Evergreen. 50’ x 35’. Native to Australia. Young leaves are silver-grey and round. Adult leaves are long and pointed. Cream-colored flowers. Rough, peeling, brown to grey bark.

Eucalyptus sideroxylon **(Red Iron bark)**

Evergreen. 65’ x 45’. Native to Australia. Tall, fast-growing tree with spear-shaped gray-green leaves. Wispy pink flowers, giving way to small brown seed capsules. Rough, dark reddish-brown bark with large, blocky furrows.

Ficus macrophylla **(Moreton Bay fig**

Evergreen. 80’ x 110’. The largest of the evergreen fig trees. Large, aggressive surface roots and massive canopy. Large, thick oval leaves - glossy dark green above and fine brown hairs below. Smooth gray bark.

Ficus microcarpa **(Indian laurel fig**

Evergreen. 25-60’ x 25-60’. Native to Asia. Leaves 2-4” glossy dark green. The most common evergreen fig in southern California, and the one breaking up the most sidewalks. Very dense canopy. Small, fig-like fruits.

TREE MAP LA
SEE HOW TREES + WATER ADD UP

Common Trees of Los Angeles

Fraxinus uhdei **(Evergreen ash)**

Deciduous tree. 60-80' x 45-60'. Very large tree that tends to have crowded branching. Compound leaves with 5-7 leaflets. Many papery tan seeds, hanging in huge clusters. Rough grayish bark.

Geijera parviflora **(Australian willow)**

Evergreen. 30' x 20'. Fairly common medium-sized street tree with thin 3-4" gray-green leaves. Small white flowers in spring. Rough, gray-brown bark.

Ginkgo biloba **(Ginkgo)**

Deciduous. 35-80' x 20-60'. Native to China. Very common street tree. Distinctive fan-shaped leaves with slight to very deep lobe in center. Ripe yellow-orange fruit smells like vomit.

Grevillea robusta **(Silk oak)**

Evergreen. 75' x 25'. Not an oak at all. Large trees with fern-like leaves and bright yellow-orange flowers mid to late spring. Often planted along freeways.

Handroanthus chrysotrichus **(Golden trumpet tree)**

Deciduous tree. 20-30' x 20-30'. Native to South America. Dark green, fuzzy leaves and yellow trumpet-shaped flowers. Long seed pods release winged seeds. **Tip:** Similar to Pink Trumpet tree—look for waxy, dark green, fuzzy leaves.

Handroanthus impetiginosus **(Pink trumpet tree)**

Semi-deciduous. 35' x 30'. Showy pink blooms in late winter before the leaves emerge. Long, thin seedpods have papery seeds. **Tip:** Similar to Golden Trumpet tree—look for light green leaves.

TREE MAP LA
SEE HOW TREES + WATER ADD UP

Common Trees of Los Angeles

***Jacaranda mimosifolia* (Jacaranda)**

Semi-deciduous. 40’ x 40’. Showy purple flowers in early summer. Bipinnately compound, fern-like leaves. 2”-3” seedpods, green at first, brown when ripe.

***Koelreuteria bipinnata* (Chinese flame t ee)**

Deciduous. 25-45’ x 25-45’. 12-18” long bi-pinnately compound leaf is yellow to red in fall. Serrated, oval-shaped leaflets. Yellow flowers late summer to early fall. Papery seedpods yellow-pink to red in fall.

***Lagerstroemia indica* (Common crape myrtle)**

Deciduous. 25’ x 25’. Very common street tree. Waxy green leaves, turning orange to red in fall. Many different cultivars, with flowers from white, purple, red, pink, magenta. Smooth patterned gray bark, often with variegated portions of reddish-brown peeling bark.

***Liquidambar styraciflua* (Sweetgum)**

Deciduous. 40-50’ x 25-30’. Leaves are star-shaped, turning bright yellow or red in the fall. Prickly brown seed pods that often litter the ground around the tree. Aggressive root system, often damaging sidewalks.

***Liriodendron tulipifera* (Tulip tree)**

Deciduous. 70’ x 35’. Very tall tree with distinctive large four-lobed leaves. Greenish-yellow flowers in spring. Fissured, gray-brown bark.

***Lophostemon confertus* (Brisbane box)**

Evergreen. 50’ x 40’. Fast-growing tree very commonly planted in LA area over the past 15 years. Waxy dark green spear-shaped leaves. Reddish-brown peeling bark. White, star-shaped flowers in spring, giving way to small green or brown urn-shaped seed capsules.

TREE MAP LA
SEE HOW TREES + WATER ADD UP

Common Trees of Los Angeles

***Lyonothamnus floribunda* (Catalina ironwood)**

Evergreen. 45’ x 30’. Medium sized tree native to CA. Leaves are fern-like and fragrant when crushed. Bark is light gray and peeling.

***Magnolia grandiflora* (Southern magnolia)**

Evergreen. 80’ x 40’. Large, waxy green leaves, with rust-colored underside. Large white flowers in spring. Large greenish-brown seed pod with bright red seeds.

***Melaleuca quinquenervia* (Cajeput)**

Evergreen. 20-40’ x 15-30’. Thin, spear-shaped gray-green leaves. Wispy white flowers in spring. Peeling, spongy white bark, with sections of dark gray or even black.

***Melaleuca viminalis* (Weeping bottlebrush)**

Evergreen. 20-30’ x 10-25’. Narrow gray-green leaves. Branches hang down in a weeping fashion with wispy, red bottlebrush-shaped flowers on their ends. Slightly flaking grayish-brown bark.

***Morus alba* (White mulberry)**

Deciduous. 40-50’x35-40’. Fast-growing tree with aggressive roots. Leaves are medium green, with toothed edges, often exhibiting many shape variations within a single tree. Fissured gray-brown bark.

***Olea europaea* (Olive)**

Evergreen. 35’ x 35’. Medium-sized tree with narrow gray-green leaves, and often with multiple trunks. Produces numerous grey-to-black olives in late summer to fall. Rough gray bark.

TREE MAP LA
SEE HOW TREES + WATER ADD UP

Common Trees of Los Angeles

***Phoenix canariensis* (Canary island date palm)**

Evergreen. 50-60’ x 40-50’. Native to the Canary Islands. Wide, stout trunk. Long, feather-shaped fronds. White flowers in late summer and then orange dates.

***Pinus canariensis* (Canary island pine)**

Evergreen. 65-80’ x 30-40’. Tall, narrow pine, very often planted along streets and in medians. Shaggy-looking 9-12” weeping needles. Rough, flaking, reddish-brown bark. **Tip:** Similar to Italian Stone Pine—look for narrower, more columnar structure.

***Pinus pinea* (Italian stone pine)**

Evergreen. 50-70’ x 50-65’. Large evergreen conifer with spreading, vase-shaped canopy. Flexible green leaves are needle-like and cones are broad. Produces edible pine nuts. Rough gray-brown bark. **Tip:** Similar to Canary Island Pine—look for wider, vase-shaped canopy.

***Pistacia chinensis* (Chinese pistache)**

Deciduous. 40-50’ x 30’. Pinnately-compound medium-green leaves, turning bright yellow to red in fall. Bright red or metallic blue fruits in large bunches.

***Pittosporum undulatum* (Victorian box)**

Evergreen. 35’ x 30’. Medium-sized tree with waxy, dark-green leaves. Leaf edge is wavy, hence species name, “undulatum.” Small, fragrant yellow-to-white flowers in spring, giving way to garbanzo-shaped yellow-orange seedpods. Smooth, light gray bark.

***Platanus x hispanica* (London plane tree)**

Deciduous. 40’-80’ x 30’-40’. Medium-green tooth-edged leaves with 5-7 lobes. Bark is variegated and peeling, with whites, grays, reds and tans. **Tip:** Similar to CA Sycamore—look for toothed leaves.

TREE MAP LA
SEE HOW TREES + WATER ADD UP

Common Trees of Los Angeles

***Platanus racemosa* (California sycamore)**

Deciduous tree. 30-80' x 20-60'. Deeply-lobed medium-green leaves are covered with minute hairs, and turn yellow-brown in late summer. White to grey bark flakes off the mottled trunk. **Tip:** Similar to London Plane tree—look for deeply-lobed, slightly fuzzy leaves.

***Podocarpus macrophyllus* (Yew pine)**

Evergreen. 20-50' x 15-40'. Medium sized-tree with medium green, thin leaves. **Tip:** Similar to Afrocarpus falcatus—look for brownish-gray, shaggy, peeling bark and longer, wider leaves than Afrocarpus falcatus.

***Prunus cerasifera* 'Atropurpurea' (Purple leaf plum)**

Deciduous. 35' x 20'. Distinctive dark purple leaves. Fragrant light pink flowers. Mostly fruitless, but occasionally produces small, dark cherry-like fruit.

***Pyrus calleryana* (Callery pear)**

Deciduous. 45'x20'. Very common medium-sized street tree. Leaves are medium to deep green and glossy. Showy, white, fragrant flowers in spring. Produces small, tan, non-edible fruits. Rough gray-brown bark.

***Quercus agrifolia* (Coast live oak)**

Evergreen tree. 60-70' x 70-85'. CA native. Waxy, dark-green leaves are oval, cupped, and have spiny edges. Gray bark grows rougher with age. **Tip:** Similar to Cork oak and Holly oak—look for hair-like fibers between the veins on the underside of the leaf.

***Quercus ilex* (Holly oak)**

Evergreen. 60'x 50'. Large tree with narrow, slightly-toothed waxy, dark green leaves with very pale white underside. Lightly fissured grayish bark. **Tip:** Similar to Cork oak and Coast live oak—look for smoother gray bark.

TREE MAP LA
SEE HOW TREES + WATER ADD UP

Common Trees of Los Angeles

Quercus lobata **(Valley oak)**

Deciduous tree. 75’ x 80’. CA native. Extremely large oak with deeply lobed leaves and large acorns. Bark is dark gray and furrowed.

Quercus suber **(Cork oak)**

Evergreen. 40-60’ x 30-40’. Medium sized tree with spiny, waxy dark green leaves, with pale green underside. Thick, whorled bark is primary source for cork. **Tip:** Similar to Coast live oak and Holly oak—look for cork-like, thick, whorled bark with variations of gray, white and brown.

Schinus molle **(California pepper tree)**

Evergreen. 35-50’ x 35-50’. Thin, fern-like leaves with a weeping habit, arranged bipinattely. Knobbly, red-dish-brown bark. Bright red-pink peppercorns hang in bunches.

Schinus terebinthifolius **(Brazilian pepper tree)**

Evergreen. 20-30’ x 20-30’. Compound leaves, with 5-9 oval shaped leaflets. Produces many clusters of bright red peppercorn-looking fruits. Gnarly gray-brown bark.

Sequoia sempervirens **(Coast redwood)**

Evergreen. 70-100’ x 30’. In the city, these trees are fairly large, but often brownish and scraggly-looking. Look for trademark rough, reddish bark.

Syagrus romanzoffiana **(Queen palm)**

Evergreen. 35-50’ x 20-45’. Medium-sized tree, often planted in front yards. Long, feather-shaped fronds. White flowers spring, summer, fall or winter.

TREE MAP LA
SEE HOW TREES + WATER ADD UP

Common Trees of Los Angeles

***Tipuana tipu* (Tipu)**

Semi-evergreen. 50’ x 50’. Large, fast-growing tree with long thin branches. Bi-pinnate medium green leaves with many oval-shaped leaflets and terminal leaf. Bright, butter-yellow flowers. Green to brown papery seed pods**.** **Tip:** Similar to Gold Medallion tree—look for oval-shaped leaves with terminal leaf and papery seedpods.

***Ulmus parvifolia* (Chinese elm)**

Semi-deciduous. 40’-60’ x 50’-70’. Large tree with long, weeping branches and medium-green leaves with toothed edges. Variegated, flaking bark with many colors, including light gray, red and white.

***Washingtonia filifera* (California fan palm)**

Evergreen. 35-65’ x 20-40’. Native to California, Arizona and Mexico. Similar to the common, tall, skinny Mexican fan palm, but with a stouter trunk, grey-green leaves and a more open crown. Mature fronds have sharp teeth.

***Washingtonia robusta* (Mexican fan palm)**

Evergreen. 60-100’ x 25’. Iconic Los Angeles tree, extremely tall and thin. Has a very tapered skinny trunk, green fan-shaped leaves and a dense crown.

Appendix B

Scenario Name: LLA-DD-1

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.82	2.82	0%	3.16	3.16	0%
Surface Runoff (in)	1.32	1.32	0%	2.91	2.91	0%	3.27	3.27	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.75	0.75	0%	1.64	1.64	0%	1.86	1.86	0%

Scenario Name: LLA-DD-5

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.82	2.82	0%	3.16	3.16	0%
Surface Runoff (in)	1.32	1.32	0%	2.91	2.91	0%	3.27	3.27	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.75	0.75	0%	1.64	1.64	0%	1.86	1.86	0%

Scenario Name: LLA-DD-10

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.82	2.82	0%	3.16	3.16	0%
Surface Runoff (in)	1.32	1.32	0%	2.91	2.91	0%	3.27	3.27	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.75	0.75	0%	1.64	1.64	0%	1.86	1.86	0%

Scenario Name: LLA-DD-15

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.82	2.82	0%	3.16	3.16	0%
Surface Runoff (in)	1.32	1.32	0%	2.91	2.91	0%	3.27	3.27	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.75	0.75	0%	1.64	1.64	0%	1.86	1.86	0%

Scenario Name: LLA-DD-30

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.82	2.82	0%	3.16	3.16	0%
Surface Runoff (in)	1.32	1.32	0%	2.91	2.91	0%	3.27	3.27	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.75	0.75	0%	1.64	1.64	0%	1.86	1.86	0%

Scenario Name: LLA-EE-1

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.82	2.82	0%	3.16	3.16	0%
Surface Runoff (in)	1.32	1.32	0%	2.91	2.91	0%	3.27	3.27	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.75	0.75	0%	1.64	1.64	0%	1.86	1.86	0%

Scenario Name: LLA-EE-5

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.82	2.82	0%	3.16	3.16	0%
Surface Runoff (in)	1.32	1.32	0%	2.91	2.91	0%	3.27	3.27	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.75	0.75	0%	1.64	1.64	0%	1.86	1.86	0%

Scenario Name: LLA-EE-10

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.82	2.82	0%	3.16	3.16	0%
Surface Runoff (in)	1.32	1.32	0%	2.91	2.91	0%	3.27	3.27	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.75	0.75	0%	1.64	1.64	0%	1.86	1.86	0%

Scenario Name: LLA-EE-15

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.82	2.82	0%	3.16	3.16	0%
Surface Runoff (in)	1.32	1.32	0%	2.91	2.91	0%	3.27	3.27	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.75	0.75	0%	1.64	1.64	0%	1.86	1.86	0%

Scenario Name: LLA-EE-30

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.82	2.82	0%	3.16	3.16	0%
Surface Runoff (in)	1.32	1.32	0%	2.91	2.91	0%	3.27	3.27	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.75	0.75	0%	1.64	1.64	0%	1.86	1.86	0%

Scenario Name: LLA-DE-1

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.82	2.82	0%	3.16	3.16	0%
Surface Runoff (in)	1.32	1.32	0%	2.91	2.91	0%	3.27	3.27	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.75	0.75	0%	1.64	1.64	0%	1.86	1.86	0%

Scenario Name: LLA-DE-5

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.82	2.82	0%	3.16	3.16	0%
Surface Runoff (in)	1.32	1.32	0%	2.91	2.91	0%	3.27	3.27	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.75	0.75	0%	1.64	1.64	0%	1.86	1.86	0%

Scenario Name: LLA-DE-10

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.82	2.82	0%	3.16	3.16	0%
Surface Runoff (in)	1.32	1.32	0%	2.91	2.91	0%	3.27	3.27	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.75	0.75	0%	1.64	1.64	0%	1.86	1.86	0%

Scenario Name: LLA-DE-15

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.82	2.82	0%	3.16	3.16	0%
Surface Runoff (in)	1.32	1.32	0%	2.91	2.91	0%	3.27	3.27	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.75	0.75	0%	1.64	1.64	0%	1.86	1.86	0%

Scenario Name: LLA-DE-30

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.82	2.82	0%	3.16	3.16	0%
Surface Runoff (in)	1.32	1.32	0%	2.91	2.91	0%	3.27	3.27	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.75	0.75	0%	1.64	1.64	0%	1.86	1.86	0%

Scenario Name: LLB-DD-1

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.66	2.66	0%	2.90	2.90	0%
Surface Runoff (in)	1.32	1.32	0%	3.07	3.07	0%	3.53	3.53	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.75	0.75	0%	2.48	2.48	0%	3.01	3.01	0%

Scenario Name: LLB-DD-5

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.66	2.66	0%	2.90	2.90	0%
Surface Runoff (in)	1.32	1.32	0%	3.07	3.07	0%	3.53	3.53	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.75	0.75	0%	2.48	2.48	0%	3.01	3.01	0%

Scenario Name: LLB-DD-10

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.66	2.66	0%	2.90	2.90	0%
Surface Runoff (in)	1.32	1.32	0%	3.07	3.07	0%	3.53	3.53	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.75	0.75	0%	2.48	2.48	0%	3.01	3.01	0%

Scenario Name: LLB-DD-15

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.66	2.66	0%	2.90	2.90	0%
Surface Runoff (in)	1.32	1.32	0%	3.07	3.07	0%	3.53	3.53	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.75	0.75	0%	2.48	2.48	0%	3.01	3.01	0%

Scenario Name: LLB-DD-30

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.66	2.66	0%	2.90	2.90	0%
Surface Runoff (in)	1.32	1.32	0%	3.07	3.07	0%	3.53	3.53	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.75	0.75	0%	2.48	2.48	0%	3.01	3.01	0%

Scenario Name: LLB-EE-1

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.66	2.66	0%	2.90	2.90	0%
Surface Runoff (in)	1.32	1.32	0%	3.07	3.07	0%	3.53	3.53	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.75	0.75	0%	2.48	2.48	0%	3.01	3.01	0%

Scenario Name: LLB-EE-5

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.66	2.66	0%	2.90	2.90	0%
Surface Runoff (in)	1.32	1.32	0%	3.07	3.07	0%	3.53	3.53	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.75	0.75	0%	2.48	2.48	0%	3.01	3.01	0%

Scenario Name: LLB-EE-10

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.66	2.66	0%	2.90	2.90	0%
Surface Runoff (in)	1.32	1.32	0%	3.07	3.07	0%	3.53	3.53	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.75	0.75	0%	2.48	2.48	0%	3.01	3.01	0%

Scenario Name: LLB-EE-15

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.66	2.66	0%	2.90	2.90	0%
Surface Runoff (in)	1.32	1.32	0%	3.07	3.07	0%	3.53	3.53	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.75	0.75	0%	2.48	2.48	0%	3.01	3.01	0%

Scenario Name: LLB-EE-30

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.66	2.66	0%	2.90	2.90	0%
Surface Runoff (in)	1.32	1.32	0%	3.07	3.07	0%	3.53	3.53	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.75	0.75	0%	2.48	2.48	0%	3.01	3.01	0%

Scenario Name: LLB-DE-1

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.66	2.66	0%	2.90	2.90	0%
Surface Runoff (in)	1.32	1.32	0%	3.07	3.07	0%	3.53	3.53	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.75	0.75	0%	2.48	2.48	0%	3.01	3.01	0%

Scenario Name: LLB-DE-5

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.66	2.66	0%	2.90	2.90	0%
Surface Runoff (in)	1.32	1.32	0%	3.07	3.07	0%	3.53	3.53	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.75	0.75	0%	2.48	2.48	0%	3.01	3.01	0%

Scenario Name: LLB-DE-10

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.66	2.66	0%	2.90	2.90	0%
Surface Runoff (in)	1.32	1.32	0%	3.07	3.07	0%	3.53	3.53	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.75	0.75	0%	2.48	2.48	0%	3.01	3.01	0%

Scenario Name: LLB-DE-15

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.66	2.66	0%	2.90	2.90	0%
Surface Runoff (in)	1.32	1.32	0%	3.07	3.07	0%	3.53	3.53	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.75	0.75	0%	2.48	2.48	0%	3.01	3.01	0%

Scenario Name: LLB-DE-30

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.66	2.66	0%	2.90	2.90	0%
Surface Runoff (in)	1.32	1.32	0%	3.07	3.07	0%	3.53	3.53	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.75	0.75	0%	2.48	2.48	0%	3.01	3.01	0%

Scenario Name: LLC-DD-1

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.11	1.11	0%	1.40	1.40	0%	1.42	1.42	0%
Surface Runoff (in)	1.50	1.50	0%	4.33	4.33	0%	5.01	5.01	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.27	1.27	0%	3.07	3.07	0%	3.51	3.51	0%

Scenario Name: LLC-DD-5

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.11	1.11	0%	1.40	1.40	0%	1.42	1.42	0%
Surface Runoff (in)	1.50	1.50	0%	4.33	4.33	0%	5.01	5.01	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.27	1.27	0%	3.07	3.07	0%	3.51	3.51	0%

Scenario Name: LLC-DD-10

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.11	1.11	0%	1.40	1.40	0%	1.42	1.42	0%
Surface Runoff (in)	1.50	1.50	0%	4.33	4.33	0%	5.01	5.01	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.27	1.27	0%	3.07	3.07	0%	3.51	3.51	0%

Scenario Name: LLC-DD-15

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.11	1.11	0%	1.40	1.40	0%	1.42	1.42	0%
Surface Runoff (in)	1.50	1.50	0%	4.33	4.33	0%	5.01	5.01	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.27	1.27	0%	3.07	3.07	0%	3.51	3.51	0%

Scenario Name: LLC-DD-30

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.11	1.11	0%	1.40	1.40	0%	1.42	1.42	0%
Surface Runoff (in)	1.50	1.50	0%	4.33	4.33	0%	5.01	5.01	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.27	1.27	0%	3.07	3.07	0%	3.51	3.51	0%

Scenario Name: LLC-EE-1

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.11	1.11	0%	1.40	1.40	0%	1.42	1.42	0%
Surface Runoff (in)	1.50	1.50	0%	4.33	4.33	0%	5.01	5.01	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.27	1.27	0%	3.07	3.07	0%	3.51	3.51	0%

Scenario Name: LLC-EE-5

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.11	1.11	0%	1.40	1.40	0%	1.42	1.42	0%
Surface Runoff (in)	1.50	1.50	0%	4.33	4.33	0%	5.01	5.01	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.27	1.27	0%	3.07	3.07	0%	3.51	3.51	0%

Scenario Name: LLC-EE-10

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.11	1.11	0%	1.40	1.40	0%	1.42	1.42	0%
Surface Runoff (in)	1.50	1.50	0%	4.33	4.33	0%	5.01	5.01	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.27	1.27	0%	3.07	3.07	0%	3.51	3.51	0%

Scenario Name: LLC-EE-15

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.11	1.11	0%	1.40	1.40	0%	1.42	1.42	0%
Surface Runoff (in)	1.50	1.50	0%	4.33	4.33	0%	5.01	5.01	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.27	1.27	0%	3.07	3.07	0%	3.51	3.51	0%

Scenario Name: LLC-EE-30

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.11	1.11	0%	1.40	1.40	0%	1.42	1.42	0%
Surface Runoff (in)	1.50	1.50	0%	4.33	4.33	0%	5.01	5.01	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.27	1.27	0%	3.07	3.07	0%	3.51	3.51	0%

Scenario Name: LLC-DE-1

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.11	1.11	0%	1.40	1.40	0%	1.42	1.42	0%
Surface Runoff (in)	1.50	1.50	0%	4.33	4.33	0%	5.01	5.01	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.27	1.27	0%	3.07	3.07	0%	3.51	3.51	0%

Scenario Name: LLC-DE-5

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.11	1.11	0%	1.40	1.40	0%	1.42	1.42	0%
Surface Runoff (in)	1.50	1.50	0%	4.33	4.33	0%	5.01	5.01	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.27	1.27	0%	3.07	3.07	0%	3.51	3.51	0%

Scenario Name: LLC-DE-10

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.11	1.11	0%	1.40	1.40	0%	1.42	1.42	0%
Surface Runoff (in)	1.50	1.50	0%	4.33	4.33	0%	5.01	5.01	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.27	1.27	0%	3.07	3.07	0%	3.51	3.51	0%

Scenario Name: LLC-DE-15

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.11	1.11	0%	1.40	1.40	0%	1.42	1.42	0%
Surface Runoff (in)	1.50	1.50	0%	4.33	4.33	0%	5.01	5.01	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.27	1.27	0%	3.07	3.07	0%	3.51	3.51	0%

Scenario Name: LLC-DE-30

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.11	1.11	0%	1.40	1.40	0%	1.42	1.42	0%
Surface Runoff (in)	1.50	1.50	0%	4.33	4.33	0%	5.01	5.01	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.27	1.27	0%	3.07	3.07	0%	3.51	3.51	0%

Scenario Name: LHA-DD-1

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.82	2.82	0%	3.16	3.16	0%
Surface Runoff (in)	1.32	1.32	0%	2.91	2.91	0%	3.27	3.27	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.76	0.76	0%	1.64	1.64	0%	1.86	1.86	0%

Scenario Name: LHA-DD-5

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.82	2.82	0%	3.16	3.16	0%
Surface Runoff (in)	1.32	1.32	0%	2.91	2.91	0%	3.27	3.27	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.76	0.76	0%	1.64	1.64	0%	1.86	1.86	0%

Scenario Name: LHA-DD-10

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.82	2.82	0%	3.16	3.16	0%
Surface Runoff (in)	1.32	1.32	0%	2.91	2.91	0%	3.27	3.27	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.76	0.76	0%	1.64	1.64	0%	1.86	1.86	0%

Scenario Name: LHA-DD-15

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.82	2.82	0%	3.16	3.16	0%
Surface Runoff (in)	1.32	1.32	0%	2.91	2.91	0%	3.27	3.27	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.76	0.76	0%	1.64	1.64	0%	1.86	1.86	0%

Scenario Name: LHA-DD-30

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.82	2.82	0%	3.16	3.16	0%
Surface Runoff (in)	1.32	1.32	0%	2.91	2.91	0%	3.27	3.27	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.76	0.76	0%	1.64	1.64	0%	1.86	1.86	0%

Scenario Name: LHA-EE-1

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.82	2.82	0%	3.16	3.16	0%
Surface Runoff (in)	1.32	1.32	0%	2.91	2.91	0%	3.27	3.27	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.76	0.76	0%	1.64	1.64	0%	1.86	1.86	0%

Scenario Name: LHA-EE-5

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.82	2.82	0%	3.16	3.16	0%
Surface Runoff (in)	1.32	1.32	0%	2.91	2.91	0%	3.27	3.27	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.76	0.76	0%	1.64	1.64	0%	1.86	1.86	0%

Scenario Name: LHA-EE-10

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.82	2.82	0%	3.16	3.16	0%
Surface Runoff (in)	1.32	1.32	0%	2.91	2.91	0%	3.27	3.27	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.76	0.76	0%	1.64	1.64	0%	1.86	1.86	0%

Scenario Name: LHA-EE-15

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.82	2.82	0%	3.16	3.16	0%
Surface Runoff (in)	1.32	1.32	0%	2.91	2.91	0%	3.27	3.27	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.76	0.76	0%	1.64	1.64	0%	1.86	1.86	0%

Scenario Name: LHA-EE-30

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.82	2.82	0%	3.16	3.16	0%
Surface Runoff (in)	1.32	1.32	0%	2.91	2.91	0%	3.27	3.27	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.76	0.76	0%	1.64	1.64	0%	1.86	1.86	0%

Scenario Name: LHA-DE-1

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.82	2.82	0%	3.16	3.16	0%
Surface Runoff (in)	1.32	1.32	0%	2.91	2.91	0%	3.27	3.27	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.76	0.76	0%	1.64	1.64	0%	1.86	1.86	0%

Scenario Name: LHA-DE-5

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.82	2.82	0%	3.16	3.16	0%
Surface Runoff (in)	1.32	1.32	0%	2.91	2.91	0%	3.27	3.27	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.76	0.76	0%	1.64	1.64	0%	1.86	1.86	0%

Scenario Name: LHA-DE-10

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.82	2.82	0%	3.16	3.16	0%
Surface Runoff (in)	1.32	1.32	0%	2.91	2.91	0%	3.27	3.27	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.76	0.76	0%	1.64	1.64	0%	1.86	1.86	0%

Scenario Name: LHA-DE-15

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.82	2.82	0%	3.16	3.16	0%
Surface Runoff (in)	1.32	1.32	0%	2.91	2.91	0%	3.27	3.27	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.76	0.76	0%	1.64	1.64	0%	1.86	1.86	0%

Scenario Name: LHA-DE-30

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.82	2.82	0%	3.16	3.16	0%
Surface Runoff (in)	1.32	1.32	0%	2.91	2.91	0%	3.27	3.27	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.76	0.76	0%	1.64	1.64	0%	1.86	1.86	0%

Scenario Name: LHB-DD-1

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.63	2.63	0%	2.87	2.87	0%
Surface Runoff (in)	1.32	1.32	0%	3.11	3.11	0%	3.56	3.56	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.76	0.76	0%	2.70	2.70	0%	3.14	3.14	0%

Scenario Name: LHB-DD-5

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.63	2.63	0%	2.87	2.87	0%
Surface Runoff (in)	1.32	1.32	0%	3.11	3.11	0%	3.56	3.56	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.76	0.76	0%	2.70	2.70	0%	3.14	3.14	0%

Scenario Name: LHB-DD-10

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.63	2.63	0%	2.87	2.87	0%
Surface Runoff (in)	1.32	1.32	0%	3.11	3.11	0%	3.56	3.56	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.76	0.76	0%	2.70	2.70	0%	3.14	3.14	0%

Scenario Name: LHB-DD-15

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.63	2.63	0%	2.87	2.87	0%
Surface Runoff (in)	1.32	1.32	0%	3.11	3.11	0%	3.56	3.56	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.76	0.76	0%	2.70	2.70	0%	3.14	3.14	0%

Scenario Name: LHB-DD-30

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.63	2.63	0%	2.87	2.87	0%
Surface Runoff (in)	1.32	1.32	0%	3.11	3.11	0%	3.56	3.56	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.76	0.76	0%	2.70	2.70	0%	3.14	3.14	0%

Scenario Name: LHB-EE-1

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.63	2.63	0%	2.87	2.87	0%
Surface Runoff (in)	1.32	1.32	0%	3.11	3.11	0%	3.56	3.56	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.76	0.76	0%	2.70	2.70	0%	3.14	3.14	0%

Scenario Name: LHB-EE-5

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.63	2.63	0%	2.87	2.87	0%
Surface Runoff (in)	1.32	1.32	0%	3.11	3.11	0%	3.56	3.56	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.76	0.76	0%	2.70	2.70	0%	3.14	3.14	0%

Scenario Name: LHB-EE-10

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.63	2.63	0%	2.87	2.87	0%
Surface Runoff (in)	1.32	1.32	0%	3.11	3.11	0%	3.56	3.56	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.76	0.76	0%	2.70	2.70	0%	3.14	3.14	0%

Scenario Name: LHB-EE-15

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.63	2.63	0%	2.87	2.87	0%
Surface Runoff (in)	1.32	1.32	0%	3.11	3.11	0%	3.56	3.56	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.76	0.76	0%	2.70	2.70	0%	3.14	3.14	0%

Scenario Name: LHB-EE-30

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.63	2.63	0%	2.87	2.87	0%
Surface Runoff (in)	1.32	1.32	0%	3.11	3.11	0%	3.56	3.56	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.76	0.76	0%	2.70	2.70	0%	3.14	3.14	0%

Scenario Name: LHB-DE-1

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.63	2.63	0%	2.87	2.87	0%
Surface Runoff (in)	1.32	1.32	0%	3.11	3.11	0%	3.56	3.56	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.76	0.76	0%	2.70	2.70	0%	3.14	3.14	0%

Scenario Name: LHB-DE-5

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.63	2.63	0%	2.87	2.87	0%
Surface Runoff (in)	1.32	1.32	0%	3.11	3.11	0%	3.56	3.56	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.76	0.76	0%	2.70	2.70	0%	3.14	3.14	0%

Scenario Name: LHB-DE-10

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.63	2.63	0%	2.87	2.87	0%
Surface Runoff (in)	1.32	1.32	0%	3.11	3.11	0%	3.56	3.56	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.76	0.76	0%	2.70	2.70	0%	3.14	3.14	0%

