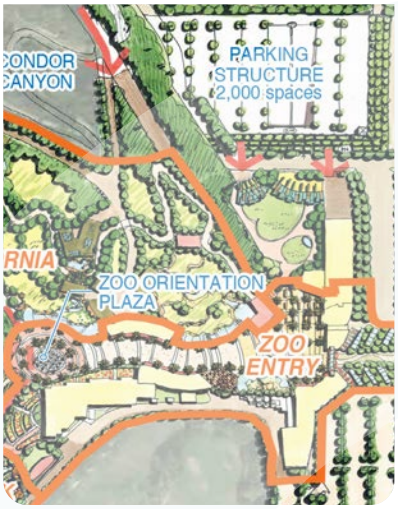
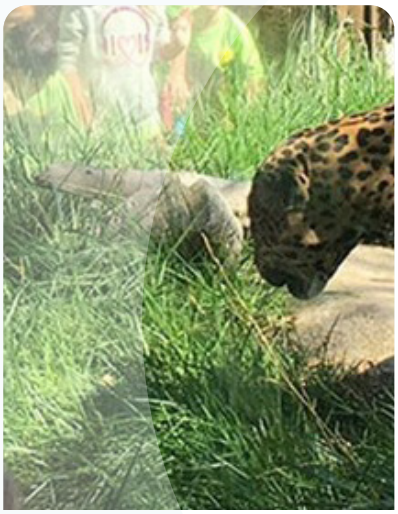
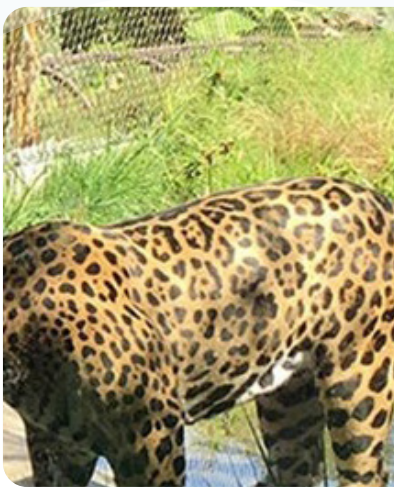
Los Angeles Zoo Vision Plan Project Draft Environmental Impact Report

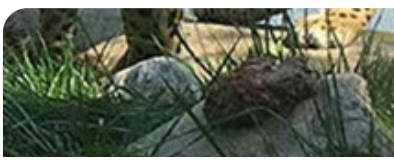
SCH# 2019011053

December 2020









STATE CLEARINGHOUSE NO. 2019011053

LOS ANGELES ZOO VISION PLAN PROJECT DRAFT ENVIRONMENTAL IMPACT REPORT

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Wood Environment & Infrastructure Solutions, Inc.
Los Angeles Zoo Vision Plan Project
Draft Environmental Impact Report. December 2020.
Prepared for the City of Los Angeles, Los Angeles, CA.

EXECUTIVE SUMMARY

ES.1 INTRODUCTION AND BACKGROUND

This Environmental Impact Report (EIR) evaluates the potential environmental impacts of the proposed Los Angeles Zoo (Zoo) Vision Plan (Vision Plan; Project) in the City of Los Angeles (City), California. Per the California Environmental Quality Act (CEQA), the City is the Lead Agency. This Executive Summary provides an overview of the proposed Project and its environmental impacts, a summary of required mitigation measures, and a description of Project alternatives considered in this EIR.

The purpose of an Environmental Impact Report (EIR) is to inform decision-makers, responsible and trustee agencies, and the public of the potential environmental impacts that could result from a project. Under the provisions of CEQA, "the purpose of the environmental impact report is to identify the significant effects of a project on the environment, to identify alternatives to the project, and to indicate the manner in which significant effects can be mitigated or avoided" (Public Resources Code 21002.1[a]). CEQA requires full disclosure and consideration of the unavoidable environmental risks, as applicable, against the economic, legal, social, or other benefits of the project as part of decision-maker approval proceedings.

The City is the Lead Agency for the proposed Project, pursuant to Section 15367 of the CEQA Guidelines. This EIR has been prepared by and under the direction of the Los Angeles Department of Public Works, Bureau of Engineering (BOE). This EIR was prepared in accordance with CEQA (Public Resources Code Section 21000 et seq.); the Guidelines for the Implementation of the California Environmental Quality Act (CEQA Guidelines) (California Code of Regulations Sections 15000 et seq.); and the City's environmental guidance documents (i.e., Los Angeles City CEQA Guidelines and L.A. CEQA Thresholds Guide: Your Resource for Preparing CEQA Analyses in Los Angeles).

The proposed Project is located at 5333 Zoo Drive in the City of Los Angeles, in the southern portion of Los Angeles County. It is generally bordered by the Golden State Freeway or Interstate 5 to the east and the Ventura Freeway or California State Route 134 to the north. The 142-acre Project site is in the northeastern portion of Griffith Park, at the base of the foothills of the Santa Monica Mountains.

ES.2 PROPOSED PROJECT SUMMARY

The Project would guide future development and modernization of the Zoo for the next 20 years. The Project would include comprehensive redesign and redevelopment of the Zoo to replace outdated buildings and infrastructure and upgrade animal care and guest amenities. The Project would result in the following:

- Expanded and revitalized immersive exhibit space for improved animal welfare and the Zoo's conservation and endangered species propagation and preservation programs;
- New and redeveloped visitor-serving facilities for enhanced visitor experience, including three visitor centers, picnic and restaurant locations, and internal circulation and walking paths;
- Expanded and modernized administrative and services facilities to support state of the art animal facilities and upgraded visitor support facilities;
- Circulation improvements for access roads, pedestrian walkways and paths, an enhanced entry way and plaza, and new parking facilities;
- Inclusion of environmentally sustainable design features within the Zoo's built structure; and
- Operational excellence of the Zoo.

The Vision Plan provides guiding principles that would apply to future ongoing Zoo operations and redevelopment of Zoo buildings and infrastructure within nine themed boundaries, referred to as "planning areas" within the Project site. Each planning area would include a common natural setting and program. Several planning areas reflect diverse regions of the planet (e.g., Africa), while others are intended to provide a common programmatic theme (e.g., Nature Play Park).

The proposed Project would include several circulation and infrastructure improvements. The proposed Project would include improvements to the Zoo's internal pedestrian and vehicular circulation by creating a complete and intuitive circulation loop for visitors and providing alternative transportation (i.e., ground tram, aerial tram, and funicular). Improvements to the external circulation would include realignment of Western Heritage Way/Crystal Springs Drive, surface parking improvements, and a multi-story parking structure in the Zoo's northern parking lot. Modern, efficient utilities infrastructure (e.g., new water lines, solar panels, stormwater management system, recirculating animal pools, recycled irrigation systems, climate-controlled irrigation, etc.) and landscaping would also improve the Zoo's long-term environmental sustainability and resiliency.

The proposed Project includes near-term and long-term improvements through seven sequential phases of development over the course of 20 years. The envisioned improvements embody the Vision Plan's guiding principles and carry out development concepts for the Zoo. The development concept and phased improvements, along with proposed Zoo programming, would facilitate expansion of annual visitation from approximately 1.8 million guests currently to 3.0 million guests at Project completion. This projected growth in visitation and expansion of facilities within the Zoo property would have commensurate increases in employment, including Zoo staff and vendors.

ES.3 PROJECT OBJECTIVES

CEQA Guidelines Section 15124(b) requires a project description to contain a statement of a project's objectives, and CEQA Guidelines Section 15124(b) requires the statement of objectives includes the purpose of the project. Broadly, the Vision Plan would serve as the blueprint for transformation and modernization of the Zoo over the next 20 years. The City has identified 14 objectives for the proposed Project:

1. **Animal Welfare and Care**. Provide an environment for all the animals that call the Zoo home to thrive through development of state-of-the art exhibits and animal care facilities that meet or exceed AZA, USDA and state of the industry care standards, as well as upgraded Zoo service centers and veterinary facilities that ensure optimal animal welfare.
2. **Increase and Modernize Zoo Exhibit Space**. Increase and modernize Zoo exhibit space to maximize animal habitat areas, create infrastructure for innovative and proactive animal care and welfare practices, and represent ecosystems and lifecycles by transforming underutilized and underdeveloped areas of the Zoo.
3. **Conservation**. Advance conservation efforts by developing facilities and programs that will support conservation actions to protect and grow animal populations and habitats.
4. **Learning and Education.** Advance public engagement efforts by developing facilities and experiences that promote lasting relationships with nature, life-long learning, opportunities for outreach beyond the Zoo's campus, and a civic culture of conservation.
5. **Immersive Visitor Experience**. Design Zoo exhibits and visitor spaces to provide nature-based experiences that allow Zoo visitors to engage with environments and animals in seamless, immersive spaces.
6. **World Class Destination**. Enhance Zoo facilities and operations to increase Zoo visitation, create a sense of place that transports visitors to other parts of the world, and generate revenue to support operation of the Zoo, capital improvements, and conservation programs.
7. **Visitor-serving Amenities**. Provide a variety of visitor-serving amenities including food and retail establishments, a range of resting and gathering places, and special event centers that will attract visitors and support a range of special events within the Zoo.
8. **Efficient Circulation System**. Develop an efficient and accessible internal loop circulation system that maximizes access to Zoo exhibits for visitor comfort, operational efficiency, and safety, providing dedicated pathways for pedestrians, trams, and emergency and service vehicles.

9. **Accessibility**. Design the Zoo to serve the needs of a diverse population of all ages and abilities through incorporation of ADA pathways, alternative travel options in the Zoo such as aerial or ground-based trams, and exhibit features and facilities for families and those with special needs, along with a cohesive approach to wayfinding.
10. **Multi-modal Access**. Improve multi-modal accessibility and regional transportation to the Zoo, including the provision of alternative transportation options to reduce congestion and improve the circulation of vehicle traffic.
11. **Visual Appearance**. Improve the visual characteristics of the Zoo through architectural design, landscaping, lighting, pedestrian-oriented improvements, and incorporation of symbolic design, and create features that reflect architecture of animal habitat theme areas and the Zoo history.
12. **Capital Improvements**. Identify and provide for implementation of capital improvements and investments that are needed to ensure that future demands on the Zoo's infrastructure will be successfully accommodated.
13. **Environmental Sustainability**. Incorporate sustainable design practices into Zoo facilities to ensure resource conservation consistent with City's Sustainable City pLAn, One Water L.A. Plan, and Resilient Los Angeles Plan.
14. **Operational Excellence**. Provide facilities and resources that allow Zoo staff and emergency responders to safely and efficiently support Zoo operations, including safe and quick vehicle access to all parts of the Zoo, as well as ensuring the Zoo is clean, well-maintained, supportive of the organizational culture, and provides high quality customer service.

ES.4 REQUIRED ACTIONS AND APPROVALS

Project approval would require the following actions by the City Council, with recommendation from the Central Area Planning Commission:

- Vision Plan adoption;
- Certification of the Final EIR; and
- Consideration and approval of a Findings and a Statement of Overriding Considerations, as necessary.

ES.5 COMMENT RECEIVED ON THE NOTICE OF PREPARATION

The City conducted a public scoping process consistent with CEQA Guidelines Section 15083. The public was provided with an opportunity to comment on the scope of the EIR through a Notice of Preparation (NOP) released on January 24, 2019. The NOP/Initial Study (IS) was distributed to federal, state, and local agencies, neighborhood organizations, and other

interested parties for review and comment during a 45-day period. The NOP comment period ended on March 11, 2019.

Two public scoping meetings were held separately during the public review period to solicit comments from interested parties on the content of the EIR. Spanish translating services were provided for both meetings. These meetings were held on Thursday, February 7, 2019, from 6:00-8:00 pm and Saturday, February 9, 2019 from 11:00 am – 1:00pm in the Witherbee Auditorium at 5333 Zoo Drive Los Angeles, California 90027. During these meetings, City staff described the proposed Project and the environmental review process and received public comment on the scope and content of the EIR. The scoping process assisted the City in determining if any aspect of the proposed Project may cause a significant effect on the environment and, based on that determination, narrow the focus of the subsequent environmental analysis. The NOP/IS is included as Appendix B of this EIR. Comments received during the NOP comment period were considered during EIR preparation and are included in Appendix C.

ES.6 AREAS OF KNOWN PUBLIC CONTROVERSY

CEQA Guidelines Section 15123 states that an EIR shall identify areas of controversy known to the Lead Agency, including issues raised by the agency and the public. Based on comments received during the scoping public meetings and NOP/IS comment period, the following issues are known to be of concern and may be controversial. Each issue is further evaluated in the EIR:

- Transportation impacts to local roads;
- Parking adequacy;
- Improved multi-modal access;
- Loss of trees and vegetation;
- Impacts to sensitive species;
- Visual impacts of Zoo redevelopment on Griffith Park visitors, including hikers and equestrians on public trails;
- Animal welfare during construction and operation
- Discovery of cultural and/or tribal cultural resources during construction;
- Water use and conservation, including recycled water;
- Disabled access and stroller access to Zoo exhibit areas;
- Noise and light impacts to sensitive receptors, including Griffith Park;
- Air quality and greenhouse gas (GHG) emissions from construction and operation;
- Recycling and disposal of construction/demolition waste; and
- Impacts of nighttime events.

ES.7 ISSUES TO BE RESOLVED

The issues to be resolved by the Lead Agency include whether and how to mitigate the significant effects of the proposed Project, consideration of the various mitigation measures and alternatives recommended in the Draft EIR by the City, whether the benefits of the proposed Project outweigh their unavoidable environmental impacts, and whether the discretionary approvals required to implement the proposed Project should be granted. Significant and unavoidable impacts have been identified in this EIR for the proposed Project; therefore, a Statement of Overriding Considerations will be required for the proposed Project. A detailed evaluation of alternatives to the proposed Project is presented in Section 4.0, *Alternatives* of this EIR.

ES.8 PROJECT IMPACTS SUMMARY

This EIR examines potential short- and long-term impacts of the project. These impacts were determined through a rigorous process mandated by CEQA in which existing conditions are compared and contrasted with conditions that would exist once the project is implemented. For each impact topic, thresholds for determining impact significance are identified based on City and State CEQA Guidelines, along with descriptions of methodologies used for conducting the impact analysis. For some topics, such as air quality, GHG emissions, noise, and transportation, the analyses of impacts are more quantitative in nature and involve the comparison of effects against a numerical threshold. For other topics, such as land use and planning, the analyses of impacts are inherently more qualitative, involving the consideration of a variety of factors, such as adopted City policies.

The EIR impact discussions classify impact significance levels as:

1. **Significant and Unavoidable** – a significant impact to the environment that remains significant even after mitigation measures are applied;
2. **Less Than Significant with Mitigation** – a significant impact that can be avoided or reduced to a less than significant level with mitigation;
3. **Less Than Significant** – a potential impact that would not meet or exceed the identified thresholds of significance for the topic area; and
4. **No Impact/Beneficial Impact** – no impact would occur for the topic area or a beneficial effect would result.

Determinations of significance levels in the EIR are made based on impact significance criteria and applicable CEQA Guidelines for each topic area.

Per CEQA Guidelines, Section 15126.4, where potentially significant environmental impacts have been identified in the EIR, feasible mitigation measures that would avoid or minimize the severity of those impacts are also identified. Pursuant to CEQA, feasible mitigation measures must be implemented for all significant impacts.

ES.8.1 Impacts Determined to Require No Further Consideration in this EIR

As discussed in Section 1.0, *Introduction* and in Section 5.0, *Other CEQA Considerations*, in accordance with CEQA Guidelines Section 15128 (Effects Not Found to Be Significant), the following environmental resource areas are not analyzed in this Draft EIR because it was determined that the proposed Project would have no impact on them:

- Agriculture Resources
- Mineral Resources
- Population and Housing

ES.8.2 Impacts Determined to be Less than Significant with Mitigation

The analysis presented in Section 3.0, *Environmental Impact Analysis and Mitigation* of this EIR concluded that the proposed Project would result in less than significant impacts, with the incorporation of required mitigation, for the following resource areas:

- Air Quality
- Biological Resources
- Cultural and Tribal Cultural Resources
- Energy
- Urban Forestry
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Noise and Vibration
- Public Services
- Recreation
- Utilities
- Wildfire

ES.8.3 Impacts Determined to be Significant and Unavoidable

The analysis presented in Section 3.0, *Environmental Impacts Analysis and Mitigation* of this EIR concluded that the proposed Project would result in significant and unavoidable impacts, with implementation of required mitigation, for the following resource areas:

- Aesthetics and Visual Resources
- Transportation

ES.8.4 Cumulative Impacts

CEQA Guidelines Section 15130(a) states that an EIR shall "*discuss the cumulative impacts of a project when the project's incremental effect is cumulatively considerable*." In this context, "cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and/or the effects of probable future projects (as defined by CEQA Guidelines Section 15130). Cumulative impacts were determined to be less than significant or less than significant with mitigation for air quality; biological resources; cultural and tribal cultural resources; energy; urban forestry resources; geology and soils; GHG emissions; hazards and hazardous materials; hydrology and water quality; land use and planning; noise; public services; recreation; utilities; and wildfire. The proposed Project would substantially contribute to cumulatively considerable impacts to aesthetics and visual resources and transportation related to projected vehicle miles traveled (VMT).

ES.8.5 Summary of Environmental Impacts of the Project

Table ES-1 at the end of this Executive Summary presents a summary of the impacts, mitigation measures, and residual impacts that could result from implementation of the proposed Project.

ES.9 SUMMARY OF PROJECT ALTERNATIVES ANALYSIS

The City considered several alternatives to the proposed Project, as fully analyzed in Section 4.0, *Alternatives*. Potential alternatives were developed to identify means other than the proposed Project to attain key Project objectives while lessening or avoiding potentially significant environmental impacts caused by the proposed Project. The proposed Project would result in significant impacts on the environment; accordingly, reduction of significant impacts was a factor considered in the development of alternatives to the Project. Scoping comments received for this EIR inform the identification and development of alternatives to the proposed Project.

ES.9.1 Alternatives Considered

Based on initial consideration, the following represents a reasonable range of alternatives to the proposed Project and have been identified by the City for consideration in this EIR.

- **No Project Alternative.** In accordance with CEQA, the EIR includes a No Project Alternative. Under the No Project Alternative, the Vision Plan would not be adopted, comprehensive Zoo-wide expansion and redevelopment would not occur, and the Zoo would continue to operate as is, with maintenance, repair, and improvement of facilities occurring as needed. Improvements to Zoo Drive, the intersection of Zoo Drive/Western Heritage Way, realignment of Crystal Springs Drive, and the Zoo's

parking lot would not occur. Similarly, resident animals would continue to live in some outdated animal spaces. Under the No Project Alternative, the Zoo would continue existing operations, with continued maintenance and repair construction projects occurring on an as needed basis. The No Project Alternative does not mean "no future growth or land uses," but rather that targeted Zoo improvements or expansion would occur under the existing 1998 Zoo Master Plan. As stated in CEQA Guidelines Section 15126.6(e)(3)(A), "typically this is a situation where other projects initiated under the existing plan will continue while the new plan is developed. Thus, the projected impacts of the proposed plan or alternative plans would be compared to the impacts that would occur under the existing plan." The existing 1998 Master Plan, however, is nearly built out, with little room for growth or improvement available under the existing plan. Therefore, the No Project Alternative would not involve any major improvements or large-scale expansions.

- **Reduced Project Alternative (Alternative 1).** This alternative would include a major reconfiguration of the proposed Vision Plan land use plan to avoid development of the existing undeveloped hillsides that contain sensitive biological resources, including areas in the California and Africa planning areas. Reconfiguration of the Vision Plan land use plan to avoid these areas would emphasize redevelopment of the existing developed areas of the Zoo within the lower elevation areas of the canyon, resulting in a smaller development footprint (Figure 4-1). Similar to the Project, all Zoo development would occur within the existing Zoo property with offsite roadway improvements to Zoo Drive/Western Heritage Way. The proposed onsite parking structure would also be reduced in size, bulk, and scale, or eliminated altogether depending on the commensurate reduction in project visitation that would occur with a reduced physical capacity within the Zoo and fewer attractions and special events. In doing so, this alternative would reduce environmental impacts identified in the EIR associated with the development and loss of natural resources within these areas (e.g., visual resources, native habitat, sensitive plant species, protected trees). All other elements of the proposed Project not associated with development of these areas would continue to be implemented under this alternative.
- **Multi-modal Transportation Alternative (Alternative 2).** The Multi-modal Transportation Alternative would incorporate all the measures identified as part of the Zoo TDM Program, required as mitigation, with additional measures necessary to achieve a goal of reducing employee VMT by 15 percent and visitor VMT by 2040. These TDM measures would become elements or programs of the Vision Plan. In doing so, this alternative would reduce environmental impacts identified in the EIR associated with VMT and policy consistency with regional and local transportation plans. This alternative would retain all improvements proposed under the Project with the exception of the onsite parking structure, which would be reduced in size, bulk, and scale in response to increase multi-modal transportation options for Zoo visitors

and employees, which would commensurately reduce parking demand. All proposed Zoo improvements would be implemented on the same 20-year timeframe.