Scenario Name: LHB-DE-15

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.63	2.63	0%	2.87	2.87	0%
Surface Runoff (in)	1.32	1.32	0%	3.11	3.11	0%	3.56	3.56	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.76	0.76	0%	2.70	2.70	0%	3.14	3.14	0%

Scenario Name: LHB-DE-30

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.29	1.29	0%	2.63	2.63	0%	2.87	2.87	0%
Surface Runoff (in)	1.32	1.32	0%	3.11	3.11	0%	3.56	3.56	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.76	0.76	0%	2.70	2.70	0%	3.14	3.14	0%

Scenario Name: LHC-DD-1

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.10	1.10	0%	1.38	1.38	0%	1.41	1.41	0%
Surface Runoff (in)	1.51	1.51	0%	4.35	4.35	0%	5.03	5.03	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.37	1.37	0%	3.12	3.12	0%	3.55	3.55	0%

Scenario Name: LHC-DD-5

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.10	1.10	0%	1.38	1.38	0%	1.41	1.41	0%
Surface Runoff (in)	1.51	1.51	0%	4.35	4.35	0%	5.03	5.03	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.37	1.37	0%	3.12	3.12	0%	3.55	3.55	0%

Scenario Name: LHC-DD-10

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.10	1.10	0%	1.38	1.38	0%	1.41	1.41	0%
Surface Runoff (in)	1.51	1.51	0%	4.35	4.35	0%	5.03	5.03	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.37	1.37	0%	3.12	3.12	0%	3.55	3.55	0%

Scenario Name: LHC-DD-15

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.10	1.10	0%	1.38	1.38	0%	1.41	1.41	0%
Surface Runoff (in)	1.51	1.51	0%	4.35	4.35	0%	5.03	5.03	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.37	1.37	0%	3.12	3.12	0%	3.55	3.55	0%

Scenario Name: LHC-DD-30

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.10	1.10	0%	1.38	1.38	0%	1.41	1.41	0%
Surface Runoff (in)	1.51	1.51	0%	4.35	4.35	0%	5.03	5.03	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.37	1.37	0%	3.12	3.12	0%	3.55	3.55	0%

Scenario Name: LHC-EE-1

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.10	1.10	0%	1.38	1.38	0%	1.41	1.41	0%
Surface Runoff (in)	1.51	1.51	0%	4.35	4.35	0%	5.03	5.03	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.37	1.37	0%	3.12	3.12	0%	3.55	3.55	0%

Scenario Name: LHC-EE-5

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.10	1.10	0%	1.38	1.38	0%	1.41	1.41	0%
Surface Runoff (in)	1.51	1.51	0%	4.35	4.35	0%	5.03	5.03	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.37	1.37	0%	3.12	3.12	0%	3.55	3.55	0%

Scenario Name: LHC-EE-10

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.10	1.10	0%	1.38	1.38	0%	1.41	1.41	0%
Surface Runoff (in)	1.51	1.51	0%	4.35	4.35	0%	5.03	5.03	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.37	1.37	0%	3.12	3.12	0%	3.55	3.55	0%

Scenario Name: LHC-EE-15

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.10	1.10	0%	1.38	1.38	0%	1.41	1.41	0%
Surface Runoff (in)	1.51	1.51	0%	4.35	4.35	0%	5.03	5.03	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.37	1.37	0%	3.12	3.12	0%	3.55	3.55	0%

Scenario Name: LHC-EE-30

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.10	1.10	0%	1.38	1.38	0%	1.41	1.41	0%
Surface Runoff (in)	1.51	1.51	0%	4.35	4.35	0%	5.03	5.03	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.37	1.37	0%	3.12	3.12	0%	3.55	3.55	0%

Scenario Name: LHC-DE-1

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.10	1.10	0%	1.38	1.38	0%	1.41	1.41	0%
Surface Runoff (in)	1.51	1.51	0%	4.35	4.35	0%	5.03	5.03	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.37	1.37	0%	3.12	3.12	0%	3.55	3.55	0%

Scenario Name: LHC-DE-5

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.10	1.10	0%	1.38	1.38	0%	1.41	1.41	0%
Surface Runoff (in)	1.51	1.51	0%	4.35	4.35	0%	5.03	5.03	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.37	1.37	0%	3.12	3.12	0%	3.55	3.55	0%

Scenario Name: LHC-DE-10

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.10	1.10	0%	1.38	1.38	0%	1.41	1.41	0%
Surface Runoff (in)	1.51	1.51	0%	4.35	4.35	0%	5.03	5.03	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.37	1.37	0%	3.12	3.12	0%	3.55	3.55	0%

Scenario Name: LHC-DE-15

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.10	1.10	0%	1.38	1.38	0%	1.41	1.41	0%
Surface Runoff (in)	1.51	1.51	0%	4.35	4.35	0%	5.03	5.03	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.37	1.37	0%	3.12	3.12	0%	3.55	3.55	0%

Scenario Name: LHC-DE-30

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.10	1.10	0%	1.38	1.38	0%	1.41	1.41	0%
Surface Runoff (in)	1.51	1.51	0%	4.35	4.35	0%	5.03	5.03	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.37	1.37	0%	3.12	3.12	0%	3.55	3.55	0%

Scenario Name: HHA-DD-1

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	4.56	4.56	0%	5.15	5.15	0%
Surface Runoff (in)	1.75	1.75	0%	4.73	4.73	0%	5.34	5.34	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	2.67	2.67	0%	3.01	3.01	0%

Scenario Name: HHA-DD-5

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	4.56	4.56	0%	5.15	5.15	0%
Surface Runoff (in)	1.75	1.75	0%	4.73	4.73	0%	5.34	5.34	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	2.67	2.67	0%	3.01	3.01	0%

Scenario Name: HHA-DD-10

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	4.56	4.56	0%	5.15	5.15	0%
Surface Runoff (in)	1.75	1.75	0%	4.73	4.73	0%	5.34	5.34	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	2.67	2.67	0%	3.01	3.01	0%

Scenario Name: HHA-DD-15

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	4.56	4.56	0%	5.15	5.15	0%
Surface Runoff (in)	1.75	1.75	0%	4.73	4.73	0%	5.34	5.34	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	2.67	2.67	0%	3.01	3.01	0%

Scenario Name: HHA-DD-30

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	4.56	4.56	0%	5.15	5.15	0%
Surface Runoff (in)	1.75	1.75	0%	4.73	4.73	0%	5.34	5.34	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	2.67	2.67	0%	3.01	3.01	0%

Scenario Name: HHA-EE-1

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	4.56	4.56	0%	5.15	5.15	0%
Surface Runoff (in)	1.75	1.75	0%	4.73	4.73	0%	5.34	5.34	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	2.67	2.67	0%	3.01	3.01	0%

Scenario Name: HHA-EE-5

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	4.56	4.56	0%	5.15	5.15	0%
Surface Runoff (in)	1.75	1.75	0%	4.73	4.73	0%	5.34	5.34	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	2.67	2.67	0%	3.01	3.01	0%

Scenario Name: HHA-EE-10

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	4.56	4.56	0%	5.15	5.15	0%
Surface Runoff (in)	1.75	1.75	0%	4.73	4.73	0%	5.34	5.34	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	2.67	2.67	0%	3.01	3.01	0%

Scenario Name: HHA-EE-15

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	4.56	4.56	0%	5.15	5.15	0%
Surface Runoff (in)	1.75	1.75	0%	4.73	4.73	0%	5.34	5.34	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	2.67	2.67	0%	3.01	3.01	0%

Scenario Name: HHA-EE-30

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	4.56	4.56	0%	5.15	5.15	0%
Surface Runoff (in)	1.75	1.75	0%	4.73	4.73	0%	5.34	5.34	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	2.67	2.67	0%	3.01	3.01	0%

Scenario Name: HHA-DE-1

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	4.56	4.56	0%	5.15	5.15	0%
Surface Runoff (in)	1.75	1.75	0%	4.73	4.73	0%	5.34	5.34	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	2.67	2.67	0%	3.01	3.01	0%

Scenario Name: HHA-DE-5

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	4.56	4.56	0%	5.15	5.15	0%
Surface Runoff (in)	1.75	1.75	0%	4.73	4.73	0%	5.34	5.34	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	2.67	2.67	0%	3.01	3.01	0%

Scenario Name: HHA-DE-10

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	4.56	4.56	0%	5.15	5.15	0%
Surface Runoff (in)	1.75	1.75	0%	4.73	4.73	0%	5.34	5.34	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	2.67	2.67	0%	3.01	3.01	0%

Scenario Name: HHA-DE-15

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	4.56	4.56	0%	5.15	5.15	0%
Surface Runoff (in)	1.75	1.75	0%	4.73	4.73	0%	5.34	5.34	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	2.67	2.67	0%	3.01	3.01	0%

Scenario Name: HHA-DE-30

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	4.56	4.56	0%	5.15	5.15	0%
Surface Runoff (in)	1.75	1.75	0%	4.73	4.73	0%	5.34	5.34	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	2.67	2.67	0%	3.01	3.01	0%

Scenario Name: HHB-DD-1

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	3.76	3.76	0%	4.07	4.07	0%
Surface Runoff (in)	1.75	1.75	0%	5.53	5.53	0%	6.41	6.41	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	4.73	4.73	0%	5.40	5.40	0%

Scenario Name: HHB-DD-5

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	3.76	3.76	0%	4.07	4.07	0%
Surface Runoff (in)	1.75	1.75	0%	5.53	5.53	0%	6.41	6.41	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	4.73	4.73	0%	5.40	5.40	0%

Scenario Name: HHB-DD-10

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	3.76	3.76	0%	4.07	4.07	0%
Surface Runoff (in)	1.75	1.75	0%	5.53	5.53	0%	6.41	6.41	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	4.73	4.73	0%	5.40	5.40	0%

Scenario Name: HHB-DD-15

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	3.76	3.76	0%	4.07	4.07	0%
Surface Runoff (in)	1.75	1.75	0%	5.53	5.53	0%	6.41	6.41	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	4.73	4.73	0%	5.40	5.40	0%

Scenario Name: HHB-DD-30

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	3.76	3.76	0%	4.07	4.07	0%
Surface Runoff (in)	1.75	1.75	0%	5.53	5.53	0%	6.41	6.41	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	4.73	4.73	0%	5.40	5.40	0%

Scenario Name: HHB-EE-1

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	3.76	3.76	0%	4.07	4.07	0%
Surface Runoff (in)	1.75	1.75	0%	5.53	5.53	0%	6.41	6.41	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	4.73	4.73	0%	5.40	5.40	0%

Scenario Name: HHB-EE-5

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	3.76	3.76	0%	4.07	4.07	0%
Surface Runoff (in)	1.75	1.75	0%	5.53	5.53	0%	6.41	6.41	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	4.73	4.73	0%	5.40	5.40	0%

Scenario Name: HHB-EE-10

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	3.76	3.76	0%	4.07	4.07	0%
Surface Runoff (in)	1.75	1.75	0%	5.53	5.53	0%	6.41	6.41	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	4.73	4.73	0%	5.40	5.40	0%

Scenario Name: HHB-EE-15

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	3.76	3.76	0%	4.07	4.07	0%
Surface Runoff (in)	1.75	1.75	0%	5.53	5.53	0%	6.41	6.41	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	4.73	4.73	0%	5.40	5.40	0%

Scenario Name: HHB-EE-30

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	3.76	3.76	0%	4.07	4.07	0%
Surface Runoff (in)	1.75	1.75	0%	5.53	5.53	0%	6.41	6.41	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	4.73	4.73	0%	5.40	5.40	0%

Scenario Name: HHB-DE-1

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	3.76	3.76	0%	4.07	4.07	0%
Surface Runoff (in)	1.75	1.75	0%	5.53	5.53	0%	6.41	6.41	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	4.73	4.73	0%	5.40	5.40	0%

Scenario Name: HHB-DE-5

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	3.76	3.76	0%	4.07	4.07	0%
Surface Runoff (in)	1.75	1.75	0%	5.53	5.53	0%	6.41	6.41	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	4.73	4.73	0%	5.40	5.40	0%

Scenario Name: HHB-DE-10

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	3.76	3.76	0%	4.07	4.07	0%
Surface Runoff (in)	1.75	1.75	0%	5.53	5.53	0%	6.41	6.41	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	4.73	4.73	0%	5.40	5.40	0%

Scenario Name: HHB-DE-15

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	3.76	3.76	0%	4.07	4.07	0%
Surface Runoff (in)	1.75	1.75	0%	5.53	5.53	0%	6.41	6.41	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	4.73	4.73	0%	5.40	5.40	0%

Scenario Name: HHB-DE-30

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	3.76	3.76	0%	4.07	4.07	0%
Surface Runoff (in)	1.75	1.75	0%	5.53	5.53	0%	6.41	6.41	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	4.73	4.73	0%	5.40	5.40	0%

Scenario Name: HHC-DD-1

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.23	1.23	0%	1.45	1.45	0%	1.46	1.46	0%
Surface Runoff (in)	2.23	2.23	0%	7.84	7.84	0%	9.02	9.02	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.81	1.81	0%	5.14	5.14	0%	5.81	5.81	0%

Scenario Name: HHC-DD-5

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.23	1.23	0%	1.45	1.45	0%	1.46	1.46	0%
Surface Runoff (in)	2.23	2.23	0%	7.84	7.84	0%	9.02	9.02	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.81	1.81	0%	5.14	5.14	0%	5.81	5.81	0%

Scenario Name: HHC-DD-10

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.23	1.23	0%	1.45	1.45	0%	1.46	1.46	0%
Surface Runoff (in)	2.23	2.23	0%	7.84	7.84	0%	9.02	9.02	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.81	1.81	0%	5.14	5.14	0%	5.81	5.81	0%

Scenario Name: HHC-DD-15

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.23	1.23	0%	1.45	1.45	0%	1.46	1.46	0%
Surface Runoff (in)	2.23	2.23	0%	7.84	7.84	0%	9.02	9.02	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.81	1.81	0%	5.14	5.14	0%	5.81	5.81	0%

Scenario Name: HHC-DD-30

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.23	1.23	0%	1.45	1.45	0%	1.46	1.46	0%
Surface Runoff (in)	2.23	2.23	0%	7.84	7.84	0%	9.02	9.02	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.81	1.81	0%	5.14	5.14	0%	5.81	5.81	0%

Scenario Name: HHC-EE-1

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.23	1.23	0%	1.45	1.45	0%	1.46	1.46	0%
Surface Runoff (in)	2.23	2.23	0%	7.84	7.84	0%	9.02	9.02	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.81	1.81	0%	5.14	5.14	0%	5.81	5.81	0%

Scenario Name: HHC-EE-5

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.23	1.23	0%	1.45	1.45	0%	1.46	1.46	0%
Surface Runoff (in)	2.23	2.23	0%	7.84	7.84	0%	9.02	9.02	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.81	1.81	0%	5.14	5.14	0%	5.81	5.81	0%

Scenario Name: HHC-EE-10

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.23	1.23	0%	1.45	1.45	0%	1.46	1.46	0%
Surface Runoff (in)	2.23	2.23	0%	7.84	7.84	0%	9.02	9.02	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.81	1.81	0%	5.14	5.14	0%	5.81	5.81	0%

Scenario Name: HHC-EE-15

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.23	1.23	0%	1.45	1.45	0%	1.46	1.46	0%
Surface Runoff (in)	2.23	2.23	0%	7.84	7.84	0%	9.02	9.02	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.81	1.81	0%	5.14	5.14	0%	5.81	5.81	0%

Scenario Name: HHC-EE-30

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.23	1.23	0%	1.45	1.45	0%	1.46	1.46	0%
Surface Runoff (in)	2.23	2.23	0%	7.84	7.84	0%	9.02	9.02	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.81	1.81	0%	5.14	5.14	0%	5.81	5.81	0%

Scenario Name: HHC-DE-1

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.23	1.23	0%	1.45	1.45	0%	1.46	1.46	0%
Surface Runoff (in)	2.23	2.23	0%	7.84	7.84	0%	9.02	9.02	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.81	1.81	0%	5.14	5.14	0%	5.81	5.81	0%

Scenario Name: HHC-DE-5

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.23	1.23	0%	1.45	1.45	0%	1.46	1.46	0%
Surface Runoff (in)	2.23	2.23	0%	7.84	7.84	0%	9.02	9.02	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.81	1.81	0%	5.14	5.14	0%	5.81	5.81	0%

Scenario Name: HHC-DE-10

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.23	1.23	0%	1.45	1.45	0%	1.46	1.46	0%
Surface Runoff (in)	2.23	2.23	0%	7.84	7.84	0%	9.02	9.02	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.81	1.81	0%	5.14	5.14	0%	5.81	5.81	0%

Scenario Name: HHC-DE-15

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.23	1.23	0%	1.45	1.45	0%	1.46	1.46	0%
Surface Runoff (in)	2.23	2.23	0%	7.84	7.84	0%	9.02	9.02	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.81	1.81	0%	5.14	5.14	0%	5.81	5.81	0%

Scenario Name: HHC-DE-30

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.23	1.23	0%	1.45	1.45	0%	1.46	1.46	0%
Surface Runoff (in)	2.23	2.23	0%	7.84	7.84	0%	9.02	9.02	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	1.81	1.81	0%	5.14	5.14	0%	5.81	5.81	0%

Scenario Name: HLA-DD-1

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	4.56	4.56	0%	5.15	5.15	0%
Surface Runoff (in)	1.75	1.75	0%	4.73	4.73	0%	5.33	5.33	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	2.67	2.67	0%	3.01	3.01	0%

Scenario Name: HLA-DD-5

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	4.56	4.56	0%	5.15	5.15	0%
Surface Runoff (in)	1.75	1.75	0%	4.73	4.73	0%	5.33	5.33	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	2.67	2.67	0%	3.01	3.01	0%

Scenario Name: HLA-DD-10

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	4.56	4.56	0%	5.15	5.15	0%
Surface Runoff (in)	1.75	1.75	0%	4.73	4.73	0%	5.33	5.33	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	2.67	2.67	0%	3.01	3.01	0%

Scenario Name: HLA-DD-15

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	4.56	4.56	0%	5.15	5.15	0%
Surface Runoff (in)	1.75	1.75	0%	4.73	4.73	0%	5.33	5.33	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	2.67	2.67	0%	3.01	3.01	0%

Scenario Name: HLA-DD-30

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	4.56	4.56	0%	5.15	5.15	0%
Surface Runoff (in)	1.75	1.75	0%	4.73	4.73	0%	5.33	5.33	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	2.67	2.67	0%	3.01	3.01	0%

Scenario Name: HLA-EE-1

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	4.56	4.56	0%	5.15	5.15	0%
Surface Runoff (in)	1.75	1.75	0%	4.73	4.73	0%	5.33	5.33	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	2.67	2.67	0%	3.01	3.01	0%

Scenario Name: HLA-EE-5

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	4.56	4.56	0%	5.15	5.15	0%
Surface Runoff (in)	1.75	1.75	0%	4.73	4.73	0%	5.33	5.33	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	2.67	2.67	0%	3.01	3.01	0%

Scenario Name: HLA-EE-10

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	4.56	4.56	0%	5.15	5.15	0%
Surface Runoff (in)	1.75	1.75	0%	4.73	4.73	0%	5.33	5.33	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	2.67	2.67	0%	3.01	3.01	0%

Scenario Name: HLA-EE-15

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	4.56	4.56	0%	5.15	5.15	0%
Surface Runoff (in)	1.75	1.75	0%	4.73	4.73	0%	5.33	5.33	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	2.67	2.67	0%	3.01	3.01	0%

Scenario Name: HLA-EE-30

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	4.56	4.56	0%	5.15	5.15	0%
Surface Runoff (in)	1.75	1.75	0%	4.73	4.73	0%	5.33	5.33	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	2.67	2.67	0%	3.01	3.01	0%

Scenario Name: HLA-DE-1

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	4.56	4.56	0%	5.15	5.15	0%
Surface Runoff (in)	1.75	1.75	0%	4.73	4.73	0%	5.33	5.33	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	2.67	2.67	0%	3.01	3.01	0%

Scenario Name: HLA-DE-5

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	4.56	4.56	0%	5.15	5.15	0%
Surface Runoff (in)	1.75	1.75	0%	4.73	4.73	0%	5.33	5.33	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	2.67	2.67	0%	3.01	3.01	0%

Scenario Name: HLA-DE-10

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	4.56	4.56	0%	5.15	5.15	0%
Surface Runoff (in)	1.75	1.75	0%	4.73	4.73	0%	5.33	5.33	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	2.67	2.67	0%	3.01	3.01	0%

Scenario Name: HLA-DE-15

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	4.56	4.56	0%	5.15	5.15	0%
Surface Runoff (in)	1.75	1.75	0%	4.73	4.73	0%	5.33	5.33	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	2.67	2.67	0%	3.01	3.01	0%

Scenario Name: HLA-DE-30

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	4.56	4.56	0%	5.15	5.15	0%
Surface Runoff (in)	1.75	1.75	0%	4.73	4.73	0%	5.33	5.33	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	2.67	2.67	0%	3.01	3.01	0%

Scenario Name: HLB-DD-1

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	3.78	3.78	0%	4.09	4.09	0%
Surface Runoff (in)	1.75	1.75	0%	5.51	5.51	0%	6.39	6.39	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	4.67	4.67	0%	5.35	5.35	0%

Scenario Name: HLB-DD-5

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	3.78	3.78	0%	4.09	4.09	0%
Surface Runoff (in)	1.75	1.75	0%	5.51	5.51	0%	6.39	6.39	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	4.67	4.67	0%	5.35	5.35	0%

Scenario Name: HLB-DD-10

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	3.78	3.78	0%	4.09	4.09	0%
Surface Runoff (in)	1.75	1.75	0%	5.51	5.51	0%	6.39	6.39	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	4.67	4.67	0%	5.35	5.35	0%

Scenario Name: HLB-DD-15

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	3.78	3.78	0%	4.09	4.09	0%
Surface Runoff (in)	1.75	1.75	0%	5.51	5.51	0%	6.39	6.39	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	4.67	4.67	0%	5.35	5.35	0%

Scenario Name: HLB-DD-30

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	3.78	3.78	0%	4.09	4.09	0%
Surface Runoff (in)	1.75	1.75	0%	5.51	5.51	0%	6.39	6.39	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	4.67	4.67	0%	5.35	5.35	0%

Scenario Name: HLB-EE-1

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	3.78	3.78	0%	4.09	4.09	0%
Surface Runoff (in)	1.75	1.75	0%	5.51	5.51	0%	6.39	6.39	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	4.67	4.67	0%	5.35	5.35	0%

Scenario Name: HLB-EE-5

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	3.78	3.78	0%	4.09	4.09	0%
Surface Runoff (in)	1.75	1.75	0%	5.51	5.51	0%	6.39	6.39	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	4.67	4.67	0%	5.35	5.35	0%

Scenario Name: HLB-EE-10

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	3.78	3.78	0%	4.09	4.09	0%
Surface Runoff (in)	1.75	1.75	0%	5.51	5.51	0%	6.39	6.39	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	4.67	4.67	0%	5.35	5.35	0%

Scenario Name: HLB-EE-15

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	3.78	3.78	0%	4.09	4.09	0%
Surface Runoff (in)	1.75	1.75	0%	5.51	5.51	0%	6.39	6.39	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	4.67	4.67	0%	5.35	5.35	0%

Scenario Name: HLB-EE-30

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	3.78	3.78	0%	4.09	4.09	0%
Surface Runoff (in)	1.75	1.75	0%	5.51	5.51	0%	6.39	6.39	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	4.67	4.67	0%	5.35	5.35	0%

Scenario Name: HLB-DE-1

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	3.78	3.78	0%	4.09	4.09	0%
Surface Runoff (in)	1.75	1.75	0%	5.51	5.51	0%	6.39	6.39	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	4.67	4.67	0%	5.35	5.35	0%

Scenario Name: HLB-DE-5

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	3.78	3.78	0%	4.09	4.09	0%
Surface Runoff (in)	1.75	1.75	0%	5.51	5.51	0%	6.39	6.39	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	4.67	4.67	0%	5.35	5.35	0%

Scenario Name: HLB-DE-10

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	3.78	3.78	0%	4.09	4.09	0%
Surface Runoff (in)	1.75	1.75	0%	5.51	5.51	0%	6.39	6.39	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	4.67	4.67	0%	5.35	5.35	0%

Scenario Name: HLB-DE-15

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	3.78	3.78	0%	4.09	4.09	0%
Surface Runoff (in)	1.75	1.75	0%	5.51	5.51	0%	6.39	6.39	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	4.67	4.67	0%	5.35	5.35	0%

Scenario Name: HLB-DE-30

System Results	2-yr, 24-hr Design Storm			50-yr, 24-hr Design Storm			100-yr, 24-hr Design Storm		
	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.	Exist.	Prop	Exist. Vs. Prop.
Precipitation (in)	2.63	2.63	0%	5.75	5.75	0%	6.45	6.45	0%
Infiltration (in)	1.71	1.71	0%	3.78	3.78	0%	4.09	4.09	0%
Surface Runoff (in)	1.75	1.75	0%	5.51	5.51	0%	6.39	6.39	0%
Evaporation (in)	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0%
Peak Flows (cfs)	0.98	0.98	0%	4.67	4.67	0%	5.35	5.35	0%

Appendix C

Precipitation Frequency Data Low End

NOAA Atlas 14, Volume 6, Version 2 LOS ANGELES-U.S.C
Station ID: 97-0620
Location name: Los Angeles, California, USA*
Latitude: 34.0206°, Longitude: -118.2875°
Elevation:
Elevation (station metadata): 208 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.154** (0.129-0.186)	**0.194** (0.163-0.235)	**0.250** (0.208-0.303)	**0.297** (0.246-0.363)	**0.366** (0.292-0.463)	**0.422** (0.329-0.546)	**0.482** (0.366-0.640)	**0.547** (0.403-0.749)	**0.641** (0.452-0.918)	**0.719** (0.489-1.07)
10-min	**0.221** (0.185-0.267)	**0.279** (0.233-0.337)	**0.358** (0.299-0.434)	**0.426** (0.352-0.521)	**0.524** (0.418-0.664)	**0.604** (0.471-0.783)	**0.690** (0.524-0.918)	**0.784** (0.578-1.07)	**0.919** (0.648-1.32)	**1.03** (0.700-1.53)
15-min	**0.267** (0.224-0.323)	**0.337** (0.282-0.407)	**0.433** (0.361-0.525)	**0.515** (0.426-0.630)	**0.634** (0.505-0.803)	**0.731** (0.570-0.947)	**0.835** (0.634-1.11)	**0.948** (0.699-1.30)	**1.11** (0.784-1.59)	**1.25** (0.847-1.85)
30-min	**0.356** (0.298-0.430)	**0.449** (0.375-0.543)	**0.577** (0.481-0.699)	**0.687** (0.567-0.839)	**0.845** (0.674-1.07)	**0.974** (0.759-1.26)	**1.11** (0.845-1.48)	**1.26** (0.931-1.73)	**1.48** (1.04-2.12)	**1.66** (1.13-2.47)
60-min	**0.509** (0.426-0.615)	**0.642** (0.537-0.776)	**0.825** (0.688-1.00)	**0.982** (0.811-1.20)	**1.21** (0.963-1.53)	**1.39** (1.09-1.81)	**1.59** (1.21-2.12)	**1.81** (1.33-2.48)	**2.12** (1.49-3.03)	**2.37** (1.61-3.53)
2-hr	**0.726** (0.608-0.876)	**0.924** (0.773-1.12)	**1.20** (0.996-1.45)	**1.43** (1.18-1.74)	**1.75** (1.40-2.22)	**2.02** (1.57-2.61)	**2.30** (1.74-3.05)	**2.60** (1.91-3.56)	**3.03** (2.13-4.33)	**3.37** (2.29-5.01)
3-hr	**0.896** (0.750-1.08)	**1.15** (0.959-1.39)	**1.49** (1.24-1.80)	**1.78** (1.47-2.17)	**2.18** (1.74-2.77)	**2.51** (1.96-3.25)	**2.85** (2.17-3.79)	**3.22** (2.37-4.41)	**3.73** (2.63-5.35)	**4.15** (2.82-6.17)
6-hr	**1.24** (1.03-1.49)	**1.60** (1.34-1.93)	**2.08** (1.74-2.52)	**2.49** (2.05-3.04)	**3.05** (2.43-3.86)	**3.49** (2.72-4.53)	**3.95** (3.00-5.26)	**4.44** (3.27-6.08)	**5.12** (3.61-7.33)	**5.66** (3.85-8.40)
12-hr	**1.59** (1.33-1.92)	**2.08** (1.74-2.51)	**2.72** (2.27-3.29)	**3.24** (2.68-3.96)	**3.96** (3.16-5.02)	**4.52** (3.53-5.86)	**5.10** (3.87-6.78)	**5.69** (4.19-7.80)	**6.50** (4.59-9.31)	**7.14** (4.86-10.6)
24-hr	**2.00** (1.77-2.30)	**2.63** (2.33-3.04)	**3.46** (3.05-4.01)	**4.14** (3.62-4.83)	**5.05** (4.27-6.09)	**5.75** (4.76-7.08)	**6.45** (5.22-8.14)	**7.18** (5.65-9.30)	**8.15** (6.16-11.0)	**8.91** (6.51-12.4)
2-day	**2.44** (2.16-2.81)	**3.28** (2.90-3.79)	**4.37** (3.85-5.06)	**5.26** (4.59-6.13)	**6.44** (5.45-7.77)	**7.35** (6.09-9.05)	**8.26** (6.68-10.4)	**9.19** (7.24-11.9)	**10.4** (7.89-14.1)	**11.4** (8.33-15.9)
3-day	**2.76** (2.44-3.18)	**3.77** (3.33-4.35)	**5.09** (4.48-5.89)	**6.15** (5.38-7.18)	**7.59** (6.43-9.16)	**8.69** (7.21-10.7)	**9.81** (7.94-12.4)	**10.9** (8.62-14.2)	**12.5** (9.44-16.9)	**13.7** (9.99-19.1)
4-day	**2.99** (2.65-3.45)	**4.11** (3.64-4.75)	**5.58** (4.92-6.47)	**6.78** (5.93-7.92)	**8.41** (7.12-10.1)	**9.66** (8.01-11.9)	**10.9** (8.84-13.8)	**12.2** (9.63-15.9)	**14.0** (10.6-18.9)	**15.4** (11.2-21.5)
7-day	**3.46** (3.06-3.99)	**4.76** (4.21-5.50)	**6.48** (5.71-7.50)	**7.90** (6.91-9.22)	**9.85** (8.34-11.9)	**11.4** (9.43-14.0)	**12.9** (10.5-16.3)	**14.6** (11.5-18.9)	**16.8** (12.7-22.7)	**18.5** (13.5-25.9)
10-day	**3.74** (3.31-4.31)	**5.14** (4.54-5.93)	**7.01** (6.18-8.12)	**8.57** (7.50-10.0)	**10.7** (9.09-13.0)	**12.5** (10.3-15.3)	**14.2** (11.5-17.9)	**16.1** (12.7-20.8)	**18.7** (14.1-25.2)	**20.7** (15.1-28.9)
20-day	**4.46** (3.95-5.15)	**6.15** (5.43-7.10)	**8.45** (7.45-9.78)	**10.4** (9.09-12.1)	**13.2** (11.1-15.9)	**15.4** (12.8-19.0)	**17.7** (14.4-22.4)	**20.2** (15.9-26.2)	**23.8** (18.0-32.1)	**26.7** (19.5-37.2)
30-day	**5.23** (4.62-6.03)	**7.20** (6.36-8.32)	**9.94** (8.76-11.5)	**12.3** (10.7-14.3)	**15.6** (13.2-18.9)	**18.4** (15.2-22.6)	**21.3** (17.2-26.8)	**24.4** (19.2-31.6)	**28.9** (21.8-39.0)	**32.6** (23.8-45.5)
45-day	**6.13** (5.43-7.07)	**8.43** (7.45-9.74)	**11.7** (10.3-13.5)	**14.4** (12.6-16.8)	**18.5** (15.6-22.3)	**21.8** (18.0-26.8)	**25.3** (20.5-31.9)	**29.2** (23.0-37.8)	**34.7** (26.3-46.9)	**39.4** (28.8-55.0)
60-day	**7.02** (6.21-8.10)	**9.62** (8.50-11.1)	**13.3** (11.7-15.4)	**16.4** (14.4-19.2)	**21.1** (17.8-25.4)	**24.9** (20.6-30.6)	**29.0** (23.4-36.5)	**33.4** (26.3-43.3)	**39.9** (30.2-53.9)	**45.4** (33.1-63.3)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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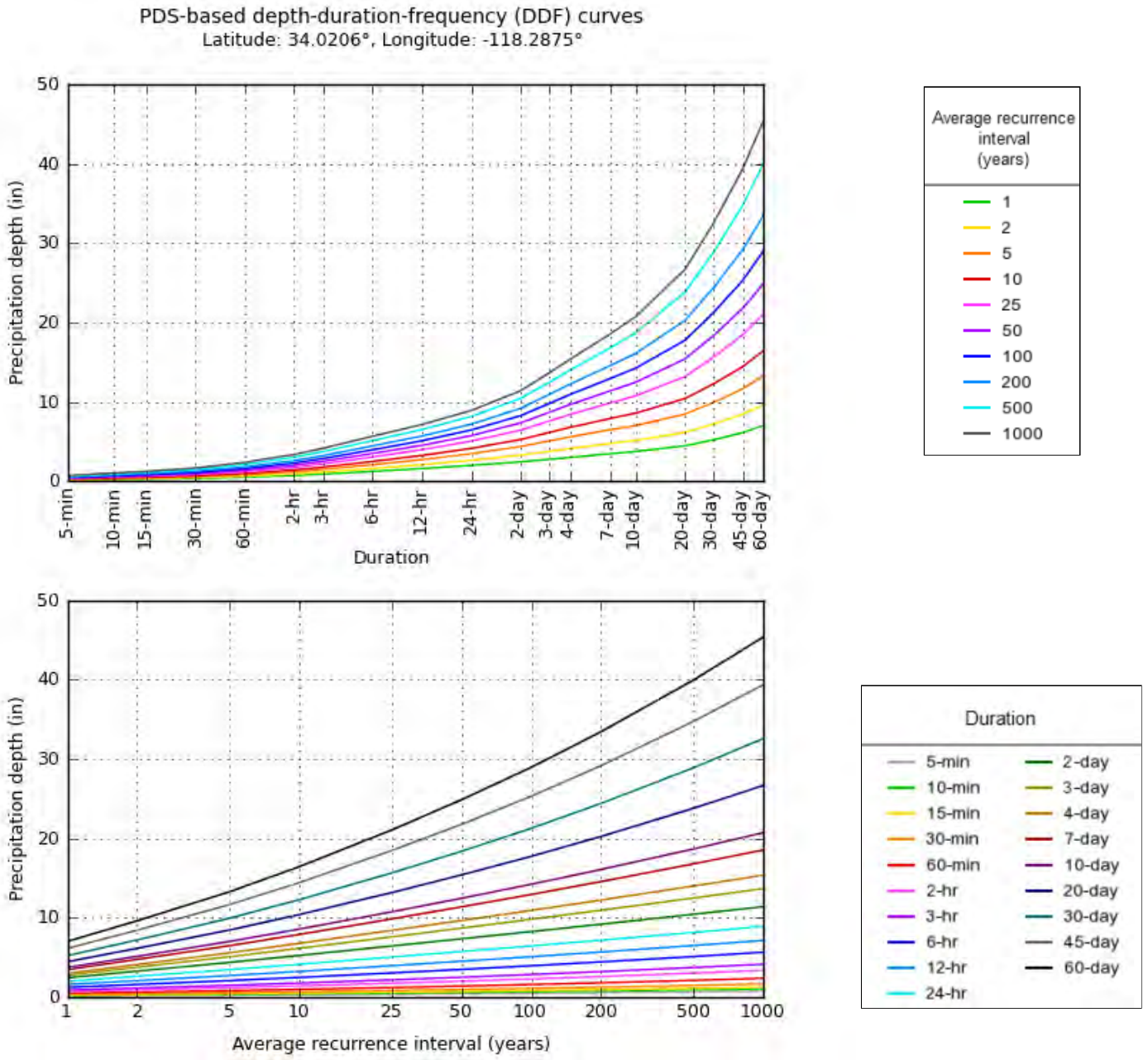
PF graphical



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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

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Precipitation Frequency Data Median

NOAA Atlas 14, Volume 6, Version 2 ASCOT RESERVOIR
Station ID: 97-0816
Location name: Los Angeles, California, USA*
Latitude: 34.0794°, Longitude: -118.1872°
Elevation:
Elevation (station metadata): 620 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.151** (0.126-0.182)	**0.198** (0.165-0.239)	**0.261** (0.217-0.316)	**0.313** (0.259-0.383)	**0.387** (0.309-0.491)	**0.446** (0.348-0.578)	**0.507** (0.385-0.675)	**0.572** (0.422-0.784)	**0.663** (0.467-0.949)	**0.735** (0.500-1.09)
10-min	**0.216** (0.181-0.261)	**0.283** (0.236-0.343)	**0.373** (0.311-0.453)	**0.449** (0.371-0.550)	**0.555** (0.442-0.704)	**0.639** (0.498-0.829)	**0.727** (0.552-0.967)	**0.820** (0.604-1.12)	**0.950** (0.670-1.36)	**1.05** (0.716-1.57)
15-min	**0.262** (0.219-0.316)	**0.342** (0.286-0.414)	**0.452** (0.376-0.548)	**0.543** (0.448-0.665)	**0.671** (0.535-0.851)	**0.773** (0.602-1.00)	**0.879** (0.667-1.17)	**0.992** (0.731-1.36)	**1.15** (0.810-1.65)	**1.27** (0.866-1.89)
30-min	**0.354** (0.296-0.428)	**0.464** (0.387-0.561)	**0.611** (0.509-0.742)	**0.735** (0.607-0.900)	**0.909** (0.724-1.15)	**1.05** (0.816-1.36)	**1.19** (0.904-1.58)	**1.34** (0.989-1.84)	**1.56** (1.10-2.23)	**1.73** (1.17-2.56)
60-min	**0.510** (0.427-0.616)	**0.668** (0.557-0.808)	**0.880** (0.733-1.07)	**1.06** (0.874-1.30)	**1.31** (1.04-1.66)	**1.51** (1.17-1.95)	**1.71** (1.30-2.28)	**1.93** (1.43-2.65)	**2.24** (1.58-3.21)	**2.48** (1.69-3.69)
2-hr	**0.741** (0.620-0.896)	**0.971** (0.811-1.17)	**1.28** (1.07-1.55)	**1.54** (1.27-1.89)	**1.90** (1.52-2.41)	**2.19** (1.71-2.84)	**2.49** (1.89-3.32)	**2.81** (2.07-3.85)	**3.26** (2.30-4.66)	**3.61** (2.46-5.37)
3-hr	**0.926** (0.774-1.12)	**1.21** (1.01-1.47)	**1.60** (1.33-1.94)	**1.93** (1.59-2.36)	**2.38** (1.90-3.02)	**2.74** (2.13-3.55)	**3.12** (2.37-4.15)	**3.51** (2.59-4.82)	**4.07** (2.87-5.83)	**4.51** (3.07-6.71)
6-hr	**1.31** (1.09-1.58)	**1.71** (1.43-2.07)	**2.26** (1.88-2.74)	**2.72** (2.24-3.32)	**3.36** (2.68-4.26)	**3.87** (3.01-5.02)	**4.40** (3.34-5.86)	**4.96** (3.66-6.80)	**5.75** (4.06-8.24)	**6.38** (4.34-9.48)
12-hr	**1.73** (1.45-2.09)	**2.27** (1.90-2.75)	**3.00** (2.50-3.64)	**3.62** (2.98-4.42)	**4.47** (3.56-5.67)	**5.15** (4.01-6.68)	**5.86** (4.45-7.80)	**6.61** (4.87-9.07)	**7.66** (5.41-11.0)	**8.51** (5.78-12.6)
24-hr	**2.30** (2.04-2.65)	**3.03** (2.68-3.50)	**4.01** (3.54-4.65)	**4.84** (4.23-5.65)	**6.00** (5.07-7.23)	**6.91** (5.73-8.51)	**7.87** (6.37-9.92)	**8.88** (6.99-11.5)	**10.3** (7.78-13.9)	**11.4** (8.35-16.0)
2-day	**2.91** (2.57-3.35)	**3.88** (3.43-4.47)	**5.19** (4.58-6.01)	**6.30** (5.51-7.35)	**7.86** (6.65-9.47)	**9.10** (7.54-11.2)	**10.4** (8.42-13.1)	**11.8** (9.28-15.3)	**13.7** (10.4-18.5)	**15.3** (11.2-21.3)
3-day	**3.26** (2.88-3.76)	**4.42** (3.90-5.10)	**6.00** (5.29-6.95)	**7.34** (6.42-8.57)	**9.25** (7.83-11.2)	**10.8** (8.94-13.3)	**12.4** (10.0-15.6)	**14.1** (11.1-18.3)	**16.6** (12.5-22.4)	**18.5** (13.5-25.9)
4-day	**3.53** (3.12-4.07)	**4.82** (4.26-5.56)	**6.60** (5.81-7.63)	**8.11** (7.09-9.46)	**10.3** (8.69-12.4)	**12.0** (9.96-14.8)	**13.9** (11.2-17.5)	**15.8** (12.5-20.5)	**18.7** (14.1-25.2)	**20.9** (15.3-29.2)
7-day	**4.10** (3.63-4.73)	**5.61** (4.96-6.47)	**7.69** (6.78-8.90)	**9.47** (8.28-11.1)	**12.0** (10.2-14.5)	**14.1** (11.7-17.3)	**16.3** (13.2-20.5)	**18.7** (14.7-24.2)	**22.1** (16.7-29.8)	**24.8** (18.1-34.7)
10-day	**4.44** (3.93-5.12)	**6.08** (5.38-7.02)	**8.35** (7.36-9.67)	**10.3** (9.01-12.0)	**13.1** (11.1-15.8)	**15.4** (12.8-19.0)	**17.8** (14.4-22.5)	**20.5** (16.1-26.5)	**24.3** (18.3-32.8)	**27.4** (20.0-38.2)
20-day	**5.26** (4.65-6.06)	**7.21** (6.38-8.33)	**9.96** (8.78-11.5)	**12.3** (10.8-14.4)	**15.8** (13.4-19.1)	**18.7** (15.5-23.0)	**21.7** (17.6-27.4)	**25.1** (19.8-32.5)	**30.0** (22.7-40.5)	**34.1** (24.9-47.6)
30-day	**6.18** (5.47-7.13)	**8.49** (7.51-9.81)	**11.8** (10.4-13.6)	**14.6** (12.8-17.1)	**18.8** (15.9-22.7)	**22.3** (18.5-27.5)	**26.1** (21.1-32.9)	**30.3** (23.8-39.2)	**36.4** (27.5-49.1)	**41.5** (30.3-57.9)
45-day	**7.23** (6.40-8.34)	**9.94** (8.79-11.5)	**13.8** (12.2-16.0)	**17.2** (15.0-20.1)	**22.2** (18.8-26.8)	**26.4** (21.9-32.5)	**31.0** (25.1-39.1)	**36.1** (28.4-46.8)	**43.6** (32.9-58.8)	**49.9** (36.5-69.7)
60-day	**8.28** (7.32-9.54)	**11.4** (10.1-13.1)	**15.8** (13.9-18.3)	**19.7** (17.2-23.0)	**25.5** (21.6-30.7)	**30.3** (25.1-37.3)	**35.6** (28.8-44.9)	**41.5** (32.7-53.8)	**50.1** (37.9-67.7)	**57.5** (42.0-80.3)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

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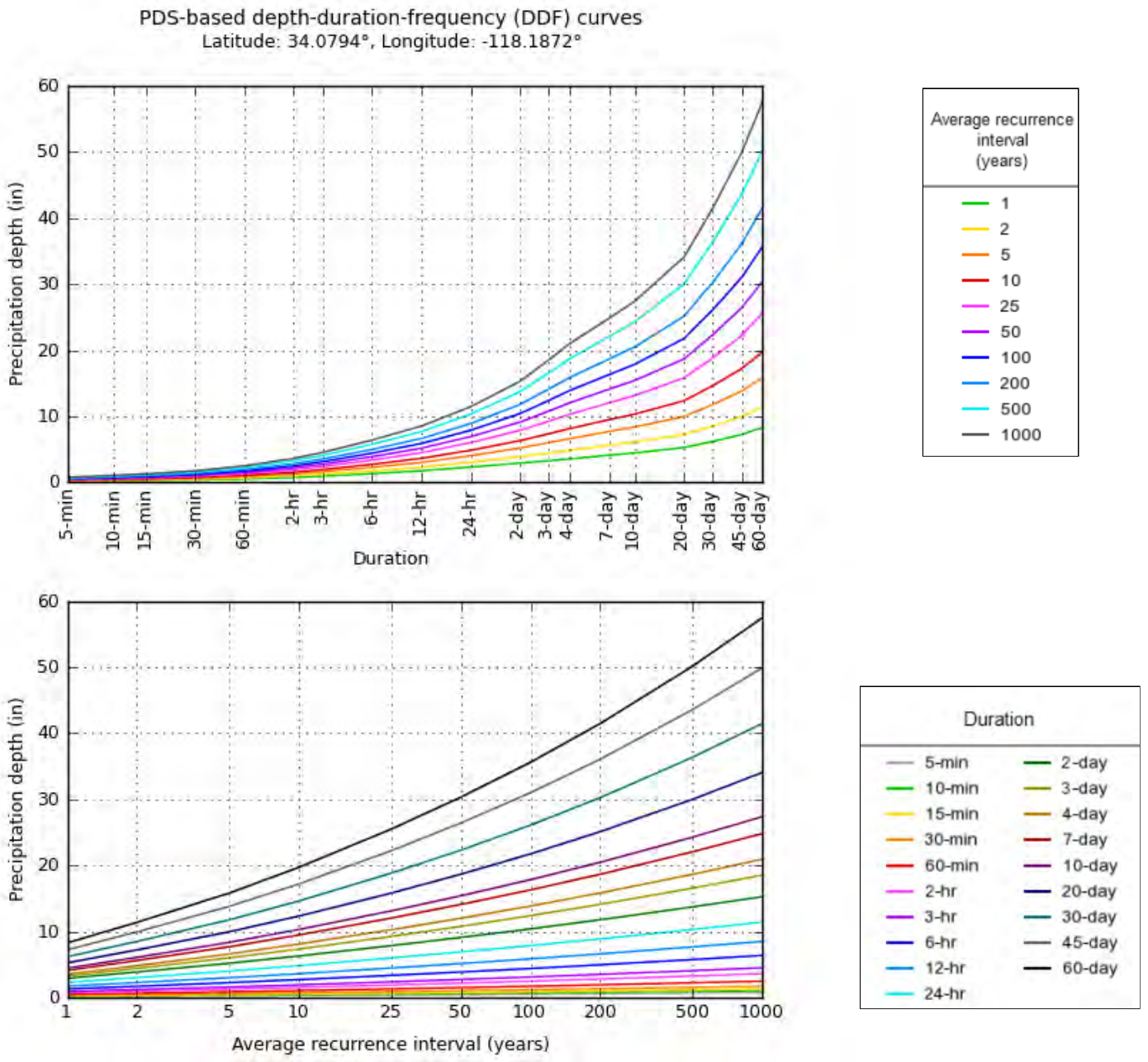
PF graphical



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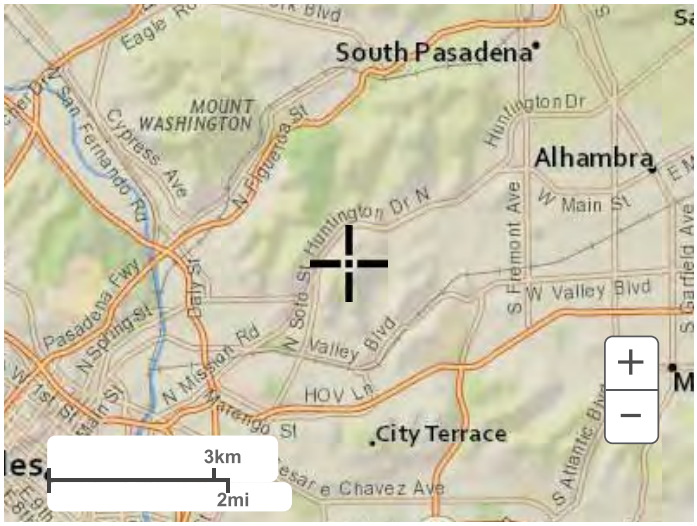
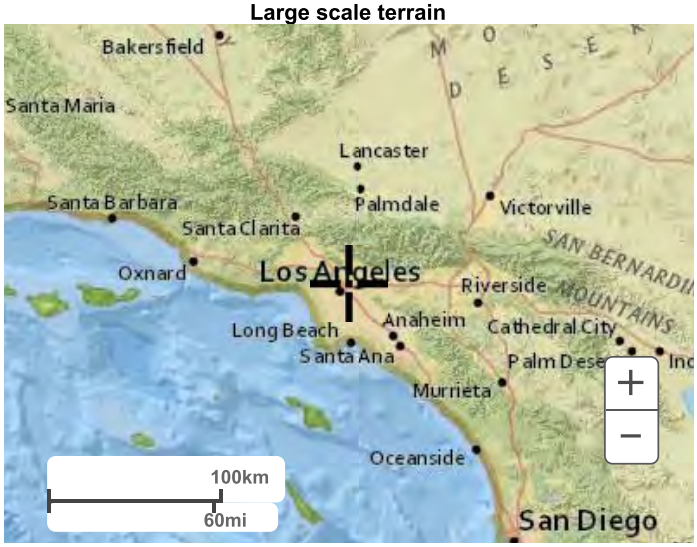
Small scale terrain

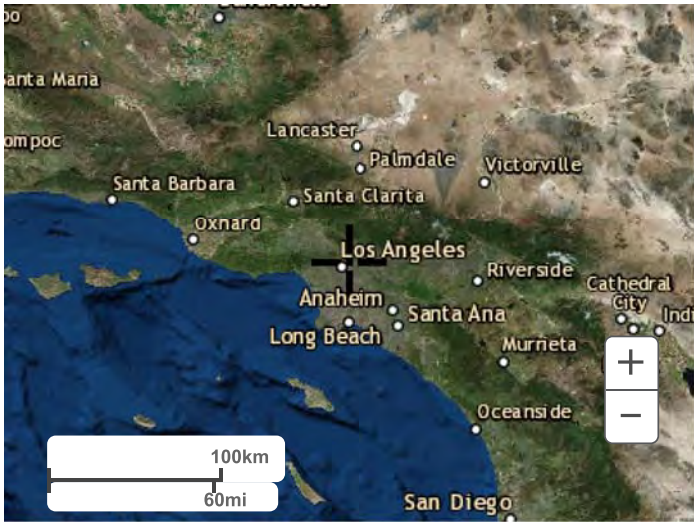


Large scale terrain



Large scale map

Large scale aerial



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Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

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Precipitation Frequency Data High End

NOAA Atlas 14, Volume 6, Version 2 NORTH HOLLYWOOD-LAKESIDE
Station ID: 97-0032
Location name: North Hollywood, California, USA*
Latitude: 34.1461°, Longitude: -118.3536°
Elevation:
Elevation (station metadata): 550 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.144** (0.120-0.174)	**0.202** (0.169-0.244)	**0.282** (0.235-0.342)	**0.349** (0.288-0.428)	**0.445** (0.355-0.565)	**0.523** (0.407-0.678)	**0.604** (0.459-0.805)	**0.692** (0.510-0.949)	**0.816** (0.575-1.17)	**0.917** (0.623-1.36)
10-min	**0.206** (0.172-0.249)	**0.290** (0.242-0.350)	**0.404** (0.336-0.490)	**0.501** (0.413-0.613)	**0.639** (0.508-0.810)	**0.749** (0.584-0.972)	**0.866** (0.657-1.15)	**0.992** (0.730-1.36)	**1.17** (0.824-1.68)	**1.31** (0.893-1.95)
15-min	**0.249** (0.208-0.301)	**0.350** (0.292-0.424)	**0.488** (0.407-0.593)	**0.606** (0.500-0.741)	**0.772** (0.615-0.979)	**0.906** (0.706-1.18)	**1.05** (0.795-1.40)	**1.20** (0.883-1.64)	**1.41** (0.997-2.03)	**1.59** (1.08-2.36)
30-min	**0.340** (0.284-0.411)	**0.478** (0.399-0.578)	**0.666** (0.555-0.809)	**0.826** (0.682-1.01)	**1.05** (0.839-1.34)	**1.24** (0.963-1.60)	**1.43** (1.09-1.90)	**1.64** (1.21-2.24)	**1.93** (1.36-2.77)	**2.17** (1.47-3.22)
60-min	**0.488** (0.408-0.590)	**0.685** (0.572-0.829)	**0.956** (0.795-1.16)	**1.19** (0.978-1.45)	**1.51** (1.20-1.92)	**1.77** (1.38-2.30)	**2.05** (1.56-2.73)	**2.35** (1.73-3.22)	**2.77** (1.95-3.97)	**3.11** (2.11-4.62)
2-hr	**0.715** (0.598-0.864)	**1.04** (0.867-1.26)	**1.46** (1.22-1.78)	**1.81** (1.50-2.22)	**2.29** (1.83-2.91)	**2.66** (2.07-3.45)	**3.04** (2.31-4.05)	**3.44** (2.53-4.71)	**3.98** (2.80-5.70)	**4.40** (2.99-6.54)
3-hr	**0.893** (0.746-1.08)	**1.32** (1.10-1.59)	**1.86** (1.55-2.26)	**2.30** (1.90-2.82)	**2.90** (2.31-3.68)	**3.35** (2.61-4.35)	**3.81** (2.89-5.08)	**4.28** (3.16-5.88)	**4.92** (3.47-7.05)	**5.41** (3.68-8.04)
6-hr	**1.27** (1.06-1.54)	**1.92** (1.60-2.32)	**2.73** (2.28-3.32)	**3.38** (2.79-4.14)	**4.24** (3.38-5.38)	**4.89** (3.81-6.34)	**5.53** (4.20-7.36)	**6.18** (4.55-8.47)	**7.03** (4.96-10.1)	**7.68** (5.22-11.4)
12-hr	**1.68** (1.40-2.03)	**2.62** (2.19-3.17)	**3.80** (3.16-4.61)	**4.72** (3.89-5.77)	**5.91** (4.71-7.50)	**6.80** (5.30-8.82)	**7.67** (5.82-10.2)	**8.54** (6.29-11.7)	**9.68** (6.82-13.9)	**10.5** (7.15-15.6)
24-hr	**2.18** (1.93-2.51)	**3.48** (3.08-4.02)	**5.12** (4.51-5.92)	**6.40** (5.60-7.46)	**8.07** (6.83-9.73)	**9.31** (7.72-11.5)	**10.5** (8.53-13.3)	**11.8** (9.26-15.2)	**13.4** (10.1-18.0)	**14.6** (10.6-20.4)
2-day	**2.73** (2.42-3.15)	**4.27** (3.78-4.93)	**6.30** (5.56-7.30)	**7.96** (6.97-9.29)	**10.2** (8.66-12.3)	**12.0** (9.95-14.8)	**13.8** (11.2-17.4)	**15.7** (12.3-20.3)	**18.3** (13.8-24.7)	**20.3** (14.8-28.3)
3-day	**3.11** (2.75-3.58)	**4.77** (4.22-5.51)	**7.06** (6.23-8.17)	**8.99** (7.87-10.5)	**11.7** (9.94-14.2)	**13.9** (11.6-17.2)	**16.3** (13.2-20.5)	**18.8** (14.8-24.3)	**22.3** (16.9-30.1)	**25.2** (18.4-35.2)
4-day	**3.38** (2.99-3.90)	**5.14** (4.55-5.93)	**7.61** (6.71-8.81)	**9.74** (8.52-11.4)	**12.8** (10.9-15.5)	**15.4** (12.7-18.9)	**18.1** (14.6-22.8)	**21.0** (16.6-27.3)	**25.3** (19.1-34.2)	**28.8** (21.1-40.3)
7-day	**3.92** (3.47-4.52)	**5.85** (5.17-6.75)	**8.62** (7.60-9.98)	**11.1** (9.68-12.9)	**14.7** (12.5-17.7)	**17.8** (14.7-21.9)	**21.1** (17.1-26.6)	**24.9** (19.6-32.2)	**30.4** (23.0-41.0)	**35.1** (25.6-49.0)
10-day	**4.23** (3.74-4.88)	**6.24** (5.52-7.21)	**9.18** (8.09-10.6)	**11.8** (10.3-13.8)	**15.7** (13.3-19.0)	**19.1** (15.8-23.5)	**22.7** (18.4-28.7)	**26.9** (21.2-34.8)	**33.1** (25.0-44.6)	**38.4** (28.0-53.6)
20-day	**5.07** (4.49-5.85)	**7.39** (6.53-8.53)	**10.8** (9.53-12.5)	**13.9** (12.1-16.2)	**18.5** (15.7-22.4)	**22.5** (18.7-27.7)	**27.0** (21.8-34.0)	**32.0** (25.2-41.5)	**39.6** (29.9-53.5)	**46.2** (33.7-64.5)
30-day	**5.99** (5.30-6.90)	**8.63** (7.63-9.96)	**12.5** (11.0-14.5)	**16.0** (14.0-18.7)	**21.4** (18.1-25.8)	**25.9** (21.5-31.9)	**31.0** (25.1-39.1)	**36.7** (28.9-47.6)	**45.4** (34.3-61.3)	**52.9** (38.6-73.9)
45-day	**7.11** (6.30-8.20)	**10.1** (8.92-11.6)	**14.5** (12.7-16.7)	**18.4** (16.1-21.4)	**24.3** (20.5-29.3)	**29.3** (24.3-36.1)	**34.9** (28.2-44.0)	**41.2** (32.4-53.4)	**50.7** (38.3-68.4)	**58.8** (42.9-82.2)
60-day	**8.23** (7.28-9.49)	**11.5** (10.1-13.3)	**16.2** (14.3-18.7)	**20.4** (17.9-23.8)	**26.7** (22.6-32.2)	**32.1** (26.6-39.5)	**38.0** (30.8-47.9)	**44.6** (35.1-57.9)	**54.5** (41.2-73.7)	**63.0** (46.0-88.1)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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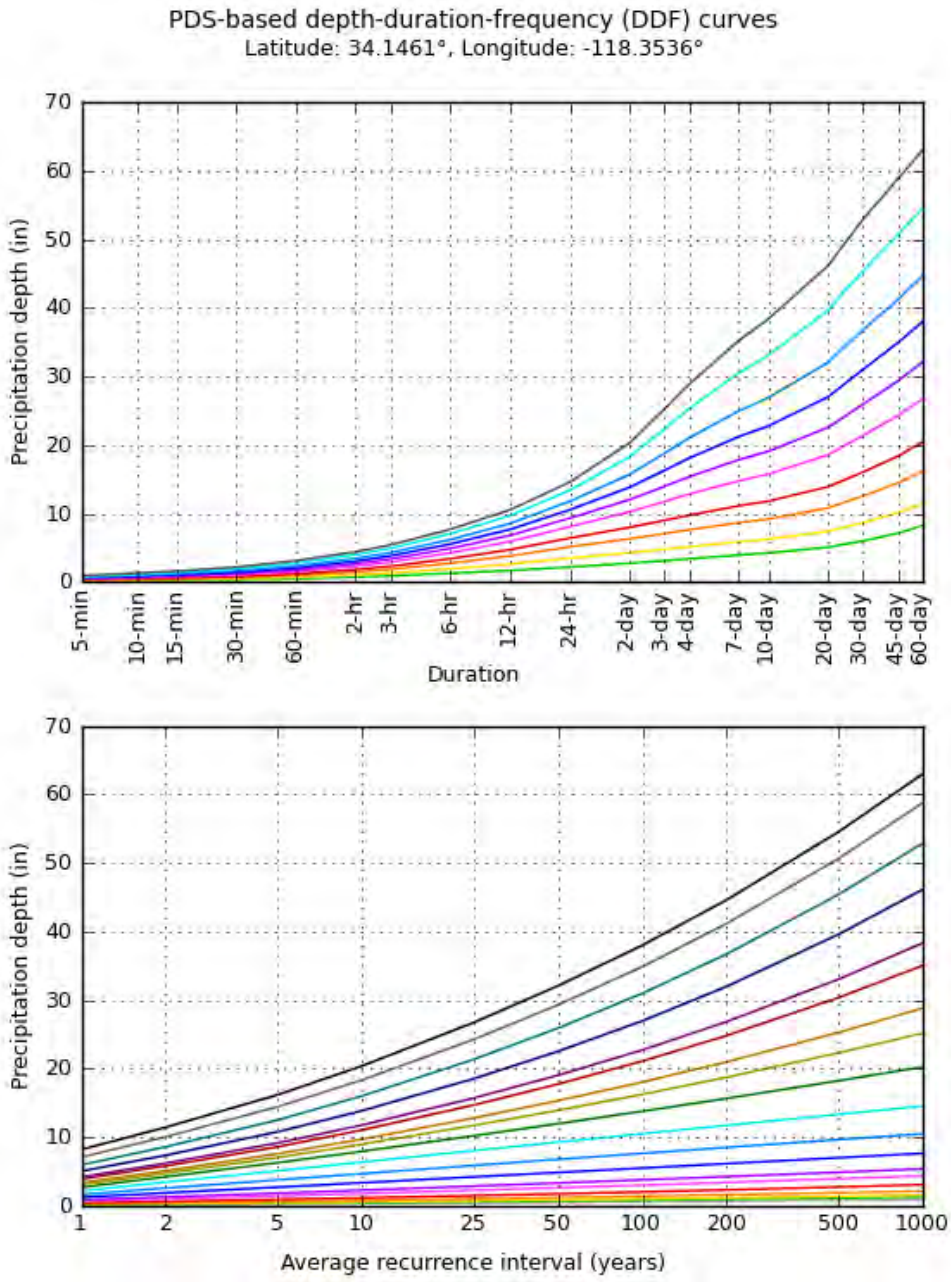
PF graphical



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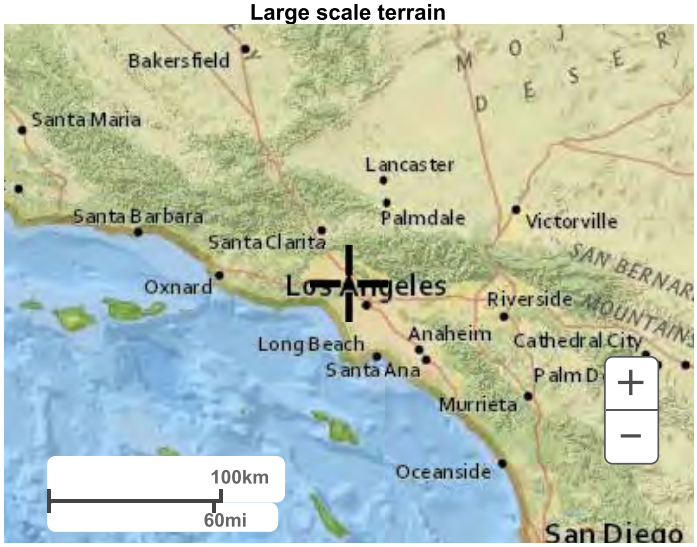
Maps & aerials

Small scale terrain

Large scale terrain



Large scale map

Large scale aerial

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Appendix D

Table D- 1 i-Tree Base Annual Flow Data

Date/Time	Precipitation (in/Unit Time)	Total Flow (ft³/Unit Time)	Base Flow (ft³/Unit Time)	Pervious Runoff (ft³/Unit Time)	Impervious Runoff (ft³/Unit Time)
Year 2005 Total	29.98	17109776278.1706	542547537.45634	7646846076.07599	8919805040.75561
Year 2006 Total	12.78	7390315796.70565	559405123.85017	3144734602.45738	3686175845.61071
Year 2007 Total	6.15	2379083899.91883	185483827.42868	616201689.91261	1577397981.11655
Year 2008 Total	15.19	9751574870.0708	506412269.61432	4735654235.29165	4509508390.76548
Year 2009 Total	10.23	5810275560.98712	537511753.80674	2364049240.45928	2908713995.88812
Year 2010 Total	24.91	15408788735.4618	566496246.45086	7513413383.51548	7328878131.64249
Year 2011 Total	12.92	7359843613.57359	568654739.54622	3140129808.19662	3651059089.02642
Year 2012 Total	8.67	4417180188.37113	577281304.75675	1511402335.36939	2328497019.70079