- **Alternative Use (Reuse/Conservation Center).** Under this alternative, the Zoo would be redeveloped to function more as a conservation/research facility that would expand upon and emphasize animal conservation, recovery, education, and research. This may include redevelopment of the Zoo property to provide animal conservation or species recovery programs, as opposed to a visitor-serving uses. The Zoo would no longer function primarily as a visitor-serving attraction and would no longer be open to the public. Visitation would be limited to support the conservation program, which would substantially reduce visitors and employee trips and demands for utilities and public services. Visitor-serving uses (e.g., attractions, restaurants, retail shops) would either be transitioned to accommodate animal conservation programs or be demolished, and many resident animals would likely be moved to other zoos.
- **Relocated Zoo.** Under this alternative, the Zoo would be relocated and developed under a revised Vision Plan at an alternative site. The alternate site would be at least 142 acres and located within the City. Potential sites include the 160-acre Wildlife Waystation in the San Fernando Valley or vacant sites near Cabrillo Marine Aquarium, both of which are AZA accredited facilities. The City and Zoo would emphasize selection of a site located within a Transit Priority Areas (TPAs) to improve multi-modal access to the Zoo. Following relocation of the Zoo, the existing Zoo would be demolished and redeveloped as a public park within Griffith Park or serve as a restoration/nature demonstration site connecting with other publicly accessible land within Griffith Park.
- **Golf Course Expansion.** Under this alternative, the Vision Plan would be amended to maintain the proposed increase in visitor-serving and animal habitat areas, but would relocate the California and Africa planning area development currently proposed within the existing undeveloped hillside areas to the adjacent Wilson & Harding Golf Course property. This alternative would require the vacation of portions or all of the Wilson & Harding Golf Course and relocation of existing Zoo back-of-house and administration facilities currently located along the Zoo's southern property boundary to support the expansion of visitor-serving and animal habitat areas onto the golf course property.
- **Adjusted Phasing Alternative.** Under this alternative, the Vision Plan would be implemented through a series of phases organized differently than that described for the proposed Project. Specifically, this alternative would defer construction of the proposed Africa planning area improvements to Phase 4, and construction of the parking structure would be advanced to Phase 3. This would extend the duration of Phase 3 by one year (completion in 2031) and push the timing of each long-term phase back by a similar duration. In addition, the revised phasing schedule would become consolidated, eliminating the need for Phase 7, and resulting in implementation of the Vision Plan in only six phases.

ES.10 SUMMARY OF ALTERNATIVES CARRIED FORWARD FOR ANALYSIS

In accordance with the State CEQA Guidelines (Section 15126.6(d)), the discussion of the environmental effects of the alternatives may be less detailed than the discussion of the impacts of the proposed Project. The following provides a comparative analysis of the impacts associated with each of the alternatives carried forward (Alternatives 1 and 2) relative to the proposed Project. Additional detailed analysis is provided in Section 4.0, *Alternatives.*

ES.10.1 Alternative 1 – Reduced Project Alternative

Alternative 1 would retain approximately 21 acres of undeveloped area currently within Zoo property in its current setting. In doing so, this alternative would preserve a combination of native and non-native vegetation communities supporting a limited range of sensitive species and protected trees, as well as avoid visual and geologic changes to these areas. As a result, this alternative would reduce potentially significant impacts to biological and urban forestry resources, as well as aesthetics, air quality and GHG emissions, energy, noise, transportation, and utilities. With mitigations required for the Project, Alternative 1 would reduce one significant and unavoidable impact (Impact VIS-2) related to aesthetic impacts to the visual character of the Zoo in context of the Zoo Drive gateway to Griffith Park. However, Alternative 1 would still generate VMTs that exceed the City's TAG threshold of net-zero VMT for regional attractions like the Zoo and impacts related to Zoo would remain significant and unavoidable under Alternative 2.

Alternative 1 would continue to support long-term redevelopment of the existing Zoo to be partially consistent with several of the Project objectives, including improvement of animal welfare and care (Project Objective No. 1) though to a lesser extent, modernization of exhibit spaces (Project Objective No. 2), improvement of the visual appearance of the Zoo (Project Objective No. 11), and incorporation of sustainable design practices (Project Objective No. 13). However, this alternative would not include the expanded exhibits within the California and Africa planning areas proposed under the Project, which would limit expansion within Zoo property. Likewise, with less area contributing to the design and function of a redeveloped zoo, this alternative would not utilize all of the Zoo property to maximize immersive experiences for visitors or expand visitor-serving features (Project Objectives Nos. 5, 6, and 7). Further, Alternative 1 would not create an efficient and accessible internal loop circulation system with a Primary Loop Path (Project Objective No. 8). This feature is key to improving not only visitor experience but also to visitor safety and operational excellence (Project Objective Nos. 9 and 14). This alternative would include some improvements to the secondary/exhibit pathways and would implement the proposed Zoo aerial tram to improve access; however, a funicular would not be developed and many of the Zoo's pathways would remain inaccessible for ADA visitors and potentially difficult to navigate, similar to the existing setting at the Zoo. As a result, Alternative 1 would not meet or only partially meet several Project objectives.

ES.10.2 Alternative 2 – Multi-modal Transportation Alternative

Alternative 2 would substantially expand multi-modal transportation opportunities for the Zoo to give visitors and employees the option to use transit, bicycles, walking, and ridesharing as a viable and attractive travel mode. In doing so, Alternative 2 would substantially reduce total Zoo VMT to a greater extent than the Project. As a result, this alternative would reduce potentially significant impacts to aesthetics, air quality and GHG emissions, energy, land use and planning, and transportation. However, given that the City's VMT threshold for the Project is net-zero new VMT, Alternative 2 would not result in zero new VMT and transportation impacts would remain significant and unavoidable,

Alternative 2 would guide redevelopment of the Zoo consistent with all of the Project objectives. Since Alternative 2 would include all of the same development components included in the proposed Project, this alternative would provide the same benefits to the Zoo associated with expanded animal exhibits, enhanced visitor-serving areas, improved circulation, and updated facilities.

ES.10.3 Environmentally Superior Alternative

Section 15126.6(e)(2) of the State CEQA Guidelines requires that an analysis of alternatives shall identify an environmentally superior alternative among the alternatives evaluated in the EIR. Each Project alternative was evaluated based on significance criteria, location, extent and magnitude of impacts, potential benefits, and relative impacts in comparison to other alternatives. The alternative with the fewest adverse impacts and relatively greatest benefits is thereby considered the Environmentally Superior Alternative. Although the No Project Alternative would result in the least amount of impacts, CEQA Guidelines section 15126.6 states that if the environmentally superior alternative is the No Project Alternative, the EIR shall also identify an environmentally superior alternative from among the other alternatives.

Based on the information in this EIR, Alternative 1, the Reduced Project Alternative, is identified as the Environmentally Superior Alternative. Alternative 1 was found to generate the least adverse impacts compared to the Project and Alternative 2, the Multi-Modal Transportation Alternative. Alternative 1 would reduce impacts as compared to the Project in the following resource areas: aesthetics, air quality; biological resources; energy; urban forestry resources; greenhouse gas emissions; noise; transportation; and utilities. For instance, avoidance of development within the hillsides of the California and Africa planning areas would greatly eliminate impacts to habitats onsite, including laurel sumac shrubland, coast live oak woodlands, eucalyptus/mixed woodlands, coast live oak woodland, and California sage coastal sage scrub habitats. Alternative 1 would also minimize impacts to Nevin's barberry and Southern California black walnut, two sensitive species known to exist on site. Reduction or elimination of the proposed parking structure would also reduce visual impacts to the public from roadways and areas fronting the Zoo in Griffith Park. However,

Alternative 1 would continue to result in significant and unavoidable impacts to transportation, similar to the Project and Alternative 2.

Alternative 1 would only meet the Project objectives for animal welfare and care within fewer exhibit spaces and animal habitats, capital improvements, and environmental sustainability. A majority of the remaining Project objectives would only be partially met by Alternative 1. For instance, the Zoo's ability to increase and modernize Zoo exhibit space, develop conservation facilities and programs, promote learning and education, provide an immersive visitor experience, create a world class destination, and provide visitor-serving amenities would all be hindered by the reduced development footprint under Alternative 1. Therefore, while Alternative 1 would be the Environmentally Superior Alternative, it would not achieve the objectives for the Project to the same extent as the Project and Alternative 2.

Table ES-1. Summary of Impacts and Mitigation Measures of the Proposed Project

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
Aesthetics and Visual Resources			
VIS-1: The proposed Project would not have a substantial adverse effect on a scenic vista.	Less than significant	No mitigation measures required.	Not applicable

VIS-2: Even with required mitigation measures, the proposed intersection improvements would detract from the urban wilderness identity of Griffith Park near the Zoo Drive gateway and affect views of topography and natural resources as viewed from travelers along Zoo Drive or Western Heritage Way. Therefore, these proposed changes outside the Zoo property would be inconsistent with the City's General Plan Conservation Element, Framework Element, 1988 Hollywood Community Plan, and Griffith Park Vision Plan.	Potentially significant	**MM UF-1** and **MM UF-2** shall apply.
		MM VIS-1 Roadway and Parking Lot Improvement Design. Improvements to the intersection of Zoo Drive/North Zoo Drive/Western Heritage Way and the main Zoo entrance, Zoo parking lots, and the realignment of Crystal Springs Drive shall be designed to respect and enhance the visual quality and natural character of Griffith Park, especially designated gateways to Griffith Park as follows:
		• A licensed landscape architect experienced with road and infrastructure design within highly scenic parks shall be part of any design team and charged with maintaining and enhancing visual quality and natural character the public spaces fronting the Zoo, including the parking, roadways, intersections and trails.
		• For improvements at the intersection of Zoo Drive/North Zoo Drive/Western Heritage Way and the main Zoo entrance, major structural changes, including but not limited to a new bridge, below-grade crossing, and slip ramps or a roundabout, a licensed architect experienced with road and infrastructure design within highly scenic parks shall be part of any design team and charged with creating a scenic and iconic gateway feature, including:
		  • Use of stone or other natural materials consistent with surrounding structures and facilities in Griffith Park.
		  • Minimize size, bulk, scale of structures to the extent feasible while also adhering to required engineering standards for safety and operations.
		  • Installation of iconic design elements, signage, and art/decorations (e.g., emblematic animals or habitats, sculpture, topiary/vegetation, water feature) that reflect the gateway to both the Zoo and Griffith Park such that the bridge or roundabout become beneficial visual features.
			Significant and unavoidable

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		• All improvements to access roads and intersections shall be designed to preserve existing vegetation, particularly healthy mature trees, and characteristic park features (e.g., split rail fences) and to protect views from these roads and adjacent trails. • As part of design of these road and intersection improvement projects, a master landscape plan shall be prepared to guide tree and landscape retention and protection along these road corridors along with tree replanting and replacement landscaping. • The Zoo shall coordinate with RAP on design of all road and intersection improvements, and parking lot perimeter plantings. **MM VIS-2 Parking Structure Design and Screening.** The proposed parking structure shall be designed in such a manner as to limit size, bulk, and scale and to reduce visibility of this new parking structure. The goal for redesign of the parking structure should be reduce the structure height as much as possible. Possible ways to reduce impacts of views of the structure from adjacent roadways and public areas may include: • Siting the parking structure in the far western corner of the parking lot as far from Zoo Drive as possible; • Design of the structure to a height no greater than three stories above grade with development of additional subterranean construction levels as necessary to achieve the intended number of new parking spaces; • Screening of the structure through planting of dense stands of trees and landscaping around the exterior of the structure; • Installation of lattices or climbing vines along the exterior of the structure and; • Use of natural materials (e.g., stone facing) or earth-tone colors to reduce the urban character of the structure. Proposed plans for the parking structure shall demonstrate screening and compatible design with Griffith Park and the intended goal of reducing structure height to the extent feasible. If the design of the structure within the proposed footprint identified in the Vision Plan and with a reduced structure height is determined to be infeasible due to cost or other environmental factors (e.g., shallow groundwater), redesign of the structure to achieve a reduced structure height may	

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		include consideration of a design of a structure within a larger footprint and no subterranean levels. All plans for the proposed parking structure shall be subject to review and approval by the City Bureau of Engineering prior to approval of permits.	
VIS-3: Construction lighting would be localized and not perceived by the public. Glare from the aerial tram gondolas would be minimized by the use of matte finishing and earth tone colors to blend with the landscape.	Potentially significant	**MM VIS-3 Aerial Tram Glare Reduction.** The proposed aerial tram support structures and gondolas shall have matte-finishing and painted with earth-tone colors to blend with the landscape. All glass features of the gondolas shall utilize non-reflective or low-reflectivity glass or film covers to avoid any potential for glare. Requirements for the use of no or low reflective materials shall be indicated on all plans for the aerial tram and be subject to review and approval by City Bureau of Engineering prior to approval of permits.	Less than significant
Air Quality			
AQ-1: The mitigated construction emissions would not have the potential to conflict with or obstruct implementation of the 2016 Air Quality Management Plan (AQMP) by exacerbating air quality violations or delaying attainment of the air quality standards. All operational emissions would remain below applicable thresholds without mitigation.	Potentially significant	**MM AQ-1 Off-Road Construction Equipment Meeting Tier 4 Final Emissions Standards.** All off-road diesel-powered construction equipment greater than 50 horsepower used for Project construction shall meet, at a minimum, Tier 4 Final off-road emissions standards. Construction contractors shall ensure that all off-road equipment meet the standards prior to deployment at the Project site and the Zoo shall demonstrate compliance with this measure to the City Bureau of Engineering prior to the start of construction. The City Bureau of Engineering shall monitor for continual compliance with these requirements throughout the course of construction.	Less than significant
AQ-2: Without mitigation, construction of the proposed Project would generate emissions of NOx, an O_3 precursor, in excess of the applicable SCAQMD regional mass daily threshold. Operational emissions of O_3 precursors and particulate matter would be below project-level thresholds and would not result in a cumulatively considerable net	Potentially significant	**MM AQ-1** shall apply.	Less than significant

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
increase of any criteria pollutants for which Los Angeles County is currently designated nonattainment.			
AQ-3: Maximum daily emissions from sources located on the site during construction would not meet or exceed applicable localized significance threshold (LST) screening values. Furthermore, mitigation would substantially reduce on-site emissions of NO_X and diesel particulate matter from off-road equipment. Operation of the proposed Project would not result in a land use change or alteration to the site that would place sensitive receptors in closer proximity to substantial sources of air pollutant emissions.	Potentially significant	**MM AQ-1** shall apply.	Less than significant
AQ-4: Implementation of the proposed Project would not result in sources of odors or other emissions that could create nuisance conditions.	Less than significant	No mitigation measures required.	Not applicable
Biological Resources			
BIO-1: Protection or restoration of native plant communities and special-status species would reduce Project impacts to special-status plant species.	Potentially significant	**MM WF-1** shall apply. **MM BIO-1 Biological Resources Mitigation and Monitoring Program.** The Zoo shall prepare and implement a Biological Resources Mitigation and Monitoring Plan (BRMMP) to mitigate loss of native vegetation communities, habitat, and special-status species from each Project phase. The BRMMP shall be prepared after completion of 30 percent design plans for each phase and shall specify timing and implementation of required biological resource restoration, enhancement, or creation measures. The BRMMP shall be prepared by a City-approved biologist as part of planning, engineering, and site	Less than significant

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		design for each Project phase under the direction of and approval by the City Bureau of Engineering and Zoo planning staff. The BRMMP shall be prepared in consultation with appropriate City departments and resource agencies such as the Los Angeles Fire Department, Recreation and Parks Department, and the CDFW. The BRMMP shall be updated prior to final designs and development plans for each phase. The Zoo shall be responsible for ensuring all BRMMP requirements are reflected in Project design/architectural, engineering, and grading plans. All plans for each Project phase shall be reviewed by the City to ensure compliance with the BRMMP. The BRMMP shall require measures to avoid and mitigate impacts to biological resources onsite, including, but not limited to, the following: 1. At 30 percent design plan stage for each Project phase, biological resource surveys shall be completed for areas of potential effect in that phase by a City-approved biologist, subject to the following requirements: a) The surveys shall refine the disturbance footprint of impacted habitats plus a buffer if recommended by the City-approved biologist. b) The survey shall delineate native vegetation communities such as coast live oak woodland, laurel sumac shrubland, and coastal sage scrub, including maps of the extent and type. c) The survey shall identify all special-status plant and animal species present or potentially present within the subject phase of Project development. d) A summary of the results of the pre-construction survey shall be submitted to the City immediately upon completion of the survey. A survey report describing and delineating the extent and quality of native vegetation communities and the presence or potential presence of special-status plant or animal species shall be submitted to the City for review and approval prior to completion of 60 percent design plans for the subject Project phase; if no native vegetation communities or special-status species are present or potentially present, the survey report shall describe such findings based evidence from the surveys.	

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		e) The survey report shall map and describe the location and extent of native vegetation communities and observed special-status plant or animal species that would be impacted within the areas of potential effect for each Project phase, and require the following avoidance, minimization, and mitigation measures: i) To the maximum extent feasible, onsite native vegetation communities and special-status plant species shall be protected and preserved in place, and design plans shall be amended to avoid disturbance or loss of these biological resources. The City-approved biologist shall work with Project designers during final design for each phase, as required, to incorporate existing native vegetation and special-status plant species, such a Nevin's barberry, and mature native trees, such as coast live oaks, into the Zoo landscaping and facilities (e.g., exhibits, visitor-serving spaces, service areas) in a manner that would ensure the livelihood and biological value of the natural community and/or individual plant. Construction techniques for Project development to avoid and protect special-status species shall be identified as part of a required construction mitigation plan (see **MM BIO-2**). ii) If avoidance or preservation in place cannot be achieved while meeting Project Objectives, the area of disturbed native vegetation communities and the total lost special-status plant species shall be mitigated onsite at a ratio of 2:1, as feasible given space limitation within the Zoo. To the extent feasible, native vegetation communities and special-status plant species shall be relocated or reestablished within disturbed, altered, and/or lost areas of coast live oak woodland, laurel sumac shrubland, and coastal sage scrub within the Project site. The BRMMP shall provide a description of the location and boundaries of the mitigation site and description of existing site conditions. The mitigation area shall be incorporated into the final development plans for each phase of Project development.	

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		iii) If native vegetation communities and/or special-status plant species cannot be protected and/or restored onsite, the Zoo and City shall work with RAP to identify an appropriate site(s) for restoration within Griffith Park to serve as a mitigation site. Offsite restoration of affected native vegetation communities and special-status plant species shall occur at a minimum ratio of 3:1. The BRMMP shall provide a description of the location and boundaries of the offsite mitigation site. iv) If onsite or offsite restoration is required, the BRMMP shall specify restoration plans and techniques, as recommended by a City-approved biologist, including, but not limited to: (1) Identification of a suitable habitat compensation area of comparable size to be preserved and managed for lost habitat or species (2) Site preparation (3) Seed collection and/or plant salvage, designation, or establishment of offsite plant nursery facilities. (4) Planting, hydroseeding, replanting or seeding activities. (5) Success criteria (6) Maintenance and monitoring program, for the short-term plant establishment period (i.e., 1-3 years), and over the long term (i.e., 5 years) (7) Reporting Requirements v) If onsite or offsite restoration is required, a binding long-term agreement with the Zoo to implement and maintain protected and restored habitats/communities shall be implemented with the City. The BRMMP shall identify typical performance and success criteria deemed acceptable by the City based on measurable goals and objectives. Minimum criteria for restored habitats shall be at least 70 percent survival of container plants and 70 percent relative vegetative cover by vegetation type. BRMMP mitigation elements that do not meet performance or final success criteria within 5 years shall be completed through an extension of the BRMMP for an additional 2 years or at the	

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		discretion of the City with the goal of completing all mitigation requirements. Monitoring of the mitigation and maintenance areas shall occur for the period established in the BRMMP, or until success criteria are met. If success criteria cannot be met through the BRMMP, the City shall specify appropriate commensurate measures (e.g., additional onsite or offsite restoration). vi) If special-status animal species are present or potentially present based on the survey, including bat, woodrats, or legless lizard species, and migratory or nesting birds, the BRMMP shall include avoidance and minimization measures to avoid or relocate as part of a construction mitigation plan (see **MM BIO-2**) and management plans for migratory and nesting birds (see **MM BIO-4**) and bat colonies (**MM BIO-5**). **MM BIO-2 Construction Mitigation Plan for Biological Resources.** The Zoo shall prepare and implement a Construction Mitigation Plan (CMP) that identifies avoidance, reduction, and mitigation measures for construction-related impacts to biological resources, including special-status species. The CMP shall be prepared by a City-approved and qualified biologist prior to initiation of construction activities for Phase 1 of the Project and updated prior to construction activities for each subsequent phase. The CMP shall be approved by the City Bureau of Engineering and Zoo planning staff. The Zoo shall be responsible for ensuring all CMP requirements are included in construction plans and implemented as part of construction. All construction activities shall be monitored by a City-approved biologist to ensure compliance with the CMP. The Zoo would coordinate with CDFW Region 5 prior to the start of any construction activities. The CMP shall require: 1. Per **MM BIO-1**, the CMP shall incorporate and address data from biological resource surveys for each Project phase to avoid and protect special-status plant and animal species to the maximum extent feasible, as follows:	

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		a) Within six months prior to the start of construction of each Project phase, biological resource surveys shall be completed for areas affected in that phase by City-approved biologist, consistent with **MM BIO-1**. b) If the phase-specific survey identifies presence or potential presence of special-status species, within 14 days of the start of construction (including mobilization and staging), pre-construction clearance surveys shall be completed by a City-approved biologist to either confirm or update the BRMMP related to the location and extent of special-status species. A report of the pre-construction survey shall be submitted to the City Bureau of Engineering for review and approval prior to the start of construction. 2. Based on the BRMMP and the results of the pre-construction surveys, the CMP shall require measures to avoid or mitigate impacts to special-status species present or potentially present within the Project phase; if no sensitive species are present or potentially present, the CMP shall identify findings from the surveys. CMP avoidance and minimization measures shall be subject to review and approval by a City-approved biologist, including, but not limited to, the following: a) If present, special-status animal species, such as woodrat, legless lizard, and bat species (see also **MM BIO-5**), shall be relocated from the Project site either through direct capture or through passive exclusion prior to construction activities. With cooperation and authorization from CDFW, trapping may be employed to identify woodrat species that are inhabiting the site. If determined appropriate, woodrat middens should also be relocated by qualified biologists outside of construction areas. b) If present, special-status plant species, such as Nevin's barberry, shall be avoided to the extent feasible through use of high visibility exclusion fencing and signage to protect vegetation and root systems from disturbance or compaction, consistent with the BRMMP. Lost special-status plant species shall be replaced consistent with the BRMMP.	