Table D- 2 i-Tree Base Annual Subsurface Hydrology Data

Date/Time	Precipitation (in/Unit Time)	Infiltration into Subsurface Zones (ft³/Unit Time)	Evapotranspiration from Root Zone (ft³/Unit Time)
Year 2005 Total	29.98	788979980.24062	150550296.36172
Year 2006 Total	12.78	271082103.0578	127730781.89122
Year 2007 Total	6.15	155072525.75426	115342171.45077
Year 2008 Total	15.19	293765619.60571	75339731.831
Year 2009 Total	10.23	233512980.43758	95836174.76318
Year 2010 Total	24.91	503488484.95624	121684824.26919
Year 2011 Total	12.92	276483051.76324	126945953.83246
Year 2012 Total	8.67	203561458.11471	110740363.44972

Table D- 3 i-Tree Base Annual Vegetation Hydrology Data

Date/Time	Precipitation (in/Unit Time)	Interception by Vegetation (ft^3/Unit Time)	Storage on Vegetation Surfaces (ft^3/Unit Time)	Throughfall from Vegetation (ft^3/Unit Time)	Evaporation from Vegetation Surfaces (ft^3/Unit Time)	Evapotranspiration from Root Zone (ft^3/Unit Time)
Year 2005 Total	29.98	24148033.70836	583637240.6693	542447432.83093	19445298.62	150550296.36172
Year 2006 Total	12.78	16705994.76398	561389091.41192	223048391.91908	17215675.91761	127730781.89122
Year 2007 Total	6.15	10964938.08062	395125001.1633	104417867.77922	10956612.82234	115342171.45077
Year 2008 Total	15.19	13184217.64077	534768803.09047	271803524.13959	13154565.03474	75339731.831
Year 2009 Total	10.23	11955508.666	455092549.67568	179979740.30653	11529364.05494	95836174.76318
Year 2010 Total	24.91	21443622.34212	920971431.48287	445902023.38601	21781045.60403	121684824.26919
Year 2011 Total	12.92	15625111.98917	682085760.83945	226748769.90932	15644689.76868	126945953.83246
Year 2012 Total	8.67	13004731.39237	602805787.53175	149663089.15308	12725656.55789	110740363.44972

Table D- 4 i-Tree Base Annual Water Quality Data

Date/Time	Precipitation (in/Unit Time)	Total Flow (ft^3/Unit Time)	Poll Tss Median (lb/Unit Time)	Poll Tss Mean (lb/Unit Time)	Poll BOD Median (lb/Unit Time)	Poll BOD Mean (lb/Unit Time)
Year 2005 Total	29.98	17109776278.1706	56365115687.4494	81083024435.0064	11893554600.1006	14582531725.3149
Year 2006 Total	12.78	7390315796.70565	23240971927.6831	33432877858.2944	4904057998.59741	6012802501.81674
Year 2007 Total	6.15	2379083899.91883	7463335618.92583	10736250052.448	1574832026.33706	1930881684.77518
Year 2008 Total	15.19	9751574870.0708	31455037246.0006	45249075184.7777	6637300515.58202	8137908101.44679
Year 2009 Total	10.23	5810275560.98712	17939648248.4688	25806756512.8308	3785430612.34811	4641266128.28684
Year 2010 Total	24.91	15408788735.4618	50498274978.8809	72643404403.128	10655600275.8981	13064693059.2559
Year 2011 Total	12.92	7359843613.57359	23105820505.7481	33238467736.1537	4875541604.11193	5977836470.72768
Year 2012 Total	8.67	4417180188.37113	13064582091.4688	18793818433.7633	2756746162.73818	3380010342.42459

Date/Time	Poll COD Median (lb/Unit Time)	Poll COD Mean (lb/Unit Time)	Poll TP Median (lb/Unit Time)	Poll TP Mean (lb/Unit Time)	Poll SolP Median (lb/Unit Time)	Poll SolP Mean (lb/Unit Time)
Year 2005 Total	46229732572.3132	54606929397.2691	267863526.48627	325779996.04026	106524885.54989	133414660.64242
Year 2006 Total	19061858886.3088	22516018743.8594	110447905.09864	134328534.45957	43923305.77904	55010731.45696
Year 2007 Total	6121304938.33359	7230535204.21662	35467966.77674	43136723.49049	14105021.8764	17665508.36395
Year 2008 Total	25798897697.0931	30473869431.7733	149483565.28368	181804327.87441	59447134.40172	74453201.87089
Year 2009 Total	14713801822.4306	17380060842.6371	85254473.82813	103687856.42881	33904286.63533	42462654.92142
Year 2010 Total	41417854159.8498	48923104496.293	239982680.70873	291870811.44255	95437126.10781	119528047.27369
Year 2011 Total	18951017321.0408	22385092808.1146	109805659.64406	133547417.22229	43667879.02525	54690843.37589
Year 2012 Total	10715353665.2422	12657060988.17	62086732.17508	75510878.78552	24690859.66342	30923500.59063

Date/Time	Poll TKN Median (lb/Unit Time)	Poll TKN Mean (lb/Unit Time)	Poll NO2_3 Median (lb/Unit Time)	Poll NO2_3 Mean (lb/Unit Time)	Poll Cu Median (lb/Unit Time)	Poll Cu Mean (lb/Unit Time)
Year 2005 Total	1520306601.24435	1789204348.44425	551240434.96852	680518270.02605	11479865.08789	13961998.45829
Year 2006 Total	626866382.93664	737740845.53679	227292452.17701	280597391.83479	4733481.37403	5756936.43146
Year 2007 Total	201304720.56526	236909605.41483	72990074.36553	90107817.3378	1520055.48185	1848716.49399
Year 2008 Total	848420114.36317	998481008.59145	307624478.16424	379769102.74561	6406438.91692	7791615.77217
Year 2009 Total	483876732.27159	569460400.75535	175446454.22718	216592406.20343	3653763.84999	4443765.73852
Year 2010 Total	1362063785.8844	1602972847.7272	493864001.47636	609685658.25781	10284970.33849	12508749.19171
Year 2011 Total	623221191.00778	733450916.32966	225970693.93493	278965718.07314	4705957.54995	5723461.11146
Year 2012 Total	352384079.17906	414710590.66138	127769206.41151	157733830.70189	2660859.28132	3236180.14247

Date/Time	Poll Pb Median (lb/Unit Time)	Poll Pb Mean (lb/Unit Time)	Poll Zn Median (lb/Unit Time)	Poll Zn Mean (lb/Unit Time)
Year 2005 Total	52435065.99497	69809995.84792	133414660.64242	167544006.46037
Year 2006 Total	21620498.08376	28784692.34056	55010731.45696	69083247.76993
Year 2007 Total	6942957.56927	9243582.96265	17665508.36395	22184602.16376
Year 2008 Total	29261839.73212	38958071.39879	74453201.87089	93499377.23106
Year 2009 Total	16688808.6604	22218827.56999	42462654.92142	53325201.29067
Year 2010 Total	46977304.89595	62543740.80285	119528047.27369	150104992.94035
Year 2011 Total	21494775.13409	28617307.43526	54690843.37589	68681523.22537
Year 2012 Total	12153655.66372	16180904.21782	30923500.59063	38834163.67222

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Water Resources + Green Infrastructure

POTENTIAL GREEN INFRASTRUCTURE FOR POST-CONSTRUCTION SIDEWALK REPAIR IMPACTS

Potential Green Infrastructure techniques are outlined below with microbasins, permeable sidewalks, and tree boxes being most applicable to the widest range of projects and bioretention and vegetated swales being options in specific instances with greater land and irrigation availability:

1. **Micro-Depressions, or Microbasins,** provide detention to offset peak flows during storms and provide infiltration into native soil thus mitigating peak flow and water quality impacts. They are small, relatively shallow basins. Microbasins could be placed on either side of the sidewalk. Microbasins can have berms built to increase detention. The microbasin bottoms should be vegetated and mulched to encourage infiltration. Microbasin berms, if used, should be covered with groundcover vegetation or riprap to prevent erosion due to heavy rainfall or water overflow. Irrigation may be needed to establish vegetation and may be required for long term health of vegetation other than very low-water use plants.

   Microbasins can be constructed in several variations, such as single-basin, connected spillways, curbed areas and more. See the City of Tucson *Water Harvesting Guidance Manual* for a full array of microbasin variations. Alternatively, microbasins may be rock lined (similar to very small infiltration basins) to encourage infiltration and reduce maintenance and irrigation requirements. Another variation is to plant proposed trees (depending on tree species) within slight depressions to encourage capture and infiltration of stormwater runoff.

   Occasional maintenance such as trash and sediment removal, pruning vegetation, or mulch replacement is required. They are appropriate for gently-sloped or nearly flat landscape such as along sidewalks and parking lot planters. They are typically not recommended for areas with high stormwater flow rates.

   Microbasins may not be appropriate for sites with soil hydrologic types C or D, which would impede infiltration, although we have seen good performance in amended clay soils in "backyard" landscape applications by individual homeowners. Hydrologic type C or D soils have low infiltration rates, meaning that water will enter the ground through the bottom of the feature at a slower rate. Hydrologic type A or B soils have a higher infiltration rate, and are ideal for effective stormwater BMPs. Note that with amended soils and minimal drainage area, micro-depressions may be workable in type C or D soils.

   Benefits: Easy to construct, can fit into any project parkway.
   Drawbacks: Less aesthetically pleasing, not appropriate for sites with moderate or high gradients, potential need for irrigation and occasional maintenance of vegetation (if included).

   Reference: City of Tucson *Water Harvesting Guidance Manual*, October 2005.

2. **Permeable Sidewalks** provide stormwater infiltration and treatment thereby reducing peak flows and improving water quality. Permeable sidewalks also provide water conservation benefits and may enhance the health of proposed and existing trees by providing additional infiltration of stormwater that would typically runoff off of permeable sidewalks. We suggest using porous concrete to match the existing sidewalk and it is commonly the least expensive of

the permeable pavement options appropriate for sidewalks. However, permeable pavers can be installed by contractors who are not specialized in porous concrete, which may be simpler to implement for this project with small amounts of distributed concrete pours. Permeable surfaces are not recommended for sidewalk slopes greater than three percent.

While vacuum sweeping is typically recommended for permeable pavement on an annual frequency or greater, sediment loads on the sidewalks would be anticipated to be significantly lower and the need for regular maintenance could be minimized. Further, even if the pavement were to clog partially or completely over time, it would allow time for the proposed tree canopy to catch up to the existing tree canopy and provide similar hydrologic and water quality benefits as the existing tree canopy. The effectiveness of permeable surfaces is very dependent on correct installation by the contractor

Benefits: Can be incorporated into the majority of repair projects.
Drawbacks: Cost, not appropriate for sidewalks with greater than 3% slopes, need for occasional maintenance by pressure washing or vacuum sweeping.

Reference: City of Los Angeles Department of Public Works, *Developed Best Management Practices Handbook, Low Impact Development Manual, Part B Planning Activities*, 5th Edition. May 9, 2016

3. **Tree Boxes, or Tree Filter Boxes,** could be used for planned or additional small trees if there is a storm drain system to tie into at the repair/tree planting location, which may be necessary for tree boxes in type C or D soils. Tree boxes provide detention and treatment similar to bioretention. They tie into the storm drain system and can treat high flow rates and provide high pollutant removal. Requires appropriate tree species selection from manufacturer's approved list and for project goals. Irrigation would be needed to establish trees and may be required for long-term health of the tree depending on the tree species selected. Irrigation could be performed with alligator bags in conjunction with watering already-planned trees. Occasional maintenance such as trash and sediment removal and mulch replacement would be necessary. The cost per volume of water storage may be higher than designed bioretention. However, the benefit is additional trees and a very small physical footprint.

   Benefits: Aesthetics, combines tree plantings and stormwater runoff/water quality mitigation, doesn't require a large space.
   Drawbacks: Requires tying into an existing storm drain system, cost, requires irrigation and occasional maintenance.

   References: Water Environment Research Foundation (www.werf.org); Ecological Landscape Alliance (www.ecolandscaping.org); Orange County Public Works *Technical Guidance Document for the Preparation of Conceptual/Preliminary and/or Project Water Quality Management Plans*, September 26, 2013.

4. **Bioretention** provides detention and treatment and can provide infiltration if it is unlined. They are shallow depressions that consist of a ponding area, mulch layer, planting soils (i.e., growing media), plantings, and, optionally, a subsurface gravel reservoir layer if the native soil hydrologic

type is type A or type B (sandier, high infiltration rate soils). Sites with soil hydrologic types C and D (more clay-rich, poorly draining soils) would require a subsurface gravel reservoir layer and an underdrain. Irrigation would be needed to establish vegetation and may be required long term health of low-water use plants during extended dry periods. Bioretention could be in the parkway, but may be an option for larger project areas or areas adjacent to parks or other City land and especially those adjacent to existing irrigation (preferably with available recycled water.). Required maintenance is minimal, only needing mulch replacements annually and trash removal as needed. Depending on vegetation, it may need pruning.

Benefits: Aesthetically pleasing, can be fitted into parkway.
Drawbacks: More complicated construction, especially if underdrain required, requires irrigation, and minimal maintenance (mulch replacement, trash removal as-needed, and possibly pruning).

Reference: City of Los Angeles Department of Public Works, *Developed Best Management Practices Handbook, Low Impact Development Manual, Part B Planning Activities*, 5th Edition. May 9, 2016

5. **Vegetated Swales** provide runoff infiltration and treatment via an open, shallow channel. Would have to be in the parkway (defined as the area between the sidewalk and the street curb). They are sloped with the landscape allowing water through the swale to run through. Irrigation would be needed to establish vegetation and may be required long term health of low-water use plants during extended dry periods. Would require occasional maintenance such as mulch replacement, trash and sediment removal, and depending on the vegetation, pruning. There would not be enough space in most project areas, but may be an option for larger project areas or areas adjacent to parks or other City land and especially those adjacent to existing irrigation (preferably with available recycled water.)

   Benefits: Aesthetically pleasing, easy to construct.
   Drawbacks: Requires more space than most residential parkways provide, requires irrigation and maintenance (mulch replacement, trash/sediment removal and pruning).

   Reference: City of Los Angeles Department of Public Works, *Developed Best Management Practices Handbook, Low Impact Development Manual, Part B Planning Activities*, 5th Edition. May 9, 2016

RECOMMENDED BMPS TO MINIMIZE EROSION, RUNOFF AND WATER QUALITY CONCERNS DURING CONSTRUCTION

The primary tool to minimize erosion, runoff, and water quality concerns during construction is the use of a checklist for potential construction impacts depending on the planned construction methods, location, and size of construction. The checklist will provide a matrix of techniques, equipment, and methodologies to minimize risks during construction, which is critical given that many of the projects will not require Construction General Permit (CGP) submittals on a stand-alone basis, although the overall construction will exceed the one-acre threshold on an annual basis.

The checklist would be similar to those proposed by other disciplines and is based on a Spill Prevention, Control and Countermeasures (SPCC) plan developed in Washington State for construction projects and modified from facility SPCC plans. This makes the format and procedures familiar to contractors since they use them in their facilities. If a more formal and extensive document is desired, it could be done later as additional phases of the EIR are underway or separately from the EIR.

The proposed checklist would cover all types of construction including Scenario 1 and Scenario 2. The difference would be a more extensive planning process required for Scenario 2 projects since they have greater risk for erosion, runoff, and water quality concerns. The contractor will not need to know if they fall into either category, just simply work through the checklist. Note that the referenced SPCC Plan for Construction is a single template used for simple maintenance projects to construction of new bridges and this flexibility would be built into our proposed checklist.

Reference: Washington State Department of Transportation, Spill Prevention, Control, and Countermeasures (SPCC) Plan for Construction, Template revised March 2016, https://www.wsdot.wa.gov/Environment/HazMat/SpillPrevention.htm.

While not comprehensive, the list below is indicative of the types of BMPs we anticipate recommending for construction-phase:

1. Storm drain inlet protection; *
2. Mulching (straw or wood) on slopes with exposed soil;
3. Avoid temporary restroom facilities located near storm drain inlets, receiving waters, or in an area that will collect water;
4. Sand bag, fiber roll, or silt fence barriers downslope of exposed soil to provide temporary sediment and storm water barrier; *
5. Cover and berm inactive stockpiles;
6. Install stabilized construction exits to remove sediment from trucks leaving construction sites.

*Any sediment accumulated by storm drain inlet protection and sand bag barriers should be properly disposed of to prevent sediment from entering the storm drain system or nearby channel.

Appendix J
Noise and Vibration Technical Reports

Appendix J1 **Field Photos and Construction Scenario 1 Noise Analysis**

Appendix J2 **Sidewalk Repair Program Noise and Vibration Technical Report**

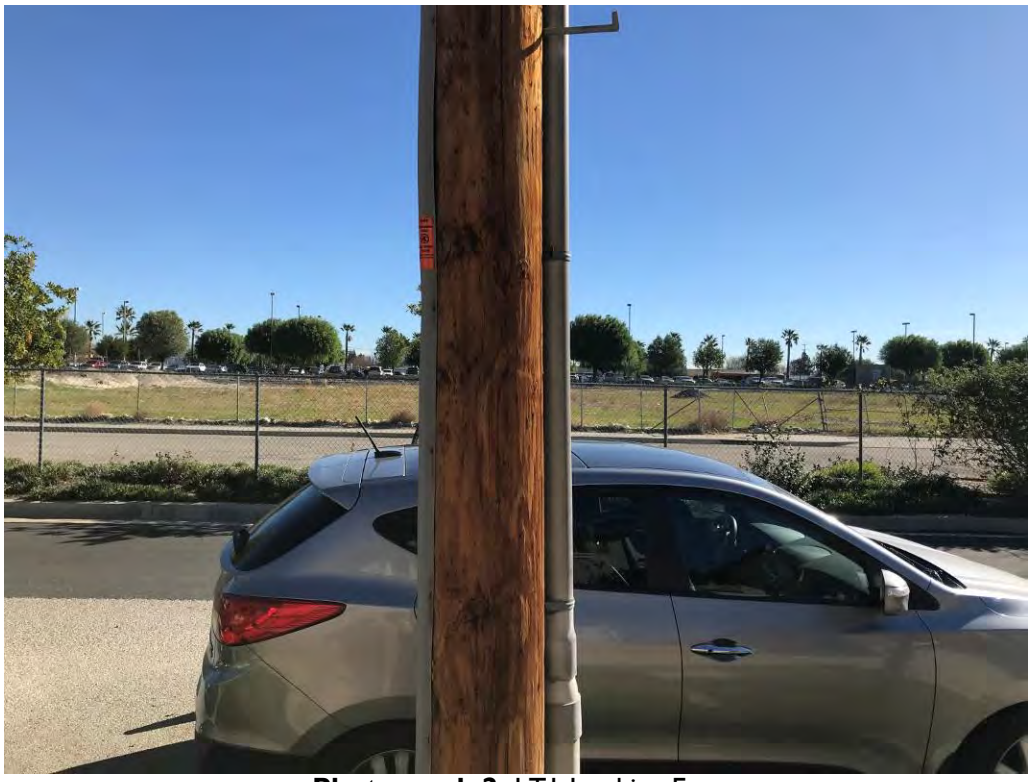
Appendix J3 **FHWA Infeasible Mitigations Table**