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		3. The CMP shall include BMPs to avoid or minimize impacts to biological resources during construction, including, but not limited to, the following: a) Construction equipment and vehicles shall be stored within existing disturbed or developed areas within the Zoo to the maximum extent feasible to avoid impacts to natural areas. All construction vehicle maintenance shall be performed in a designated offsite vehicle storage and maintenance area approved by the City. All construction access roads and staging areas shall be located to avoid known/mapped native vegetation and special-status species. b) All construction materials (e.g., fuels, chemicals, building materials) shall be stored at designated construction staging areas, which shall be located outside of designated sensitive areas in the BRMMP and CMP. Should spills occur, materials and/or contaminants shall be cleaned immediately and recycled or disposed of to the satisfaction of the RWQCB. c) All trash and construction debris shall be properly disposed at the end of each day. Dumpsters shall be covered either with locking lids or with plastic sheeting at the end of each workday and during storm events. All sheeting shall be carefully secured to withstand weather conditions. d) Construction-related erosion shall be minimized to retain sediment within the area of potential effect, including installation of silt fencing, straw waddles, or other acceptable construction erosion control devices. Such measures shall be installed along the perimeter of disturbed areas. e) Concrete truck and tool washout shall occur in a designated construction staging areas or other offsite location such that no runoff would flow to natural areas within the Zoo or to the Zoo's stormwater collection system. f) All open trenches shall be constructed with appropriate exit ramps to allow species that incidentally fall into a trench to escape. All open trenches shall be inspected at the beginning of each workday to ensure that no wildlife species are present. Any wildlife species found during inspections shall be gently	

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		encouraged to leave the Project site by a qualified biologist or otherwise trained and City-approved personnel. Trenches shall remain open for the shortest period necessary to complete required work. g) Construction shall be limited to daylight hours (7:00 AM to 7:00 PM or sunset, whichever is sooner). **MM BIO-3 Worker Environmental Awareness Program.** The Zoo shall retain a qualified, City-approved biologist to prepare a Worker Environmental Awareness Program (WEAP) that shall be implemented during all phases of construction. WEAP training shall be provided to all personnel working on the site by a qualified, City-approved biologist. The training should review the construction-related requirements of the BRMMP and the CMP, including all special-status species that occur or have potential to occur. Training should explain all mitigation and protection measures, responsibilities of each worker, and a reporting framework. The WEAP shall be prepared and approved by the City Bureau of Engineering and Zoo planning staff prior to construction activities of Phase 1. **MM BIO-4 Migratory and Nesting Bird Management.** Removal of trees and other vegetation shall be conducted outside of the breeding season (generally January 15 to August 31 for raptors, March 1 to August 31 for other bird species) to the extent feasible. If Project construction activities must be conducted during these period, pre-construction nesting bird surveys by a City-approved biologist shall take place within one week prior to ground disturbance and tree removal or trimming associated with each Project phase. If no active nests or nesting activity is found within or immediately adjacent to the phase work area, construction activities may proceed. If active nests are located during these surveys, the following measures shall be implemented: 1. A summary of the results of the pre-construction survey shall be submitted to the City immediately upon completion of the survey. Consistent with **MM BIO-1** and **MM BIO-2**, the qualified biologist shall prepare a final report of the pre-construction survey to be submitted to the City Bureau of Engineering for review and approval prior to the start of construction. The report shall detail	

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		appropriate fencing or flagging of the buffer zone and make recommendations on additional monitoring requirements. A map of the area of potential effect and nest and roost locations shall be included with the report. If any special-status species are observed during pre-construction surveys, the Project biologist shall coordinate with appropriate regulatory agencies to determine appropriate procedures for handling or avoidance of the specimen. 2. If the pre-construction surveys indicate presence of nesting or roosting birds, the construction activity shall be evaluated, and avoidance methods implemented as necessary at the discretion of the qualified biologist. Methods would vary based on bird species, site conditions, and type of work to be conducted, but could consist of limited or reduced construction access; reduced vehicle speeds; and/or noise attenuation. 3. At the discretion of the qualified biologist, construction activities within 3o0 feet of an active nest of passerine birds shall be restricted until chicks have fledged, unless the nest belongs to a raptor, in which case a 500-foot activity restriction buffer shall be observed to avoid noise, light, and direct disturbance (see Section 3.12, *Noise and Vibration*). The Project biologist conducting the survey shall have the authority to reduce or increase the recommended buffer depending upon site conditions and the species involved. 4. A report of findings and recommendations for bird protection shall be submitted to the City prior to vegetation removal.	
BIO-2: With implementation of best management practices (BMPs) and mitigation, the proposed Project would not adversely affect wildlife movement in the vicinity.	Potentially significant	**MM BIO-1**, **MM BIO-2**, and **MM BIO-4** shall apply. **MM UF-1** and **MM UF-2** shall apply. **MM BIO-5 Bat Colony Management.** Removal of trees and older structures should be conducted outside of the maternity roost season (typically March 1 to August 31). Prior to removal of any trees over 20 inches diameter-at-breast-height (DBH) or demolition/relocation of existing onsite structures, a pre-construction acoustic and day/night roost survey shall be conducted by a qualified biologist to determine if any tree or structure proposed for removal, trimming, demolition, or relocation harbors sensitive bat species or maternal bat colonies. If present, maternal bat colonies shall not be disturbed and grading and	Less than significant

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		construction activities shall avoid the bat breeding season to the extent feasible. If disturbance of structures must occur during the bat breeding season, buildings and trees must be inspected and deemed clear of bat colonies/roosts within 7 days of demolition and an appropriately trained and approved biologist must conduct a daily site-clearance during demolition. If bats are roosting in a structure or tree in the Project site during the daytime but are not part of an active maternity colony, then exclusion measures shall be utilized and must include one-way valves that allow bats to leave but are designed so that the bats may not re-enter the structure. For each occupied roost removed, one bat box shall be installed in similar habitat as determined by the Project biologist and shall have similar cavities or crevices to those which are removed, including access, ventilation, dimensions, height above ground, and thermal conditions. If a bat colony would be eliminated from the Project site, appropriate alternate bat habitat shall be installed within the Project site. To the extent practicable, alternate bat house installation shall occur near onsite drainages.	
BIO-3: Implementation of preservation and restoration measures would reduce impacts associated with the loss of protected native trees and shrubs.	Potentially significant	**MM UF-1** and **MM UF-2** shall apply.	Less than significant
Cultural and Tribal Cultural Resources			
CUL-1: The proposed Project would not result in impacts to historical resources.	Less than significant	No mitigation measures required.	Not Applicable
CUL-2: The proposed Project would potentially discover prehistoric cultural resources during construction.	Potentially significant	**MM CUL-1 Pre-Construction Workshop.** Prior to any ground disturbance activities during construction of each Project phase, a City-qualified archaeologist and shall conduct a cultural resources workshop for all construction personnel. The City-qualified archaeologist must meet the Secretary of Interior standards for archaeology and have a minimum of 10 years of experience as a Principal Investigator working with Native American archaeological sites in southern California. The qualified archaeologist will ensure that all other personnel are appropriately trained and qualified. The workshop will inform all construction personnel of the types of cultural material that may be	Less than significant

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		encountered, and of the proper procedures to be followed in the event of an unexpected discovery of cultural material or human remains. Appropriate documentation will be completed to demonstrate attendance. **MM CUL-2 Unexpected Discovery of Cultural Material.** In the event unexpected cultural resource material - such as flaked or ground stone, historic debris, building foundations, or non-human bone - is discovered during Project-related ground disturbances, construction personnel will stop all work within 50 feet of the discovery until a City-qualified archaeologist can evaluate the discovery for significance. Construction personnel will contact the City and Zoo staff immediately. Activities that may adversely impact the discovery will not resume without written authorization from the City that construction may proceed. The nature, extent, and significance of the discovery will be evaluated by a City-qualified archaeologist, and a Native American representative if the discovered resource is prehistoric. If the discovery is determined to be a significant cultural resource under CEQA, avoidance is the primary method of mitigation. If avoidance is not feasible, the City-qualified archaeologist will prepare a treatment plan consistent with CEQA Guidelines Section 15064.5(f) that addresses implementation of data recovery mitigation excavations. Treatment measures typically include development of avoidance strategies, capping with fill material, or mitigation of impacts through data recovery programs such as excavation or detailed documentation and public interpretation. A report of findings shall be prepared, and recovered materials curated, if needed, in an approved facility.	
CUL-3: The proposed Project would potentially discover human remains during construction.	Potentially significant	**MM CUL-3 Unexpected Discovery of Human Remains.** In the event human remains are encountered during Project-related ground disturbances, construction personnel will stop all work in the vicinity of the discovery and immediately contact the Los Angeles County Coroner in accordance with Public Resources Code Section 5097.98 and Health and Safety Code Section 7050.5. The City and Zoo staff will also be contacted. If the County Coroner determines the remains are prehistoric, the Coroner will contact the Native American Heritage Commission and the Native American Heritage Commission shall designate a Most Likely Descendant.	Less than significant

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
CUL-4: The proposed Project would potentially impact tribal cultural resources, including buried resources and cultural landscapes.	Potentially significant	**MM CUL-4 Native American Monitoring.** A Native American representative approved by the Gabrieleño Band of Mission Indians-Kizh Nation Tribal Government and the NAHC will monitor ground disturbing construction activities. Ground disturbing construction activities are defined by the Gabrieleño Band of Mission Indians-Kizh Nation as activities that include, but are not limited to, pavement removal, pot-holing or augering, grubbing, tree removal, boring, grading, excavation, drilling, and trenching. The Native American representative will complete daily monitoring logs that will provide the location of construction activities, and a description of the soil and any cultural materials identified. Native American monitoring will be terminated when all ground disturbing construction activities are complete or when the Native American representative determines that the proposed Project site has a low potential for impacting Tribal Cultural Resources during each phase of Project implementation. Native American monitoring during ground disturbing construction activities will be conducted consistent with current professional standards. **MM CUL-5 Unanticipated Discovery of Tribal Cultural and Archaeological Resources.** Pursuant to **MM CUL-2**, upon discovery of any archaeological resources, construction activities will cease in the immediate vicinity of the discovery until the discovery can be assessed. All archaeological resources identified during Project construction activities will be evaluated by the Native American representative approved by the Gabrieleño Band of Mission Indians-Kizh Nation. If the resources are Native American in origin, the Gabrieleño Band of Mission Indians-Kizh Nation will coordinate with the City and the Zoo regarding treatment and curation of the resources including reburial or preservation for educational purposes. Per AR-2, if the discovery is a significant resource, avoidance measures or appropriate mitigation will be implemented. **MM CUL-6 Preservation of Unique Archeological Resources.** If unique archaeological resources are discovered, preservation in place (i.e., avoidance) will be the preferred manner of treatment consistent with Public Resources Code Section 21083.2(b). If preservation in place is not feasible, treatment may include implementation of archaeological	Less than significant

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		data recovery excavations to remove the resources and subsequent laboratory processing and analysis. Historic archaeological material that is not Native American in origin will be curated at a public, non-profit institution with a research interest in the materials, such as the Natural History Museum of Los Angeles County or the Fowler Museum, if such an institution agrees to accept the material. If no institution accepts the archaeological material, it will be offered to a local school or historical society for educational purposes. **MM CUL-7 Unanticipated Discovery of Human Remains and Associated Funerary Objects.** PRC Section 5097.98(d)(1) defines Native American human remains as an inhumation or cremation in any state of decomposition or skeletal completeness. Consistent with MM CUL-3, in the event human skeletal material is discovered, excavation will be stopped, and the discovery will be immediately reported to the Los Angeles County Coroner consistent with Health and Safety Code 7050.5. If the County Coroner recognizes the human remains to be Native American or has reason to believe the remains are Native American, the County Coroner will contact the NAHC within 24 hours. Public Resources Code 5097.98 will be followed. In the event human skeletal material is discovered, the following will occur: • The Native American representative monitor will immediately redirect construction activity a minimum of 150 feet from the discovery and place an exclusion zone around the discovery. The Native American representative will contact the construction manager who will then contact the Los Angeles County Coroner. The Native American representative will also contact the Gabrieleño Band of Mission Indians-Kizh Nation, a City-qualified archaeologist, the City, and the Zoo. Construction activity will continue to be redirected while the County Coroner determines whether the human skeletal material is Native American. The discovery will be kept confidential and secure to prevent further disturbance. If the human skeletal material is determined to be Native American, the County Coroner will notify the NAHC. The NAHC will then appoint a Most Likely Descendant.	

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		• Funerary objects/associated grave goods will be treated in the same manner as bone fragments. • If discovered human remains cannot be fully documented and recorded on the same day, the remains will be covered with muslin cloth. A steel plate will be placed over the discovery to protect the remains. If a steel plate is not available, a 24-hour guard will be present onsite outside of regular construction hours. • Redirecting construction activities to protect the human remains in place will be recommended if feasible. If construction activities cannot be redirected, the burials may be removed. Cremations will be removed in bulk or by any means necessary to ensure complete recovery of all material. The Gabrieleño Band of Mission Indians-Kizh Nation will work closely with the City-qualified archaeologist to ensure that any excavation to remove human remains is conducted carefully, ethically, and respectfully. • If the discovery of human remains includes four or more burials, the location will be considered a cemetery and a separate treatment plan will be prepared. • If data recovery excavations are approved by the Gabrieleño Band of Mission Indians-Kizh Nation, documentation will include detailed descriptive notes and sketches at a minimum. Additional documentation will be approved by the Gabrieleño Band of Mission Indians-Kizh Nation • All feasible care will be taken to avoid any unnecessary disturbance, physical modification, or separation of human remains and associated funerary objects. • Scientific study of the human remains, including the use of invasive diagnostic procedures/techniques, will not be conducted. • Each discovery of human remains or associated funerary objects will be stored in opaque cloth bags. All human remains, funerary objects, sacred objects, and objects of cultural patrimony will be removed to a secure container on-site if possible. These items will be retained and reburied within six months of discovery. • Prior to the resumption of ground disturbing construction activities, the Zoo will designate a location within the proposed Project site for the respectful reburial of the human remains and/or funerary	

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		objects. The reburial/repatriation site will be a location agreed upon between the Gabrieleño Band of Mission Indians-Kizh Nation and the Zoo to be protected in perpetuity. • There will be no publicity regarding a discovery of human remains. • A final report will be submitted to the Gabrieleño Band of Mission Indians-Kizh Nation and the NAHC.	
Energy			
EN-1: The proposed Project would utilize fuel-efficient equipment consistent with state and federal regulations and would comply with state and City measures to reduce the inefficient, wasteful, and unnecessary consumption of energy.	Less than significant	No mitigation measures required	Not Applicable
EN-2: Implementation of the proposed Project has potential to conflict with regional plans and policies governing transportation energy initiatives due to the substantial increase in annual Zoo visitation and VMT generated by new Zoo visitors and employees.	Potentially significant	**MM T-2** shall apply.	Less than significant
Urban Forestry Resources			
UF-1: With implementation of mitigation, significant trees impacted during Project implementation would be protected, relocated, or replaced consistent with applicable City tree protection policies.	Potentially significant	**MM UF-1 Protected Tree Plan.** To offset impacts to protected and important trees and shrubs resulting from Vision Plan implementation, the Zoo shall prepare and implement a Protected Tree Plan. The Protected Tree Plan shall identify measures for the protection, relocation, and/or replacement of protected and important significant trees and shrubs. The Protected Tree Plan shall outline and require that Project activities affecting protected trees and shrubs proceed as follows: 1. Preservation of Trees and Shrubs: Protected and important trees and shrubs shall be preserved in place to the maximum extent feasible. To ensure protection of native protected trees and shrubs, as part of final design of the California and Africa area exhibits, all	Less than significant

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		protected trees and shrubs shall be mapped and incorporated into the exhibit to the maximum extent feasible. The Zoo shall hire a City-approved Tree Expert meeting the requirements of the City's Tree Protection Ordinance to evaluate the health and structure of protected and important trees and shrubs and make recommendations for avoidance of healthy specimens to the maximum extent feasible. The tree expert shall work with project designers during the final design of each phase to incorporate such trees into the exhibits in a manner that would ensure protection of the tree or shrub from damage by exhibit animals or exhibit maintenance activities. Each protected or important tree and shrub to be retained shall have a designated Protection Zone identifying the area sufficiently large enough to protect it and its roots from significant damage during construction. The designated Protection Zone of each specimen shall be protected with 5- to 6-foot-high chain link fences. Fences shall be mounted on 2-inch galvanized iron posts, driven into the ground to a depth of at least two feet and at no more than 10-foot centers, or similarly durable material. Tree and shrub fences shall be erected before demolition, grading, or construction begins and remain until final inspection of the project. Construction and demolition activities around protected trees shall follow all industry standards. Erosion control measures, tree pruning, soil compaction preventive measures, and a tree maintenance schedule shall be implemented and verified by the Bureau of Engineering and a City-authorized tree expert. Following construction, each tree or shrub preserved shall be monitored for a minimum of 5 years to ensure their long-term survivability. 2. Relocation of Trees and Shrubs: Where protected and important trees cannot be avoided and preserved in place, individuals shall be transplanted elsewhere onsite to the extent feasible. If relocation onsite is not feasible, individuals shall be transplanted to an appropriate offsite location elsewhere within Griffith Park, pursuant to the approval of the City Bureau of Engineering and RAP. The City-approved Tree Expert shall identify the necessary measure to be taken to ensure the maximum survivability of the relocated specimens, including relocation method, placement,	

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		irrigation method, and maintenance. Relocated individuals shall be monitored for their success for a period of 5 years. The Tree Protection Plan shall identify performance standards for determining whether relocated specimens are healthy and growing normally and shall outline procedures for periodic monitoring and implementation of corrective measures in the event the health of relocated trees declines. 3. Replacement of Trees and Shrubs: Where the preservation or relocation of protected and important trees and shrubs is not feasible, or where the health of preserved or relocated specimens becomes compromised, as part of the final design of each exhibit or feature, the Zoo shall prepare and implement a replacement planting program. Replacement of protected and important trees and shrubs should follow guidelines described in the City's Tree Protection Ordinance adopted at the time, including requirements for relocated or removed trees or shrubs to be replaced by other species protected by the ordinance at a 4:1 ratio (number of individuals restored to number of individuals impacted). The replacement planting program shall be prepared by a City-approved Tree Expert meeting the requirements of the City's Tree Protection Ordinance. The replacement planting program shall specify the location for replacement, tree or shrub size, planting specifications, and shall include a monitoring program to ensure that the replacement planting program is successful. To the extent feasible, protected and important trees or shrubs removed within the California or Africa exhibits shall be replaced within each exhibit. Where this is not feasible, the Tree Protection Plan shall outline provisions and standards for replacement in areas outside of each exhibit. At a minimum, the monitoring program shall require monitoring of replacement individuals for a period of 5 years and shall include performance standards for determining whether replacement specimens are healthy and growing normally and procedures for periodic monitoring and implementation of corrective measures in the event that the health of replacement trees declines.	

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		Replacement of removed trees and shrubs should occur within the Zoo to the extent feasible. If replacement within the Zoo is not feasible, the Zoo should coordinate with RAP for replacement trees and shrubs to be planted on adjacent areas of Griffith Park, provided such locations can support the tree's or shrub's survival. Each replacement tree shall be at least 15-gallon, or larger, measuring one inch or more in diameter one foot above the base, and be not less than seven feet in height measured from the base. The size and number of replacement trees shall approximate the value of the tree to be removed. If use of similar sized replacement trees and shrubs is not possible, smaller sized replacements may be planted. In that event, a greater number of replacement trees or shrubs may be required.	
UF-2: Preparation of a detailed landscape plan for each proposed phase would ensure the Project area would be landscaped, irrigated, and maintained with a diverse mix of tree species that would provide significant urban forest value such that a net loss of urban forestry resources would not occur.	Potentially significant	**MM UF-2 Restoration Plan.** To offset impacts to urban forestry resources and ensure landscaping under the Vision Plan is planned to provide urban forest value, the Zoo shall retain a qualified landscape architect to prepare a landscaping plan. The Zoo landscape plan shall be subject to review and approval by City Bureau of Engineering and shall include the following: 1. Maximize protection of existing protected and important trees and shrubs consistent with the Zoo's Tree Protection Plan identified in **MM UF-1**. 2. Specify a plant palette and landscape plan that ensures establishment of tree canopy that is cohesive with and supports continuity with the surrounding canopy. The plant palette shall emphasize tree species which are considered to provide a healthy mix of visual and biological value and which offer greater shade cover and carbon sequestration. 3. Plantings shall include tree specimens and shrubs capable of reaching or exceeding the heights of the adjacent proposed structures and plantings. 4. Landscaping shall occur immediately following completion of construction of a proposed area of improvement. Planting shall prioritize the use of larger containers and more mature specimens to expedite recovery of the urban forest and minimize duration of heat island effects following construction.	Less than significant

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
Geology and Soils			
GEO-1: With compliance with the California and Los Angeles Building Codes, the proposed Project would not expose people or structures to potential substantial adverse effects from rupture of a known earth fault or strong seismic ground shaking.	Less than significant	No mitigation measures required.	Not Applicable
GEO-2: With geotechnical investigations for each phase of Project development and implementation of engineering techniques and technologies, the proposed Project would not expose people or structures to potential substantial adverse effects from ground failure.	Potentially significant	**MM GEO-1 Site-Specific Geotechnical Evaluation.** Prior to the design and construction of proposed improvements at in each phase of the Project, a detailed geotechnical evaluation, including subsurface exploration and laboratory testing, shall be performed, consistent with LADBS standards and approvals. The geotechnical evaluation shall 1) further evaluate the specific subsurface conditions, including liquefaction and landslide potential, at each development site, 2) provide site-specific data regarding potential geologic and geotechnical constraints, and 3) provide information pertaining to the engineering characteristics of earth materials with regard to the proposed Project. Recommendations for earthwork, excavations, foundations, shoring, pavements, and other pertinent geotechnical design considerations shall be formulated from the detailed geotechnical evaluation. In the California planning area, the proposed hillside cut, excavation, and reinforcement required for Condor Canyon and its potential bridges shall be evaluated and designed with appropriate shoring mechanisms to avoid landslide and soil instability during construction and operation. The recommendations of the geotechnical report shall be incorporated into the final design and construction of the Project components. The geotechnical reports shall analyze for the following hazards: • If the site-specific geotechnical evaluation finds that slope instability is an issue in certain phases of development such as California and Africa planning area improvements, engineering techniques and technologies as retaining walls or graded soil buttresses, shall be employed during construction and/or operation.	Less than significant