Appendix J1

Field Photos and Construction Scenario 1 Noise Analysis

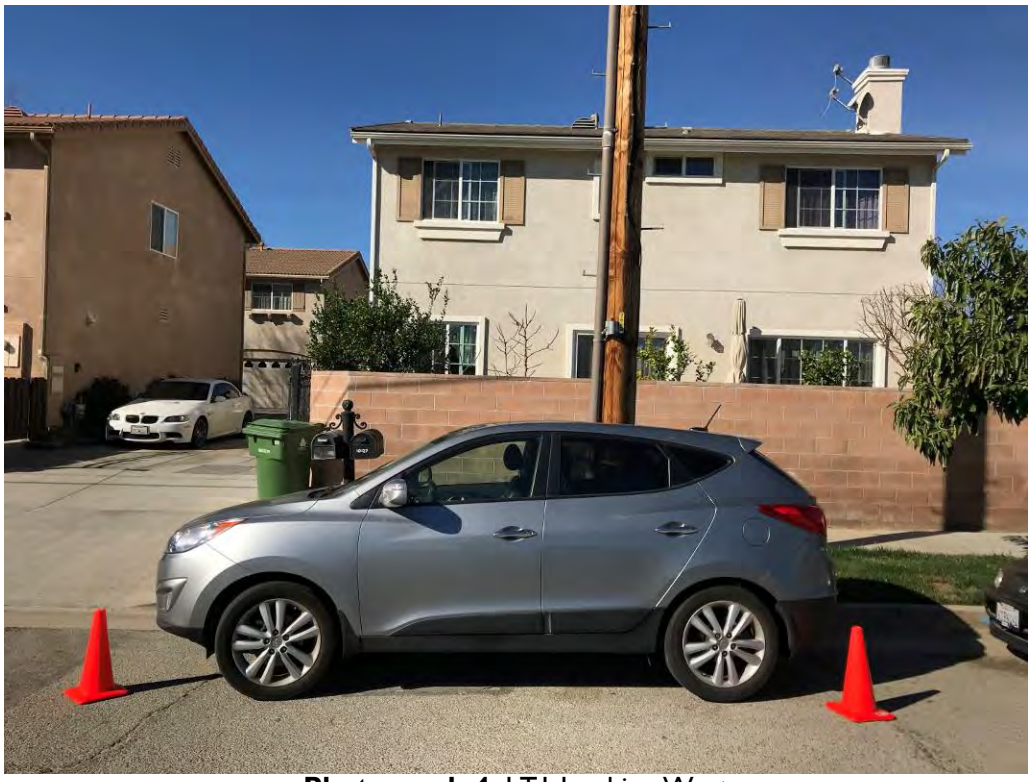
Part I: Field Photos

Photograph 1: LT1 Looking North



Photograph 2: LT1 Looking East

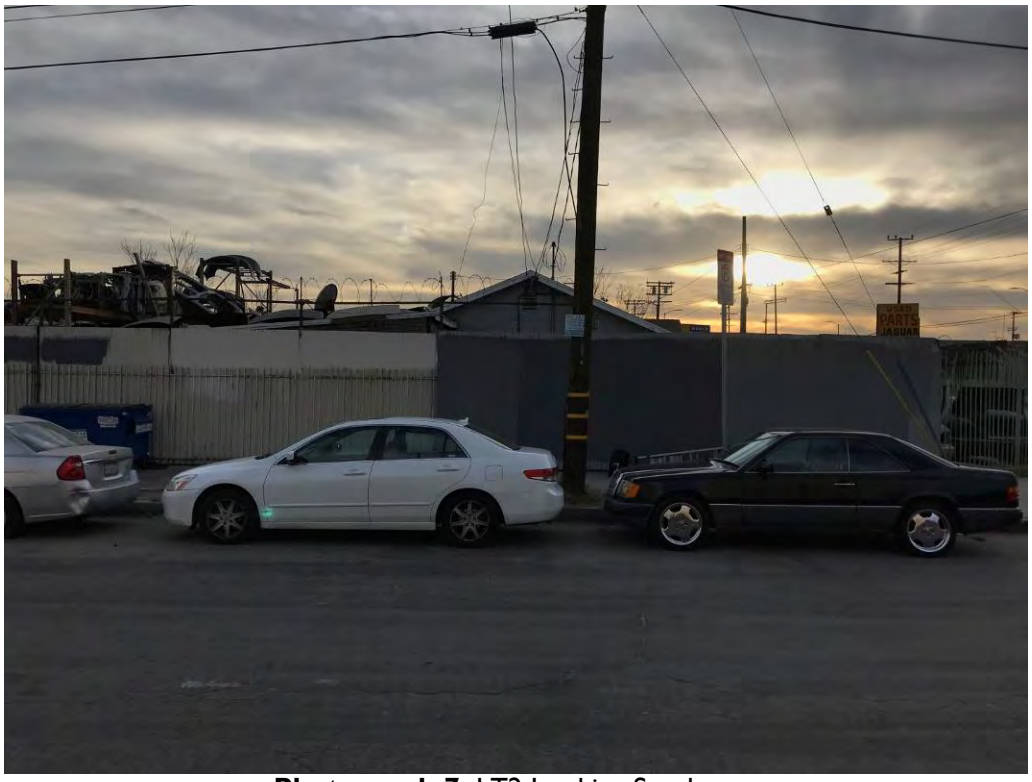
Photograph 3: LT1 Looking South



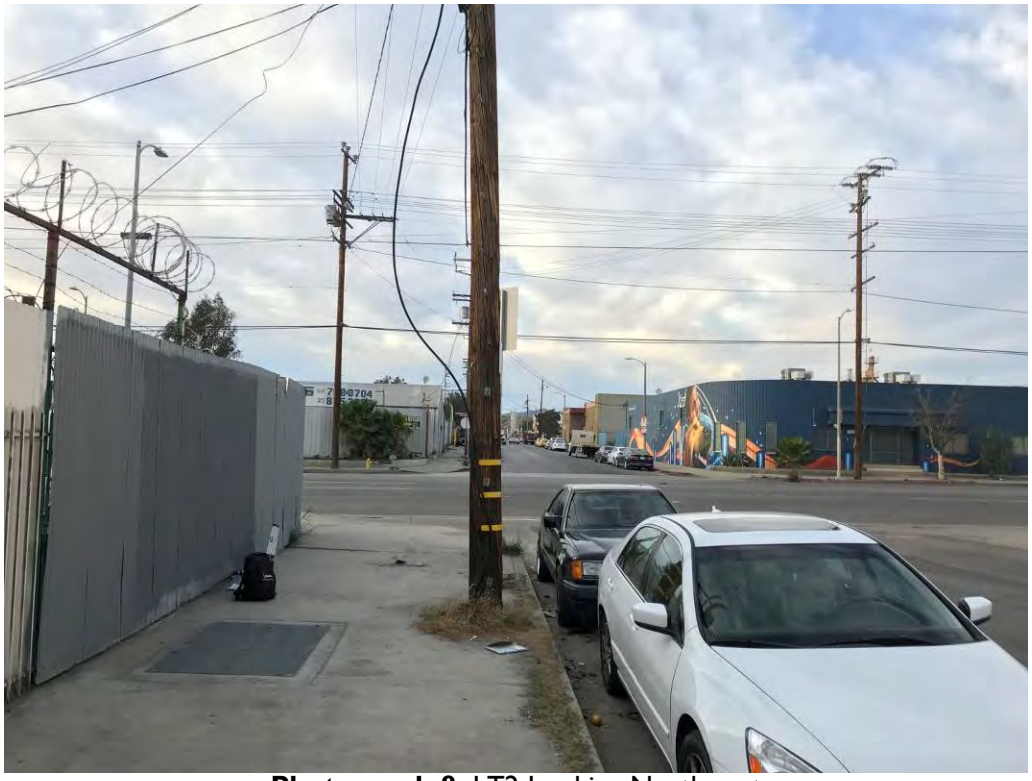
Photograph 4: LT1 Looking West

Photograph 5: LT2 Looking Northeast

Photograph 6: LT2 Looking Southeast



Photograph 7: LT2 Looking Southwest

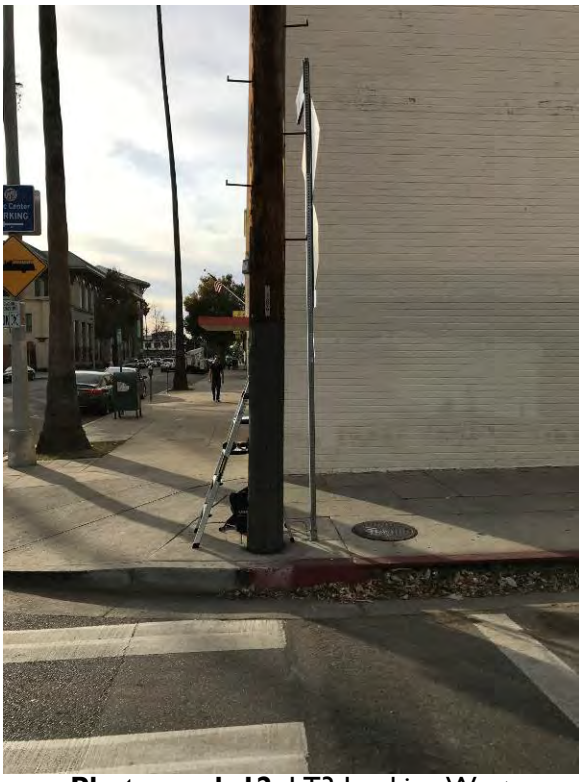


Photograph 8: LT2 Looking Northwest

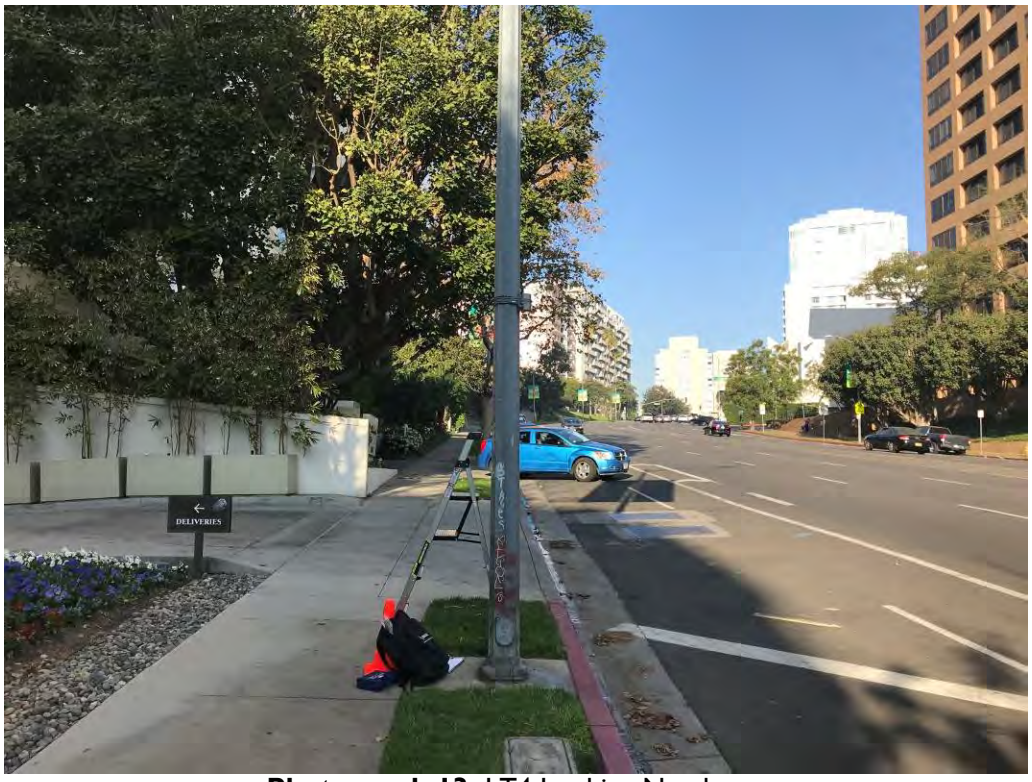
Photograph 9: LT3 Looking North

Photograph 10: LT3 Looking East

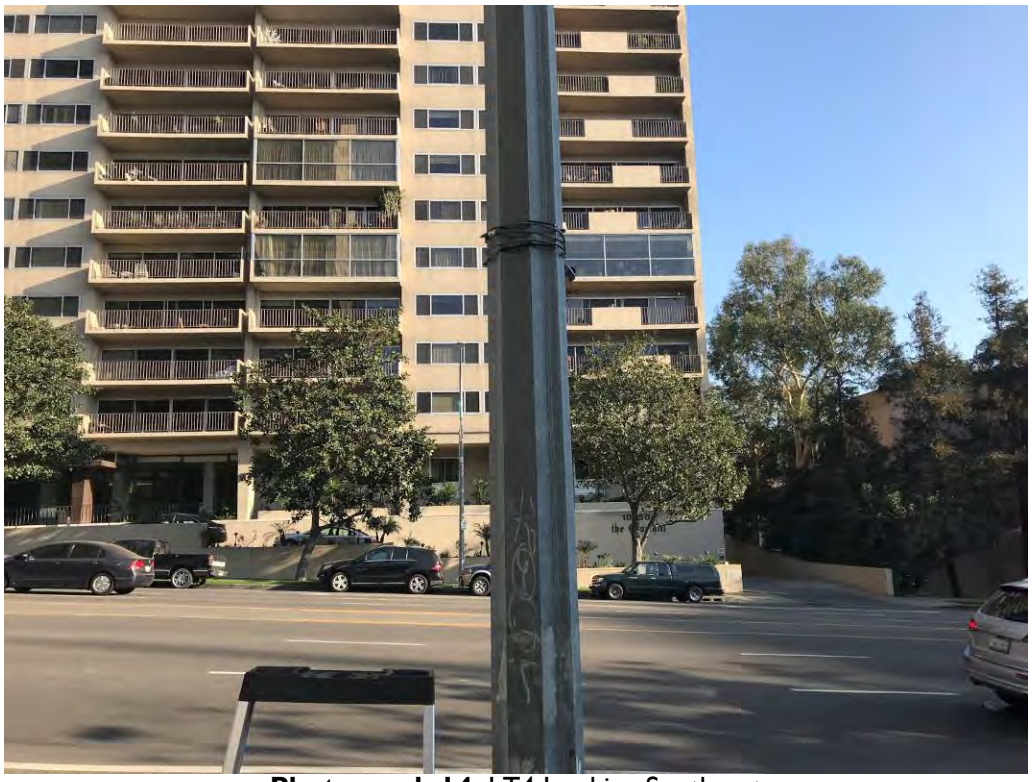
Photograph 11: LT3 Looking South



Photograph 12: LT3 Looking West



Photograph 13: LT4 Looking Northeast



Photograph 14: LT4 Looking Southeast

Photograph 15: LT4 Looking Southwest

Photograph 16: LT4 Looking Northwest

Photograph 17: LT5 Looking Northeast

Photograph 18: LT5 Looking Southeast

Photograph 19: LT5 Looking Southwest

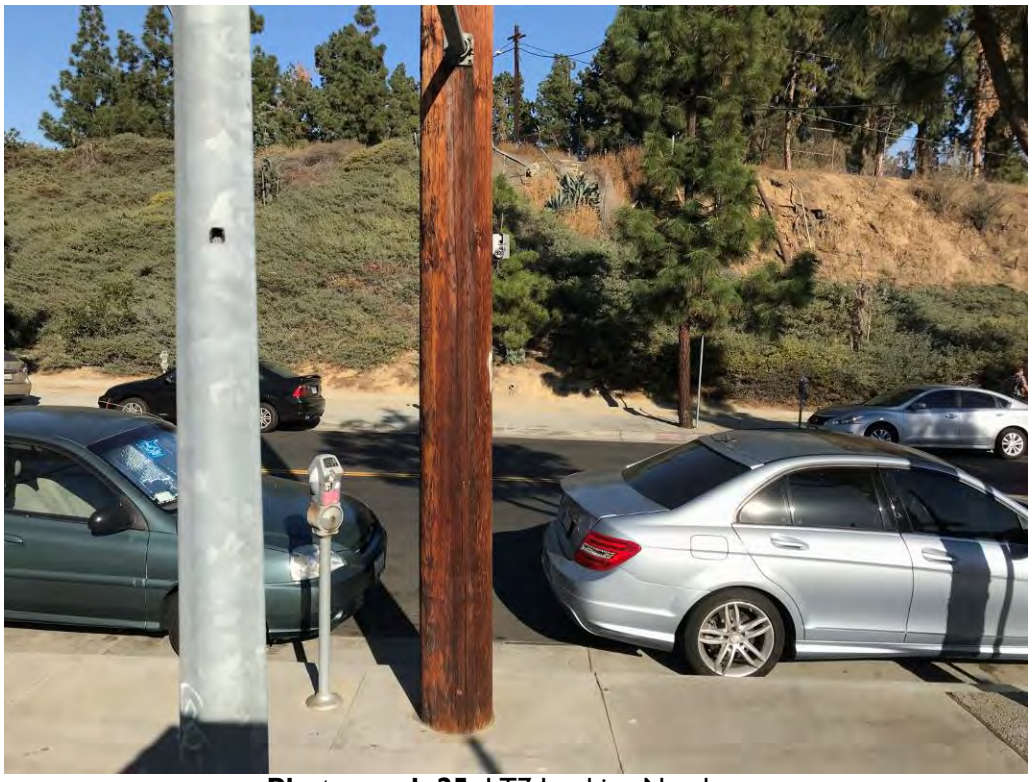
Photograph 20: LT5 Looking Northwest

Photograph 21: LT6 Looking North

Photograph 22: LT6 Looking East

Photograph 23: LT6 Looking South

Photograph 24: LT6 Looking West



Photograph 25: LT7 Looking Northeast

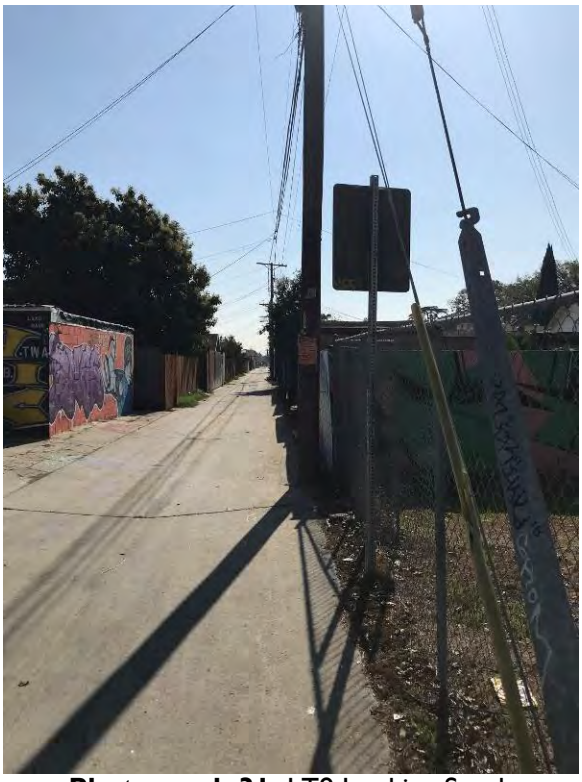
Photograph 26: LT7 Looking Southeast

Photograph 27: LT7 Looking Southwest

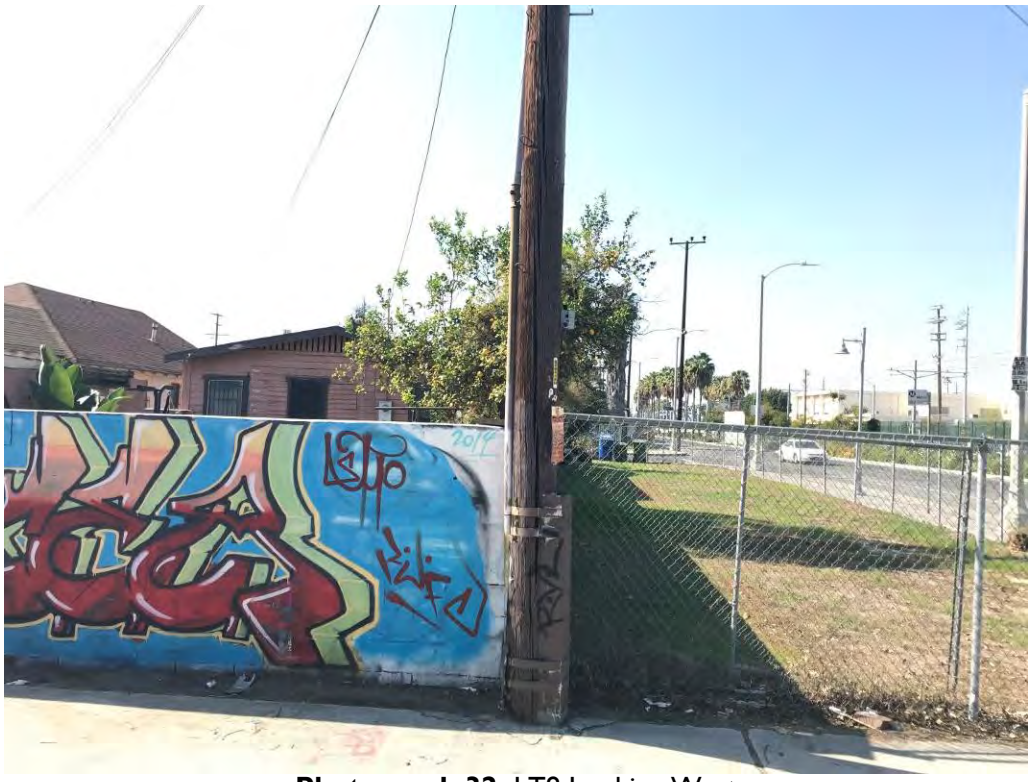
Photograph 28: LT7 Looking Northwest

Photograph 29: LT8 Looking North

Photograph 30: LT8 Looking East



Photograph 31: LT8 Looking South



Photograph 32: LT8 Looking West

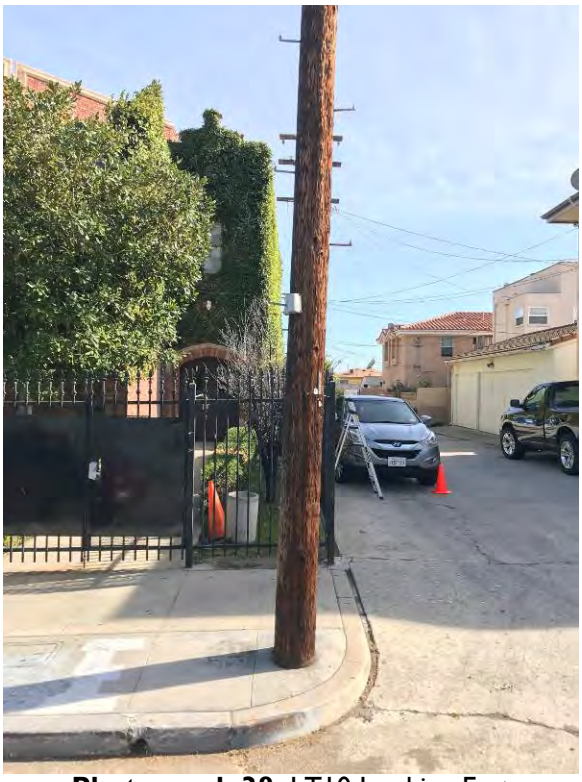
Photograph 33: LT9 Looking North

Photograph 34: LT9 Looking East

Photograph 35: LT9 Looking South

Photograph 36: LT9 Looking West

Photograph 37: LT10 Looking North



Photograph 38: LT10 Looking East

Photograph 39: LT10 Looking South

Photograph 40: LT10 Looking West

Part II: Construction Scenario 1 Noise Analysis

Table 1-1. Construction Noise Analysis - Scenario 1, Mobilization

Equipment		Typical Level @ 50', dBA[1]	Usage Factor[1,2]	Hours/ Day	Number of Units	Distance to Receiver, ft.	Hard or Soft Site?	Barrier Attenuation, dB	Leq(h), dBA	Lmax, dBA
Item No.	Description									
10	Compressor, Air	77.7	0.4	2	1	50	hard	0	68	78
21	Generator (<25KVA, VMS signs)	72.8	0.5	8	1	50	hard	0	70	73
	Combined Equipment								***72***	***78***

1. Obtained or estimated from FHWA Roadway Construction Noise Model (RCNM), Version 1.1, December 8, 2008.
2. Usage Factor = percentage of time equipment is operating in noisiest mode while in use

Table 1-2. Construction Noise Analysis - Scenario 1, Traffic Control, Demolition, and Removal

Equipment		Typical Level @ 50', dBA[1]	Usage Factor[1,2]	Hours/ Day	Number of Units	Distance to Receiver, ft.	Hard or Soft Site?	Barrier Attenuation, dB	Leq(h), dBA	Lmax, dBA
Item No.	Description									
25	Hammer, Jack	88.9	0.2	4	2	50	hard	0	82	89
48	Saw, Concrete	89.6	0.2	1	2	50	hard	0	77	90
71	Skid Steer Loader (based on backhoe)	77.6	0.4	4	1	50	hard	0	71	78
61	Truck, Dump	76.5	0.4	4	1	50	hard	0	70	77
60	Tractor	84	0.4	2	1	50	hard	0	74	84
	Combined Equipment								***84***	***90***

1. Obtained or estimated from FHWA Roadway Construction Noise Model (RCNM), Version 1.1, December 8, 2008.
2. Usage Factor = percentage of time equipment is operating in noisiest mode while in use

Table 1-3. Construction Noise Analysis - Scenario 1, Grading/formwork

Equipment		Typical Level @ 50', dBA[1]	Usage Factor[1,2]	Hours/ Day	Number of Units	Distance to Receiver, ft.	Hard or Soft Site?	Barrier Attenuation, dB	Leq(h), dBA	Lmax, dBA
Item No.	Description									
44	Roller	80	0.2	1.5	1	50	hard	0	66	80
62	Truck, Flat Bed	74.3	0.4	2	1	50	hard	0	64	74
	Combined Equipment								***68***	***80***

1. Obtained or estimated from FHWA Roadway Construction Noise Model (RCNM), Version 1.1, December 8, 2008.
2. Usage Factor = percentage of time equipment is operating in noisiest mode while in use

Table 1-4. Construction Noise Analysis - Scenario 1, Concrete Pouring

Equipment		Typical Level @ 50', dBA[1]	Usage Factor[1,2]	Hours/ Day	Number of Units	Distance to Receiver, ft.	Hard or Soft Site?	Barrier Attenuation, dB	Leq(h), dBA	Lmax, dBA
Item No.	Description									
31	Mixer, Concrete (or concrete mixer truck)	78.8	0.4	6	1	50	hard	0	74	79
32	Mixer, Concrete Vibratory	80	0.2	2	2	50	hard	0	70	80
	Combined Equipment								***75***	***80***

1. Obtained or estimated from FHWA Roadway Construction Noise Model (RCNM), Version 1.1, December 8, 2008.
2. Usage Factor = percentage of time equipment is operating in noisiest mode while in use

Table 1-5. Construction Noise Analysis - Scenario 1, Utility Adjustment

Equipment		Typical Level @ 50', dBA[1]	Usage Factor[1,2]	Hours/ Day	Number of Units	Distance to Receiver, ft.	Hard or Soft Site?	Barrier Attenuation, dB	Leq(h), dBA	Lmax, dBA
Item No.	Description									
73	Manhole Cutter (based on rock drill)	81	0.2	2	1	50	hard	0	68	81
48	Saw, Concrete	89.6	0.2	2	1	50	hard	0	77	90
31	Mixer, Concrete (or concrete mixer truck)	78.8	0.4	2	1	50	hard	0	69	79
	Combined Equipment								***78***	***90***

1. Obtained or estimated from FHWA Roadway Construction Noise Model (RCNM), Version 1.1, December 8, 2008.
2. Usage Factor = percentage of time equipment is operating in noisiest mode while in use

Table 1-6. Construction Noise Analysis - Scenario 1, Tree Removal

Equipment		Typical Level @ 50', dBA[1]	Usage Factor[1,2]	Hours/ Day	Number of Units	Distance to Receiver, ft.	Hard or Soft Site?	Barrier Attenuation, dB	Leq(h), dBA	Lmax, dBA
Item No.	Description									
62	Truck, Flat Bed	74.3	0.4	2	1	50	hard	0	64	74
46	Saw	76	0.2	2	1	50	hard	0	63	76
75	Wood Chipper (based on chain saw)	83.7	0.2	1	1	50	hard	0	68	84
76	Stump Grinder (based on chain saw)	83.7	0.2	4	1	50	hard	0	74	84
71	Skid Steer Loader (based on backhoe)	77.6	0.4	2	1	50	hard	0	68	78
	Combined Equipment								***76***	***84***

1. Obtained or estimated from FHWA Roadway Construction Noise Model (RCNM), Version 1.1, December 8, 2008.
2. Usage Factor = percentage of time equipment is operating in noisiest mode while in use

Table 1-7. Construction Noise Analysis - Scenario 1, Tree Planting

Equipment		Typical Level @ 50', dBA[1]	Usage Factor[1,2]	Hours/ Day	Number of Units	Distance to Receiver, ft.	Hard or Soft Site?	Barrier Attenuation, dB	Leq(h), dBA	Lmax, dBA
Item No.	Description									
62	Truck, Flat Bed	74.3	0.4	3	1	50	hard	0	66	74
74	Mini Excavator (based on backhoe)	77.6	0.4	2	1	50	hard	0	68	78
	Combined Equipment								***70***	***78***

1. Obtained or estimated from FHWA Roadway Construction Noise Model (RCNM), Version 1.1, December 8, 2008.
2. Usage Factor = percentage of time equipment is operating in noisiest mode while in use

Table 1-8. Construction Noise Analysis - Scenario 1, Cleanup

Equipment		Typical Level @ 50', dBA[1]	Usage Factor[1,2]	Hours/ Day	Number of Units	Distance to Receiver, ft.	Hard or Soft Site?	Barrier Attenuation, dB	Leq(h), dBA	Lmax, dBA
Item No.	Description									
63	Truck, Pickup	75	0.4	4	1	50	hard	0	68	75
	Combined Equipment								***68***	***75***

1. Obtained or estimated from FHWA Roadway Construction Noise Model (RCNM), Version 1.1, December 8, 2008.
2. Usage Factor = percentage of time equipment is operating in noisiest mode while in use

Part III: Construction Scenario 2 Noise Analysis

Table 2-1. Construction Noise Analysis - Scenario 2, Mobilization

Equipment		Typical Level @ 50', dBA[1]		Number of Units	Hours/ Day	Distance to Receiver, ft.	Hard or Soft Site?	Barrier Attenuation, dB	Leq(h), dBA	Lmax, dBA
Item No.	Description									
10	Compressor, Air	77.7	0.4	1	2	50	hard	0	68	78
21	Generator (<25KVA, VMS signs)	72.8	0.5	1	8	50	hard	0	70	73
	Combined Equipment								***72***	***78***

1. Obtained or estimated from FHWA Roadway Construction Noise Model (RCNM), Version 1.1, December 8, 2008.
2. Usage Factor = percentage of time equipment is operating in noisiest mode while in use

Table 2-2. Construction Noise Analysis - Scenario 2, Traffic Control, Demolition, and Removal

Equipment		Typical Level @ 50', dBA[1]		Number of Units	Hours/ Day	Distance to Receiver, ft.	Hard or Soft Site?	Barrier Attenuation, dB	Leq(h), dBA	Lmax, dBA
Item No.	Description									
25	Hammer, Jack	88.9	0.2	2	4	50	hard	0	82	89
48	Saw, Concrete	89.6	0.2	2	1	50	hard	0	77	90
71	Skid Steer Loader (based on backhoe)	77.6	0.4	1	4	50	hard	0	71	78
61	Truck, Dump	76.5	0.4	1	4	50	hard	0	70	77
60	Tractor	84	0.4	1	2	50	hard	0	74	84
	Combined Equipment								***84***	***90***

1. Obtained or estimated from FHWA Roadway Construction Noise Model (RCNM), Version 1.1, December 8, 2008.
2. Usage Factor = percentage of time equipment is operating in noisiest mode while in use

Table 2-3. Construction Noise Analysis - Scenario 2, Grading/Formwork

Equipment		Typical Level @ 50', dBA[1]	Usage Factor[1,2]	Number of Units	Hours/ Day	Distance to Receiver, ft.	Hard or Soft Site?	Barrier Attenuation, dB	Leq(h), dBA	Lmax, dBA
Item No.	Description									
44	Roller	80	0.2	1	1.5	50	hard	0	66	80
62	Truck, Flat Bed	74.3	0.4	1	2	50	hard	0	64	74
	Combined Equipment								***68***	***80***

1. Obtained or estimated from FHWA Roadway Construction Noise Model (RCNM), Version 1.1, December 8, 2008.
2. Usage Factor = percentage of time equipment is operating in noisiest mode while in use

Table 2-4. Construction Noise Analysis - Scenario 2, Concrete Pouring

Equipment		Typical Level @ 50', dBA[1]	Usage Factor[1,2]	Number of Units	Hours/ Day	Distance to Receiver, ft.	Hard or Soft Site?	Barrier Attenuation, dB	Leq(h), dBA	Lmax, dBA
Item No.	Description									
31	Mixer, Concrete (or concrete mixer truck)	78.8	0.4	1	6	50	hard	0	74	79
32	Mixer, Concrete Vibratory	80	0.2	2	2	50	hard	0	70	80
	Combined Equipment								***75***	***80***

1. Obtained or estimated from FHWA Roadway Construction Noise Model (RCNM), Version 1.1, December 8, 2008.
2. Usage Factor = percentage of time equipment is operating in noisiest mode while in use

Table 2-5. Construction Noise Analysis - Scenario 2, Utilities Relocation

Equipment		Typical Level @ 50', dBA[1]	Usage Factor[1,2]	Number of Units	Hours/ Day	Distance to Receiver, ft.	Hard or Soft Site?	Barrier Attenuation, dB	Leq(h), dBA	Lmax, dBA
Item No.	Description									
48	Saw, Concrete	89.6	0.2	1	4	50	hard	0	80	90
18	Excavator	80.7	0.4	1	6	50	hard	0	75	81
9	Compactor	83.2	0.2	1	2	50	hard	0	70	83
34	Paver	77.2	0.5	1	2	50	hard	0	68	77
	Combined Equipment								***82***	***90***

1. Obtained or estimated from FHWA Roadway Construction Noise Model (RCNM), Version 1.1, December 8, 2008.
2. Usage Factor = percentage of time equipment is operating in noisiest mode while in use

Table 2-6. Construction Noise Analysis - Scenario 2, Crosswalk Repaving

Equipment		Typical Level @ 50', dBA[1]	Usage Factor[1,2]	Number of Units	Hours/ Day	Distance to Receiver, ft.	Hard or Soft Site?	Barrier Attenuation, dB	Leq(h), dBA	Lmax, dBA
Item No.	Description									
48	Saw, Concrete	89.6	0.2	1	4	50	hard	0	80	90
71	Skid Steer Loader (based on backhoe)	77.6	0.4	1	2	50	hard	0	68	78
61	Truck, Dump	76.5	0.4	1	2	50	hard	0	67	77
34	Paver	77.2	0.5	1	2	50	hard	0	68	77
77	Line Striper (based on generator(<25KVA,	72.8	0.5	1	2	50	hard	0	64	73
	Combined Equipment								***80***	***90***

1. Obtained or estimated from FHWA Roadway Construction Noise Model (RCNM), Version 1.1, December 8, 2008.
2. Usage Factor = percentage of time equipment is operating in noisiest mode while in use

Table 2-7. Construction Noise Analysis - Scenario 2, Tree Removal

Equipment		Typical Level @ 50', dBA[1]	Usage Factor[1,2]	Number of Units	Hours/ Day	Distance to Receiver, ft.	Hard or Soft Site?	Barrier Attenuation, dB	Leq(h), dBA	Lmax, dBA
Item No.	Description									
62	Truck, Flat Bed	74.3	0.4	1	2	50	hard	0	64	74
46	Saw	76	0.2	1	2	50	hard	0	63	76
75	Wood Chipper (based on chain saw)	83.7	0.2	1	1	50	hard	0	68	84
76	Stump Grinder (based on chain saw)	83.7	0.2	1	4	50	hard	0	74	84
71	Skid Steer Loader (based on backhoe)	77.6	0.4	1	2	50	hard	0	68	78
	Combined Equipment								***76***	***84***

1. Obtained or estimated from FHWA Roadway Construction Noise Model (RCNM), Version 1.1, December 8, 2008.
2. Usage Factor = percentage of time equipment is operating in noisiest mode while in use

Table 2-8. Construction Noise Analysis - Scenario 2, Tree Planting

Equipment		Typical Level @ 50', dBA[1]	Usage Factor[1,2]	Number of Units	Hours/ Day	Distance to Receiver, ft.	Hard or Soft Site?	Barrier Attenuation, dB	Leq(h), dBA	Lmax, dBA
Item No.	Description									
62	Truck, Flat Bed	74.3	0.4	1	3	50	hard	0	66	74
74	Mini Excavator (based on backhoe)	77.6	0.4	1	2	50	hard	0	68	78
	Combined Equipment								***70***	***78***

1. Obtained or estimated from FHWA Roadway Construction Noise Model (RCNM), Version 1.1, December 8, 2008.
2. Usage Factor = percentage of time equipment is operating in noisiest mode while in use

Table 2-9. Construction Noise Analysis - Scenario 2, Cleanup

Equipment		Typical Level @ 50', dBA[1]	Usage Factor[1,2]	Number of Units	Hours/ Day	Distance to Receiver, ft.	Hard or Soft Site?	Barrier Attenuation, dB	Leq(h), dBA	Lmax, dBA
Item No.	Description									
63	Truck, Pickup	75	0.4	1	4	50	hard	0	68	75
	Combined Equipment								***68***	***75***

1. Obtained or estimated from FHWA Roadway Construction Noise Model (RCNM), Version 1.1, December 8, 2008.
2. Usage Factor = percentage of time equipment is operating in noisiest mode while in use

Table 2-10. Noise Contour Distances for Construction Scenario 2 Phases

Phase			Distance to L_{eq} Noise Contour, feet[1]				
#	Description	8-Hour L_{eq} @ 50'	60	65	70	75	80
1	Mobilization	72	196	110	62	35	20
2	Traffic Control, Demolition, and Removal	84	785	441	248	140	78
3	Grading/formwork	68	127	71	40	23	13
4	Concrete pouring	75	286	161	90	51	29
5	Utilities relocation	82	599	337	189	106	60
6	Crosswalk Repaving	80	525	295	166	93	53
7	Tree Removal	80	525	295	166	93	53
8	Tree Planting	70	156	88	49	28	16
9	Cleanup	68	126	71	40	22	13

1. Assumed hard site propogation (6 dB per doubling of distance)

Part IV: Construction Vibration Analysis

Table 3-1. Construction Vibration Analysis - Potential Building Damage

Vibration attenuation constant (n):	1.1							
		Building Category:	**Extremely fragile historic buildings, ruins, ancient monuments**	**Fragile buildings**	**Historic and some old buildings**	**Older residential structures**	**New residential structures**	**Modern industrial/ commercial buildings**
Equipment Item	**Reference PPV at 25 feet, in/s [a]**	**Vibration Damage Impact Criteria, PPV, in/s:**	**0.08**	**0.1**	**0.25**	**0.3**	**0.5**	**0.5**
Large bulldozer[b]	0.089	Distance to Impact Criteria, feet:	28	23	10	9	6	6
Jackhammer	0.035		12	10	5	4	3	3
Small bulldozer[c]	0.003		2	2	1	1	1	1

[a] Obtained from "Transportation and Construction Vibration Guidance Manual", Caltrans 2013

[b] Considered representative of other heavy earthmoving equipment such as excavators, graders, backhoes, etc.

[c] Considered representative of smaller equipment such as small skid steers and mini excavators.

Table 3-2. Construction Vibration Analysis - Potential Building Damage

Vibration attenuation constant (n):	1.1					
		Perceptibility:	**Barely perceptible**	**Distinctly perceptible**	**Strongly perceptible**	**Severe**
Equipment Item	**Reference PPV at 25 feet, in/s [a]**	**Vibration Damage Impact Criteria, PPV, in/s:**	**0.01**	**0.04**	**0.1**	**0.4**
Large bulldozer[b]	0.089	Distance to Impact Criteria, feet:	183	52	23	7
Jackhammer	0.035		79	23	10	3
Small bulldozer[c]	0.003		9	3	2	1

[a] Obtained from "Transportation and Construction Vibration Guidance Manual", Caltrans 2013

[b] Considered representative of other heavy earthmoving equipment such as excavators, graders, backhoes, etc.

[c] Considered representative of smaller equipment such as small skid steers and mini excavators.

Appendix J2

Sidewalk Repair Program Noise and Vibration Technical Report

Sidewalk Repair Program Noise and Vibration Technical Report

Prepared for:

City of Los Angeles
Department of Public Works
Bureau of Engineering

March 1, 2019

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APPENDICES

1. Introduction

The purpose of this report is to provide project-specific California Environmental Quality Act (CEQA) noise and vibration thresholds, as well as modeling results and analyses for the proposed City of Los Angeles (City) Sidewalk Repair Program (SRP). The SRP involves the adoption of proposed ordinances and policies related to the repair and upgrade of approximately 9,000 miles of sidewalk over 30 years. Two primary construction scenarios have been proposed for the project. Scenario 1 includes sidewalk repair, street tree removal/replacement and minor utility work expected to occur over 3 to 4 days per location. Scenario 2 includes sidewalk repair, street tree removal/replacement, major utility work and crosswalk repaving expected to occur from 5 to 30 days per location. For purposes of the CEQA analysis of the SRP, there is also a Scenario 3 which includes atypical conditions in Scenarios 1 and 2 that may result in potentially significant impacts for some environmental resources. All scenarios are discussed in detail in Chapter 2 of the *Sidewalk Repair Program Draft Environmental Impact Report*. Typical construction activities, for the proposed Project, include street tree removal, pavement breaking, clearing and concreting for sidewalk replacement. Due to the relatively short duration of each construction activity in any one particular location, the construction activities associated with the SRP can be considered temporary, mobile construction work. Scenarios 1 and 2 were modeled because the Project may consist of any combination of activities within these scenarios. Scenario 3 would also consist of any combination of activities of Scenarios 1 and 2, with the exception of the unique circumstances like, encounter of cultural resources, ground contamination, or other atypical site conditions.

Noise thresholds presented in the L.A. CEQA Thresholds Guide (2006) are more suitable for longer term, stationary projects such as development projects. The temporary, mobile nature of the construction activities associated with the SRP presents a unique environment where alternative technical and regulatory requirements should be considered.

This report presents recommended noise and vibration thresholds that can be applied specifically to sidewalk repair work. The noise thresholds will be based on the background research presented in Section 4. The vibration thresholds will be based on Caltrans vibration criteria for building damage and human annoyance. Modeling results and/or impact analyses are also discussed in this report.

A map of the project location is shown in Figure 1-1.