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		• If the site-specific geotechnical evaluation finds that liquefaction is an issue in certain phases of development such as development of Zoo Entry, Nature Play Park, or Asia planning area improvements or the proposed parking structure, engineering techniques and technologies such as removal and recompaction, densification of existing soils, or deepened foundations shall be employed during construction and operation. • If the site-specific geotechnical evaluation finds that expansive soils are an issue in certain phases of development such as development of Zoo Entry, Nature Play Park, or Asia planning area improvements, engineering techniques and technologies such as removal and replacement with low expansive materials or special reinforced design of foundations and slabs shall be employed during construction and operation. • If the site-specific geotechnical evaluation finds that dynamic compaction of dry soils is an issue in certain phases of development, engineering techniques and technologies such as removal and recompaction, densification of existing soils, or deepened foundations may be employed during construction and operation. The Zoo shall prepare each geotechnical evaluation for each improvement in Phases 1 – 7 to inform final design and engineering of improvements. Each geotechnical investigation shall be reviewed and approved by LADBS and the City Bureau of Engineering prior to groundbreaking of each phase. LADBS and the City of Bureau of Engineering shall review and approve all geotechnical investigations and review final Zoo development and engineering plans to ensure geotechnical recommendations are accurately incorporated prior to Project-related construction.	
GEO-3: With geotechnical investigations for each phase of Project development and implementation of engineering techniques and technologies, the proposed Project would not expose people or structures to potential	Potentially significant	**MM GEO-1** shall apply.	Less than significant

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
substantial adverse effects from landslides.			
GEO-4: The proposed Project would not result in substantial soil erosion or the loss of topsoil with compliance with BMPs from the National Pollutant Discharge Elimination System (NPDES) Permit and the City's Stormwater and Urban Runoff Pollution Control Ordinance.	Less than significant	No mitigation measures required.	Not Applicable
GEO-5: With geotechnical investigations for each phase of Project development and implementation of engineering techniques and technologies, geologic risks associated with unstable geology would be minimized.	Potentially significant	**MM GEO-1** shall apply.	Less than significant
GEO-6: With implementation of a paleontological resource mitigation plan and worker awareness training, the proposed Project would not significantly affect fossil specimens that may be uncovered during construction.	Potentially significant	**MM GEO-2 Site-specific Paleontological Mitigation Plan.** A qualified paleontologist approved by the City of Los Angeles and the Los Angeles County Natural History Museum Vertebrate Paleontology Department shall be retained prior to earth-moving activities associated with construction of any individual Project phase. Prior to these earth-moving activities, the paleontologist shall determine if a site-specific mitigation plan is required for each phase based on the underlying geology and the proposed depths of excavation proposed by development and engineering plans for each phase. If a site-specific mitigation plan is required, the plan shall specify the level and types of mitigation efforts as set forth below, based on the types and depths of any ground disturbing activities and associated, impacted geological unit. Where a site-specific mitigation plan is required, earth-moving activities shall be monitored by the paleontologist or a monitor. Monitoring is only required in those areas of the individual development phase where these activities would disturb previously	Less than significant

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		undisturbed geological units and dependent upon the units present. Monitoring shall be conducted on a full-time basis in areas underlain by the Upper Topanga Formation, and at depths greater than 10 feet bgs in areas underlain by Quaternary alluvium. Monitoring shall consist of: • Visually inspecting debris piles and freshly exposed cuts for larger fossil remains • Periodic dry screening sediment, rock, and debris for smaller fossil remains • Recovery of all vertebrate fossil specimens, a representative sample of invertebrate or plant fossils, or any fossiliferous rock sample that may be easily recovered • Diversion of ground disturbing activities away from large or unusually productive fossil localities for the time that is required to recover the resource by the paleontologist or monitor(s) • Notification of the paleontologist or monitor (if not on-site) by the construction crew of any unanticipated discoveries of fossil resources. Ground disturbing activities will be temporarily diverted while the paleontologist or monitor assess the resource and determine if recovery is warranted or if ground-disturbing activities may resume in the area. • Collection of rock or sediment samples of the Upper Topanga Formation or Quaternary alluvium for each construction site for processing for small fossils. The total weight of all processed samples from either rock unit shall not exceed 1,000 pounds (2,000 pounds total). The results of processing initial 250-pound test samples shall be used by the paleontologist in determining how much of the remaining total samples shall be collected and processed. More of the samples shall be processed if the recovered remains are sufficiently concentrated (at least 4-5 identifiable specimens per sample), generally identified to genus or species level, and represent a taxonomically diverse faunal assemblage. With the development of each successive construction site, the paleontologist or monitor, may specify that less than 1,000 pounds shall be processed, based on the amount of excavation and other ground disturbing activities that would occur in areas underlain by the Quaternary alluvium, 10 feet bgs, or Upper Topanga Formation,	

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		and on the results of processing samples from the same rock unit at previous construction sites. • Unless potentially fossilized remains are discovered at or near the surface, no paleontological monitoring of ground disturbing activities in the Quaternary alluvium at depths less than 10 feet bgs, and no samples shall be collected or processed. • The paleontologist or monitor shall maintain daily monitoring logs that record the tasks accomplished, locations, where ground disturbing activities and monitoring were conducted, geological units encountered, any fossil specimen recovered, and associated specimen data and geologic and geographic site data. If no fossil remains are found after 50 percent of ground-disturbing activities have been completed in an area underlain by Quaternary alluvium or Upper Topanga Formation, monitoring may be reduced or suspended in the remainder of that area with approval from the City of Los Angeles. If a site-specific mitigation program is required, the paleontologist shall reach a formal agreement with a recognized museum repository, such as the Los Angeles County Natural History Museum, before the mitigation program begins. The agreement shall include specifications regarding final disposition and permanent storage and maintenance of any fossil specimens recovered as part of the mitigation program as well as archiving associated fossil specimen data and corresponding geologic and geographic site data, and level of treatment/preparation of the fossil specimens. The fossil collection shall be donated to a public, nonprofit repository with a research interest in the collection. The costs to be charged by the repository for curating and permanently storing the collected fossil specimens shall be specified in the repository agreement. If paleontological resources are discovered and curated as a result of a required site-specific mitigation program, a final technical report of results and findings shall be prepared by the paleontologist in accordance with City of Los Angeles requirements, as applicable. Copies of the final report and any supporting documentation, including the paleontologist's or monitor's field notes and fossil site maps shall be archived at the designated repository. The final report shall be prepared	

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		upon completion of ground disturbing activities for the first applicable phase of Project development. Subsequent reports for additional phases shall be issued as addenda to the first final report. Individual projects whose ground disturbing activities are completed within a single calendar year may be addressed collectively in one report or addendum, as applicable. **MM GEO-3 Worker Paleontological Resource Awareness Program.** Prior to construction of each phase, workers shall receive education regarding the recognition of possible paleontological resources, during grading and excavation. Such training shall provide construction personnel with direction regarding the procedures to be followed in the unlikely event that previously unidentified paleontological materials are discovered during construction. Training shall also inform construction personnel that unauthorized collection or disturbance of paleontological resources is not allowed. The training shall be prepared by a City-approved paleontologist and shall provide a description of paleontological resources that may be encountered in the Project site, outline steps to follow in the event that a discovery is made, and provide contact information for the Project paleontologist and appropriate City personnel. The training shall be conducted concurrent with other environmental or safety awareness and education programs for the Project, provided that the program elements pertaining to paleontological resources is provided by a qualified instructor meeting applicable professional qualifications standards. To prevent inadvertent potential significant impacts to paleontological resources that may be encountered during ground disturbance or construction activities, in the event of any inadvertent discovery of paleontological resources during construction, all work within the vicinity of the resource established by the City-approved paleontologist shall temporarily cease. If a paleontological resource is discovered, the City-approved paleontologist shall be notified to assess the significance of the find and provide recommendations as necessary for its proper disposition and the need for a site-specific mitigation plan, consistent with **MM GEO-2**.	

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
Greenhouse Gas Emissions			
GHG-1: The proposed Project would not generate greenhouse gases (GHG) emissions that would have a significant impact on the environment, and would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs with implementation of mitigation for impacts to urban forestry, hydrology, transportation, and utilities.	Potentially significant	**MM UF-1** and **MM UF-2** shall apply. **MM HYD-2** shall apply. **MM T-2** shall apply. **MM UT-1** shall apply.	Less than significant
Hazards and Hazardous Materials			
HAZ-1: With implementation of federal, state, and local regulations governing the transport, use, and disposal of potentially hazardous materials, the proposed Project would not create a significant hazard to the public or the environment.	Less than significant	No mitigation measures required.	Not Applicable
HAZ-2: With implementation of a Phase II Environmental Site Assessment (ESA) and measures for discovery of contamination, construction of the proposed Project would not create a significant hazard to the public or the environment involving release of hazardous materials. The proposed Project would not result in significant operational hazards.	Potentially significant	**MM HAZ-1 Phase II Environmental Site Assessment (ESA).** Prior to Project implementation, the City shall prepare a Phase II ESA to address the following: • **Potential soil contamination around known USTs on site**. Prior to ground-disturbance, a qualified environmental specialist (e.g., a licensed Professional Geologist [PG], a licensed Professional Engineer [PE] or similarly qualified individual) shall perform soil sampling and analysis to determine whether contamination exists and, if so, the extent of contamination from the following UST locations within the Project site; if contaminants are detected in soil at or above regulatory levels, then the results of the soil sampling shall be reviewed and acted upon by the LAFD and other regional or state regulatory agencies as needed:	Less than significant

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		• The fueling station in the Zoo Construction Shop and Support area • West of the South Parking Area • North of the Autry Museum. • **ACM, LBP, and Molds in Buildings**. Prior to any building demolition, the City shall conduct a comprehensive survey of ACM, LBP, and molds. If such hazardous materials are found to be present, the Zoo shall follow all applicable local, state and federal codes and regulations, as well as applicable best management practices, related to the treatment, handling, and disposal of ACM, LBP, and molds to ensure public safety. If the Phase II ESA identifies contamination at or above regulatory levels, prior to the issuance of grading permits for development, it shall be the responsibility of the Zoo to conduct and conclude all investigation and/or remediation activities under the oversight of the applicable regulatory agency (e.g., LAFD, DTSC, SWRCB). Remediation shall be accomplished in accordance with the requirements of the appropriate oversight agency. No Project construction shall occur in the affected area until case closure reports have been approved by the appropriate oversight agency. **MM HAZ-2 Discovery of Contamination.** In the event that previously unknown or unidentified soil and/or groundwater contamination that could present a threat to human health or the environment is encountered during construction at a development site, construction activities in the immediate vicinity of the contamination shall cease immediately. At the start of construction, all construction contractors shall be instructed to immediately stop all subsurface activities in the event that potentially hazardous materials are encountered, an odor is identified, or significantly stained soil is visible. Contractors shall be instructed to follow all applicable regulations regarding discovery and response for hazardous materials encountered during the construction process. A qualified environmental specialist (e.g., a licensed PG, a licensed PE or similarly qualified individual) shall investigate to identify and determine the level of soil and/or groundwater contamination.	

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		If contamination is encountered, a Human Health Risk Management Plan shall be prepared and implemented that: (1) identifies the contaminants of concern and the potential risk each contaminant would pose to human health and the environment during construction and post-development, and (2) describes measures to be taken to protect workers, and the public from exposure to potential site hazards. Such measures could include a range of options, including, but not limited to, physical site controls during construction, remediation, long-term monitoring, post-development maintenance or access limitations, or some combination thereof. Depending on the nature of contamination, if any, appropriate agencies shall be notified (e.g., LAFD). If needed, a Site Health and Safety Plan that meets Occupational Safety and Health Administration requirements shall be prepared and in place prior to commencement of work in any contaminated area.	
HAZ-3: While the Project site is located within 0.25 miles of a school, implementation of the Phase II ESA would ensure no adverse impacts related to hazardous emissions or spills would occur during implementation of the proposed Project.	Potentially significant	**MM HAZ-1** shall apply.	Less than significant
HAZ-4: While the Project site is located within or in the vicinity of several sites which are included on a list of hazardous materials sites complied pursuant to Government Code Section 65962.5, with implementation of measures for discovery of contamination, construction of the proposed Project would not create a significant hazard to the public or the environment.	Potentially significant	**MM HAZ-2** shall apply.	Less than significant

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
HAZ-5: Project implementation would not impair implementation or physically interfere with an adopted emergency response plan or emergency evacuation plan.	Less than significant	No mitigation measures required.	Not Applicable
Hydrology and Water Quality			
HYD-1: With implementation of BMPs from the City's Stormwater and Urban Runoff Pollution Control Ordinance and a stormwater management plan, the proposed Project would not violate any water quality standards or waste discharge requirements or otherwise degrade water quality.	Potentially significant	**MM HAZ-1** and **MM HAZ-2** shall apply. **MM HYD-1 Construction Sequencing and Design of Onsite Stormwater Management System.** The Zoo shall prepare a stormwater management plan prior to Phase 1 Project implementation. The stormwater management plan shall finalize the design of the subterranean stormwater management system with minimum capacity to capture the equivalent of 2-year, 24-hour storm events as proposed by the Project, and shall consider increased capacity to maximize rainfall capture and reuse. The stormwater management plan shall indicate the sizing and design of the underground stormwater collection system for all proposed drainage areas. The stormwater management plan shall also determine the appropriate sequencing of system installation relative to the Project's development phasing to provide continuous stormwater management throughout the 20-year implementation of the proposed Vision Plan. This sequencing plan shall ensure each phase of development has a functioning onsite stormwater system prior to operation to contain and convey all stormwater flows to the underground cistern(s), to onsite LIDs (e.g., bioswales), and/or to the Zoo's Wastewater Facility. Sequencing shall avoid or minimize sedimentation into proposed LID features and underground stormwater management system infrastructure, which could lead to a loss of capacity and decrease in water quality benefits. During phased construction of the Project, the City shall also install stormwater storage facilities to supplement the underground cisterns such as rain barrels if needed to temporarily manage stormwater flows. These can be integrated into the Vision Plan redevelopment to be thematically appropriate and visually reminding visitors of the Zoo's efforts for water conservation. The Zoo shall prepare and submit the stormwater management plan to the City BOE for review and approval prior to issuance of grading	Less than significant

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		permits for each Project phase. All development plans and permits shall reflect the approved sequencing and timing of implementation of stormwater management measures. The Zoo shall be responsible for ensuring all requirements are included in construction plans and implemented as part of construction. All construction activities shall be monitored by a City BOE staff to ensure compliance with the stormwater management plan. **MM HYD-2 Preparation of a Storm Water Pollution Prevention Plan (SWPPP).** For each phase of construction, the City shall require the building contractor to prepare and submit a SWPPP as part of the City's NPDES Construction General Permit 45 days prior to the start of work for approval. The contractor is responsible for understanding the Construction General Permit and instituting the SWPPP during construction. A SWPPP for site construction shall be developed prior to the initiation of grading and implemented for all construction activity on the Project site in excess of 1 acre, or where the area of disturbance is less than 1 acre but is part of the Project's plan of development that in total disturbs 1 or more acres. The SWPPP shall identify potential pollutant sources that may affect the quality of discharges to stormwater and shall include specific BMPs to control the discharge of material from the site, including, but not limited to: • Temporary detention basins, straw bales, sand bagging, mulching, erosion control blankets, silt fencing, and soil stabilizers shall be used. • Sufficient physical protection and pollution prevention measures to prevent sedimentation, siltation, and/or debris from entering the onsite storm drain system, proposed stormwater management system, and the Los Angeles River. • Soil stockpiles and graded slopes shall be covered after 14 days of inactivity and 24 hours prior to and during inclement weather conditions. • Fiber rolls shall be placed along the top of exposed slopes and at the toes of graded areas to reduce surface soil movement, as necessary. • Sandbags, or other equivalent techniques, shall be utilized along graded areas to prevent siltation transport to the surrounding areas.	

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		• A routine monitoring plan shall be implemented to ensure success of all onsite erosion and sedimentation control measures. • Dust control measures shall be implemented to ensure success of all onsite activities to control fugitive dust. • Streets, parking areas, and paved pathways affected by phased Project construction shall be cleaned daily or as necessary to remove sediment, soils, and other construction debris. • BMPs shall be strictly followed to prevent spills and discharges of pollutants onsite (material and container storage, proper trash disposal, construction entrances, etc.); additional BMPs shall be implemented for any fuel storage or fuel handling that could occur onsite during construction. The SWPPP must be prepared in accordance with the guidelines adopted by the SWRCB. The SWPPP shall be submitted to the City BOE along with grading/development plans for review and approval. The SWPPP and notices shall be submitted to the SWRCB under their Stormwater Multi-Application, Reporting, and Tracking System (SMARTS). The SWPPP shall be designed to address erosion and sediment control during all phases of development of the site until all disturbed areas are permanently stabilized. All development plans and permits shall reflect the approved erosion control plan and BMPs submitted to the SWRCB. The Zoo shall be responsible for ensuring all requirements are included in construction plans and implemented as part of construction. All construction activities shall be monitored by a City BOE staff to ensure compliance with the SWPPP. All construction activities shall be monitored by City staff to ensure compliance with the SWPPP during grading and after conclusion of grading activities to monitor runoff. A Qualified SWPPP Practitioner shall be retained by the developer for overall management and reporting responsibility regarding the SWPPP and documentation under SMARTS in accordance with their permitting requirement. The City will keep a copy of the SWPPP on the Project site during grading and construction activities. The City shall file a Notice of Completion once construction of each Project phase is complete, identifying that pollution sources were	

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		controlled during the construction of the Project and implementing a closure SWPPP for the site. **MM HYD-3 Avoidance of the Seasonal Storms.** Ground disturbing activities such as excavation, grading, earthwork, and installation of the stormwater collection system shall occur during the dry season (May through October), including installation of the storm drains, underground cisterns, hydrological connections, and water pumps for irrigation use. Stormwater management system features shall be fully installed and restored to ensure soil stabilization and adequate stormwater conveyance capacity prior to the storm season (October through April). The Zoo shall be responsible for ensuring all requirements are included in construction plans and implemented as part of construction. The City shall review grading and construction plans for all phases to ensure compliance. All construction activities shall be monitored by a City BOE staff to ensure compliance with the grading and construction phasing plans.	
HYD-2: The proposed Project would not adversely affect groundwater recharge and impacts to groundwater quality would be minimized with implementation of a Phase II ESA. With implementation of a site-specific geotechnical report, impacts related to encountering shallow groundwater during excavation would be minimized.	Potentially significant	**MM HAZ-1** shall apply. **MM GEO-1** shall apply.	Less than significant
HYD-3: Construction activities would alter drainage on site, subject to requirements to control water quality and stormwater flows but would not alter drainage patterns or amounts offsite to the Zoo Wastewater Facility or the Los Angeles River. Soil erosion and	Potentially significant	**MM HYD-1** through **MM HYD-3** shall apply. **MM HYD-4 Operation and Maintenance Manual.** The City shall prepare and submit an Operation and Maintenance (O&M) Manual to ensure LID features and the underground stormwater capture are maintained following installation under the Project. Regular maintenance is critical for the proper operation and longevity of the LID features and stormwater collection system. For example, the O&M Manual would provide maintenance schedules for type and frequency	Less than significant

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
sedimentation would be controlled through implementation of mitigation.		for items such as replacing mulch, trash removal, or sediment removal for bioretention, permeable pavement, and the stormwater collection system. The O&M Manual shall also include guidelines for each LID life-cycle and appropriate reconstruction at the end of the life-cycle. The Zoo shall prepare and submit the O&M Manual to the City BOE and Zoo planning staff for review and approval prior to issuance of grading permits. The Zoo shall be responsible for ensuring all requirements are included in O&M Manual and implemented as part of Zoo operations. **MM HYD-5 Mulch.** Immediately following the completion of landscaping installation, gorilla-mulch (i.e., shredded redwood) or similar non-animal waste mulch should be applied to landscaped and bioretention areas to minimize the risk of erosion and sedimentation. The application of mulch would also retain irrigated water within the soil, thereby reducing evaporation and irrigation requirements. Sedimentation in the stormwater collection system would result in degraded water quality, requiring additional treatment prior to stormwater reuse. Bark mulch is not recommended (especially in bioretention) as it tends to float and does not include the beneficial soil building properties of a shredded redwood or similar mulch. The Zoo shall be responsible for ensuring all landscaped areas are mulched as part of construction. **MM HYD-6 Underground Stormwater Capture Pre-Treatment and Filtering.** The Zoo shall develop a pre-treatment and filtering plan and design for the stormwater collection system to ensure that captured water reused for irrigation does not unnecessarily contribute pollutants back into the Zoo's drainage system. At a minimum, the stormwater collection system must comply with SWRCB safety regulations and County Guidelines for Alternate Water Sources. Additionally, sediment and TSS shall be filtered out to the level required for the proposed irrigation system. The Zoo shall submit pre-treatment and filtering plans to the City BOE and Zoo planning staff for review and approval prior to issuance of grading permits for each Project phase. All development plans and permits shall reflect the approved pre-treatment and filtering features. The Zoo shall be responsible for ensuring all requirements are included in construction plans and implemented as part of construction. All	

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		construction activities shall be monitored by City BOE staff to ensure compliance with the pre-treatment and filtering plans.	
HYD-4: Implementation of the stormwater collection system would result in beneficial impacts to polluted runoff and existing stormwater drainage systems.	Less than significant	No mitigation measures required.	Not Applicable
Land Use and Planning			
LU-1: The proposed Project would not cause a significant environmental impact due to conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect with implementation of mitigation for impacts to biological resources, cultural and tribal cultural resources, urban forestry, recreation, and transportation.	Potentially significant	**MM BIO-1** through **MM BIO-6** shall apply. **MM CUL-1** through **MM CUL-7** shall apply. **MM UF-1** and **MM UF-2** shall apply. **MM REC-1** shall apply. **MM T-1** and **MM T-2** shall apply.	Less than significant
Noise and Vibration			
NOI-1: With implementation of noise control measures, construction noise levels would not exceed applicable standards. Project operation would not exceed applicable thresholds with the exception of ongoing construction activities within the Service areas, which would be minimized with noise control measures.	Potentially significant	**MM NOI-1 Equipment Mufflers.** The City and its contractors and subcontractors shall ensure that all construction equipment is operated with closed engine doors and is properly muffled according to manufactures specifications or as required by the City Department of Building and Safety (LADBS), whichever is the more stringent. Use of manufacturer-certified mufflers associated with construction equipment has been shown to reduce noise levels by a minimum of 8 dBA and up to 10 dBA. These requirements shall be included in all final Project plans and permit documents. **MM NOI-2 Rubber Tired Equipment.** The City and its contractors and subcontractors shall use rubber-tired equipment to the maximum extent feasible during grading, excavation, and building construction activities, rather than metal-tracked equipment, to reduce noise and vibration levels. These requirements shall be included in all final Project plans and permit documents.	Less than significant

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		MM NOI-3 Equipment Idling. California State law prohibits heavy-duty diesel motor vehicles from idling for longer than five minutes (Title 13 CCR Section 2485). Under this mitigation, all construction equipment shall be turned off when not in use for an excess of five minutes, except for equipment that requires idling to maintain performance. **MM NOI-4 Notification Requirements and Coordination with Neighboring Properties.** At least one month prior to the initiation of construction related activities, the City shall prepare and distribute notices to property owners within 500 feet of the Project site, including the Wilson and Harding Golf Courses, Los Angeles Department of Recreation and Parks (RAP), North Hollywood High School Zoo Magnet Center, and the Autry Museum of the American West, as well as affected commercial businesses and residences along the haul truck route. At a minimum, the notices shall describe the overall construction schedule, advise residents, business owners, and employees of increased construction-related noise, and provide a non-automated telephone number to call to submit complaints associated with construction noise. • The Zoo shall retain a Noise Disturbance Coordinator for the duration of Project construction activities. The Noise Disturbance Coordinator shall be responsible for responding to local complaints about construction noise. The Noise Disturbance Coordinator shall determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and shall be required to implement reasonable measures such that the complaint is resolved. All notices that are sent to sensitive receptors within 500 feet of the construction site and all signs posted at the construction site shall list the telephone number for the Noise Disturbance Coordinator. • Prior to initiating construction activity, the BOE's construction contractor shall coordinate with the site administrator for the North Hollywood High School Zoo Magnet Center to discuss construction activities that generate high noise levels. Coordination between the site administrator and the construction contractor shall continue on an as-needed basis throughout construction of the proposed Project to mitigate potential disruption of classroom activities.	