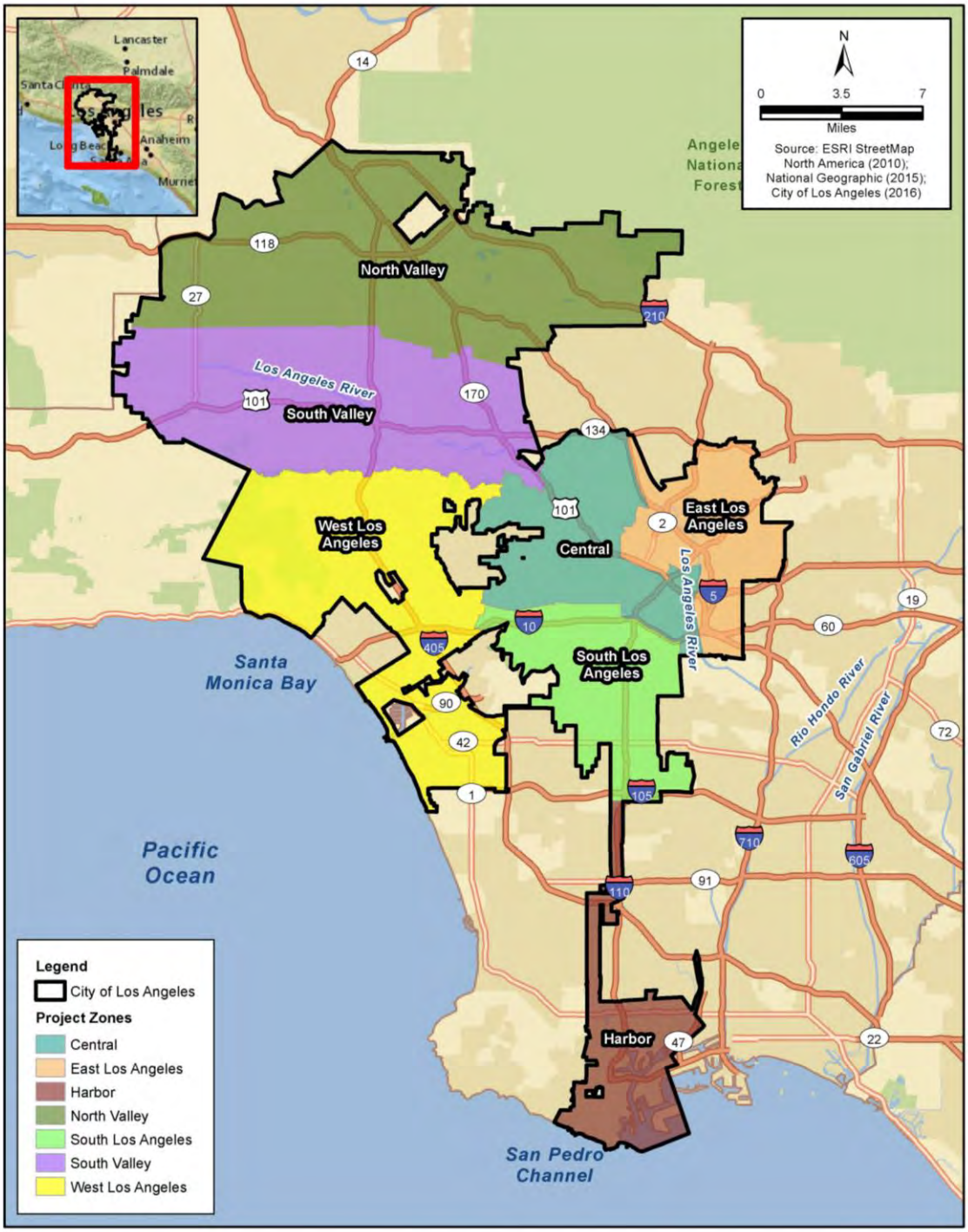

Figure 1-1 Project Location Map

2. Noise Fundamentals

Sound is most commonly experienced by people as pressure waves passing through air. These rapid fluctuations in air pressure are processed by the human auditory system to produce the sensation of sound. The rate at which sound pressure changes occur is called the frequency. Frequency is usually measured as the number of oscillations per second or Hertz (Hz). Frequencies that can be heard by a healthy human ear range from approximately 20 Hz to 20,000 Hz. Toward the lower end of this range are low-pitched sounds, including those that might be described as a “rumble” or “boom”. At the higher end of the range are high-pitched sounds that might be described as a “screech” or “hiss”.

Environmental noise generally derives, in part, from a combination of distant noise sources. Such sources may include common experiences such as distant traffic, wind in trees, and distant industrial or farming activities. These distant sources create a low-level "background noise" in which no particular individual source is identifiable. Background noise is often relatively constant from moment to moment, but varies slowly from hour to hour as natural forces change or as human activity follows its daily cycle.

Superimposed on this low-level, slowly varying background noise is a succession of identifiable noisy events of relatively brief duration. These events may include the passing of single-vehicles, aircraft flyovers, screeching of brakes, and other short-term events. The presence of these short-term events causes the noise level to fluctuate. Typical indoor and outdoor A-weighted sound levels are shown in Figure 2-1. Detailed acoustical and vibration definitions have been provided in Appendix A – Glossary of Acoustical Terms.

2.1 Absolute and Relative Noise Thresholds

There are two categories that define the implementation of objective regulations used in the determination of noise thresholds. These two categories are absolute and relative noise thresholds. The absolute noise threshold is a fixed sound pressure level that cannot be exceeded for a specific amount of time at a defined location. This threshold usually does not consider the environmental sound levels in the area which are not related to the activity in question. This can be achieved by either selecting a noise limit considerably above the ambient sound levels in the area or including a relative noise threshold when the ambient sound levels are high enough to impact a measurement of the individual source in question.

The relative noise threshold is a fixed noise limit made relative to the existing ambient sound level. It is intended to take into account the ambient sound levels in the area and set an allowable limit above the existing sound levels. Relative noise thresholds consider the contribution a noise source has on the existing noise environment and can be used to avoid imposing a regulatory noise limit which is quieter than existing sound levels. The relative noise threshold is usually written in the form of setting the noise limit at the existing ambient level plus X decibels.

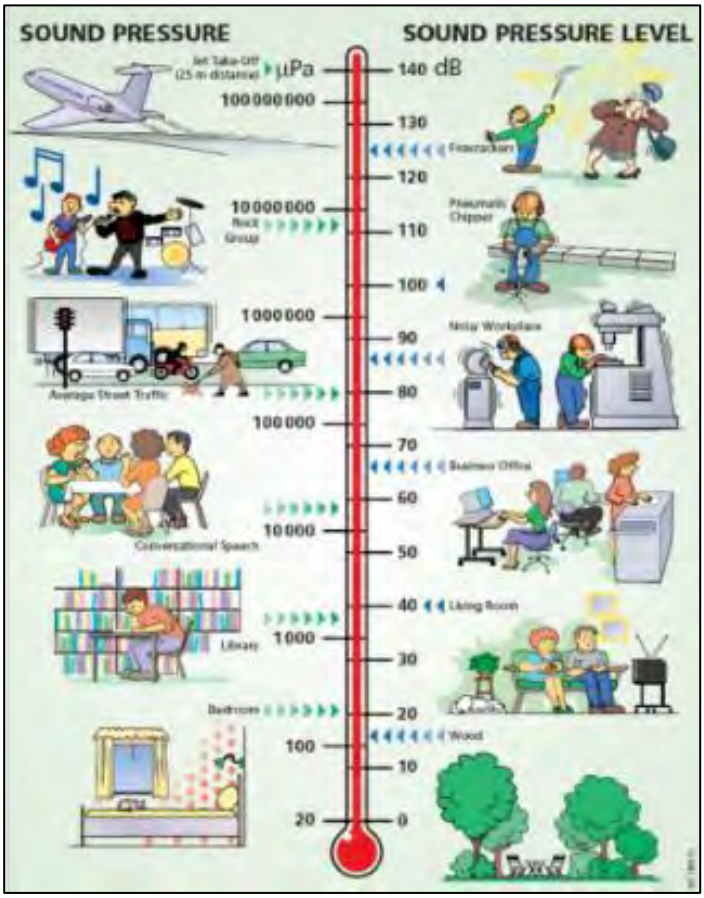

Figure 2-1 Typical Indoor and Outdoor Sound Pressure Levels (Brüel & Kjær, 2013)

3. Ground-Borne Vibration Fundamentals

Vibration is acoustic energy transmitted as waves through a solid medium, such as soil or concrete. Like noise, the rate at which pressure changes occur is called the frequency of the vibration, measured in Hz. Vibration may be the form of a single pulse of acoustical energy, a series of pulses, or a continuous oscillating motion.

Ground-borne vibration is the ground motion about some equilibrium position that can be described in terms of displacement, velocity, and acceleration. It can be generated by transportation systems, construction activities, and other large mechanical systems. Vibration motion moves in the X, Y and Z axes.

The way that vibration is transmitted through the ground depends on the soil type, the presence of rock formations or man-made features and the topography between the vibration source and the receptor location. As a general rule, vibration waves tend to dissipate and reduce in magnitude with distance from the source. Also, the high frequency vibrations are generally attenuated rapidly as they travel through the ground, so that the vibration received at locations distant from the source tends to be dominated by low-frequency vibration. The frequencies of ground-borne vibration most perceptible to humans are in the range from less than 1 Hz to 100 Hz.

When ground-borne vibration arrives at a building, a portion of the energy will be reflected or refracted away from the building, and a portion of the energy will typically continue to penetrate through the ground-building interface. However, once the vibration energy is in the building structure, it can be amplified by the resonance of the walls and floors. Occupants can perceive vibration as motion of the building elements (particularly floors) and also rattling of lightweight components, such as windows, shutters or items on shelves. At very high amplitudes (energy levels), low-frequency vibration can cause damage to buildings.

3.1 Vibration Descriptors

The following section describes the vibration descriptors that will be used in this study.

Peak Particle Velocity

The peak particle velocity (PPV) is defined as the maximum instantaneous velocity of a particle as it transmits a vibration wave. The accepted unit for measuring PPV is inches per second (ips). PPV is appropriate for evaluating the potential for building damage and for evaluating human response to ground-borne vibration. When reporting measured PPV values, a time interval is generally specified over which the PPV values were recorded during the measurement process.

Table 7-1 displays typical vibration exposure guidelines for various types of structures and Table 7-2 categorizes typical human responses to exposure of varying vibration levels.

4. Background Research

To derive noise thresholds applicable to the SRP, background research into various noise thresholds applicable to a wide range of projects are presented in this section.

4.1 Hearing Damage

Occupational Safety and Health Administration (OSHA) Hearing Conservation

The Occupational Safety and Health Administration (OSHA) has developed permissible noise exposure limits to protect workers from occupational noise. The noise limits vary with exposure time and are presented in Table 4-1. If noise exposures are above the levels shown in Table 4-1 for an employee, hearing protection is required to reduce noise exposure below these levels. These hearing thresholds could potentially be used as a basis for hearing protection of nearby residents during construction work associated with the SRP.

Table 4-1 OSHA Hearing Thresholds

Duration, Hours per Day	Sound Level, dBA
8	90
6	92
4	95
3	97
2	100
1 ½	102
1	105
½	110
¼ or less	115

U.S. Environmental Protection Agency (EPA)

The U.S. Environmental Protection Agency (EPA) document titled, “Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety” was developed as required by the Noise Control Act of 1972. Table 4-2 presents annual averages of the daily level over a period of 40 years to protect against long-term hearing loss and outdoor activity interference. However, the noise exposure levels shown here are applicable to long-term noise exposure and are not suited to the temporary, short-term, mobile nature of the SRP.

Table 4-2 EPA Noise Exposure Levels

Duration per Day	Sound Level, dBA
16-24 hours	70
8 hours	75
4 hours	80
3 hours	85
1 hours	90
½ hours	95
¼ hours	100
4 minutes	110
Less than 2 minutes	115

4.2 Speech Interference

The Caltrans Technical Noise Supplement provides numerical estimates of how noise levels effect speech communication as shown in Figure 4-1.. At approximately 5 feet, normal conversation is possible below 65 dBA. Above 65 dBA, more vocal effort is required during conversation. Increased vocal effort correlates with increasing levels of speech interference as conversation is altered, reduced or simplified to adapt to a noisy environment.

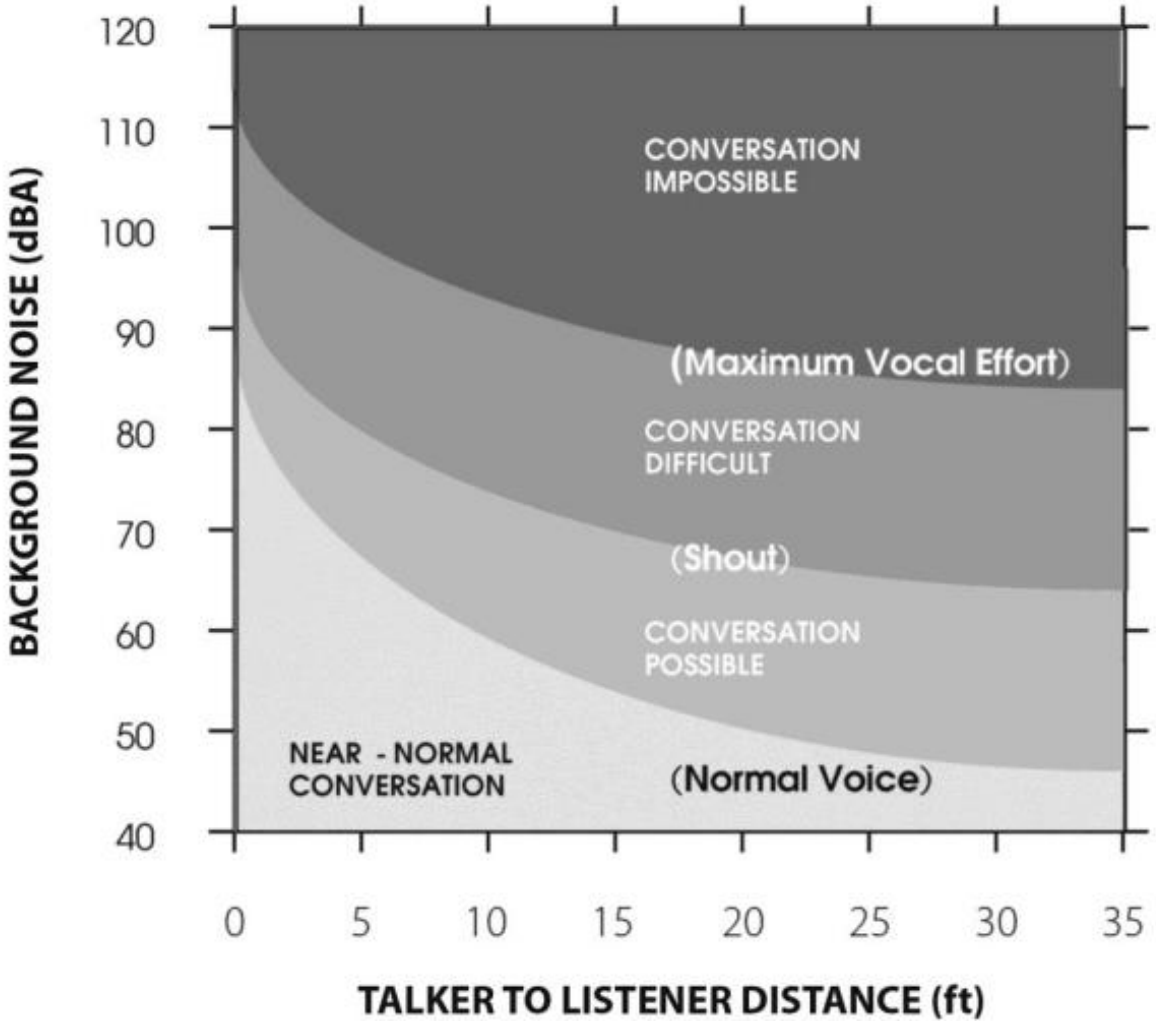

Figure 4-1 Caltrans Speech Interference Estimates

4.3 Relative Loudness Perception

The FHWA Traffic Noise Analysis and Abatement Guidance presents information related to relative loudness of environmental noise.

The relative loudness of environmental noise is shown in the FHWA document and correlates a decibel change in sound levels with a perceived relative loudness as shown in Table 4-3. The sound level change is applicable in the field as opposed to a quiet laboratory environment where smaller sound level differences could be perceived. A decrease of 10 dB is perceived as half as loud and similarly a decrease of 20 dB is perceived as ¼ as loud. Sound level increases are perceived similarly, with a 10 dB increase perceived as a doubling of loudness and a 20 dB increase perceived as 4 times as loud.

Table 4-3 FHWA Relative Loudness of Environmental Noise

Sound Level Change	Relative Loudness	Acoustic Energy Loss
0 dB(A)	Reference	0
-3 dB(A)	Barely Perceptible Change	50%
-5 dB(A)	Readily Perceptible Change	67%
-10 dB(A)	Half as Loud	90%
-20 dB(A)	1/4 as Loud	99%
-30 dB(A)	1/8 as Loud	99.9%

*Table adapted from FHWA Highway Traffic Noise: Analysis and Abatement Guidance, revised December 2010. Similar table in CALTRANS Technical Noise Supplement to the Traffic Noise Analysis Protocol.

4.4 Building Reduction Factors

The FHWA Traffic Noise Analysis and Abatement Guidance also includes estimated building reduction factors for various construction types. The building reduction factors estimate the noise reduction achieved due to the exterior of the structure. It is important to note that these reductions are estimates as the noise reduction through an exterior façade can vary depending on a range of factors related to the construction assembly of the walls. Door/window dimensions, door/window seals and absorption inside the room also have an effect on noise reduction. The reduction factors shown in Table 4-4 assume that windows and doors are closed.

Table 4-4 FHWA Building Reduction Factors

Building Type	Window Condition	Noise Reduction Due to Exterior of the Structure
All	Open	10 dB
Light Frame	Ordinary Sash (closed)	20 dB
	Storm	25 dB
Masonry	Single Glazed	25 dB
	Double Glazed	35 dB

4.5 Example Construction Noise Regulations and Thresholds

City of Seattle Construction Noise Ordinance

The City of Seattle Construction Noise Ordinance Chapter 25.08.425.C includes language specific to equipment used in the SRP such as pavement breakers. An excerpt of the City of Seattle Noise Ordinance is presented below:

> "Sounds created by impact types of equipment, including but not limited to pavement breakers, piledrivers, jackhammers, sandblasting tools, or by other types of equipment that create impulse sound or impact sound or are used as impact equipment, as measured at the property line or 50 feet from the equipment, whichever is greater, may exceed the exterior sound level limits established in subsection 25.08.425.B in any one hour period between the hours of 8 a.m. and 5 p.m. on weekdays and 9 a.m. and 5 p.m. on weekends and legal holidays, but in no event may the sound level exceed the following:
>
> 1. Leq 90 dB(A) continuously;
> 2. Leq 93 dB(A) for 30 minutes;
> 3. Leq 96 dB(A) for 15 minutes; or
> 4. Leq 99 dB(A) for 7½ minutes;
>
> provided that sound levels in excess of Leq 99 dB(A) are prohibited unless authorized by variance obtained from the Administrator; and provided further that sources producing sound levels less than 90 dB(A) shall comply with subsection 25.08.425.A and B of this section during those hours not covered by this subsection 25.08.425.C."

The ordinance provides noise limits based on time of use for pavement breakers measured at the property line or 50 feet, whichever is greater.

New York City Construction Noise Ordinance

The New York City Construction Noise Ordinance Chapter 24-230 includes language specific to equipment used in the SRP such as pavement breakers. An excerpt of the New York City Construction Noise Ordinance is presented below:

> "Paving Breakers. a) No person shall operate or cause to be operated a paving breaker, other than one operated electrically or hydraulically, unless a pneumatic discharge muffler certified by the manufacturer of such muffler to provide a dynamic insertion loss of 5 dBA of the sound released from the air discharge of such paving breaker is installed on such air discharge.
>
> b) No person shall sell, offer for sale for use within the city of New York, operate or permit to be operated a paving breaker that when operated produces a maximum sound level that exceed 95 dBA, when measured at a distance of one meter or more from a face of such paving breaker."

The ordinance provides noise limits for pavement breakers measured at a distance of one meter from the source. There is also a requirement of pneumatic discharge mufflers achieving an insertion loss of 5 dBA installed on pneumatic equipment. This is an example of a mitigation measure that is part of the noise ordinance.

City of West Hollywood Construction Noise Ordinance

The City of West Hollywood Municipal Code Chapter 9.08.050.d exempts exterior construction noise during daytime hours from Monday to Friday. An excerpt from the code is shown below:

> "Construction is permitted to be performed between the hours of 8:00 AM and 7:00 PM, Monday – Friday. On Saturdays, only interior construction can be performed between 8:00 AM and 7:00 PM. No construction is allowed on Sundays or on the following holidays:
>
> New Year's Day, Martin Luther King Day, President's Day, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, the day after Thanksgiving, and Christmas Day
>
> The term "construction" includes any activity that takes place that is related to any demolition, repair, maintenance, or construction that requires a building permit. This also includes the loading/ unloading of materials, the use of mechanical paint sprayers, or the staging or idling of construction equipment or food services vehicles at or near construction sites.

Interior construction is considered to be when all construction activities take place inside a structure that is completely enclosed by a roof and walls, with all doors and windows installed and closed."

City of Manhattan Beach Construction Noise Ordinance

The City of Manhattan Beach Municipal Code Chapter 5.48.250 exempts construction noise from their noise ordinance stating, "Construction activity as defined in Section 9.44.010 is exempt from the provisions of this chapter except as provided in Chapter 9.44." Chapter 9.44.030 provides the permissible construction hours which are from 7:30 AM to 6:00 PM on weekdays, and from 9:00 AM to 6:00 PM on Saturdays. No construction is permitted on Sundays or City recognized holidays and there are no further noise limits provided in Chapter 9.44.

City of Torrance Construction Noise Ordinance

The City of Torrance Municipal Code Chapter 46.3.1.a) exempts exterior construction noise during daytime hours from Monday to Saturday stating, "It shall be unlawful for any person within the City of Torrance to operate power construction tools, equipment, or engage in the performance of any outside construction or repair work on buildings, structures, or projects in or adjacent to a residential area involving the creation of noise beyond 50 decibels (db) as measured at property lines, except between the hours of 7:30 A.M. to 6:00 P.M. Monday through Friday and 9:00 A.M. to 5:00 P.M. on Saturdays. Construction shall be prohibited on Sundays and Holidays observed by City Hall. An exception exists between the hours of 10:00 A.M. to 4:00 P.M. for homeowners that reside at the property."

Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (Construction Noise Limits)

The Federal Transit Administration (FTA) released a comprehensive guide to analyzing noise associated with transit projects including analysis of construction related noise and allowable background noise level increases in the document titled, "Transit Noise and Vibration Impact Assessment Manual". Construction noise is analyzed in terms of a general assessment and a detailed assessment. The general assessment includes the two loudest pieces of equipment only, assessed as an hourly L_{eq}. The detailed assessment considers all significant noise generating construction equipment assessed as an 8-hour L_{eq}. The noise limits presented for the general assessment and the detailed assessment are shown in Table 4-5 and Table 4-6.The FTA does not state a noise threshold relative to ambient, only the absolute threshold shown below.

Table 4-5 FTA General Assessment Noise Limits

Land Use	One-hour Leq (dBA)	
	Day	Night
Residential	90	80
Commercial	100	100
Industrial	100	100

Table 4-6 FTA Detailed Assessment Noise Limits

Land Use	8-hour Leq (dBA)		Ldn (dBA)
	Day	Night	30-day Average
Residential	80	70	75
Commercial	85	85	80*
Industrial	90	90	85*

* Use 24-hour L_{eq}, not L_{dn}

In terms of ambient noise level increases due to transit projects, the FTA details operational noise exposure increases designated as no impact, moderate impact, and severe impact. A graph of the increase in cumulative noise levels is shown in Figure 4-2. The moderate impact region begins at an allowable increase of 10 dBA and reduces above an existing noise exposure of 42 dBA. The severe impact region begins at an allowable increase of 15 dBA and reduces above an existing noise exposure of 44 dBA.

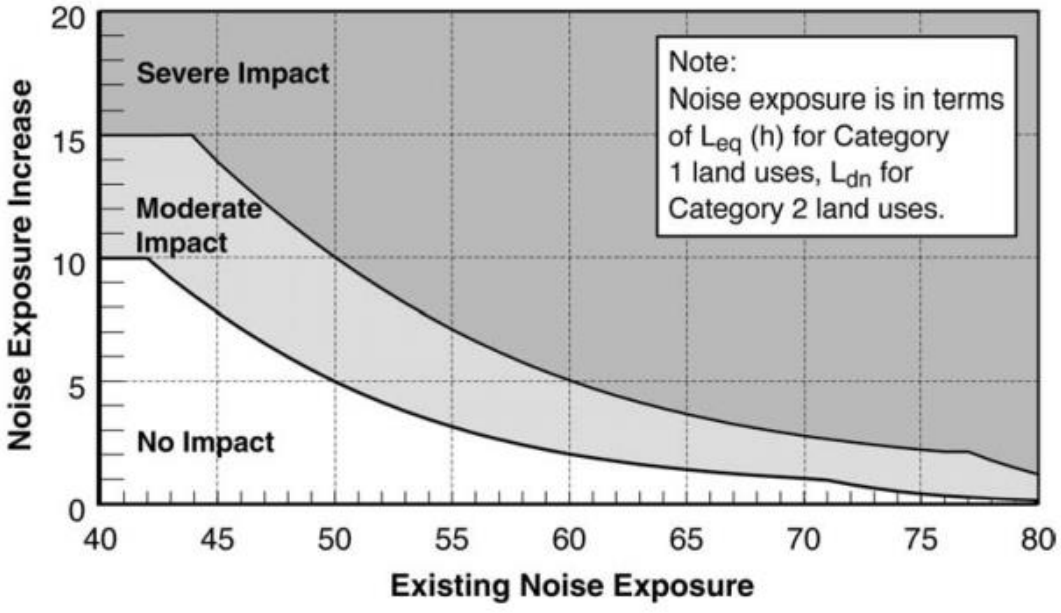

Figure 4-2 FTA Increase in Cumulative Noise Levels

FHWA Highway Traffic Noise Analysis and Abatement Guidance

FHWA Noise Abatement Criteria is shown in Table 4-7. The noise abatement criteria were developed to prevent hearing impairment, annoyance and interference with speech communication for operational noise levels for noise sensitive land uses near highways. Criteria are shown in hourly A-weighted L_{eq} and hourly A-weighted L_{10} sound levels for the loudest hour of the day. The L_{10} is defined as the sound level exceeded 10 percent of the time during the measurement.

Table 4-7 FHWA Noise Abatement Criteria

Activity Category	Activity Criteria (dBA)		Evaluation Location	Activity Description
	L_{eq} (h)	L10 (h)		
A	57	60	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67	70	Exterior	Residential
C	67	70	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	55	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72	75	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F.
F	-	-	-	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	-	-	-	Undeveloped lands that are not permitted.

5. Noise Thresholds & Modeling Results

5.1 State CEQA Guidelines

The State CEQA Guidelines updated on December 28, 2018, includes an updated environmental checklist in Appendix G, which is often used as screening criteria for environmental analysis as a basis for the development of thresholds of significance. Specifically, the CEQA guidelines in Appendix G, Section XIII present the following checklist questions related to a project noise and vibration impact potential relevant to a Project:

- 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?
- Generation of excessive groundborne vibration or groundborne noise levels?

5.2 City of Los Angeles CEQA Thresholds Guide

The City of Los Angeles CEQA Thresholds Guide states that a project would have a significant impact on noise levels if:

- Construction activities lasting more than one day would exceed existing ambient exterior noise levels by 10 dBA or more at a noise sensitive use;
- Construction activities lasting more than 10 days in a three month period would exceed existing ambient exterior noise levels by 5 dBA or more at a noise sensitive use; or
- Construction activities would exceed the ambient noise level by 5 dBA at a noise sensitive use between the hours of 9:00 p.m. and 7:00 a.m. Monday through Friday, before 8:00 a.m. or after 6:00 p.m. on Saturday, or at anytime on Sunday.

The L.A. CEQA Thresholds Guide further states that ambient noise levels are measured as a Community Noise Equivalent Level (CNEL) which is a 24-hour average sound level with an evening penalty of 5 dB between the hours of 7 pm and 10 pm and a nighttime penalty of 10 dB between the hours of 10 pm and 7 am. The difficulty with measuring the ambient sound level in CNEL is that CNEL is a 24-hour average whereas construction for the SRP is only conducted during daytime hours. Ambient sound levels outside of construction hours are not relevant when analyzing noise from daytime construction.

5.3 City of Los Angeles Municipal Code

The City of Los Angeles Municipal Code contains construction noise limits in Chapter XI Noise Regulation Section 112.05 Maximum Noise Level of Powered Equipment or Powered Hand Tools. The regulation states, “Between the hours of 7:00 a.m. and 10:00 p.m., in any residential zone of the City or within 500 feet thereof, no person shall operate or cause to be operated any powered equipment or powered hand tool that produces a maximum noise level exceeding the following noise limits at a distance of 50 feet therefrom:

> (a) 75 dB(A) for construction, industrial, and agricultural machinery including crawler-tractors, dozers, rotary drills and augers, loaders, power shovels, cranes, derricks, motor graders, paving machines, off-highway trucks, ditchers, trenchers, compactors, scrapers, wagons, pavement breakers, compressors and pneumatic or other powered equipment;
>
> (b) 75 dB(A) for powered equipment of 20 HP or less intended for infrequent use in residential areas, including chain saws, log chippers and powered hand tools;
>
> (c) 65 dB(A) for powered equipment intended for repetitive use in residential areas, including lawn mowers, backpack blowers, small lawn and garden tools and riding tractors.”

The construction noise limit in the City of Los Angeles is therefore 75 dBA between the hours of 7 am and 10 pm at a distance of 50 feet from the equipment within a residential zone. The noise limits do not apply however, where the limitations are technically infeasible. Technical infeasibility is defined as not meeting noise limitations despite the use of mufflers, shields, sound barriers and/or other noise reduction device or techniques during the operation of the equipment. It is anticipated that standard manufacturer mufflers will be used for SRP construction equipment.

For the temporary, mobile construction activities associated with the SRP, it is not technically feasible to comply with these limits. Utilizing a sound barrier would not be possible as the sound barrier placement would be on private property where access is limited. Shields, assumed to be smaller equipment specific barriers in a fixed location, would not effectively reduce sound levels at the surrounding properties as most equipment is required to be moving around the construction site. The use of upgraded mufflers would also not result in compliance as mufflers only reduce exhaust/discharge noise, therefore noise emissions from sources other than equipment exhaust would be unattenuated. Other noise reduction techniques such as increasing the distance between the equipment and the adjacent properties is not feasible as the sidewalk is at a fixed location so the equipment must be used at this location and cannot be moved further away.

5.4 Alternate Criteria from the City of Los Angeles CEQA Threshold

The L.A. CEQA Thresholds Guide construction noise thresholds are not suitable for the SRP as the SRP is not confined to stationary project area like most other construction projects and occurs over a longer time period. Each phase of the SRP construction activities are short-term, mobile and limited to daytime hours. Therefore, a 24-hour measurement at a fixed location would not accurately represent the noise impact of mobile construction activities adjacent to the site.

The short-term, mobile nature of construction for the SRP, along with the fact that the sidewalks that would be part of this Project are in need of repair or an upgrade as required to ensure compliance with the applicable accessibility requirements and a legal settlement, represent a unique environment. According to the L.A. CEQA Thresholds Guide, thresholds can vary based on "unique environments, evolving regulatory requirements, and the nature of projects encountered by each lead agency." The L.A. CEQA Thresholds Guide further states, "the use of the Thresholds Guide may be appropriate for projects located within the City boundaries under 'normal' conditions, but there may be circumstances where another set of criteria better applies to the proposed action or setting, and should be used for the determination of significance." Another set of criteria for determination of significance is presented subsequently in this report.

5.5 Sidewalk Repair Program Threshold

Noise thresholds have been developed to satisfy the CEQA Guidelines Sections 15064(a)(2) and 1504.7, and to be consistent with the 2019 CEQA Guidelines Appendix G, in Section XIII checklist questions based on the research conducted and outlined in Section 4.

The noise thresholds in this section provide both relative and absolute noise limits. The relative noise limits are dependent on the ambient noise in the area before construction activities and the absolute noise limits provide a noise limit to reduce interior speech interference and protect against hearing loss.

> The thresholds developed in this section are intended to be measured at a sensitive land use for a sensitive receptor.The L.A. CEQA Thresholds Guide (City of Los Angeles 2006) noise-sensitive land uses include residences, transient lodgings, schools, day-care facilities, libraries, churches, hospitals, nursing homes, auditoriums, concert halls, amphitheaters, playgrounds, and parks. Noise-sensitive land uses are considered sensitive receptors and both of these terms are used interchangeable, from herein on, in this document.

The following threshold has been developed by the City of Los Angeles for this project:

- *"The project would have a significant noise impact if an interior noise level of 85 dBA L_{eq} (8-hr) is exceeded and an exterior noise level increase of 10 dBA above the loudest ambient sound level (hourly A-weighted L_{eq}) is exceeded during construction hours as measured or predicted at the closest occupied space façade of the closest sensitive use."*

The following section 5.6 Collected Ambient Noise Data describes the ambient measurements presented in a previous report for this Project.