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		MM NOI-5 Temporary Noise Barriers. The City and its contractors and subcontractors shall implement noise attenuation measures to the satisfaction of the LADBS. Prior to the initiation of the proposed realignment of Crystal Springs Drive/Western Heritage Way and south parking area improvements (Phase 1), a solid noise barrier wall shall be erected around the property boundary of North Hollywood High School Zoo Magnet Center. The noise barrier wall shall be designed to achieve the maximum sound attenuation feasible by breaking the line of site to the Project site (i.e., it shall be scalable to the height of the mixed-use hotel building during each construction phase). The noise barrier wall shall be based on a site-specific acoustic analysis prepared by a qualified acoustic engineer to be approved by the Community Development Director. The noise barrier wall shall be designed to reduce construction-related noise by a minimum of 10 dBA; however, it is expected that the noise barrier wall could decrease construction-related noise levels by up to 15 dBA during certain phases of construction. The noise barrier wall design shall be subject to City staff approval and shall include an art installation (e.g., painting, adhesive pattern design, etc.) that provides visual relief during the Phase 1 construction period. **MM NOI-6 Noise Reduction Through Design.** The City shall design the Zoo's planning areas to reduce operational noise levels. For example, buildings and noise generating uses, such as the proposed Service Center and Zoo Entry shops, should be oriented such that the open faces of these buildings are facing inwards towards the center of the Zoo. Additionally, noise generators for operational equipment, including but not limited to the aerial tram and funicular motors and generators shall be enclosed to reduce noise exposure.	
NOI-2: Due to the distance of sensitive receptors to individual construction sites requiring blasting, groundborne vibration would not exceed applicable thresholds. The Zoo would continue to implement existing relocation and protective measures	Less than significant	No mitigation measures required.	Not Applicable

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
to ensure no adverse noise and vibration impacts to Zoo animals.			
Public Services			
PS-1: Implementation of a Construction Traffic & Access Management Plan would ensure continued access to the Zoo and through the interior of the Zoo circulation system to minimize impacts from Project construction on emergency access and response. Project operation would not adversely affect service ratios, response times, or other performance objectives for fire protection.	Potentially significant	**MM T-1** shall apply.	Less than significant
PS-2: Implementation of additional measures to increase security of the Zoo's parking lot areas would help to reduce the likelihood for vehicle theft/break in and manage crime within the Zoo, thereby minimizing impacts to public safety and police protection services.	Potentially significant	**MM PS-1 Zoo Parking Lot Security Improvements.** In coordination with the City and LAPD, the Zoo shall prepare a Parking Lot Security Plan. The Plan shall identify and implement strategies to improve security within the Zoo's parking areas to reduce vehicle theft/break in or other crimes. Strategies may include but not be limited to installation of surveillance cameras to provide 24-hour video coverage of all Zoo parking areas and frequent foot- or bicycle-based patrolling of the Zoo parking areas by Zoo Security personnel. LAPD shall review and approve the Plan and parking lot security improvements shall be implemented prior to completion of Phase 1. The parking structure improvements proposed as Phase 7 shall be equipped with video surveillance.	Less than significant
PS-3: Project impacts to schools would be minimized by designating parking spaces for Zoo Magnet Center school buses and implementing parking hour limitations to accommodate staff and visitors.	Potentially significant	**MM PS-2 Zoo Magnet Center Parking Restrictions.** The City and Zoo shall work with the LAUSD North Hollywood High School Zoo Magnet Center to coordinate improvements to the southern Zoo parking lot in Phase 1 of the Project. Parking lot design and management shall ensure adequate provision of parking for the Zoo Magnet Center during peak Zoo attendance days. Measures may include, but not be limited to, reserved parking spaces for Zoo Magnet Center school buses and adequate spaces to accommodate teachers, the	Less than significant

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		office administrator, and campus counselor, with an additional reserve space for visitors. Reserved parking stalls shall be in effect during hours of Zoo Magnet Center operation. Signage shall indicate all restrictions on public parking within the southern parking lot. All proposed parking improvements shall be noted on final plans and reviewed and approved by the City Bureau of Engineering and the LAUSD prior to Project construction of Phase 1.	
Recreation			
REC-1: Implementation of the proposed Project would accommodate and facilitate the growth in demand for the Zoo's amenities and would not result in loss of or substantial additional demand on existing recreational facilities within Griffith Park. Consideration of pedestrian, bicyclist, and equestrian mobility and safety along the Main Trail in the design of proposed Zoo Drive/Western Heritage Way intersection improvements would ensure that the use of this trail is not hindered by Project implementation.	Potentially significant	**MM REC-1 Consideration of the Main Trail in Intersection Designs.** Should the Zoo pursue improvements to the intersection of Zoo Drive/Western Heritage Way to include a roundabout or grade-separated intersection, the design of the proposed improvements shall be considerate of pedestrian, bicyclist, and equestrian mobility and safety along the Main Trail and ensure that the use of this trail is not hindered. All proposed intersection improvements, including those for design for the mobility and safety of pedestrians, bicyclists, and equestrians shall be incorporated into final plans and reviewed and approved by the City of Los Angeles Bureau of Engineering and the City of Los Angeles Department of Transportation prior to the issuance of permits for these improvements.	Less than significant
REC-2: With implementation of the regulations and measures identified in other sections of this EIR, impacts from the construction or expansion of recreational facilities would be minimized.	Less than significant	Mitigation measures required to reduce potentially significant environmental impacts from the construction of the proposed Project, including a new public park, are further discussed within each of the resource sections analyzed in this EIR. All mitigation measures discussed in this EIR shall apply.	Not applicable

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
Transportation			
T-1: The proposed Project would not cause a significant environmental impact due to conflict with a program, plan, ordinance, or policy addressing the circulation system, with implementation of mitigation for recreation and VMT impacts.	Potentially significant	**MM REC-1** shall apply. **MM T-2 Zoo Transportation Demand Management (TDM) Program.** The Zoo shall prepare and implement a comprehensive TDM program to provide trip reduction strategies for Zoo visitors and employees. The TDM program shall be prepared by a qualified transportation planner and submitted by the Zoo to LADOT for review and approval prior construction activity. The goal of the TDM Program shall be to reduce Zoo employee VMT by 10 percent below existing conditions by 2040. The TDM Program shall also apply all feasible VMT reduction strategies for visitor vehicle trips to reduce visitor VMT below projected conditions to the maximum extent feasible. The TDM Program shall be developed and approved prior to operation of Phase 1 of the Project and shall be maintained and adjusted as needed continuously. The TDM Program shall be overseen by a Zoo TDM Coordinator. The Zoo TDM Coordinator shall be qualified transportation planner and may be a City/Zoo employee or contractor. The Zoo TDM Coordinator shall monitor visitor and employee mode share with annual surveys, collect and analyze parking and transit use data, and develop annual reports for submittal to BOE and LADOT. The surveys shall capture trip origin data, travel mode, number of people in the party, and other key data and indicators for TDM program performance relative to VMT. The Zoo TDM Coordinator shall ensure that monitoring efforts capture all Zoo-related travel behavior. Annual monitoring reports shall include trip length surveys completed at least biannually by a sample of Zoo patrons and annually by Zoo employees (e.g., trip origin data collection). Monitoring results shall be used to determine the appropriate TDM measures to employ in the coming year to maximize reductions in VMT per capita, champion transit and alternative mode transportation to the Zoo for visitors and employees, develop appropriate incentives to increase the Zoo's transit mode share incrementally over time, and develop effective marketing tools to advertise transit and non-vehicular travel mode availability and incentives. Each annual TDM Program monitoring report shall:	Less than significant

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		• Describe the TDM efforts in place at the time to reduce vehicular trips; • Summarize collected survey data and results; • Evaluate parking utilization and transit use, comparing trends and annual changes; • Analyze the results of trip reduction measures in reducing VMT relative to projected VMT increases; • Evaluate change in available transportation infrastructure and programs serving the zoo, • Report the effect on zoo employee and visitor VMT per capita and compare to current citywide VMT per capita; and • Provide recommendations for adjustments to the tdm program to adaptively manage VMT reductions for visitors and employees. The TDM Coordinator shall oversee annual monitoring and reporting to evaluate the effectiveness of the TDM measures being implemented at the Zoo and recommend adjustments as needed to the TDM Program on an annual basis. The annual report shall be submitted to LADOT for review. The TDM measures shall be assessed and adapted as necessary based on the results of this review. Final annual reports and data (e.g., survey data) shall be shared with the City and made readily available for public review and use. The TDM Program shall be prepared consistent with the Mobility Element and in consultation with LADOT, as well as RAP, if required for measures affecting Griffith Park. Information regarding the TDM program shall be distributed to all Zoo employees and shall be posted on the Zoo's website and other marketing materials for Zoo visitors and updated annually as needed based on the annual reports. The TDM Coordinator shall consider a range of measures for the TDM Program to reduce employee and visitor VMT per capita, including, but not limited to, the following: **1. Measures to Reduce Zoo Employee VMT Per Capita** • Encourage employee participation in existing vanpool programs, including City employee and Metro vanpool programs, or develop/expand the Zoo vanpool program.	

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		• Provide employee incentives to participate in a vanpool program and regularly advertise the opportunities to vanpool through a variety of employee communication formats. • Implement a paid parking program to discourage employee vehicle trips to the Zoo and generate revenue that the Zoo may use to expand transit ridership for employee trips. Pricing options of onsite employee parking spaces include pay-per-use or weekly/monthly parking passes. • Partner with rideshare companies such as Uber or Lyft to guarantee availability of an emergency ride home or provide access to City vehicles for this purpose. • Offer employee TDM benefits for use of active transportation commuter modes, including ridesharing, transit, bicycling walking, carpool/vanpool, etc. Incentives for Zoo employees could include flexible scheduling or options for telecommuting. • Maximize opportunities for Zoo employee to telecommute as part of regular scheduling. • Provide a transportation information center and a commuter club to support a collaborative approach among employees to TDM. • Provide onsite bicycle facilities (i.e., shower, racks, and lockers) for Zoo employees in an amount and location informed by annual employee surveys and monitoring reports. • Encourage bicycles as a primary commute mode for employees and provide incentives for biking to work, including providing free or discounted equipment to employees such as helmets, locks, bicycle commuter gear, and bicycles (electric or non-electric). • Coordinate with LARiverworks, RAP, and LADOT to identify and facilitate new bicycle and pedestrian linkages and bridges between the Zoo and neighboring communities, particularly linkages to Los Angeles River Bike Path. The Zoo, RAP, and LADOT in consultation with the City of Glendale shall consider development of a new bicycle and pedestrian bridge across Colorado Boulevard, linking neighborhoods within the City of Glendale to Griffith Park, south of the Project site. The Zoo, RAP, and LADOT shall ensure that all bicycle and pedestrian linkages and bridges to Griffith Park are	

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation

		well-signed and provide lighting, are regularly patrolled by law enforcement.
		• Continue to seek grant funding to support expanded TDM measures to reduce employee VMT per capita.
		2. Measures to Reduce Zoo Visitor VMT Per Capita
		• Offer discounted Zoo entrance tickets for patrons using transit to visit the Zoo. Visitors must provide proof of arrival via transit to receive discounted rate. Advertise the availability of ticket discounts for transit through social media and in coordination with RAP, LADOT, and Metro.
		• Coordinate with Metro to increase bus service frequency to the Zoo bus stop.
		• Seek funding opportunities to provide proportional share funding in coordination with RAP to expand Parkline Shuttle service to increase access to Griffith Park and Zoo from nearby Metro light rail stations, as follows:
		  • Expand Parkline Shuttle service to connect to the Metro B Line Vermont/Sunset station in the south and the Metro B/G (formerly, Orange) Line North Hollywood station in the north. Shuttle routes should be coordinated with LADOT and RAP.
		  • Extend Parkline Shuttle service hours to begin at 9:30 AM, before the Zoo opens each day. This expanded service should first be targeted to occur during peak demand periods such as Easter, Memorial Day, and during Los Angeles Unified School District (LAUSD) holidays, such as the week of spring break.
		  • Coordinate with RAP to monitor the success of the Parkline Shuttle during such peak periods and to fund expansion of the service over time, as needed, to facilitate and accommodate increased ridership. The program shall then be expanded to broaden the hours and days of operation as needed to meet demand.
		  • Coordinate with RAP on how best to advertise and perform outreach to user groups regarding the availability of this transit service and methods to increase ridership (e.g., social media outreach).	

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation

		• Seek funding opportunities to provide proportional share funding in coordination with Metro and LADOT to provide an express shuttle service to and from Los Angeles Union Station and the Zoo.
		  ◦ Provide Union Station shuttle during operating hours on weekends and legal holidays. This new service shall first be targeted as a pilot program to occur during peak demand periods such as Easter, Memorial Day, and during LAUSD holidays, such as spring break week. If successful, the program shall then be expanded to broaden hours and days of operation.
		  ◦ Coordinate with Metro and LADOT on how best to advertise and perform outreach to user groups regarding the availability of this transit service and methods to increase ridership (e.g., social media outreach).
		• Maintain and expand onsite bicycle parking for Zoo visitors in an amount and location informed by visitor surveys and annual monitoring reports.
		  ◦ Maintain and expand short-term bicycle parking within the Zoo to meet changing demands evaluated in the TDM Program annual reports.
		  ◦ Provide well-lit, clearly signed, bicycle parking that is convenient and in close proximity to the Zoo Entry to encourage bicycling by visitors.
		  ◦ Provide secure short-term bicycle parking and/or a bicycle parking attendant, bicycle valet, or indoor bicycle parking facility to prevent theft and ensure parking availability for Zoo visitors.
		  ◦ Design bicycle racks with space-efficient configurations, such as vertically staggered racks and two-tier racks.
		  ◦ Provide a bike share station at the Zoo as a part of the Metro Bike Share, Ofo, or a new bike share program specific to Griffith Park. Funding shall be determined based on the area required for the bike station. The bike share station shall be well-lit and located at a safe and convenient location adjacent to the Zoo entrance.	

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		• Develop and implement a paid parking program for Zoo visitors to discourage personal vehicle trips to the Zoo and provide a secure funding source to help subsidize TDM, transit improvement, and other trip reduction measures, considering the following options: • A Peak Period Parking Program would charge for preferred parking during the highest visitation periods, including all weekends (Saturdays and Sundays), holidays, the spring months (April and May), and December, collecting fees for preferred parking on approximately 170 days of the year (based on the 2020 calendar year). • An Everyday Parking Program would charge for preferred parking 364 days of the year (every day the Zoo is open). • Maintain at least 15 percent of parking spaces as free parking to meet the needs of disadvantaged households and ensure that low-income visitors may continue to visit the Zoo. • The Zoo's TDM Coordinator shall prepare a quarterly report on the effectiveness of the Paid Parking Program and monthly revenue generated. • Continue to seek grant funding to support expanded TDM measures to reduce visitor VMT per capita.	
T-2: While a required TDM program would substantially reduce Project VMT, the projected increase in Project VMT would exceed the City's established VMT threshold, which stipulates that any net increase in VMT for event centers and regional-serving entertainment venues would be significant.	Potentially significant	**MM T-2** shall apply.	**Significant and Unavoidable**
T-3: Construction-related hazards would be minimized with implementation of a Construction Traffic & Access Management Plan. With compliance with City standards and regulations and	Potentially significant	**MM T-1 Construction Traffic & Access Management Plan.** The Zoo shall prepare, implement, and maintain a Construction Traffic & Access Management Plan during the pre-construction design and permitting for each Project phase to address traffic management during construction. The Construction Traffic & Access Management Plan shall be subject to LADOT approval and designed to:	Less than significant

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
review and approval by various City agencies, the proposed Project would not create potentially hazardous conditions for people driving.		• Minimize traffic impacts on the surrounding street network within Griffith Park and surrounding areas to the maximum extent feasible during each construction phase; • Minimize impacts to existing public recreational uses and parking to the greatest extent practicable; • Ensure safety for both those constructing the proposed Project and the surrounding community; • Minimize the impacts of truck traffic within Griffith Park; • Avoid conflicts with planned events and festivals within Griffith Park to the greatest extent possible; and • Provide for coordination with adjacent or nearby construction projects. To achieve these outcomes, the Plan shall, at a minimum, include the following: **1. Ongoing Requirements throughout the Duration of Construction** • A detailed Construction Traffic & Access Management Plan for work zones shall be maintained. At a minimum, this shall include parking and travel lane configurations; warning, regulatory, guide, and directional signage; and area sidewalks, bicycle lanes, and parking lanes. The plan shall include specific information regarding the Project's construction activities that may disrupt normal pedestrian and traffic flow and the measures to address these disruptions. • Work within the public right-of-way (i.e., road realignment, intersection improvements, construction of the proposed parking structure) that is performed before 9:00 AM and after 2:00 PM on weekdays during the school year shall require flaggers and traffic controls to avoid conflicts with pick-up and drop-off at the North Hollywood High School Magnet Center. • Any requests for work before or after normal construction hours within the public right-of-way shall be subject to review and approval through the After-Hours Permit process administered by the Los Angeles Department of Building and Safety. • A Zoo-funded on-site construction monitor shall be present to ensure safety when work occurs within the public right-of-way (i.e., road realignment, intersection improvements, construction of the	

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		proposed parking structure), or when more hazardous activities are occurring such as heavy-haul materials delivery or oversize transport. The Construction Traffic & Access Management Plan shall identify the activities that would prompt the presence of an on-site monitor. • Trucks shall only travel on a City-approved construction route. Construction routes shall avoid Griffith Park roads to the maximum extent feasible. Truck queuing/staging shall not be allowed on City streets. Limited queuing may occur on the construction site itself. • Staging areas for construction materials and equipment shall be limited to fenced-off areas within the Zoo campus (with the exception of the road realignment and intersection improvements during Phase 1 and construction of the parking structure during Phase 7). • Materials and equipment shall be minimally visible to the public; the preferred location for materials is to be onsite, with a minimum amount of materials within a work area in the public right-of-way. • Off-street parking shall be provided for construction workers, which may include the use of a remote location with shuttle transport to the site, if determined necessary by the City. • At the discretion of the City, construction work shall not be permitted during City-approved or RAP-sponsored large events or festivals (e.g., Griffith Park Trail Race, Harvest Festival, concerts at the Greek Theatre) within Griffith Park. **2. Project Coordination Elements That Shall Be Implemented Prior to Commencement of Construction** • The Zoo shall advise the traveling public of impending construction activities through active outreach measures (e.g., information signs, portable message signs, media listing/notification, social media, and implementation of an approved Construction Traffic & Access Management Plan). • The Zoo shall obtain needed City permits (e.g., Use of Public Property Permit, Oversize Load Permit), as well as any Caltrans permits required, for any construction work requiring encroachment into public rights-of-way, detours, or any other work within the public right-of-way.	

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		• The Zoo shall provide timely notification of construction schedules to all affected agencies (e.g., Metro, RAP, LAFD, LAPD, Public Works Department, and BOE), as well as adjacent facilities (e.g., Autry Museum of the American West, Zoo Magnet School, Wilson-Harding Golf Course). • The Zoo shall coordinate construction work with affected agencies in advance of start of work. Coordination with Metro regarding construction activities that may impact Metro bus lines (e.g., Metro Line 96) or result in closures lasting over 6 months shall be initiated at least 30 days in advance of construction activities. • The Zoo shall obtain LADOT approval of any haul routes for earth, concrete, or construction materials and equipment hauling.	
T-4: Implementation of a Construction Traffic & Access Management Plan would ensure continued access to the Zoo and through the interior of the Zoo circulation system to minimize impacts from Project construction on emergency access and response. Project operation would not result in inadequate emergency access.	Potentially significant	**MM T-1** shall apply.	Less than significant
Utilities			
UT-1: Construction of the proposed Project would not result in significant environmental effects from water demand or construction of water facilities. The installation of water efficient fixtures, use of recycled water, and reuse of stormwater would minimize impacts from the Zoo's water demand.	Potentially significant	**MM HYD-7** shall apply. **MM UT-1 Recycled Water Use.** In accordance with the Green New Deal pLAn and One Water L.A. Plan, the Zoo shall work with LADPW and LASAN to expand recycled water lines (purple pipe) to interior portions of the Zoo. Recycled water shall be used to the maximum extent available for washdown of the animal holding areas, powerwashing walkways and plazas, and flushing toilets, and in the Zoo's exhibits (e.g., treatment systems, ponds, aesthetics, water features, etc.) if the recycled water is dechlorinated before use, and for fire suppression where feasible. Additionally, all irrigation water demand not covered by stormwater captured in the proposed stormwater collection system (i.e., during dry years), shall be covered by recycled water. The point of connection to the City's water recycling	Less than significant

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation

		system would be at the existing 8-inch recycled water main at the west end of the Zoo parking lot in Griffith Park, subject to review and approval of LADPW, LASAN, and BOE. LASAN staff shall ensure the recycled water main connections are incorporated into the final building plans prior grading. City staff shall ensure measures are on all Project plans to ensure that these requirements are implemented.
		MM UT-2 Vision Plan Recommendations. Project components designed and engineered to implement the Vision Plan shall follow all recommendations and guidelines for water, wastewater, and stormwater utilities provided in the Appendix of the Vision Plan. As recommended in the Vision Plan Appendix (New Infrastructure: Plumbing), the Project must provide the following features to reduce maintenance and conserve water:
		• Restrooms
		  ◦ Shut-off valve for all fixtures in each restroom, located above the upper terminal water closet and behind a locked access panel.
		  ◦ Water-saving battery-operated infrared-sensored flush valves, with manual override on all water closets.
		  ◦ Push-button, ADA-metered, self-closing faucets on lavatories.
		  ◦ Hose-bibb with vacuum breaker in recessed box with locking cover.
		  ◦ Floor drains with trap primers with floors sloped to drain.
		  ◦ Clean-outs above all urinals, lavatories, and water closets.
		• Public Restrooms
		  ◦ Shut-off valve for all fixtures located above the upper terminal water closet and behind a locked access panel.
		  ◦ Floor drains with trap primers sloped to drain.
		  ◦ Clean-outs above all urinals, lavatories, and water closets.
		  ◦ ADA compliant floor-mounted water closet and countertop lavatory.
		• Sewer Lines
		  ◦ Cast iron soil pipe at all following locations:
		  ▪ Within the building and 5 feet outside the building line.
		  ▪ Running parallel to and within 2 feet of any building or structure.	

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		◦ 6-inch sewer lateral to fire station. • Provide clean-outs above all urinals, lavatories, upper terminal water closets, and sinks. • Provide uniform slope of 0.25-inch fall per foot whenever possible, but never less than 0.125-inch per foot. • Indicate invert elevations of new sewer lines at buildings, changes in direction, locations where sewer lines join and at property lines. • Review existing sewer pipe's capacities, conditions, and materials. ▪ Floor Drains, Area Drains and Floor Sinks • Where drains or sinks are required, slope floor to drain at 0.125 inch per foot. • Floor drains with trap primers are required at restrooms. One floor drain shall be provided front and center for two or more urinals. One floor drain is required for water closets in all restrooms with an additional floor drain when a total of four or more water closets are provided. One floor drain shall be provided for a combination of one water closet and one urinal. ▪ Utility/Service Sink Room • Provide wall-mounted stainless-steel mop sink, with floor drain. • Floor sinks with trap primers are required at: ◦ Utility/Service sink room. ◦ Kitchens, and where preparation sinks have an indirect waste drain rather than a direct connection. ◦ Trench drain. ◦ Wherever required by the California Plumbing Code or the City Plumbing Code. ▪ Water Systems • Use Type L hard copper pipe inside buildings. • Do not run water lines under slab if at all possible. • Provide a shut-off valve to isolate all fixtures in each restroom, kitchens, and any other room with multiple fixtures.	

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		• Slope pipes up in direction of water flow to air-elimination devices, or up to a nearby expansion tank, to provide for air elimination from water lines. • Water hammer arrestors are required for lavatories, sinks, fountains, water closets, urinal headers, and other fixtures. • Water Valves and Other Devices • Uninterrupted Service: • All domestic water supply mains shall be designed in an above-ground valve station with a minimum of two parallel branch lines – a primary and secondary – to provide for uninterrupted service to the site during maintenance of a backflow preventer or a pressure regulating valve. Each branch shall include a backflow preventer with strainer and when the street pressure exceeds 80 psi, a pressure regulator with strainer. • A separate service shall be provided for landscape irrigation, with an above-ground valve station that includes a backflow preventer and a pressure regulator with strainer when the street pressure exceeds manufacturer's or design suggested range. • Shut-off Valves: • All shut-off valves shall be accessible from the room in which fixtures are installed, and shall be located at approximately 3 feet, but not more than 7 feet, from the floor. These valves shall control only fixtures in the room in which they are installed. • Provide shut-off valves for: • Each group of fixtures. • Each restroom. *The City is required to include the above standard recommended measures from the Vision Plan's Appendix in the final building plans prior to approval. City staff shall ensure measures are on all Project plans to ensure that these requirements are implemented.*	
UT-2: The proposed underground stormwater infrastructure would	Potentially significant	Mitigation measures required to reduce potentially significant environmental impacts from the construction of the proposed	Less than significant

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
result in environmental impacts associated with excavation and trenching of underlying soils, emissions from construction equipment and fugitive dust, construction vehicle traffic, construction stormwater runoff, potential disturbance of archaeological and paleontological resources, and construction related noise.		underground stormwater system, are further discussed within each of the resource sections analyzed in this EIR. All mitigation measures discussed in this EIR shall apply.	
UT-3: The proposed Project would not adversely affect flows to the Zoo Wastewater Facility, North Outfall Sewer and Advanced System, and Los Angeles – Glendale Water Reclamation Plant (LAGWRP). Further, the installation of pre-treatment and filtering devices within the stormwater collection system would ensure that captured water reused for irrigation does not unnecessarily contribute pollutants back into the Zoo's drainage system. The proposed Project would not exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board (RWQCB).	Potentially significant	**MM HYD-6** shall apply.	Less than significant
UT-4: The proposed Project would be served by landfills with sufficient permitted capacity to accommodate the Project's solid waste disposal needs and would	No impact	No mitigation measures required.	Not Applicable

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
comply with federal, state, and local statutes and regulations related to solid waste.			
Wildfire			

WF-1: The proposed Project would not impair an adopted emergency response plan or emergency evacuation plan with implementation of a Construction Traffic & Access Management Plan and updates to the Los Angeles Zoo Procedures Manual and the City Emergency Operations Plan.	Potentially significant	**MM T-1** shall apply.
		MM WF-2 Evacuation and Fire Response Access Plan. Prior to initiation of each phase of Project implementation, the Zoo shall prepare and implement an Evacuation and Fire Response Access Plan (EFRAP), which shall address conditions and requirements for both construction and operation of the Zoo area affected by the Project. The EFRAP shall be prepared in coordination with the LAFD and RAP. The Zoo Department shall oversee implementation of the EFRAP, including updates of the Los Angeles Zoo Procedures Manual and coordination with the City Emergency Management Department – Planning Division for updates of the City Emergency Operations Plan. The EFRAP shall include, but not be limited to:
		• Evacuation of Visitors and Employees
		  ◦ Designated evacuation routes and exits within the Zoo for Zoo visitors and employees;
		  ◦ Wayfinding and signage to assist with route, exits, and meeting area identification during evacuation;
		  ◦ Special considerations and requirements for nighttime evacuations;
		  ◦ Accommodations for special care or disabled guests or employees;
		  ◦ Specified egress points for transportation vehicles and traffic controls to help efficiently evacuate the Zoo's parking lot;
		  ◦ Contingency plans for changes to the construction schedule or phasing plan that would affect the primary evacuation plan and routes; and
		  ◦ Regular practice drills (e.g., one per year) for implementation of the EFRAP.
		• Fire Response Access within the Zoo
		  ◦ Specified at least two dedicated ingress points for emergency responders;
			Less than significant

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		• Specified firefighter staging or command locations within the Zoo (e.g., northern parking lot or Gottlieb Animal Health Center); and • Traffic controls at gates and intersections to balance ingress/egress needs during evacuation. • Zoo Animal Shelter in Place and Evacuation • Shelter-in-place accommodations; and • A relocation plan from the Project site to a secondary location or facility, with associated transportation.	
WF-2: With implementation of existing regulations, risks associated with construction of the Project over the Vision Plan implementation period would be reduced such that associated wildfire risk would be nominal. With the application of existing regulations and requirements to update wildfire management and evacuation plans, Project operation would not significantly exacerbate wildfire risks resulting in the exposure of Zoo staff and visitors to wildfire hazards.	Potentially significant	**MM WF-2** shall apply.	Less than significant
WF-3: Adverse impacts to biological resources as a result of installation and maintenance of fuel breaks would be reduced through maximum avoidance of native vegetation and appropriate restoration offsite.	Potentially significant	**MM BIO-2** shall apply. **MM WF-1 Wildfire Fuel Management Plan.** The Zoo shall retain a City-qualified specialists (i.e., fire management professionals) and City-approved biologist to prepare a Wildfire Fuel Management Plan (WFMP) to design the creation and maintenance of required fire buffers and fuel management zones around the Project site while preserving the integrity of existing native oak woodland, chaparral and coastal sage scrub habitats to the maximum extent feasible. To the maximum extent feasible, native trees and shrubs, such as coast live oak, coastal scrub, and grassland shall be thinned and limbed up but left in place. The WFMP shall be prepared consistent with the requirements of PRC Section 4291 and also detail methods for achieving fire safety around	Less than significant

Table ES-1. Summary of Impacts and Mitigation Measures (Continued)

Environmental Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		new and existing structures. The WFMP shall incorporate management strategies in coordination with RAP and LAFD to address any needed future management actions in Griffith Park buffering the Project site. Vegetation and other fuels with the management zone(s) shall be maintained by the Zoo in a manner consistent with existing CFC and LAFD regulations to reduce fuel loading in vulnerable areas and to avoid the buildup of deadwood and leaf litter and/or inappropriate storage of flammable materials. Specifically, the WFMP shall describe at least the following elements: • Vegetation coverage and type within and adjacent to the vegetation management zone(s); • Sensitive species identification, mapping, and avoidance; • Setbacks between structures, Project site boundaries, and access routes; • Location and management procedure for flammable materials use and storage; and • Development plan landscaping and planting standards within the setback areas. The Zoo shall submit the WFMP to the City Bureau of Engineering, Emergency Management Department, RAP, LAFD, and California Department of Fish and Wildlife (CDFW) for review and approval prior to issuance of any grading and development plans for improvements under the Project.	
WF-4: The proposed Project would not expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.	Less than significant	No mitigation measures required.	Not Applicable

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ACRONYMS AND ABBREVIATIONS

%	percent
°C	Celsius
°F	Fahrenheit
µg/m^3	micrograms per cubic meter
AB	Assembly Bill
ACC	Advanced Clean Cars
ACC	Avian Conservation Center
ACM	Animal Care Manuals
ACM	asbestos-containing materials
ADA	Americans with Disabilities Act
AEP	Association of Environmental Professionals
AF	acre-feet
AFY	acre-feet per year
AHERA	Asbestos Hazard Emergency Response Act
AIA	Area of Influence
ALS	Advanced Life Support
ALUC	Los Angeles County Airport Land Use Commission
ALUP	Los Angeles County Airport Land Use Plan
ANSI	American National Standards Institute
APA	Allowed Pumping Allocation
APC	Area Planning Commission
APS	Alternative Planning Strategy
AQMP	Air Quality Monitoring Plan
ARB	Air Resource Board
ASHRAE	American Society of Heating, Refrigerating, and Air-Conditioning Engineers
ATS	Aerial Tram Service
AVO	average vehicle occupancy
AWA	Animal Welfare Act
AZA	American Zoological Association
Basin Plan	Water Quality Control Plan for the Los Angeles Region
BC	Before Common Era
BEN	Bicycle Enhanced Network
bgs	below ground surface
BLM	Bureau Land Management
BLN	Bicycle Lane Network
BMP	best management practice
BOE	Bureau of Engineering
BP	before present
BRMMP	Biological Resources Mitigation and Monitoring Plan
BTU	British thermal units
BUR	Bob Hope Airport
C&D	construction and demolition
C_2H_3Cl	vinyl chloride
CAA	Clean Air Act
CAD	Computer-aided design

CAFE	Corporate Average Fuel Economy
CalEEMod	California Emission Estimator Model
CalEMA	California Emergency Management Agency
CalEPA	California Environmental Protection Agency
CAL FIRE	California Department of Forestry and Fire Protection
CALGreen	California's Green Building Standard Code
California Register	California Register of Historical Resources
Cal/OSHA	California Department of Occupational Safety and Health Agency
CalRecycle	California Department of Resources Recycling and Recovery
Caltrans	California Department of Transportation
CAP	Climate Action Plan
CAPCOA	California Air Pollution Control Officers Association
CAAQS	California Ambient Air Quality Standards
CARB	California Air Resources Board
CBC	California Building Code
CCAA	California Clean Air Act
CCE	State Candidate Endangered
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CDPH	California Department of Public Health
CE	State Endangered
CEC	California Energy Commission
CEC-A15	California Retail Fuel Outlet Annual Reporting
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CESA	California Endangered Species Act
CFC	California Fire Code
CFR	Code of Federal Regulations
cfs	Cubic feet per second
CGS	California Geological Survey
CH_4	methane
CHP	California Highway Patrol
CHRIS	California Historical Resources Inventory System
CHL	California Historical Landmarks
City	City of Los Angeles
CIWMB	California Integrated Waste Management Board
CIWQS	California Integrated Water Quality System Project
CMP	Congestion Management Plan
CMP	Construction Mitigation Plan
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CNRA	California Natural Resources Agency
CO	carbon monoxide
CO_2	carbon dioxide

CO_2e	carbon dioxide equivalents
COP-16	2010 United Nations Climate Change Conference
COP-21	2015 United Nations Climate Change Conference
County	Los Angeles County
CPED	Circulation and Parking enhancement Plan
CPS	Cleanup Program Sites
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CRPR	California Rare Plant Rank
Cr(VI)	hexavalent chromium
CSR	Comprehensive Strategies Report
CT	State Threatened
CTC	California Transportation Commission
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
CWC	California Water Code
CY	Calendar year
cy	cubic yard
DASH	Downtown Area Short Hop
dB	decibel
dBA	A-weighted decibels
DBH	Diameter breast height
DCE	dichloroethanes
DCP	Los Angeles Department of City Planning
DDT	dichlorodiphenyltrichloroethane
Delta	Sacramento-San Joaquin River Delta
DoD	Department of Defense
DOT	Department of Transportation
DPW	Los Angeles County Department of Public Works
DTSC	Department of Toxic Substance Control
DWR	California Department of Water Resources
E. Coli	fecal coliform
EBEWE	Existing Buildings Energy and Water Efficiency
ECHO	Enforcement Compliance History Online
ECSP	Erosion and Sediment Control Plan
EDR	Environmental Data Resources, Inc.
EFRAP	Evacuation and Fire Response Access Plan
EI	Expansion Index
EIR	Environmental Impact Report
EISA	Energy Independence and Security Act
EMFAC	EMission FACtors model
EMI	Exposure Model for Individuals
EMS	emergency medical service
EO	Executive Order
EPA	Environmental Protection Agency
EPCRA	Emergency Prevention and Community Right to Know Act
EPD	Environmental Programs Division

ESA	Environmental Site Assessment
EV	Electric Vehicle
EWMP	Enhanced Watershed Management Plan
LRT	Metro Light Rail Transit line
FAA	Federal Airport Authority
Facilities Plan	City of Los Angeles Solid Resources Infrastructure Strategy Facilities Plan
FATO	Final Approach and Takeoff
FCPCMP	Final Closure/Post-Closure Maintenance Plan
FE	Federally Endangered
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FHSZ	Fire Hazard Severity Zone
FHWA	Federal Highway Administration
FICUN	Federal Interagency Committee on Urban Noise
FINDS	Facility Index System
FIRM	Flood Insurance Rate Maps
FPS	Fire Preemption System
FRAP	Fire Resource Management Program
Framework Element	City of Los Angeles General Plan Framework Element
ft	feet
FT	Federally Threatened
FTA	Federal Transit Administration
FTE	full-time equivalent
FY	Fiscal Year
Gal	gallon
gal/hp/hr	gallons per horsepower per hour
GBMP	Groundwater Basins Master Plan
GC	Government Code
GCF	Green Climate Fund
GHG	greenhouse gas
GIS	Geographic Information System
GLAC	Greater Los Angeles County
GLAZA	Greater Los Angeles Zoo Area
GO!	Glendale Outdoors!
gpd	gallons per day
gpm	gallons per minute
GRACE	Gorilla Rehabilitation and Conservation Education
GSA	groundwater sustainability agency
GSP	groundwater sustainability plan
GWh	gigawatt hours
GWP	global warming potential
H_2S	hydrogen sulfide
HAZNET	Hazardous Waste Information System
HCM	Historic-Cultural Monument
HCPU2	Hollywood Community Plan Update
HFC	hydrofluorocarbons

HIN	High Injury Network
HOV	high-occupancy vehicle
hp	horsepower
HPZ	Helicopter Protection Zone
HRI	Historic Resource Inventory
HSC	California Health and Safety Code
HUC	Hydrologic Unit Code
HVAC	heating, ventilation, and air conditioning
Hwy	Highway
hz	hertz
I-	Interstate
IBC	International Building Code
ICC	International Code Council
ICU	Intersection Capacity Utilization
in	inches
IPCC	Intergovernmental Panel on Climate Change
IRP	Integrated Resource Plan
IRWMP	Integrated Water Resource Management Plan
IS	Initial Study
IWMA	Integrated Waste Management Act
IWMP	Integrated Waste Management Plan
JPA	Joint Powers Authority
k-12	kindergarten through 12th grade
kBTU	kilo-British thermal units
kBTU/sf/year	kBTU per square foot of building area per year
kg CO_2	kilograms of carbon dioxide
KVL	Key Viewing Location
kWh	kilowatt
LAA	Los Angeles Aqueduct
LACDPW	Los Angeles County Department of Public Works
LACFCD	Los Angeles County Flood Control District
LACoFD	Los Angeles County Fire Department
LADBS	Los Angeles Department of Buildings and Safety
LADOT	Los Angeles Department of Transportation
LADPW	City of Los Angeles Department of Public Works
LADWP	City of Los Angeles Department of Water and Power
LAFD	Los Angeles Fire Department
LAGBC	Los Angeles Green Building Code
LAGWRP	Los Angeles – Glendale Water Reclamation Plant
LAIR	Living Amphibians Invertebrates and Reptiles
LAMC	Los Angeles Municipal Code
LAPD	Los Angeles Police Department
LASAN	City of Los Angeles Bureau of Sanitation
LA Sanitation	City of Los Angeles Bureau of Sanitation
LAUSD	Los Angeles Unified School District
LAX	Los Angeles International Airport
LBP	lead-based paint

lbs	pounds
lbs/gal	pounds per gallon
LCFS	Low Carbon Fuel Standard
LED	light emitting diode
LEED	Leadership in Energy and Environmental Design
L_{eq}	Equivalent Noise Level
LEV	Low-Emission vehicle
LHMP	Local Hazard Mitigation Plan
LID	low-impact development
L_{max}	Maximum Instantaneous Noise Level
LORS	Laws, Ordinances, Regulations, and Standards
LOS	Level of Service
LRA	Local Responsibility Area
LRRMP	Los Angeles River Revitalization Master Plan
LRTP	Long Range Transportation Plan
LST	localized significance threshold
LUFT	Leaking Underground Fuel Tanks
LUST	leaking underground storage tank
MBTU	Million British thermal units
MCL	Maximum Containment Level
MCM	Minimum Control Measures
MCP	Mobile Command Post
MD	midday
MERV	Minimum Efficiency Reporting Value
Metro	Los Angeles Metropolitan Transportation Authority
mg/cm^2	milligram per square centimeter
mg/yr	million gallons per year
mgd	million gallons per day
MLD	Most Likely Descendant
MM	Mitigation Measure
mm	millimeters
Mmax	maximum moment magnitude
MMRP	Mitigation Monitoring and Reporting Program
$MMTCO_2e$	million metric tons of CO2e
MOU	Memorandum of Understanding
mpg	miles per gallon
mph	miles per hour
MPO	metropolitan planning organization
MPP	LADOT Manual of Policies and Procedure
MS4	Municipal Separate Storm Sewer System
msl	mean sea level
MT CO_2e	metric tons of CO2e
MW	megawatts
MWD	Metropolitan Water District
MWh	Megawatt-hours
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards

NAHC	Native American Heritage Commission
NAL	Numeric Action Level
NAT	No-Action-Taken
National Register	National Register of Historic Places
NEL	Numeric Effluent Limitation
NEN	Neighborhood Enhanced Network
NESHAP	National Emissions Standard for Hazardous Air Pollutants
NFA	No Further Action
NFIP	National Floodplain Insurance Program
NFPA	National Fire Protection Association
NHHS	North Hollywood High School
NHPA	National Historic Preservation Act of 1966
NHTSA	National Highway Traffic Safety Administration
NO_2	nitrogen dioxide
NOI	Notice of Intent
NOP	Notice of Preparation
NO_x	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NPS	National Park Service
NRCS	National Resources Conservation Service
NRHP	National Register of Historic Places
NY	New York
O&M	Operations and Maintenance
O_3	ozone
Ocean Plan	Water Quality Control Plan for Ocean Waters of California
OEHHA	Office of Environmental Health Hazard Assessment
OES	State Office of Emergency Services
OPR	Office of Planning and Research
ORCR	Office of Resource Conservation and Recovery
OS	Open Space
OSC	On-Scene Coordinator
OSHA	Occupational Safety and Health Administration
PA	public address
Pb	lead
PCB	polychlorinated biphenyl
PCE	tetrachloroethylene
PE	Professional Engineer
PED	Pedestrian Enhanced Districts
PeMS	Caltrans Performance Measurement System
PFC	perfluorocarbons
PG	Professional Geologist
PHEV	plug-in hybrid electric vehicles
PHI	Points of Historical Interest
PI	Plasticity index
PIIRA	Petroleum Industry Information Reporting Act
pLAn	City of Los Angeles Sustainable City pLAn