5.6 Collected Ambient Noise Data

In order to provide a snapshot of the existing ambient exterior noise conditions for a range of environments within the City, 10 long-term noise measurements (24 hours or more) were conducted. While it is not practical to capture every noise environment that exists in the study area; the measurement locations were chosen to represent a diverse mix of conditions, both geographically and in terms of the major noise contributors. At least one measurement was obtained in each of the seven Area Planning Commissions (APCs) boundaries within the City. The 10 locations are designated as LT1 through LT10. All measurement locations were within the incorporated City boundaries. Measurement durations ranged from 42 to 51 hours. Additional details for each measurement location are provided below and the results are summarized in Table 5-1. Average noise levels are reported for three different timeframes that are of particular interest for the proposed project based on the project description, L.A. CEQA Thresholds Guide, and City Municipal Code. The first time period of interest is between 7:00 a.m. and 3:00 p.m., which is when the majority of sidewalk repair would take place. The second time period is 7:00 a.m. to 9:00 p.m. which is the overall daytime period when construction is permitted by the City Municipal Code. The final time period encompasses the nighttime hours of 9:00 p.m. to 7:00 a.m.; nighttime construction is not part of the proposed project. Measurement LT5 was conducted using a Rion NL-22 Type 2 sound level meter.[1] All other measurements were conducting using Piccolo SLM-P3 Type 2 sound level meters. The sound level meters for each measurement were field calibrated for accuracy using a Larson Davis CAL200 acoustical calibrator.

LT1 was located in the North Valley APC adjacent to an existing single-family residence at 10127 Remmet Avenue in Chatsworth. This location is within 500 feet of Chatsworth Station, which is a regional transit hub serving Metrolink (Ventura County Line) and Amtrak (Pacific Surfliner) trains with connections to multiple bus services, including Metro Local, LADOT Commuter Express, Simi Valley Transit, and Santa Clarita Transit. The measurement location has direct line-of-sight to the railroad tracks and the main station parking lot. Remmet Avenue is a small residential street that does not experience high traffic volumes. Hourly noise data was gathered at LT1 from 2:00 p.m. on Wednesday, February 7 to 10:00 a.m. on Friday, February 9, 2018.

[1] Type 2 sound level meters are considered "General Purpose Grade" for field use.

LT2 was located in the North Valley APC adjacent to an existing auto salvage yard at 11202 Tuxford Street in Sun Valley. This location is within a highly industrialized part of the City, surrounded by various industrial uses including auto dismantling, auto repair, materials handling and recycling, and concrete trucking/supply. The roads in the area experience a very high volume of heavy trucks. Hourly noise data was gathered at LT2 from 5:00 p.m. on Monday, January 29 to 12:00 p.m. on Wednesday, January 31, 2018.

LT3 was located in the South Valley APC adjacent to 14401 Sylvan Street in Van Nuys, across the street from Van Nuys Civic City Hall (Valley Municipal Building). This location is in close proximity to a range of civic/municipal uses, including the Van Nuys Civic Child Development Center, Los Angeles Department of Building and Safety, Van Nuys Branch Library, Los Angeles Police Department Van Nuys Station, and Los Angeles Fire Department Station 39. Hourly noise data was gathered at LT3 from 5:00 p.m. on Monday, January 29 to 1:00 p.m. on Wednesday, January 31, 2018.

LT4 was located in the West LA APC adjacent to an existing multi-family senior living development (Belmont Village) at 10475 Wilshire Boulevard in Los Angeles. This location is along a portion of Wilshire Boulevard that is densely populated with many high-rise residential condominium and apartment buildings. Wilshire Boulevard is a heavily-travelled street with six lanes of traffic. Hourly noise data was gathered at LT4 from 4:00 p.m. on Monday, February 5 to 11:00 a.m. on Wednesday, February 7, 2018.

LT5 was located in the West LA APC at an existing single-family residence at 7601 Earldom Avenue in Playa Del Rey. This location is within a residential neighborhood immediately northwest of LAX. Consequently, the noise levels are dominated by jet aircraft flying into and out of the airport. Hourly noise data was gathered at LT5 from 12:00 p.m. on Monday, February 5 to 11:00 a.m. on Wednesday, February 7, 2018.

LT6 was located in the Central APC adjacent to an existing commercial business at 6614 Melrose Avenue in Los Angeles. This location is along a portion of Melrose Avenue that is developed with a variety of commercial uses including retail, restaurants, and small office buildings. Melrose Avenue is a busy 4-lane street with metered parking on either side. Hourly noise data was gathered at LT6 from 3:00 p.m. on Monday, January 29 to 11:00 a.m. on Wednesday, January 31, 2018.

LT7 was located adjacent to LAC+USC Medical Center at 2051 Marengo Street in Los Angeles, in the East LA APC. The measurement was located on North Cummings Street, approximately 200 feet from the inpatient hospital tower. This location is uphill from the hospital and elevated approximately 90 feet above the ground elevation at the hospital, with line-of-sight views to I-10 similar to the upper floors of the hospital tower. Hourly noise data was gathered at LT7 from 4:00 p.m. on Wednesday, February 7 to 10:00 a.m. on Friday, February 9, 2018.

LT8 was located in the South LA APC adjacent to an existing single-family residence at 3778 South Harvard Boulevard in Los Angeles. This location is within 100 feet of the Expo Line light rail tracks, just east of the Expo/Western Station. The measurement location has direct line-of-sight to the tracks, which run along the center of Exposition Boulevard between the eastbound and westbound traffic lanes. Hourly noise data was gathered at LT8 from 1:00 p.m. on Monday, February 5 to 10:00 a.m. on Wednesday, February 7, 2018.

LT9 was located in the Harbor APC adjacent to an existing single-family residence at 841 W 134th Street, Los Angeles (it is noted that postal address for this property is listed as Gardena, but the property is in fact within the City). This location is directly across the street from 135th Street Elementary School. The measurement location has direct line-of-sight to the school playground. Hourly noise data was gathered at LT9 from 11:00 a.m. on Wednesday, February 7 to 9:00 a.m. on Friday, February 9, 2018.

LT10 was located in the Harbor APC adjacent to existing multi-family residences (apartments) at 1020 South Cabrillo Avenue in San Pedro. This location is representative of numerous single- and multi-family homes along this segment of South Cabrillo Avenue, which has been identified by LADOT as part of the City's High Injury Network (a network of roadway segments that account for a disproportionately high percentage of all serious pedestrian and cyclist injuries within the City). Hourly noise data was gathered at LT10 from 12:00 p.m. on Monday, January 29 to 3:00 p.m. on Wednesday, January 31, 2018.

Table 5-1 Ambient Noise Measurements Summary

Location #, Description	**APC**	**Address**	**Time Period**	**Average Noise Level, L_{eq}, dBA (*range of hourly levels*)**
LT1, residence within 500 feet of a regional transit hub	North Valley	10127 Remmet Avenue, Chatsworth	Typical sidewalk repair hours (7 a.m. to 3 p.m.)	64 (*58–67*)
			Permissible daytime construction hours (7 a.m. to 9 p.m.)	64 (*56–69*)
			Nighttime hours (9 p.m. to 7 a.m.)	62 (*49–73*)
LT2, in heavy industrial area	North Valley	11202 Tuxford Street, Sun Valley	Typical sidewalk repair hours (7 a.m. to 3 p.m.)	73 (*72–74*)
			Permissible daytime construction hours (7 a.m. to 9 p.m.)	72 (*68–76*)
			Nighttime hours (9 p.m. to 7 a.m.)	71 (*64–73*)

Table 5-1 Ambient Noise Measurements Summary

Location #, Description	APC	Address	Time Period	Average Noise Level, L_{eq}, dBA (*range of hourly levels*)
LT3, opposite Civic Center	South Valley	14401 Sylvan Street, Van Nuys	Typical sidewalk repair hours (7 a.m. to 3 p.m.)	71 (*64–79*)
			Permissible daytime construction hours (7 a.m. to 9 p.m.)	71 (*63–79*)
			Nighttime hours (9 p.m. to 7 a.m.)	73 (*52–74*)
LT4, senior living (multi-family)	West LA	10475 Wilshire Boulevard, Los Angeles	Typical sidewalk repair hours (7 a.m. to 3 p.m.)	73 (*71–78*)
			Permissible daytime construction hours (7 a.m. to 9 p.m.)	73 (*71–78*)
			Nighttime hours (9 p.m. to 7 a.m.)	72 (*64–75*)
LT5, residence close to LAX	West LA	7601 Earldom Avenue, Playa Del Rey	Typical sidewalk repair hours (7 a.m. to 3 p.m.)	68 (*66–69*)
			Permissible daytime construction hours (7 a.m. to 9 p.m.)	67 (*64–69*)
			Nighttime hours (9 p.m. to 7 a.m.)	64 (*55–68*)
LT6, in commercial area	Central	6614 Melrose Ave, Los Angeles	Typical sidewalk repair hours (7 a.m. to 3 p.m.)	75 (*73–77*)
			Permissible daytime construction hours (7 a.m. to 9 p.m.)	75 (*72–77*)
			Nighttime hours (9 p.m. to 7 a.m.)	75 (*66–76*)
LT7, LAC+USC Medical Center Hospital Tower	East LA	2051 Marengo Street, Los Angeles	Typical sidewalk repair hours (7 a.m. to 3 p.m.)	64 (*63–66*)
			Permissible daytime construction hours (7 a.m. to 9 p.m.)	64 (*63–66*)
			Nighttime hours (9 p.m. to 7	65 (*62–68*)

Table 5-1 Ambient Noise Measurements Summary

Location #, Description	**APC**	**Address**	**Time Period**	**Average Noise Level, L_{eq}, dBA (*range of hourly levels*)**
			a.m.)	
LT8, residence adjacent to Expo Line light rail	South LA	3778 S Harvard Boulevard, Los Angeles	Typical sidewalk repair hours (7 a.m. to 3 p.m.)	69 (*68–73*)
			Permissible daytime construction hours (7 a.m. to 9 p.m.)	69 (*67–73*)
			Nighttime hours (9 p.m. to 7 a.m.)	66 (*59–73*)
LT9, residence adjacent to school	Harbor APC	841 W 134th Street, Gardena	Typical sidewalk repair hours (7 a.m. to 3 p.m.)	61 (*54–65*)
			Permissible daytime construction hours (7 a.m. to 9 p.m.)	63 (*54–72*)
			Nighttime hours (9 p.m. to 7 a.m.)	61 (*57–64*)
LT10, residences adjacent to a High Injury Network street	Harbor APC	1020 S Cabrillo Avenue, San Pedro	Typical sidewalk repair hours (7 a.m. to 3 p.m.)	61 (*58–64*)
			Permissible daytime construction hours (7 a.m. to 9 p.m.)	62 (*58–65*)
			Nighttime hours (9 p.m. to 7 a.m.)	56 (*48–63*)

6. Methodology

The ambient exterior noise levels were measured as hourly A-weighted L_{eq} sound levels during construction hours (7:00 am to 3:00 pm). As most residential areas are relatively quiet and for a more accurate relative analysis, the highest hourly L_{eq} sound level occurring during daytime hours could be used as a basis for the ambient noise level. As the ambient noise level is measured as an hourly L_{eq} sound level, the influence of short-term peaks will be minimized and the ambient noise level should be representative of the ambient noise levels experienced by residents in the area.

Based on the measurements conducted by ICF, the highest ambient exterior noise levels and the resulting relative noise thresholds are shown in Table 6-1.

Table 6-1 Relative Noise Threshold Based on ICF Measurements

Location	Address	Average Hourly and (Range of Hourly) Noise Level from 7 am to 3 pm (dBA)	10 dBA Above Highest Hourly Measurement (dBA)
LT1	10127 Remmet Avenue, Chatsworth	64 (58–67)	77
LT2	11202 Tuxford Street, Sun Valley	73 (72–74)	84
LT3	14401 Sylvan Street, Van Nuys	71 (64–79)	89
LT4	10475 Wilshire Boulevard, Los Angeles	73 (71–78)	88
LT5	7601 Earldom Avenue, Playa Del Rey	68 (66–69)	79
LT6	6614 Melrose Ave, Los Angeles	75 (73–77)	87
LT7	2051 Marengo Street, Los Angeles	64 (63–66)	76
LT8	3778 S Harvard Boulevard, Los Angeles	69 (68–73)	83
LT9	841 W 134th Street, Gardena	61 (54–65)	75
LT10	1020 S Cabrillo Avenue, San Pedro	61 (58–64)	74

6.1 Sensitive Uses

The L.A. CEQA Thresholds Guide (City of Los Angeles 2006) noise-sensitive land uses include residences, transient lodgings, schools, day-care facilities, libraries, churches, hospitals, nursing homes, auditoriums, concert halls, amphitheaters, playgrounds, and parks. Noise-sensitive land uses are considered sensitive receptors and both of these terms are used interchangeable, in this document as mentioned in Section 5.5 above.

There might be speech interference at the sensitive use, such that persons need to speak loudly, however, there would no damage to hearing as explained further in Section 6.3.

6.2 Sidewalk Repair Program Noise Sources

For SRP the "temporary" noise-producing activities, such as construction work, are best understood by the recognition that human response to noise is very subjective and is influenced by many factors, such as the overall loudness of the noise (as expressed in decibels), the increase in loudness relative to pre-existing ambient conditions, the character of the noise (such as shrill, tonal or impulsive versus broadband), the duration of the noise (minutes or hours, days or weeks, months or years), the perceived benefit of the source of the noise (or lack thereof) to the listener, as well as the individual listener's age, health, acuity of hearing, and current or planned noise-sensitive activities (sleeping, reading, watching TV, etc.) that may be effected by the noise.

The SRP construction activity would be restricted to daytime hours, with no noise producing activity during the evening and nighttime hours. Previous sidewalk repair work has historically drawn minimal noise complaints from residents in the neighborhoods where the projects have taken place. This is evident from the 2 noise complaints received from the total 816 sidewalk repair sites completed from January 2017 to present.

The City already exempts project construction from daytime noise restrictions if doing so would be "technically infeasible." Jurisdictions like the City of West Hollywood, City of Manhattan Beach and the City of Torrance have an exemption for daytime only municipal construction noise.

6.3 Potential Hearing Loss

Potential hearing loss criteria is a recommended exposure limit of 85 dBA for long-term workplace exposure (8-hours/day for about 252 days a year) to reduce or prevent noise induced hearing loss based on a 40-year lifetime exposure (with an excess risk of less than 8 percent) as established in the Criteria for a Recommended Standard, Occupational Noise Exposure Revised Criteria, 1998, Published by the U.S. Department of Health and Human Services, National Institute for Occupational Safety and Health (NIOSH). The noise exposure is not referenced to a set distance. It refers to the total noise exposure at the person's ears. It's the

cumulative noise exposure over the day. It might be a person operating a single machine all day at very close range, or it could be someone moving around a factory at varying distances from multiple noise sources. In this reference, the duration of exposure to sound levels that could potentially lead to hearing loss is expressed in terms of years and decades. For example, in one summary table (Table 5-3 below) the excess percent risk of hearing impairment is expressed as worker age and sound exposure periods of either 5 to 10 years, or greater than 10 years. For instance, according to Table 5-3, a 30 year old worker and 60 year old worker with an exposure to average sound levels of 85 dBA for 8 hours/day for 5 to10 years would have a risk of hearing loss (without hearing protection) of just 1.4 percent and 4.9 percent, respectively. Qualitatively extrapolating this result down to an exposure period of just a few days would likely suggest a less than significant chance of hearing loss.

Reliable technical data relating to hearing loss is historically focused on long-term occupational noise exposure, such as the NIOSH study referenced above and in Table 6-2 (NOISH Table 3.3), since this represents the most threatened risk groups. Reliable scientific data for much shorter exposure periods does not appear to be readily available in the referenceable technical literature. Table 6-2 presents data on occupational noise exposure risks.

Table 6-2 Excess Risk Estimates for Material Hearing Impairment, by Age and Duration of Exposure

Average daily exposure (dBA)	5-10 years of exposure								>10 years of exposure							
	Age 30		Age 40		Age 50		Age 60		Age 30		Age 40		Age 50		Age 60	
	Risk (%)	95% CI	Risk (%)	95% CI	Risk (%)	95% CI	Risk (%)	95% CI	Risk (%)	95% CI	Risk (%)	95% CI	Risk (%)	95% CI	Risk (%)	95% CI
90	5.4	2.1-9.5	9.7	3.7-16.5	14.3	5.5-24.4	15.9	6.2-26.2	10.3	5.8-16.2	17.5	10.7-25.3	24.1	14.6-33.5	24.7	14.9-34.3
85	1.4	0.3-3.2	2.6	0.6-6.0	4.0	0.9-9.3	4.9	1.0-11.5	2.3	0.7-5.3	4.3	1.3-9.4	6.7	2.0-13.9	7.9	2.3-16.6
80	0.2	0-1.1	0.4	0-2.2	0.6	0.01-3.6	0.8	0.01-4.7	0.3	0-1.8	0.6	0.01-3.3	1.0	0.01-5.2	1.3	0.01-6.8

Source: 1997-NIOSH model for the definition of hearing impairment
Notes: CI= confidence interval

6.4 Relative Noise Threshold as Increase of 10 dBA Over Ambient

The relative noise threshold recommended for the SRP is 10 dBA above the ambient exterior noise levels. The 10 dBA above ambient exterior noise level represents a perceived doubling of the loudness as discussed in the FHWA Analysis and Abatement Guide. This is referenced/utilized by both the Caltrans[2] and FHWA for non-CEQA, transportation-related noise impacts.[3]

6.5 Absolute Noise Threshold as 85 dBA

The absolute noise threshold recommended for the project is 85 dBA measured as an 8-hour L_{eq} in the interior of the sensitive use. The absolute noise threshold of 85 dBA was derived to minimize speech interference indoors and hearing loss outdoors adjacent to the construction. Above a noise level of 65 dBA indoors, speech interference begins to occur and to compensate, people raise their voices during conversation. To minimize speech interference, the noise level indoors should be less than 65 dBA. Considering the noise reduction of a façade is approximately 20 dBA from outdoors to indoors, the absolute noise threshold is 65 dBA plus 20 dBA resulting in 85 dBA at the façade. This absolute noise threshold of 85 dBA is below the OSHA hearing loss threshold of 90 dBA for an 8-hour duration.

In applying these thresholds, there may be speech inference at the loudest temporary uses, such that persons need to speak more loudly to be heard, however, there would no damage to hearing.

The 85 dBA noise level is based upon a typical 65 dBA level for speech interference at the loudest temporary uses plus an approximate 20 dBA exterior to interior reduction for typical residential construction. Caltrans *Technical Noise Supplement* provides numerical estimates of how noise levels effect speech at approximately 5 feet, normal conversation is possible below 65 dBA. This is illustrated in Figure 2-20 of their report (page 2-61). The assumption of 20 dB noise reduction due to buildings (with windows closed) is supported by Table 7-1 on page 7-17 of the Caltrans *Technical Noise Supplement*. The table comes originally from the FHWA *Highway Traffic Noise: Analysis and Abatement Guidance* on page 30. For the use of 85 dBA as a threshold to protect against hearing loss the California Code of Regulations Subchapter 7 note that the “Action Level” for hearing conservation is “an 8-hour time-weighted average of 85 decibels measured on the A-scale, slow response, or equivalently, a dose of fifty

[2] California Department of Transportation. (2013). Technical Supplement to the Traffic Noise Analysis Protocol, Chapter 2.2.4.2. Prepared by: California Department of Transportation, Division of Environmental Analysis, Environmental Engineering, Hazardous Waste, Air, Noise, & Paleontology Office, Sacramento, CA, Page 2-45.

[3] Federal Highway Administration. (2011). Analysis and Abatement Guide, Page 10.

percent".[4] This is also available on a Federal OSHA factsheet.[56] This 85 dBA is below the OSHA hearing loss threshold of 90 dBA for 8-hour duration.

For example, if the absolute threshold interior noise limit of 85 dBA L_{eq} (8-Hour Average) can be evaluated as an exterior noise level by adding 20 dB as explained in the background research in Section 4. This would effectively be interpreted as an exterior noise limit at the façade of a sensitive use of 105 dBA L_{eq} (8-Hour Average).

6.6 L_{eq} (8-Hour Average) at 50 Feet

The following discussion and results are from a previous report. For evaluation of environmental noise, 50 feet is the standard distance used to describe source noise levels for construction equipment. Other distances could be used, but 50 feet has become the de facto standard through common usage. Both the FHWA's standard construction noise model (RCNM) and FTA Guidance Manual use 50 feet. These models are not designed to predict the noise levels at the operator's location, since that is an occupational safety and health issue (OSHA or Cal/OSHA). The noise exposure in OSHA is not referenced to a set distance. It refers to the total noise exposure at the person's ears. It's the cumulative noise exposure over the day. It might be a person operating a single machine all day at very close range, or it could be someone moving around a factory at varying distances from multiple noise sources. There is no easy conversion between noise at 50 feet and operator noise exposure. However, it could be estimated by assuming a distance much smaller than 50 feet. Noise levels would increase by about 6 dBA every time you halve the distance from the source to the receptor.

6.7 Noise Modeling at 50 Feet

Potential noise impacts associated with Project construction activities were evaluated based on the proposed Project's construction equipment schedule and phasing information. Analysis was conducted for each of the two typical construction scenarios considered under Chapter 2.0 Project Description for the *Sidewalk Repair Program Draft Environmental Impact Report*. Construction-related noise was analyzed using data and modeling methodologies from FHWA's Roadway Construction Noise Model (RCNM) (FHWA 2008), which predicts average noise levels at nearby receptors by analyzing the type of equipment, the distance from source to receptor, and usage factor (the fraction of time the equipment is operating in its noisiest mode while in use). This methodology calculates the composite average noise levels for involves the operation of multiple pieces of equipment at the same time.

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[4] California Code of Regulations, Subchapter 7 General Industry Safety Orders, Group 15 Occupational Noise, Article 105 Control of Noise Exposure. Available at: https://www.dir.ca.gov/title8/5095.html

[5] OSHA Fact Sheet, Laboratory Safety Noise. Available at:https://www.osha.gov/Publications/laboratory/OSHAfactsheet-laboratory-safety-noise.pdf

[6] Federal Code of Regulations, 2018, Title 29 Section 1910.95.

The average combined equipment noise levels for an 8-hour work day (i.e., 8-hour L_{eq}) during each phase of construction was calculated at a reference distance of 50 feet. Noise distances were then estimated for each phase and used for comparison to the measured ambient noise levels at noise-sensitive (i.e., residential) receptors. Results of the noise modeling are below in Table 6-3 and Table 6-4 for Scenario 1 and Scenario 2, respectively. Each table calculates the daily 8-hour average noise level (8-hour L_{eq}) for a single phase of construction. If a single phase were to last 1 day, 2 days, 3 days, etc., then this represents the predicted daily noise level for each day of that phase.

Table 6-3 Scenario 1 Noise Modeling Results (50 Feet)

Phase	Equipment	Typical Level at 50 ft., dBA	Distance to Receiver, ft.	Usage factor	Time equipment is in use (hours/day)	Leq (8-hr), dBA
Mobilization	Compressor, Air	77.7	50	0.4	2	68
	Generator (<25KVA, VMS signs)	72.8	50	0.5	8	70
	Combined Equipment					***72***
Street Tree Removal	Truck, Flat Bed	74.3	50	0.4	2	64
	Saw	76	50	0.2	2	63
	Wood Chipper (based on chain saw)	83.7	50	0.2	1	68
	Stump Grinder (based on chain saw)	83.7	50	0.2	4	74
	Skid Steer Loader (based on backhoe)	77.6	50	0.4	2	68
	Combined Equipment					***76***
Traffic Control, Demolition, and Concrete Removal	Hammer, Jack	88.9	50	0.2	**4**	82
	Saw, Concrete	89.6	50	0.2	**1**	77
	Skid Steer Loader (based on backhoe)	77.6	50	0.4	**4**	71
	Truck, Dump	76.5	50	0.4	**4**	70
	Tractor	84	50	0.4	**2**	74
	Combined Equipment					***84***
Utility Adjustment	Manhole Cutter (based on rock drill)	81	50	0.2	2	68
	Saw, Concrete	89.6	50	0.2	2	77

Table 6-3 Scenario 1 Noise Modeling Results (50 Feet)

Phase	Equipment	Typical Level at 50 ft., dBA	Distance to Receiver, ft.	Usage factor	Time equipment is in use (hours/day)	Leq (8-hr), dBA
	Mixer, Concrete (or concrete mixer truck)	78.8	50	0.4	2	69
	Combined Equipment					***78***
Grading/Form work	Roller	80	50	0.2	1.5	66
	Truck, Flat Bed	74.3	50	0.4	2	64
	Combined Equipment					***68***
Concrete Pouring	Mixer, Concrete (or concrete mixer truck)	78.8	50	0.4	6	74
	Mixer, Concrete Vibratory	80	50	0.2	2	70
	Combined Equipment					***75***
Street Tree Planting	Truck, Flat Bed	74.3	50	0.4	3	66
	Mini Excavator (based on backhoe)	77.6	50	0.4	2	68
	Combined Equipment					***70***
Cleanup	Truck, Pickup	75	50	0.4	4	68
	Combined Equipment					***68***

Source: ICF 2018

Table 6-4 Scenario 2 Noise Modeling Results (50 Feet)

Phase	Equipment	Typical Level at 50 ft., dBA	Distance to Receiver, ft.	Usage factor	Time equipment is in use (hours/day)	Leq(h), dBA
Mobilization	Compressor, Air	77.7	50	0.4	2	68
	Generator (<25KVA, VMS signs)	72.8	50	0.5	8	70
	Combined Equipment					***72***
Street Tree Removal	Truck, Flat Bed	74.3	50	0.4	2	64
	Saw	76	50	0.2	2	63
	Wood Chipper (based on chain saw)	83.7	50	0.2	1	68
	Stump Grinder (based on chain saw)	83.7	50	0.2	4	74
	Skid Steer Loader (based on backhoe)	77.6	50	0.4	2	68
	Combined Equipment					***76***
Traffic Control, Demolition, and Concrete Removal	Hammer, Jack	88.9	50	0.2	4	82
	Saw, Concrete	89.6	50	0.2	1	77
	Skid Steer Loader (based on backhoe)	77.6	50	0.4	4	71
	Truck, Dump	76.5	50	0.4	4	70
	Tractor	84	50	0.4	2	74
	Combined Equipment					***84***
Utility Relocation	Excavator	81	50	0.4	6	75
	Saw, Concrete	89.6	50	0.2	4	77
	Compactor	82.3	50	0.2	2	70
	Paver	77.2	50	0.5	2	68

Table 6-4 Scenario 2 Noise Modeling Results (50 Feet)

Phase	Equipment	Typical Level at 50 ft., dBA	Distance to Receiver, ft.	Usage factor	Time equipment is in use (hours/day)	Leq(h), dBA
	Combined Equipment					***82***
Grading/Form work	Roller	80	50	0.2	1.5	66
	Truck, Flat Bed	74.3	50	0.4	2	64
	Combined Equipment					***68***
Concrete Pouring	Mixer, Concrete (or concrete mixer truck)	78.8	50	0.4	6	74
	Mixer, Concrete Vibratory	80	50	0.2	2	70
	Combined Equipment					***75***
Street Tree Planting	Truck, Flat Bed	74.3	50	0.4	3	66
	Mini Excavator (based on backhoe)	77.6	50	0.4	2	68
	Combined Equipment					***70***
Crosswalk Repaving	*Saw, Concrete*	89.6	50	0.2	4	*80*
	Skid Steer Loader (based on backhoe)	77.6	50	0.4	2	*68*
	Truck, Dump	76.5	50	0.4	2	*67*
	Paver	77.2	50	0.5	2	*68*
	Line Striper (based on generator (<25KVA,)			0.5	2	*64*
	Combined Equipment					***80***
Cleanup	Truck, Pickup	75	50	0.4	4	68
	Combined Equipment					***68***

Source: ICF 2018

6.8 Modeling Results at 10 Feet and 20 Feet from Sidewalk Repair Construction

The Sidewalk Repair construction activities would take place closer than 50 feet from a sensitive use. The City includes buildings of various ages, architecture, and uses. Therefore, in order to standardize such variables for CEQA analysis purposes, location of sensitive receptor (as the most conservative approach) from the repair activities are modeled. This also meets the requirement of the Project Threshold. According to the Los Angeles Zoning Code a typical setback distance for a residence is at 20 feet from the sidewalk and a typical setback distance from daycare, hospitals, and other sensitive uses is 10 feet from the sidewalk. Consistent with the RCNM methodology, it was assumed that construction noise levels would be reduced at a rate of 6 dB per doubling of distance from the source.

Table 6-5 and Table 6-6 show noise modeling results for Scenarios 1 and 2, respectively, using ICF data at 10 feet and 20 feet from the noise source.

6.9 Presumed Interior Sound Level Attenuation of 20 dBA

City zoning, over the years, has separated various land uses and required front, rear and side yards set back to distance homes from the adjacent street noise. Other sensitive uses typically zoned as commercial are built with provisions of building codes intended to reduce noise. Furthermore, City of Los Angeles Building Code provides guidelines for building construction with provisions of insulation to reduce of weather and noise from the outside as well in between structures. Though sound transmission control requirements were added to the national Uniform Building Code as recently as 1992, and incorporated into the City of Los Angeles Building Code (LAMC Section 91) in 1994, typical older structure would have noise attenuation decrease through walls, doors, windows, etc. The Presumed Interior Sound Level (dBA) is calculated considering the noise attenuation of 20 dBA as a result of the walls or the façade of the sensitive use with a typical setback of 10 feet (less than 20 feet). As tables 6-5 and 6-6 show for both Scenarios 1 and 2, the calculated interior sound level would not exceed the project-specific interior threshold of 85 dBA through the various phases of construction activities. It is recognized that speech may be interrupted; however, construction would be short-term in duration and no hearing damage would occur.

Table 6-5 Scenario 1 Noise Modeling Results (10 and 20 Feet)

Phase	Equipment	Leq (8-hr) at 50 ft., dBA	Sound Level at 20 ft., dBA	Sound Level at 10 ft., dBA	*Presumed Interior Sound Level, dBA	Interior Threshold of 85 dBA	Above Threshold?
Mobilization	Compressor, Air	68					
	Generator (<25KVA, VMS signs)	70					
	Combined Equipment	***72***	***80***	**86**	**66**	**85**	**NO**
Street Tree Removal	Truck, Flat Bed	64					
	Saw	63					
	Wood Chipper (based on chain saw)	68					
	Stump Grinder (based on chain saw)	74					
	Skid Steer Loader (based on backhoe)	68					
	Combined Equipment	***76***	**84**	**90**	**70**	**85**	**NO**
Traffic Control, Demolition, and Concrete Removal	Hammer, Jack	82					
	Saw, Concrete	77					
	Skid Steer Loader (based on backhoe)	71					
	Truck, Dump	70					
	Tractor	74					
	Combined Equipment	***84***	**92**	**98**	**78**	**85**	**NO**
Utility Adjustment	Manhole Cutter (based on rock drill)	68					
	Saw, Concrete	77					
	Mixer, Concrete (or concrete mixer truck)	69					

Table 6-5 Scenario 1 Noise Modeling Results (10 and 20 Feet)

Phase	Equipment	Leq (8-hr) at 50 ft., dBA	Sound Level at 20 ft., dBA	Sound Level at 10 ft., dBA	*Presumed Interior Sound Level, dBA	Interior Threshold of 85 dBA	Above Threshold?
	Combined Equipment	***78***	**86**	**92**	**72**	**85**	**NO**
Grading/Formwork	Roller	66					
	Truck, Flat Bed	64					
	Combined Equipment	***68***	**76**	**82**	**62**	**85**	**NO**
Concrete Pouring	Mixer, Concrete (or concrete mixer truck)	74					
	Mixer, Concrete Vibratory	70					
	Combined Equipment	***75***	**83**	**89**	**69**	**85**	**NO**
Street Tree Planting	Truck, Flat Bed	66					
	Mini Excavator (based on backhoe)	68					
	Combined Equipment	***70***	**78**	**84**	**64**	**85**	**NO**
Cleanup	Truck, Pickup	68					
	Combined Equipment	***68***	**76**	**82**	**62**	**85**	**NO**

*Assumptions: Calculated (or Presumed) Interior Sound Level assumes a 20 dBA attenuation due to structure/building wall using the exterior sound level calculated at 10 ft. The building reduction factor of 20 dBA is referenced from the FHWA Traffic Noise Analysis and Abatement Guidance (Table 4-7) and is consistent with Southern California residential construction standards (Light Frame/Ordinary Sash).
Source: Federal Highway Administration. 2011. Highway Traffic Noise: Analysis and Abatement Guidance. FHWA-HEP-10-025. December 2011.