PM	particulate matter
PM_{10}	particulate matter equal to or less than 10 microns in diameter
$PM_{2.5}$	particulate matter equal to or less than 2.5 microns in diameter
POTW	publicly owned treatment work
ppm	Parts per million
PPOP	plans, programs, ordinances, or policies
PPV	peak particle velocity
PRC	Public Resources Code
Project	Los Angeles Zoo and Botanical Gardens Vision Plan
Project site	133-acre Zoo and surrounding parking lots and roads
psi	per square inch
PV	photovoltaic
PVC	polyvinyl chloride
pVES	Preliminary vapor encroachment screen
qd	quartz diorite bedrock
Qa	alluvial material
RAP	Los Angeles Department of Recreation and Parks
RCNM	Roadway Construction Noise Model
RCP	Regional Comprehensive Plan
RCRA	Resource Conservation and Recovery Act
RCRA-SQG	Resource Conservation and Recovery Act Small Quantity Generator
REAP	Rain Event Action Plan
REC	recognized environmental conditions
RFS	Renewable Fuels Standard
RMS	root mean square
ROG	reactive organic gases
ROWD	Report of Waste Discharge
RPOSD	Los Angeles Regional Park and Open Space District
RPS	Renewable Portfolio Standard
RPZ	Runway Protection Zones
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SAFE	Safer, Affordable, Fuel-Efficient
Safety Element	City of Los Angeles General Plan Safety Element
SAR	Second Assessment Report
SB	Senate Bill
SC	Site Cleanups
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCAR	Sewer Capacity Availability Review
SCS	Sustainable Communities Strategy
SEA	Significant Ecological Areas
SECSD	Security Services Division
sf	square foot/feet
SF_6	sulfur hexafluoride
SFHA	Special Flood Hazard Area

SFVGB	San Fernando Valley Groundwater Basin
SGMA	Sustainable Groundwater Management Act
SHMP	State of California Multi-Hazard Mitigation Plan
SLIC	Spills, Leaks, Investigations, and Cleanups
SLTRP	Strategic Long-Term Resource Plan
SMARTS	Stormwater Multi-Application, Reporting, and Tracking System
SMFD	Santa Monica Fire Department
SO_2	sulfur dioxide
SO_4^{2-}	sulfate ion
SoCal Gas	Southern California Gas Company
SOP	Standard Operating Procedure
SO_x	sulfur oxides
Specific Plan	Los Angeles Specific Plan for the Management of Flood Hazards
SR-	State Route
SRA	Source Receptor Area
SRRE	Source Reduction and Recycling Element
SSC	California Species of Special Concern
SSP	Species Survival Plans
STEM	Science/Technology/Engineering/Math
STIP	State Transportation Improvement Program
SUSMP	Standard Urban Stormwater Mitigation Plan
SVP	Society of Vertebrate Paleontology
SWIRP	Solid Waste Integrated Resources Plan
SWMM	Storm Water Management Model
SWP	State Water Project
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	Toxic Air Contaminants
TAG	Transportation Assessment Guidelines
TCE	trichloroethylene
TDM	Transportation Demand Management
TEN	Transit Enhanced Network
TIA	Transportation Impact Analysis
TIMS	Transportation Injury Mapping System
TMDL	Total Maximum Daily Load
TNC	Transportation Network Companies
TPA	Transit Priority Areas
Transportation Assessment	Los Angeles Zoo Vision Plan Transportation Assessment
TSCA	Toxic Substances Control Act of 1976
TSS	Total Suspended Solids
Ttucg	Upper Topanga Formation
U.S.	United States
UBC	Uniform Building Code
ULARA	Upper Los Angeles River Area
UNFCCC	United Nations Framework Convention on Climate Change
USACE	U.S. Army Corps of Engineers

USC	U.S. Code
USC	University of Southern California
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
USNAS	U.S. National Academy of Sciences
UST	underground storage tank
UWMP	Urban Water Management Plan
V/C	volume-to-capacity ratio
VdB	decibel notation
VEC	vapor encroachment condition
VEN	Vehicle Enhanced Network
Vision Plan	Los Angeles Zoo and Botanical Gardens Zoo Vision Plan
VMT	vehicle miles traveled
VOC	Volatile Organic Compound
WCIP	Wastewater Capital Improvement Program
WEAP	Worker Environmental Awareness Program
WFMP	Wildfire Fuel Management Plan
Wh	watt-hours
WIP	Wetland Identification Program
WL	CDFW Watch List
Wood	Wood Environment & Infrastructure Solutions, Inc.
WQCMP	Water Quality Compliance Master Plan for Urban Runoff
WRD	Water Replenishment District of Southern California
WSA	water supply assessments
WUI	Wildland Urban Interface
WWBG	Western Working Bat Group
$X\text{-}SO_4^2$	sulfates
ZAHP	Zoo and Aquarium All Hazards Preparedness, Response, and Recovery
ZEV	zero emission vehicle
Zoning Code	City of Los Angeles Planning and Zoning Code
Zoo	Los Angeles Zoo and Botanical Gardens
Zoo Security	Los Angeles Zoo Security

1.0 INTRODUCTION

1.1 BACKGROUND AND PROJECT OVERVIEW

The City of Los Angeles (City) is proposing to construct and operate the Los Angeles Zoo Vision Plan (Project). The Project would guide future development and modernization of the Los Angeles Zoo and Botanical Gardens (Zoo) for the next 20 years. The Project would include comprehensive redesign and redevelopment of the Zoo to replace outdated buildings and infrastructure and upgrade animal care and guest amenities. The Project would result in the following:

- Expanded and revitalized immersive exhibit space for improved animal welfare and the Zoo's conservation and endangered species propagation and preservation programs;
- New and redeveloped visitor-serving facilities for enhanced visitor experience, including three visitor centers, picnic and restaurant locations, and internal circulation and walking paths;
- Expanded and modernized administrative and services facilities to support state of the art exhibits and upgraded visitor support facilities;
- Circulation improvements for access roads, pedestrian walkways and paths, an enhanced entry way and plaza, and new parking facilities;
- Inclusion of environmentally sustainable design features within the Zoo's built structure; and
- Operational excellence of the Zoo.

Improved and expanded facilities would allow for annual visitation to grow from by approximately 1.2 million annual guests to 3.0 million guests annually by 2040. Improvements would be made through seven sequential phases of development. Project implementation would involve demolition of existing buildings, installation of new facilities, and construction of new pathways and circulation infrastructure.

The proposed Project is located at 5333 Zoo Drive in the City of Los Angeles, in the southern portion of Los Angeles County. It is generally bordered by the Golden State Freeway or Interstate 5 to the east and the Ventura Freeway or California State Route 134 to the north. The 142-acre Project site is in the northeastern portion of Griffith Park, at the base of the foothills of the Santa Monica Mountains. The Los Angeles River flows within 900 feet of the Project site at the base of Griffith Park. Project site topography is undulating with approximately 150 feet of elevation change; however, interior portions of the Zoo are relatively flat resulting from the previous placement of fill soils during Zoo construction.

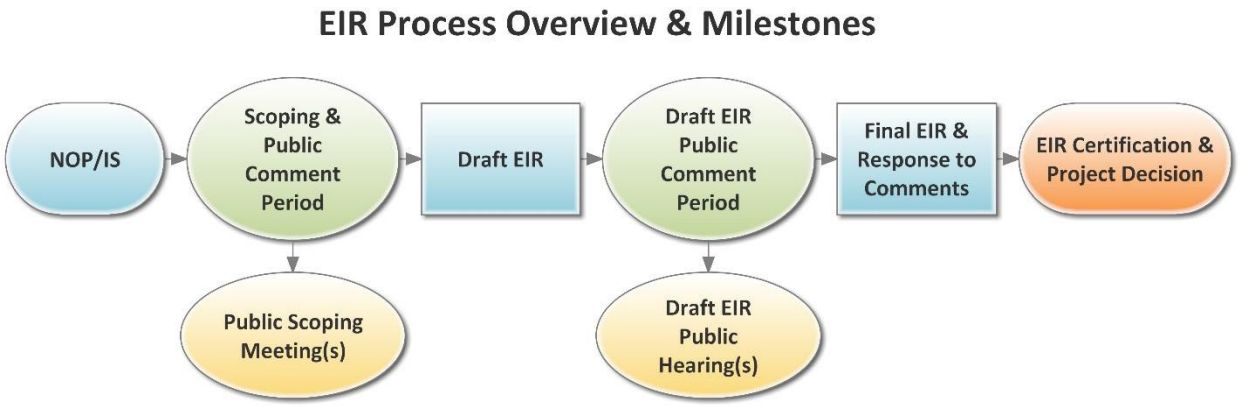
1.2 PURPOSE AND INTENDED USE OF THIS EIR

The purpose of an Environmental Impact Report (EIR) is to inform decision-makers, responsible and trustee agencies, and the public of the potential environmental impacts that could result from a project. Under the provisions of CEQA, "the purpose of the environmental impact report is to identify the significant effects of a project on the environment, to identify alternatives to the project, and to indicate the manner in which significant effects can be mitigated or avoided" (Public Resources Code 21002.1[a]). The CEQA process was established to enable public agencies to evaluate a project in terms of its environmental consequences, to examine and implement methods of eliminating or reducing any potentially adverse impacts, and to consider alternatives to the project. CEQA Section 15021(a) requires that major consideration be given to avoiding environmental damage. CEQA requires full disclosure and consideration of the unavoidable environmental risks, as applicable, against the economic, legal, social, or other benefits of the project as part of decision-maker approval proceedings.

The City is the Lead Agency for the proposed Project, pursuant to Section 15367 of the CEQA Guidelines. This EIR has been prepared by and under the direction of the Los Angeles Department of Public Works, Bureau of Engineering (BOE). This EIR was prepared in accordance with the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000 et seq.); the Guidelines for the Implementation of the California Environmental Quality Act (CEQA Guidelines) (California Code of Regulations Sections 15000 et seq.); and the City's environmental guidance documents (i.e., Los Angeles City CEQA Guidelines and L.A. CEQA Thresholds Guide: Your Resource for Preparing CEQA Analyses in Los Angeles).

Responsible and trustee agencies are public agencies responsible for certain discretionary Project approvals or implementing specific onsite and/or offsite components of the Project. For the purposes of CEQA, a "responsible agency" includes all public agencies other than the Lead Agency which have discretionary approval power over the Project (CEQA Section 15381). A "trustee agency" is defined as a state agency having jurisdiction over certain resources held in trust for the people of California but do not have legal authority for approval of the Project (CEQA Section 15386).

The CEQA process is initiated when the Lead Agency identifies a proposed project. The proposed Project requires several discretionary approvals (see Section 2.o, *Project Description*). Therefore, the proposed Project is subject to environmental review requirements under CEQA. The EIR process overview and key milestones is depicted here:



1.3 PUBLIC OUTREACH & ENGAGEMENT

1.3.1 Notice of Preparation & Scoping

On January 24, 2019, the City issued a Notice of Preparation (NOP) to request comments on the scope of the EIR on and included a brief description and background of the Project, key Project components, and a description of potential environmental resource areas affected by the proposed Project. The NOP/Initial Study (IS) was circulated for public review for a 45-day period from January 24, 2019 to March 11, 2019. The NOP was made available in both English and Spanish and published online at: https://eng.lacity.org/los-angeles-zoo-vision-plan and http://www.visionplan.lazoo.org/. Copies of the document were also made available for review at the following locations:

- Los Angeles Central Library, 630 W. 5th Street, Los Angeles, CA 90071
- Los Feliz Branch Library, 1874 Hillhurst Avenue, Los Angeles, CA 90027
- Atwater Village Library, 3379 Glendale Blvd., Los Angeles, CA 90039
- Cahuenga Branch Library, 4591 Santa Monica Blvd., Los Angeles, CA 90029
- Burbank Central Library, 110 N. Glenoaks Blvd., Burbank, CA 91502
- Glendale Downtown Central Library, 222 E. Harvard St., Glendale, CA 91205
- North Hollywood (Amelia Earhardt Regional) Library, 5211 Tujunga Ave., North Hollywood, CA 91601
- Buena Vista Branch Library, 300 N. Buena Vista, Burbank, CA 91506
- LA Zoo Administration Offices, 5333 Zoo Drive, Los Angeles, CA 90027
- City of Los Angeles, Bureau of Engineering, 1149 S. Broadway, Suite 600, Los Angeles, CA 90015

Two public scoping meetings were held separately during the public review period to solicit comments from interested parties on the content of the EIR. Spanish translating services were provided for both meetings. These meetings were held on Thursday, February 7, 2019, from 6:00-8:00 p.m. and Saturday, February 9, 2019 from 11:00 a.m. – 1:00 p.m. in the Witherbee Auditorium at 5333 Zoo Drive Los Angeles, California 90027.

Appendix B contains the NOP and comments and input received during the review period which was considered in preparing the scope of this EIR (CEQA Guidelines Section 15082). The City received approximately 60 sets of comments in the form of letters, emails, interviews verbal comments, and comment or speaker cards provided at public scoping meetings, from community residents, stakeholders, agencies, and organizations. These comments are provided in Appendix C. All comments were considered by BOE during preparation of this EIR.

In addition to EIR scoping in compliance with CEQA requirements, the City also engaged in stakeholder outreach and interviews to solicit input and comments directly. The City conducted a total of 13 in-person stakeholder interviews, included Los Angeles City Council staff, representatives from nearby neighborhood councils and/or homeowner and tenant associations, Griffith Park representatives, schools, and members of environmental and transit organizations. Through these interviews, the City learned of key concerns for these stakeholders, including transportation and traffic, land use and planning, urban forest, construction emissions, and habitat and biological resources impacts, and factored these issues into this EIR analysis.

1.4 SCOPE OF THE DRAFT EIR

This EIR assesses the potential environmental impacts that would occur with implementation of the proposed Project. The EIR evaluates potentially significant environmental impacts including issues raised in public comments received in response to the NOP/IS and at public scoping meetings (See Appendix B and C). This scoping process determined that the EIR should analyze the following issues (See Section 3.0, *Environmental Impact Analysis and Mitigation*.):

- Aesthetics
- Biological Resources
- Energy
- Geology & Soils
- Hazards & Hazardous Materials
- Land Use & Planning
- Public Services
- Transportation
- Utilities & Service Systems
- Air Quality
- Cultural & Tribal Cultural Resources
- Urban Forestry Resources
- Greenhouse Gas Emissions
- Hydrology & Water Quality
- Noise and Vibration
- Recreation
- Utilities & Service Systems
- Wildfire

This EIR addresses the issues referenced above and identifies potential environmental impacts associated with the Project, in accordance with the provisions of the State CEQA Guidelines. The EIR identifies feasible mitigation measures where necessary that would reduce or eliminate adverse environmental effects. In accordance with CEQA Guidelines

Section 15128 (Effects Not Found to Be Significant), environmental impacts related to Agriculture Resources, Mineral Resources and Population and Housing would be less than significant and therefore are not fully analyzed in this EIR (see Section 5.0, *Other CEQA Considerations* of this EIR).

A summary of cumulative impacts, which considers other projects or plans in the vicinity, is described in Section 3.18, *Cumulative Impacts*. Cumulative project analyses represent a comprehensive assessment of potential impacts on City resources using a list of past, present, and probable future projects capable of producing related or compounded impacts.

Consistent with CEQA Guidelines Section 15126.6(d), this EIR includes an assessment of a reasonable range of alternatives to the Project that could feasibly attain the Project objectives while avoiding or substantially lessening any of the significant effects of the Project. The alternatives analysis includes alternatives that were considered but discarded from further analysis, and two alternatives fully analyzed in accordance with the CEQA Statute and Guidelines. Please refer to Section 4.0, *Alternatives Analysis*.

1.4.1 Areas of Known Public Controversy

CEQA Guidelines Section 15123 states that an EIR shall identify areas of controversy known to the Lead Agency, including issues raised by the agency and the public. Based on comments received during the scoping public meetings and NOP/IS comment period, the following issues are known to be of concern and may be controversial. Each issue is further evaluated in the EIR:

- Transportation impacts to local roads;
- Parking adequacy;
- Improved multi-modal access;
- Loss of trees and vegetation;
- Impacts to sensitive species;
- Visual impacts of Zoo redevelopment on Griffith Park visitors, including hikers and equestrians on public trails;
- Animal welfare during construction and operation
- Discovery of cultural and/or tribal cultural resources during construction;
- Water use and conservation, including recycled water;
- Disabled access and stroller access to Zoo exhibit areas;
- Noise and light impacts to sensitive receptors, including Griffith Park;
- Air quality and GHG emissions from construction and operation;
- Recycling and disposal of construction/demolition waste; and
- Impacts of nighttime events.

1.5 REVIEW OF THE DRAFT EIR

The Draft EIR has been distributed to federal, state, regional, and local agencies, key stakeholders, interested parties, neighborhood groups, and NOP commenters, as well as the State CEQA Clearinghouse.

Due to the ongoing public health crisis associated with the COVID-19 pandemic, and the recent Regional Stay Home Order issued by the Governor, the Zoo closed to the public on December 7, 2020 for a minimum of three weeks and will reopen in the future based on public health guidance. Therefore, the environmental review process will be conducted online. The Draft EIR will be made available online and the public meeting will occur virtually.

The Draft EIR is available for review online at:

https://eng.lacity.org/los-angeles-zoo-vision-plan and http://lazoo.org/

CEQA requires a Draft EIR to be submitted to the State Clearinghouse for circulation and for a 45-day review and comment period. This provides agencies and the public an opportunity to review and comment on the adequacy of the analysis and the findings regarding potential environmental impacts of a proposed Project.

The Draft EIR public review period runs for 60 days from **December 17, 2020 to February 15, 2021**.

All comments must be submitted by email or mail (please include "**LA Zoo Vision Plan EIR Comments**" in the subject line) to:

Norman Mundy, Environmental Supervisor II
Los Angeles Bureau of Engineering, Environmental Management Group
1149 S. Broadway, Suite 600, Mail Stop 939
Los Angeles, CA 90015
Norman.Mundy@lacity.org

A virtual public meeting will be held during the public review period to solicit comments from interested parties on the content of the EIR. The meeting will be held at the following date and time:

Wednesday, January 13, 2021 **5:30 p.m.**

The presentation for the virtual public meeting will be recorded and available on-demand from links posted at: https://eng.lacity.org/los-angeles-zoo-vision-plan and http://www.lazoo.org/.

The City will consider all comments, written and oral, in preparation of the Final EIR, which will be incorporated in the Draft EIR or a revision to the Draft EIR, Draft EIR comments and a list of commenters, and responses to comments. In addition, the Lead Agency must prepare the Findings of Fact, and if necessary, a Statement of Overriding Considerations if there are significant impacts that cannot be mitigated to a level below significance, as well as a

Mitigation Monitoring and Reporting Program (MMRP) if there are mitigation measures that must be incorporated and adopted. These are the components of a Final EIR. The Zoo Commission will consider the Final EIR and make a recommendation to the City Council, as the governing body of the City of Los Angeles, regarding certification of the Final EIR and the Vision Plan.

1.6 ORGANIZATION OF THE EIR

This EIR is organized into the following sections:

- Section 1.0, *Introduction*, summarizes the background of the Project and explains the environmental review process.
- Section 2.0, *Project Description,* provides a detailed description of the Project site, Project objectives, and all proposed Project components, including Project phasing and implementation.
- Section 3.0, *Environmental Impact Analysis and Mitigation*, provides analysis of applicable federal, state, and local regulations, existing environmental conditions, specific direct and indirect Project impacts, cumulative impacts, mitigation measures, secondary impacts, and residual impacts.
- Section 4.0, *Alternatives*, describes alternatives to the Project, and identifies the Environmentally Superior Alternative.
- Section 5.0, *Other CEQA Sections*, identifies significant and irreversible, growth-inducing, and unavoidable effects, and a brief discussion of resource areas that would not be significantly affected by the Project.
- Section 6.0, *List of Preparers*, identifies the EIR Project team.
- Section 7.0, *References*, provides information about resources used in preparation of the EIR.

Appendices to the EIR include the IS/NOP, NOP comment letters, the Draft Vision Plan, and supporting technical studies used as a basis of information and analyses in preparation of the EIR.

2.0 PROJECT DESCRIPTION

2.1 INTRODUCTION

The Vision Plan proposes comprehensive transformation of the Zoo to modernize and improve both the visitor experience and the quality of life for the Zoo's animal residents, including a major exhibit expansion for elephants.