Table 6-6 Scenario 2 Noise Modeling Results (10 and 20 Feet)

Phase	Equipment	Leq(8-hr), dBA at 50 ft.	Sound Level at 20 ft., dBA	Sound Level at 10 ft., dBA	*Presumed Interior Sound Level, dBA	Interior Threshold of 85 dBA	Above Threshold?
Mobilization	Compressor, Air	68					
	Generator (<25KVA, VMS signs)	70					
	Combined Equipment	***72***	***80***	***86***	**66**	**85**	**NO**
Street Tree Removal	Truck, Flat Bed	64					
	Saw	63					
	Wood Chipper (based on chain saw)	68					
	Stump Grinder (based on chain saw)	74					
	Skid Steer Loader (based on backhoe)	68					
	Combined Equipment	***76***	**84**	**90**	**70**	**85**	**NO**
Traffic Control, Demolition, and Concrete Removal	Hammer, Jack	82					
	Saw, Concrete	77					
	Skid Steer Loader (based on backhoe)	71					
	Truck, Dump	70					
	Tractor	74					
	Combined Equipment	***84***	**92**	**98**	**78**	**85**	**NO**
Utility Relocation	Excavator	75					
	Saw, Concrete	77					
	Compactor	70					
	Paver	68					
	Combined Equipment	***82***	**90**	**96**	**76**	**85**	**NO**
Grading/Formwork	Roller	66					
	Truck, Flat Bed	64					
	Combined Equipment	***68***	**82**	**76**	**56**	**85**	**NO**

Table 6-6 Scenario 2 Noise Modeling Results (10 and 20 Feet)

Phase	Equipment	Leq(8-hr), dBA at 50 ft.	Sound Level at 20 ft., dBA	Sound Level at 10 ft., dBA	*Presumed Interior Sound Level, dBA	Interior Threshold of 85 dBA	Above Threshold?
Concrete Pouring	Mixer, Concrete (or concrete mixer truck)	74					
	Mixer, Concrete Vibratory	70					
	Combined Equipment	***75***	**89**	**83**	**63**	**85**	**NO**
Street Tree Planting	Truck, Flat Bed	66					
	Mini Excavator (based on backhoe)	68					
	Combined Equipment	***70***	**78**	**84**	**64**	**85**	**NO**
Crosswalk Repaving	*Saw, Concrete*	*80*					
	Skid Steer Loader (based on backhoe)	*68*					
	Truck, Dump	*67*					
	Paver	*68*					
	Line Striper (based on generator (<25KVA,)	*64*					
	Combined Equipment	***80***	**88**	**94**	**74**	**85**	**NO**
Cleanup	Truck, Pickup	68					
	Combined Equipment	***68***	**76**	**82**	**62**	**85**	**NO**

*Assumptions: Calculated (or Presumed) Interior Sound Level assumes a 20 dBA attenuation due to structure/building wall using the exterior sound level calculated at 10 ft. The building reduction factor of 20 dBA is referenced from the FHWA Traffic Noise Analysis and Abatement Guidance (Table 4-7) and is consistent with Southern California residential construction standards (Light Frame/Ordinary Sash). Source: Federal Highway Administration. 2011. Highway Traffic Noise: Analysis and Abatement Guidance. FHWA-HEP-10-025. December 2011.

6.10 Best Noise Management Practices[7]

Best noise management practices which may both be generally and specifically already incorporated in standard project conditions by the City, are listed here that would generally have been suggested to reduce noise levels at the structures adjacent to the site. These are not intended to be relied upon to reduce any significant noise impacts, to the extent they exist, to a level below significance such that they would more appropriately be classified as mitigation measures. The best noise management practices would be implemented as feasible and are provided below:

1. Unnecessary idling of internal combustion engines should be strictly prohibited.

2. All equipment should be kept in good repair with all worn, loose and unbalanced machine parts to be replaced.

3. Locate stationary noise-generating equipment such as air compressors or portable power generators as far as possible from neighboring houses.

4. Construction would occur in the daytime hours as allowable by *41.40 LAMC-Construction Noise*.

5. Notify all adjacent property owners and land users of the construction length, duration, and hours of noise and vibration producing construction activities, in writing.

6. Provide and make available contact information for Sidewalk Repair concerns, on construction activities, prior to and on-site during construction.

[7] California Department of Transportation. (2013). Technical Supplement to the Traffic Noise Analysis Protocol, Chapter 7.5.3.1. Prepared by: California Department of Transportation, Division of Environmental Analysis, Environmental Engineering, Hazardous Waste, Air, Noise, & Paleontology Office, Sacramento, CA.

7. SRP Vibration Thresholds & Impact Distances

The City of Los Angeles CEQA Thresholds Guide does not include any vibration criteria however, the CEQA Initial Study Checklist question XIII.b) asks whether there is generation of excessive groundborne vibration levels. As no further guidance is provided defining excessive groundborne vibration levels, vibration thresholds for the project have been developed based on the 2013 Caltrans document "Transportation and Construction Vibration Guidance Manual."

7.1 Caltrans Construction Vibration Guidance

Caltrans' construction vibration guidance document presents a detailed synthesis of construction related vibration research over the last few decades and provides recommended vibration criteria for evaluating potential building damage and human annoyance due to vibration from construction activities.

For potential building damage, buildings are categorized based on structure and condition with varying vibration limits associated with each structure and construction type. There are additional vibration criteria presented that categorizes the vibration source as a transient source or a continuous/frequent intermittent source. A transient source is defined as a single isolated vibration event whereas a continuous/frequent intermittent source includes a repetitive construction activity like pile driving, even if the source of vibration is impulsive in nature. The Caltrans structural guideline vibration criteria are shown in Table 7-1.

Table 7-1 Guideline Vibration Damage Potential Threshold Criteria

Structure and Condition	Maximum PPV (ips)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely Fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structure	0.5	0.3
New residential structure	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5
Note: Transient sources create a single isolated vibration event. Continuous/frequent intermittent sources include impact pile drivers, vibratory pile drivers, and vibratory compaction equipment.		

Source: Caltrans Transportation and Construction Vibration Guidance Manual (Table 19)

Caltrans also presents vibration perceptibility in humans in terms of transient sources and continuous/frequent intermittent sources as shown in Table 7-2.

Table 7-2 Guideline Vibration Annoyance Potential Criteria

Human Response	Maximum PPV (ips)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4
Note: Transient sources create a single isolated vibration event. Continuous/frequent intermittent sources include impact pile drivers, vibratory pile drivers, and vibratory compaction equipment.		

Source: Caltrans Transportation and Construction Vibration Guidance Manual (Table 20)

As the construction activities associated with the SRP are temporary and mobile, the strongly perceptible response category associated with a vibration limit of 0.1 inches per second (ips) has been chosen to represent the human annoyance threshold. This annoyance threshold is suitable as the construction events occur in a specific location for only a short period of time, reducing the chance that continuous vibration would become annoying thus allowing for a strong perceptibility threshold. As is common practice the Caltrans Transportation and Construction Vibration Guidance Manual is used throughout the City of Los Angeles to address the State CEQA Guidelines on Vibration. However, these are not adopted as policy by the City.

7.2 Recommended Vibration Thresholds

The construction activities associated with the SRP can be considered continuous/frequent intermittent vibration sources. Therefore, to assess groundborne vibration impacts, a significant impact would occur if:

- *In terms of potential building damage, ground-borne vibration caused by construction exceeds a velocity of 0.3 ips PPV at the building foundations of the nearest structure.*
- *In terms of potential human annoyance, ground-borne vibration caused by construction exceeds 0.1 ips PPV at the nearest occupied space of a sensitive use.*

A sensitive use is defined as residences, schools, playgrounds, child care centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. Further explanation of sensitive uses was provided in Section 5.5.

In applying these thresholds for human annoyance, occupied space of the sensitive use should be representative of a frequently occupied, vibration-sensitive area such as a living room, sleeping area, dining area, waiting room or office space. This does not include a garage, bathroom, loading area or storage area.

7.3 Vibration Impact Distances

To ensure the vibration thresholds are not exceeded, impact distances have been calculated for each vibration producing equipment item used during the construction activities associated with the SRP. The impact distance represents the minimum distance required between the construction equipment and the façade of the nearest structure for building damage or the minimum distance required between the construction equipment and the closest sensitive use for human response to comply with the thresholds. Impact distances for vibration producing construction equipment are shown in Table 7-3.

Table 7-3 Vibration Impact Distances

Construction Equipment	Reference PPV Vibration Level at 25 ft (ips)*	Human Annoyance Impact Distance (ft)	Building Damage Impact Distance (ft)
Skid Steer/Backhoe/Mini Excavator	0.003	1	0.4
Excavator	0.089	23	8
Truck/Dump Truck/Aggregate Delivery Truck	0.076	20	7

* Reference PPV levels sourced from FTA document Transit Noise and Vibration Impact Assessment

To calculate the impact distances using a PPV building damage limit of 0.3 ips and PPV human annoyance limit of 0.1 ips, the following formula was adapted from the Caltrans document Transportation and Construction Vibration Guidance Manual.

$$D_{Impact} = 25\left(\frac{PPV_{Ref}}{PPV_{Limit}}\right)^{\frac{1}{n}}$$

Where: D_{Impact} is the impact distance (ft)

PPV_{Ref} is the reference PPV at 25 ft (ips)

PPV_{Limit} is the vibration threshold limit (ips)

n is the vibration attenuation rate though the ground (n=1.1)

The vibration attenuation rate through the ground is assumed to equal 1.1 representing hard soil. This is a conservative assumption that can be used as a basis for estimating vibration attenuation for construction activities within the project area.

7.4 Best Vibration Management Practices

Best vibration management practices which may both be generally and specifically already incorporated in standard project conditions by the City, are listed here that would generally reduce vibration levels at the structures adjacent to the site. These are not intended to be relied upon to reduce any significant vibration impacts, to the extent they exist, to a level below significance such that they would more appropriately be classified as mitigation measures. The best vibration management practices would be implemented as feasible and are provided below:

1. Use lower powered equipment or techniques such as concrete saws instead of jack hammers, as much as practicable.

2. Minimize the time of use of vibration generating equipment as much as practicable.

3. Notify all adjacent property owners and land users of the construction length, duration, and hours of noise and vibration producing construction activities, in writing.

4. Provide and make available contact information for Sidewalk Repair concerns, on construction activities, prior to and on-site during construction.

8. Conclusion

Noise thresholds have been provided for the Los Angeles Sidewalk Repair Program based on the background research conducted and presented in Section 4. The background research includes published noise thresholds and estimates from OSHA, EPA, Caltrans, FTA and FHWA. Construction vibration thresholds for potential building damage and human annoyance have been developed based on the 2013 Caltrans document "Transportation and Construction Vibration Guidance Manual."

The developed noise thresholds include absolute noise limits to protect hearing and minimize speech interference where possible. The absolute noise threshold recommended is 85 dBA measured at the interior of a sensitive use. A relative noise threshold was developed to take into consideration the existing ambient noise levels in the area. The relative noise threshold recommended was 10 dBA above the highest hourly L_{eq} measured during anticipated construction hours. As the ambient sound level is measured as an hourly L_{eq}, the influence of short-term peaks will be minimized and the ambient sound level should be representative of the ambient sound levels experienced by residents in the area.

The developed vibration thresholds include a limit of 0.3 ips PPV for potential building damage measured at the building foundations of the nearest structure and 0.1 ips PPV for human annoyance measured at the nearest living space of an occupied structure.

9. References

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APPENDIX A
GLOSSARY OF ACOUSTICAL TERMS

Ambient Noise
The all-encompassing noise associated with a given environment at a specified time, usually a composite of sound from many sources both near and far.

Average Sound Level
See Equivalent-Continuous Sound Level

A-Weighted Sound Level, dB(A)
The sound level obtained by use of A-weighting. Weighting systems were developed to measure sound in a way that more closely mimics the ear's natural sensitivity relative to frequency so that the instrument is less sensitive to noise at frequencies where the human ear is less sensitive and more sensitive at frequencies where the human ear is more sensitive.

Community Noise Equivalent Level (CNEL)
A 24-hour A-weighted average sound level which takes into account the fact that a given level of noise may be more or less tolerable depending on when it occurs. The CNEL measure of noise exposure weights average hourly noise levels by 5 dB for the evening hours (between 7:00 pm and 10:00 pm), and 10 dB between 10:00 pm and 7:00 am, then combines the results with the daytime levels to produce the final CNEL value. It is measured in decibels, dB.

Day-Night Average Sound Level (L_{dn})
A measure of noise exposure level that is similar to CNEL except that there is no weighting applied to the evening hours of 7:00 pm to 10:00 pm. It is measured in decibels, dB.

Daytime Average Sound Level
The time-averaged A-weighted sound level measured between the hours of 7:00 am to 7:00 pm. It is measured in decibels, dB.

Decibel (dB)
The basic unit of measurement for sound level.

Direct Sound
Sound that reaches a given location in a direct line from the source without any reflections.

Divergence
The spreading of sound waves from a source in a free field, resulting in a reduction in sound pressure level with increasing distance from the source.

Energy Basis
This refers to the procedure of summing or averaging sound pressure levels on the basis of their squared pressures. This method involves the conversion of decibels to pressures, then performing the necessary arithmetic calculations, and finally changing the pressure back to decibels.

Equivalent-Continuous Sound Level (Leq)
The average sound level measured over a specified time period. It is a single-number measure of time-varying noise over a specified time period. It is the level of a steady sound that, in a stated time period and at a stated location, has the same A-Weighted sound energy as the time-varying sound. For example, a person who experiences an Leq of 60 dB(A) for a period of 10 minutes standing next to a busy street is exposed to the same amount of sound energy as if he had experienced a constant noise level of 60 dB(A) for 10 minutes rather than the time-varying traffic noise level. It is measured in decibels, dB.

Fast Response
A setting on the sound level meter that determines how sound levels are averaged over time. A fast sound level is always more strongly influenced by recent sounds, and less influenced by sounds occurring in the distant past, than the corresponding slow sound level. For the same non-steady sound, the maximum fast sound level is generally greater than the corresponding maximum slow sound level. Fast response is typically used to measure impact sound levels.

Frequency
The number of oscillations per second of a sound wave

Hourly Average Sound Level (HNL)
The equivalent-continuous sound level, Leq, over a 1-hour time period.

Impact Noise
The noise that results when two objects collide.

Impulse Noise
Noise of a transient nature due to the sudden impulse of pressure like that created by a gunshot or balloon bursting.

Insertion Loss
The decrease in sound power level measured at the location of the receiver when an element (e.g., a noise barrier) is inserted in the transmission path between the sound source and the receiver.

Inverse Square Law
A rule by which the sound intensity varies inversely with the square of the distance from the source. This results in a 6dB decrease in sound pressure level for each doubling of distance from the source.

Masking
The process by which the threshold of hearing for one sound is raised by the presence of another sound.

Maximum Sound Level (L_{max})
The greatest sound level measured on a sound level meter during a designated time interval or event.

NC Curves (Noise Criterion Curves)
A system for rating the noisiness of an occupied indoor space. An actual octave-band spectrum is compared with a set of standard NC curves to determine the NC level of the space.

Noise Isolation Class (NIC)
A single number rating derived from the measured values of noise reduction between two enclosed spaces that are connected by one or more partitions. Unlike STC or NNIC, this rating is not adjusted or normalized to a measured or standard reverberation time.

Noise Reduction
The difference in sound pressure level between any two points.

Noise Reduction Coefficient (NRC)
A single number rating of the sound absorption properties of a material. It is the average of the sound absorption coefficients at 250, 500, 1000, and 2000 Hz, rounded to the nearest multiple of 0.05.

Octave
The frequency interval between two sounds whose frequency ratio is 2. For example, the frequency interval between 500 Hz and 1,000 Hz is one octave.

Octave-Band Sound Level
For an octave frequency band, the sound pressure level of the sound contained within that band.

One-Third Octave
The frequency interval between two sounds whose frequency ratio is 2^(1/3). For example, the frequency interval between 200 Hz and 250 Hz is one-third octave.

One-Third-Octave-Band Sound Level
For a one-third-octave frequency band, the sound pressure level of the sound contained within that band.

Outdoor-Indoor Transmission Class (OITC)
A single number rating used to compare the sound insulation properties of building façade elements. This rating is designed to correlate with subjective impressions of the ability of façade elements to reduce the overall loudness of ground and air transportation noise.

Peak Sound Level (L_{pk})
The maximum instantaneous sound level during a stated time period or event.

Pink Noise
Noise that has approximately equal intensities at each octave or one-third-octave band.

Point Source
A source that radiates sound as if from a single point.

Receiver
A person (or persons) or equipment which is affected by noise.

Reflected Sound
Sound that persists in an enclosed space as a result of repeated reflections or scattering. It does not include sound that travels directly from the source without reflections.

Reverberation
The persistence of a sound in an enclosed or partially enclosed space after the source of the sound has stopped, due to the repeated reflection of the sound waves.

Slow Response
A setting on the sound level meter that determines how measured sound levels are averaged over time. A slow sound level is more influenced by sounds occurring in the distant past that the corresponding fast sound level.

Sound
A physical disturbance in a medium (e.g., air) that is capable of being detected by the human ear.

Sound Absorption Coefficient
A measure of the sound-absorptive property of a material.

Sound Insulation
The capacity of a structure or element to prevent sound from reaching a receiver room either by absorption or reflection.

Sound Level Meter (SLM)
An instrument used for the measurement of sound level, with a standard frequency-weighting and standard exponentially weighted time averaging.

Sound Power Level
A physical measure of the amount of power a sound source radiates into the surrounding air. It is measured in decibels.

Sound Pressure Level
A physical measure of the magnitude of a sound. It is related to the sound's energy. The terms sound pressure level and sound level are often used interchangeably.

Sound Transmission Class (STC)
A single number rating used to compare the sound insulation properties of walls, floors, ceilings, windows, or doors. This rating is designed to correlate with subjective impressions of the ability of building elements to reduce the overall loudness of speech, radio, television, and similar noise sources in offices and buildings.

Spectrum
The spectrum of a sound wave is a description of its resolution into components, each of different frequency and usually different amplitude.

Tone
A sound with a distinct pitch

Transmission Loss (TL)
A property of a material or structure describing its ability to reduce the transmission of sound at a particular frequency from one space to another. The higher the TL value the more effective the material or structure is in reducing sound between two spaces. It is measured in decibels.

Windscreen
A porous covering for a microphone, designed to reduce the noise generated by the passage of wind over the microphone.

X-Percentile-Exceeded Sound Level
The A-Weighted sound level equaled or exceeded by a fluctuating sound level x percent of a stated time period. E.g., the letter symbol L10 represents the sound level which exceeded for more than 30 minutes in an hour, L25 is the sound level exceeded for more than 15 minutes in an hour, L8 is the sound level exceeded for more than 5 minutes in an hour, and L2 is the sound level exceeded for more than 1 minute in an hour.

Appendix J3

FHWA Infeasible Mitigations Table

FHWA Infeasible Mitigations Table

Mitigation Category	Mitigation Procedure	Location of Mitigation (i.e. Source, Receiver, Along propagation path)	Description
Design Options	Design and Project Layout	**Source**	The proposed Project is required to be compliant with applicable accessibility requirements for sidewalks, driveways, curbs and gutters, ramps, and street trees. Street trees would be root pruned or canopy pruned to the maximum extent possible, however, there may be instances requiring the removal of street trees where they have caused damage to the sidewalk. A replacement to removal ratio of 2:1 or 3:1 would be applicable using equipment consistent with applicable existing regulations.
	Sequence of Operations	**Source**	The proposed Project would not cause Noise and Vibration impacts as a result of Project operations.
	Alternative Construction Methods	**Source and Along the Propagation Path**	**Hydraulic Bursting.** Hydraulic bursting is a demolition method that can be used to break up rock or concrete. Holes are drilled in the material and the burster head is inserted. Hydraulic power is then used to expand the burster head and apply pressure to the material until cracking is induced. Cracks are induced from multiple holes until a whole area of the material fractures. Angle grinders or flame cutters can then be used to cut any reinforcing steel and the separated section can be removed. This technique can reduce noise by reducing or eliminating the need for impact tools such as jackhammers, but noise is still generated by the necessary drills, the hydraulic power unit, and any cutting tools used in the process. Hydraulic bursting can eliminate groundborne vibration if it can be used exclusively in place of impact equipment such as jackhammers. However, hydraulic bursting is not considered practical for the sidewalk repair project for two primary reasons. First, are the relatively close proximity of the sidewalks to adjacent existing structures and the risk of expansion-related damage to those structures. Second, is that the use of impact tools could not be eliminated completely and would still be required for tasks such as removing portions of wall footings that encroach into the sidewalk repair area. Therefore, this is not considered a feasible mitigation measure. **Chemical Cracking/Bursting Agents.** In principal, this demolition technique is very similar to hydraulic bursting except that it uses a chemical “cracking” or “bursting” agent to break up the rock or concrete. Holes are drilled in the material and the liquid chemical agent is poured in. Chemical reactions follow which cause the material to harden and expand; applying pressure to the material until cracking is induced. Cracks are induced from multiple holes until a whole area of the material fractures. Angle grinders or flame cutters can then be used to cut any reinforcing steel and the separated section can be removed. This technique can reduce noise by reducing or eliminating the need for impact tools such as jackhammers, but noise is still generated by the necessary drills and any cutting tools used in the process. The use of chemical cracking/bursting agents can eliminate

Mitigation Category	Mitigation Procedure	Location of Mitigation (i.e. Source, Receiver, Along propagation path)	Description
			groundborne vibration if it can be used exclusively in place of impact equipment such as jackhammers. However, chemical cracking/bursting agents are not considered practical for the sidewalk repair project for two primary reasons. First, are the relatively close proximity of the sidewalks to adjacent existing structures and the risk of expansion-related damage to those structures. Second, is that the use of impact tools could not be eliminated completely and would still be required for tasks such as removing portions of wall footings that encroach into the sidewalk repair area. Therefore, this is not considered a feasible mitigation measure.
Contract Specifications/Special Provisions	Operation Constraints	**Not Applicable**	The proposed Project would not cause Noise and Vibration impacts as a result of Project operations.
	Time Periods and Duration	**Length of construction**	Specifications related to the timing and length of construction activities are being implemented as part of the proposed Project. The Project would include compliance with the Los Angeles Municipal Code Section 41.40 - Construction Noise Allowable Construction Hours: • Monday through Friday between 7:00 a.m. to 9:00 p.m. • Saturdays and National Holidays between 8:00 a.m. to 6:00 p.m. • Sundays, no construction except for residents
	Specified Equipment	**Source**	Specifications related to the type of equipment used during construction would be implemented as a part of the proposed Project. The use of construction equipment that results in a decreased potential for noticeable noise and vibration would be included with the Project, as is feasible. The types of equipment to be used in the construction of the proposed Project include: air compressors, generators, flat bed trucks, saws, wood chippers (based on saw chain), stump grinders (based on saw chain), skid steer loaders (based on backhoe), jack hammers, concrete saws, compactors, pavers, dump trucks, tractors, manhole cutters, concrete mixer trucks, rollers, concrete vibratory mixers, mini excavators (based on backhoe), and pickup trucks. As part of the Project, all equipment would be kept in good repair with all worn, loose, and unbalanced machine parts to be replaced.
	Noise-Related Incentives/Disincentives	**Receiver**	Incentives related to the proposed Project include even sidewalks, curbs, driveways, and more street trees throughout the life of the City of Los Angeles. Residents, pedestrians, and other users will have an even and safer sidewalk, smoother driveways, wheel chair access ramps and curbs that are compliant with applicable accessibility requirements. Most of the sidewalk repairs to occur as part of the Project are in front of the properties, where the property owner has requested this work to be completed.
	Training Programs for Contractor	**Source**	The potential Noise and Vibration impacts related to the proposed Project are a function of the physical distance between the sidewalk, where construction activities would occur, and existing residential and commercial sensitive uses. Implementing a project-specific training program for the contractor would not result in changes in the distances between the construction zone and sensitive uses. As such, this measure is determined not to be feasible and is not applicable.

Mitigation Category	Mitigation Procedure	Location of Mitigation (i.e. Source, Receiver, Along propagation path)	Description
Mitigation at the Source	Stationary Equipment	**Source**	The construction of the proposed Project would include the use of primarily mobile equipment. However, stationary generators would be used. As part of the proposed Project, stationary generators would be located as far away from residential and commercial sensitive uses as is feasible.
	Mobile Equipment	**Source**	The construction of the proposed Project would include the use of primarily mobile equipment. However, the potential Noise and Vibration impacts related to the proposed Project are a function of the physical distance between the sidewalk, where construction activities would occur, and existing residential and commercial sensitive uses. Implementing mitigation at the source of mobile equipment would not result in changes in the distances between the construction zone and sensitive uses. As such, this measure is determined not to be feasible and is not applicable.
	Selection of Equipment	**Source and Along the Propagation Path**	**Smaller Tools/Hand Tools.** The use of smaller tools, including hand tools, could reduce both noise and vibration relative to the jackhammers and earthmoving equipment contained in the project construction equipment list. However, in order to demolish the quantity and type of materials in question (concrete, rebar, etc.) smaller tools are not a viable practical option. Therefore, this is not considered a feasible mitigation measure.
	Inspection/Maintenance Programs	**Source**	As part of the Project, all equipment would be kept in good repair with all worn, loose, and unbalanced machine parts to be replaced.
	Equipment Operation Training	**Source**	The proposed Project would not cause Noise and Vibration impacts as a result of Project operations.
Mitigation Along the Path	Natural Shielding	**Source**	Many properties have a setback (distance from the source) or landscape or retaining walls. These natural and built shieldings will reduce the interior noise levels and will reduce the impact. However, as a conservative approach to analyzing the Noise and Vibration impacts it was assumed that not every property in front of the sidewalk repair would have landscape, fences, or security walls. Therefore, although this mitigation is implied it is not used for measurement purposes because it cannot be verified.
	Temporary Shielding	**Source and Along the Propagation**	**Temporary Noise Barriers.** The use of temporary noise barriers would not reduce the predicted vibration levels, but could reduce noise. Therefore, temporary noise barriers were considered as a construction noise mitigation measure. However, because existing sidewalks often abut existing structures (buildings, retaining walls, screen walls, fences, etc.) there would be no room available in which to install/place a barrier without interfering with the work area. In other locations, the sidewalk may abut open private property (such as an unfenced front yard); in this instance there could be space available for a barrier, but the barrier would then be on private property and not on

Mitigation Category	Mitigation Procedure	Location of Mitigation (i.e. Source, Receiver, Along propagation path)	Description
			the City right-of-way. Height and width of the barriers installed/placed are usually dependent on the height of the footprint of a structure containing the sensitive receptor. This would be a Citywide Project with various locations and stories of residences, hospitals, and schools. Each construction site would have a unique setting and barriers or would not be practical. Therefore, this is not considered a feasible mitigation measure.
	Permanent Shielding	**Source and Along the Propagation**	Shielding is used to block and dampen noise traveling from a source to a sensitive receptor, but is not applicable to vibration. The implementation of permanent shielding would not be required as the proposed Project would not result in permanent (or operational) noise impacts. Therefore, this is not considered a feasible or applicable mitigation measure.
Mitigation at the Receiver	Building Envelope Improvements	**Receiver**	Building envelope mitigation to reduce construction noise can include techniques such as sealing existing building elements, providing new sealed windows and doors, adding building insulation, etc. The proposed Project is a Citywide Project and it would not be cost effective to implement this type of measure at numerous sensitive uses located across the City of Los Angeles. Therefore, this is not considered a feasible mitigation measure.
	Masking	**Source and Along the Propagation**	Noise masking is a technique that is still developing in the acoustic industry. Masking could include techniques such as employment of noise cancellation technologies, changing "background" noise levels, etc. The proposed Project is a Citywide Project and it would not be cost effective to implement this type of measure at numerous construction sites and sensitive uses located across the City of Los Angeles. Therefore, this is not considered a feasible mitigation measure.
	Relocation of Residents	**Receiver**	The proposed Project is a Citywide Project and it would not be cost effective to implement this type of measure at numerous residences located across the City of Los Angeles. Therefore, this is not considered a feasible mitigation measure.
Public Involvement and Project Coordination	Critical components of the overall mitigation strategy. Should be considered during all phases of a project.	**Receiver**	As part of the proposed Project, the public, residences, and other uses near Project construction sites would be notified ahead of time of upcoming construction activities.

Appendix K

Tribal Cultural Resources

Confidential Appendix on File at

City of Los Angeles, Department of Public Works
Bureau of Engineering
1149 S. Broadway
Los Angeles, CA 90015

Appendix L

Energy Calculations

APPENDIX L: PROJECT ENERGY CALCULATIONS

Construction Energy

Annual Construction Energy Consumption				
	Fuel	*CO_2 LBs per year*	*Gallons per year*	*Million BTU*
Years 1-5 (2018-2022)				
Construction Equipment	Diesel	437,092	19,418	2,514
Construction Equipment	Gasoline	9,523	492	56
Haul Trucks	Diesel	-	35,563	4,605
Worker Commute	Gasoline	-	21,016	2,394
Total Per Year		**446,615**	**76,489**	**9,570**
Total 5-Year Period		**2,233,075**	**382,446**	**47,849**
Years 6-10 (2023-2027)				
Construction Equipment	Diesel	463,271	20,581	2,665
Construction Equipment	Gasoline	10,981	567	65
Haul Trucks	Diesel	-	40,547	5,250
Worker Commute	Gasoline	-	24,031	2,738
Total Per Year		**474,253**	**85,727**	**10,718**
Total 5-Year Period		**2,371,263**	**428,633**	**53,589**
Years 11-15 (2028-2032)				
Construction Equipment	Diesel	531,474	23,611	3,057
Construction Equipment	Gasoline	12,630	652	74
Haul Trucks	Diesel	-	48,820	6,322
Worker Commute	Gasoline	-	29,640	3,377
Total Per Year		**544,104**	**102,724**	**12,830**
Total 5-Year Period		**2,720,521**	**513,620**	**64,151**
Years 16-20 (2033-2037)				
Construction Equipment	Diesel	646,963	28,742	3,722
Construction Equipment	Gasoline	14,563	752	86
Haul Trucks	Diesel	-	55,835	7,230
Worker Commute	Gasoline	-	33,978	3,871
Total Per Year		**661,527**	**119,307**	**14,908**
Total 5-Year Period		**3,307,634**	**596,537**	**74,542**
Years 21-25 (2038-2042)				
Construction Equipment	Diesel	740,168	32,883	4,258
Construction Equipment	Gasoline	16,782	867	99
Haul Trucks	Diesel	-	63,885	8,272
Worker Commute	Gasoline	-	38,956	4,438
Total Per Year		**756,950**	**136,590**	**17,067**
Total 5-Year Period		**3,784,749**	**682,952**	**85,336**

Years 25-30 (2043-2047)				
Construction Equipment	Diesel	841,774	37,397	4,842
Construction Equipment	Gasoline	19,318	998	114
Haul Trucks	Diesel	-	69,038	8,940
Worker Commute	Gasoline	-	41,272	4,702
Total Per Year		**861,092**	**148,705**	**18,598**
Total 5-Year Period		**4,305,459**	**743,527**	**92,989**

CO_2 = carbon dioxide
Lb = pound
Million = 1,000,000
BTU = British Thermal Unit

Energy Construction Consumption Over 30 Years				
	Fuel	*CO_2 LBs*	*Gallons*	*Million BTU*
Total Over 30 Years		**18,722,701**	**3,347,715**	**418,456**

Operational Energy

Annual Operational Energy Consumption				
	Fuel	*CO_2 LBs per year*	*Gallons per year*	*Million BTU*
Maintenance Worker Trips	Gasoline	-	10,623	1,376
Total Per Year		**-**	**10,623**	**1,376**

Energy Operational Consumption Over 30 Years				
	Fuel	*CO_2 LBs*	*Gallons*	*Million BTU*
Total Over 30 Years		**-**	**318,690**	**41,280**

Conversion Factor Table

Kg to lb	2.20462
Kg of CO_2 per gallon of diesel fuel[1]	10.21
Kg of CO_2 per gallon of gasoline[1]	8.78
Lbs of CO_2 per gallon of diesel fuel	22.5
Lbs of CO_2 per gallon of gasoline	19.4
BTUs per gallon of gasoline[2]	113,927
BTUs per gallon of diesel fuel[2]	129,448

Source 1: The Climate Registry 2017
Source 2: United States Department of Energy 2014
Kg = kilogram
Lb = pound
CO_2 = carbon dioxide
BTU = British Thermal Unit