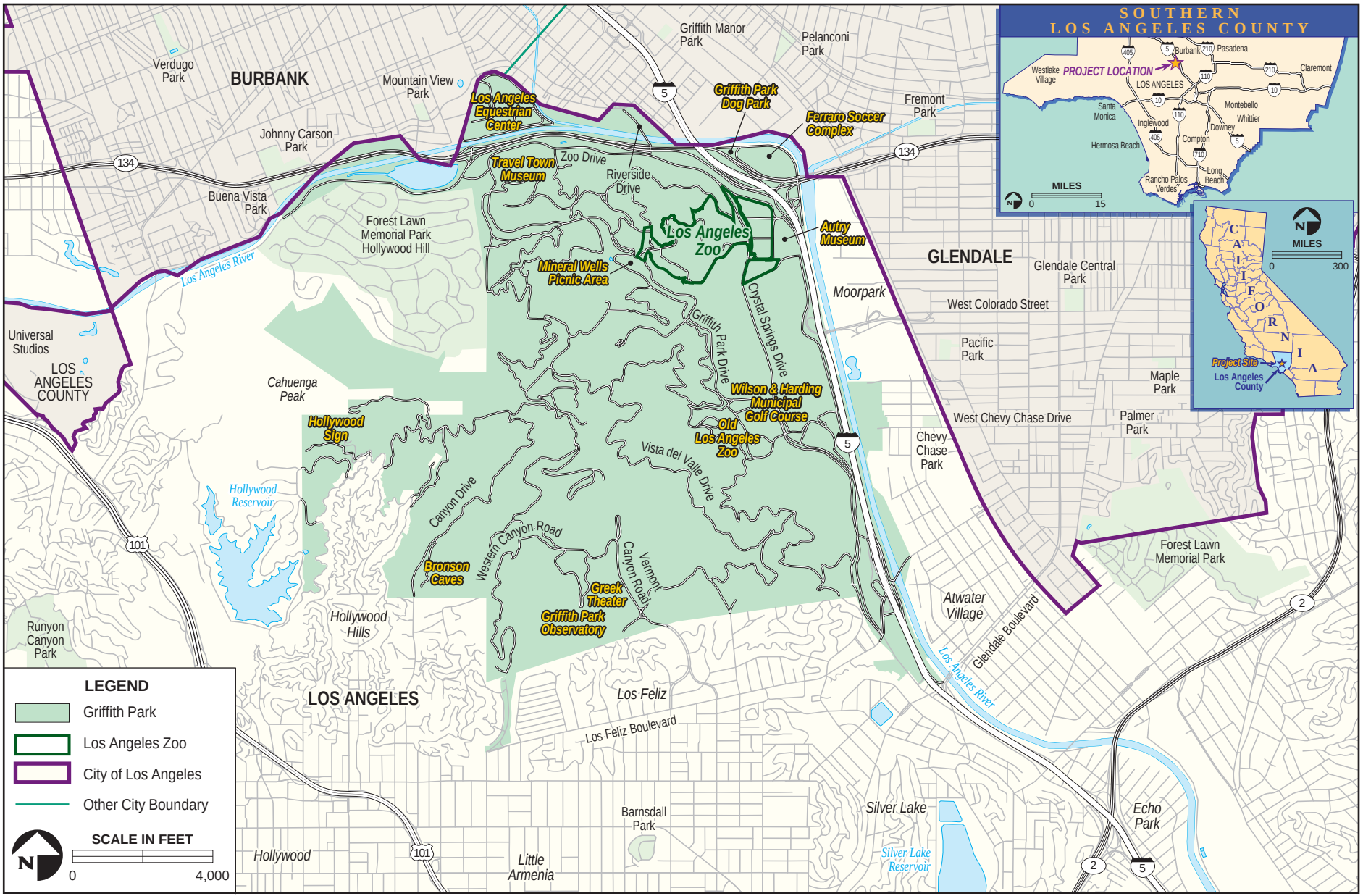
The City of Los Angeles (City) is proposing the Los Angeles Zoo Vision Plan (Vision Plan; Appendix A) to guide physical transformation and improvement of facilities and operations of the Los Angeles Zoo and Botanical Gardens (Zoo). The Vision Plan would serve as the blueprint for transformation and modernization of the Zoo over the next 20 years. The Vision Plan's proposed infrastructure and animal facility improvements prioritize animal welfare, conservation, sustainability, and community engagement. The Vision Plan also addresses operational deficiencies at the Zoo, including the quality and extent of animal habitat within exhibits such as the current lion exhibit area. The Vision Plan also addresses the currently constrained visitor circulation system and missing linkages between animal facilities, and a limited range of visitor-serving facilities. The Vision Plan would guide comprehensive animal facility improvements and capital projects to upgrade Zoo facilities and circulation to ultimately create a transformational zoo for the City, including expansion of the current elephant area by approximately 200 percent. These improvements would support the Zoo's capability to advance local and global conservation efforts and continue to be a major attraction in the City. The development concept and phased improvements, along with proposed Zoo programming, would facilitate incremental expansion of annual visitation by approximately 1.2 million annual visitors over the 20-year planning horizon, to 3.0 million guests per year.

Originally designed in 1966, the Zoo has changed substantially over the course of more than 50 years in response to past master planning efforts, including a 1992 Master Plan and a 1998 Master Plan Update. The Vision Plan would guide phased transformation of the Zoo into a progressive model for animal welfare, a trusted wildlife conservation organization, a commitment to environmental sustainability and innovation, and a world class destination. The Vision Plan includes a set of guiding principles that would implement the shared organizational values and strategic vision and mission of the Zoo, and serve as a basis for decision-making. The guiding principles constitute the standards, constraints, criteria, and behaviors that serve to implement the proposed Project. The guiding principles would apply to Zoo operations and future redevelopment, as outlined in the Vision Plan's proposed

development concept within the 142-acre Project area for phased redevelopment of the Zoo. Specifically, the Vision Plan includes a conceptual land use and development plan that covers the main physical aspects of the Zoo, including animal facilities, visitor-serving uses, administration and service buildings, pedestrian circulation, infrastructure improvements, and the entry and access/parking.

The Vision Plan's goals and planning objectives would apply to and guide all proposed improvements throughout the Zoo for both resident animals and Zoo visitors, as well as general Zoo operations and approaches to Zoo management. Through implementation of the Vision Plan, areas within the Zoo dedicated to animals and their welfare would increase by more than 270 percent, including provision of an additional 3.3 acres of open habitat area for the Zoo's elephants. Animal support facilities would also be upgraded and expanded to ensure continued high-quality care and veterinary services. Designated animal care and service centers would prioritize animal health and increase operational efficiencies for service employees at the Zoo. New solar energy and stormwater management systems would also improve the operational sustainability of the Zoo.

The visitor experience would also substantially change through implementation of the Vision Plan. The improved internal circulation network would feature a logical and complete Primary Path Loop, which would be designed for stroller and Americans with Disabilities Act (ADA)-compliant access, as well as ground and aerial trams to transport visitors within the Zoo. Three new visitor centers, including the reconstructed Treetops Terrace building, would provide Zoo guests with dining options, classrooms, event rental spaces, and enhanced animal interfaces and experiences. Combined with proposed expansion in Zoo animal facilities and guest programs, these improvements are anticipated to increase visitation to the Zoo incrementally over its 20-year-long phased implementation schedule. This projected visitation would be accommodated with streamlined vehicular entry and expanded parking lots, as well as support for rideshare services, public transit, and non-vehicular transportation within Griffith Park and the City. See Section 2.3.5, *Proposed Planning Areas and Projects*, for further information on the new animal facilities and improvements proposed within the Vision Plan. Section 2.4, *Vision Plan Implementation*, provides details on estimated construction activities for proposed improvements identified in the Vision Plan.



wood.

Los Angeles Zoo and Botanical Gardens
Regional Setting

FIGURE
2-1

This Environmental Impact Report (EIR) uses the following terminology in describing and referring to the proposed Vision Plan:

- "The implementation of the Vision Plan" refers to the development that would be allowed if the proposed Vision Plan is approved. In accordance with CEQA Guidelines Section 15378, the implementation of the Vision Plan represents the "proposed Project" evaluated in this document.
- "proposed Project" refers to the proposed action under consideration by the City, including adoption of the Vision Plan and associated required approvals.
- "Project area" refers to the entire 142-acre area subject to the Vision Plan, including 117.3 acres currently developed with Zoo facilities and transportation infrastructure and 24.7 acres proposed for new development.
- "Griffith Park" refers to the entire 4,355-acre park area, including the Project area.

2.2 EXISTING SETTING

2.2.1 Project Location

The proposed Project is in the City of Los Angeles (City) within southern Los Angeles County, bordered by the cities of Burbank, Glendale, Calabasas, Santa Monica, Torrance, Carson, and Pasadena (Figure 2-1). The Project area encompasses the entire existing Zoo, located at 5333 Zoo Drive, Los Angeles, CA 90027. The Project area is roughly bound by the Golden State Freeway or Interstate 5 (I-5) to the east and the Ventura Freeway or California State Route 134 (SR-134) to the north. The Los Angeles River also borders the north and east boundaries of Griffith Park before continuing south and eventually flowing into the Pacific Ocean at Long Beach.

2.2.2 Existing Setting

Regional Setting

The Project area lies in the northeastern portion of Griffith Park at the base of the eastern foothills of the Santa Monica Mountains (Figure 2-1). Griffith Park is one of the largest municipal parks with urban wilderness in the United States, and forms an extensive, relatively undisturbed island of natural vegetation in an urbanized, metropolitan area. Griffith Park is bordered by the cities of Burbank and Glendale to the northwest and northeast, respectively, as

The Zoo lies at the northeastern area of Griffith Park, which provides an "island" of open space and wilderness recreation within a highly urbanized area. Photo: City of Los Angeles, Dept. of Recreation and Parks

well as communities within the City, including Los Feliz, Hollywood Hills, and Cahuenga Park to the southwest.

The Griffith Park Significant Ecological Area (SEA), designated by the County of Los Angeles in 1976, encompasses most of Griffith Park, generally following the natural area near the Griffith Park boundaries. The Park's elevations range from 384 to 1,625 feet above sea level and contains natural chaparral-covered terrain with trails connecting landscaped parkland and picnic areas. The Park's plant communities vary from coastal sage scrub, oak and walnut woodlands to riparian vegetation with trees in the Park's deep canyons. Griffith Park, including the Zoo, supports areas of important natural resources and wilderness characteristics exemplified by the inhabitation of P-22, the celebrity mountain lion resident of the Park. The wilderness provided within Griffith Park makes it a popular recreational destination for cyclists, hikers, equestrians, mountain bikers, and site-seers. The Zoo property and Project site is not located within the designated Griffith Park SEA.

Griffith Park provides several popular destinations, including the Zoo, the Greek Theater, the Ferraro Soccer Complex, the Autry Museum of the American West, Griffith Park Dog Park, and Griffith Observatory, along with eight service yards and maintenance areas. Other attractions include the Hollywood Sign, the Bronson Caves, the Wilson and Harding Golf Courses, the Los Angeles Equestrian Center, and the Travel Town Train Museum. The abandoned Griffith Park Zoo (aka, Old Zoo or former location of the Los Angeles Zoo) remains an attraction for visitors to Griffith Park with benches for picnicking and the ruins of large animal facilities for exploring. The remaining area of Griffith Park is dedicated to open space and recreation, including approximately 55 miles of bridle trails that equestrians share with hikers, more than 26 miles of bicycle routes (23 miles of which are vehicle-free), and 38 miles of paved roads. In addition, Universal Studios is located directly west of Griffith Park, approximately 3.5 miles from the Zoo. This combination of recreation, events, and attractions draws over ten million visitors to Griffith Park every year.

Table 2-1. Key Griffith Park Facilities

Area/Facility	Area/Length
Los Angeles Zoo and Botanical Gardens	133 acres
Greek Theater	82.65 acres
Griffith Observatory	1.5 acres
Autry Museum of the American West	16 acres
Ferraro Soccer Complex	26 acres
Service and Maintenance	52 acres
Equestrian/multi-use trails	55 miles
Bicycle routes	26 miles
Paved Roads	38 miles

Source: City of Los Angeles Department of Recreation and Parks 2008.

Griffith Park is located within the Los Angeles River Watershed, which encompasses an area of 834 square miles and extends from the eastern portions of the Santa Monica Mountains to the San Gabriel Mountains. The Zoo lies within a sub-watershed within Griffith Park of approximately 1,300 acres that flows to the Los Angeles River. Also located within Griffith Park is the Hollywood Reservoir, approximately 2.5 miles southwest of the Zoo and the former Toyon Landfill, which closed in 2008 and is currently undergoing active management and vegetation restoration by the City's Bureau of Sanitation. While the Los Angeles River, located less than one mile north and east of the Zoo, is channelized, oak riparian woodland exists in this corridor near the Project area.

The Los Angeles River Watershed drains an 834-square mile area within northern and eastern portions of Los Angeles County. The Los Angeles River flows between Griffith Park, including the Zoo and adjacent cities of Burbank and Glendale. Photo: curbedla.com

Existing Land Uses & Development

Land use within the vicinity of the Zoo is guided by the City's General Plan and the Hollywood Community Plan. Griffith Park, including the Zoo, are designated for open space uses in the Hollywood Community Plan and Los Angeles Municipal Code. The Zoo is bordered to the north by undeveloped land within Griffith Park, to the east by the Autry Museum of the American West, to the south by Wilson and Harding Golf Courses, and to the west by Mineral Wells Picnic Area, as well as Condor and Mineral Wells hiking trails (Figure 2-1).

Visitors are attracted to Griffith Park for its natural resources and the recreational amenities it provides, such as the Greek Theatre, Griffith Observatory, Hollywood Sign, and the Zoo. Photo: Los Angeles Times

A mix of uses surround Griffith Park, including residential neighborhoods, open space, heavy manufacturing areas, and freeway (City of Los Angeles 2017). Low-density residential areas border Griffith Park to the south and west, with the Forest Lawn Memorial Park – Hollywood Hill located along the Park's western boundary. Within the City boundaries, areas east of Griffith Park include the I-5 freeway corridor, heavy manufacturing land uses, low-density residential, and neighborhood commercial. Land uses east of the Park that fall within the City of Glendale's boundaries are primarily industrial and commercial mixed uses, such as construction and demolition, recycling, and stage lighting equipment supply (City of Glendale 2018). North of the park, land uses in Glendale include industrial, commercial service, and medium- to low-density residential. Major industrial and

manufacturing tenants in the vicinity include Walt Disney Studios, Disney Animation, Dreamworks Animation LLC, American Reclamation, Inc., Eaton Corporation Hydraulic Systems, Quixote Studios, Warner Brothers Studios, and 4Wall Entertainment. Land uses bordering Griffith Park within the City of Burbank are primarily single family residential and open space (City of Burbank 2012).

Transportation & Regional Access

Freeways and Roadways

Regional vehicle access to the Zoo is provided via Interstate (I) 5, located approximately 0.2 miles east of the Zoo entrance, as well as State Route (SR) 134, which is located approximately 0.35 miles north of the northern Zoo. I-5, also named the Golden State Freeway, is a major north-south route that spans the U.S. borders with Mexico and Canada, traversing through Seattle, Washington and Portland, Oregon and linking major California cities, including San Diego, Santa Ana, Los Angeles, Stockton, Sacramento, and Redding. Additionally, U.S. Highway 101 (U.S. 101), known as the Ventura Freeway, is a north-south highway that runs from Seattle, Washington to the Greater Los Angeles area and provides major regional vehicular transportation.

The Golden State Freeway (I-5) and the Ventura Freeway (SR-134) provide regional vehicular access to the Zoo via Zoo Drive.

Vehicle access to the Zoo is provided from the I-5 by a northbound off-ramp and southbound on-ramp at Zoo Drive. Additional vehicle access from I-5 is provided via Crystal Springs Drive, which traverses Wilson & Harding Municipal Public Golf Course and provides a northbound off-ramp and a southbound on-ramp at I-5 south of the golf courses. Vehicle access from the SR-134 is provided via an eastbound off-ramp and a westbound on-ramp at Riverside Drive, which supports a stop-controlled intersection at Zoo Drive. Visitors arrive at the Zoo from the south and east via offramps from I-5 and SR-134, from the north via I-5, and from the west via SR-134. Local access to the Zoo entrance is provided by Zoo Drive/Western Heritage Way from the north and west and via Crystal Springs Drive from the south. Zoo Drive is a public roadway managed by the City's Department of Transportation (LADOT). Crystal Springs Drive is a private roadway managed by City Recreation and Parks Department (RAP). Additionally, Griffith Park Drive provides vehicular access to the west end of the Zoo for employees and deliveries only.

Transit

Several transit providers serve the Greater Los Angeles area, the Los Angeles Metropolitan Transit Authority (Metro) and the Los Angeles Department of Transportation (LADOT).

Metro provides both rail and bus service regionally, and LADOT provides the DASH bus service within the City, including to Griffith Observatory, located 2.3 miles southwest across Griffith Park from the Zoo. Amtrak also provide regional passenger train services.

Transit to the Zoo is currently provided by a single Metro Bus Line 96, with termini in Burbank and Downtown Los Angeles. Buses serve the Zoo at approximately 30- to 40-minute intervals during peak periods (AM and PM) with service less frequent on weekends (up to 60-minute headways). The closet bus stop is located at approximately 450 feet south of the Zoo entrance at Crystal Springs Drive and Zoo Drive in the southern parking lot of the Zoo. An additional stop includes the Autry Museum of the American West approximately 500 feet west of the Zoo entrance(Metro 2019).

On December 7, 2019, the City began running the Parkline shuttle service within Griffith Park, providing free weekend shuttle service between noon and 10:00 p.m. The 14.2-mile Parkline route has stops at nearly a dozen attractions within the Park, including the Zoo.

Project Setting

The Zoo occupies a hilly site with 150 feet of vertical rise (ranging from 460 to 650 feet above mean sea level [msl]). Interior areas of the Zoo are relatively flat due to fill used as part of original Zoo construction. Development within the Zoo is constrained by two large hills that are 150 feet higher in elevation than the flat interior of the Zoo. One hill is approximately 600 feet msl immediately west of the Zoo's entry plaza and Winnick Family Children's Zoo (Children's Zoo). The other large hill is located at the western boundary of the Zoo nearby the Africa exhibits and the Gottlieb Animal Health and Conservation Center. This hill rises to 650 feet msl and is surrounded by steep grades (up to 45 percent) (Figure 2-2).

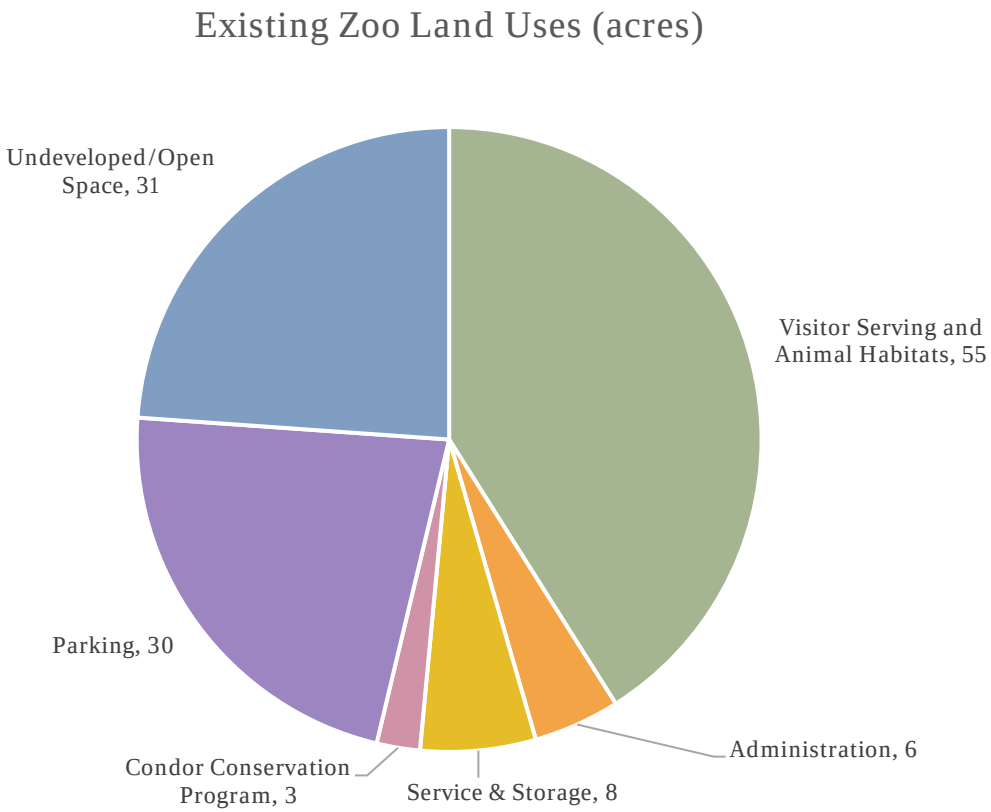
The Zoo was built in 1966 on a hilly site on the eastern side of Griffith Park. The Zoo supports diverse animal facilities amongst lush vegetation intermixed with native habitat.

Existing development, animal facilities, and walkways are concentrated within the Zoo's central and eastern 102 acres, which support animal facilities, visitor-serving facilities and the Zoo's pedestrian routes. These facilities are generally developed on level and gently sloping valley bottom areas, with some development in perimeter areas, such as the aviary and otter facilities, extending up steeper hillsides. Service and conservation uses are concentrated on steeper slopes and canyon bottoms around the Zoo periphery, such as equipment yards, storage, the Gottlieb Animal Health and Conservation Center, the California condor recovery facilities, and a perimeter access road.

Undeveloped hillsides in the Zoo support coastal sage scrub, chaparral, riparian, and southern oak woodland plant communities that are typical in the interior mountain ranges of Southern California. Natural vegetation in undeveloped areas includes oak woodland in the ravines and mixed chaparral and grassland on the upper slopes. Ash, Southern California black walnut, oak, sycamores, willows, and mulefat can also be found in ravines, along with chaparral. The Zoo also includes several extensive groves of eucalyptus in undeveloped areas (Los Angeles County 2012). Coastal sage scrub and chaparral-covered slopes occur throughout the Project vicinity (see also, Section 3.3, *Biological Resources* and Section 3.6, *Forestry Resources*).

Existing Zoo Layout & Development

The Zoo is comprised of approximately 102 developed acres within the 133-acre Project area, with 55 acres of animal facilities and 30.2 acres of parking lots as dominant land use (Figure 2-3). The Zoo's California Condor Program land use is dedicated within 3.25 acres. Approximately 31 acres of the Zoo are undeveloped supporting a mix of non-native woodland and native habitats, such as chaparral and scattered oak trees. In addition, 9 out of the 55 acres of animal space are considered under-developed, inadequate, and/or inconsistent with the Zoo's current standards and the guiding principles proposed under the Vision Plan (see Section 2.3.2, *Project Objectives*, and Section 2.3.3, *Vision Plan Guiding Principles*).



wood.

Los Angeles Zoo
Existing Setting

FIGURE
2-2

The existing Zoo contains approximately 1,259,930 square feet (sf) of development, including 208,762 sf of visitor-serving facilities, 50,000 sf of administration buildings, 936,540 sf of animal care and animal space, and 8,000 sf of service buildings. Approximately 14,400 sf of the Zoo is dedicated to food and beverage service and 7,300 sf is dedicated to retail (Table 2-2). Throughout the animal facilities, 10 different botanical gardens and groves highlight the Zoo's flora which contribute to the Zoo's Botanical Garden. Visitors have seven different onsite dining options, including two in the entry plaza (i.e., Reggie's Bistro and Zoo Grill); Fork in the Road at the main shuttle station;, Gorilla Grill, and Churro Factory in the southern portion of the Zoo; and Mahale Café and Café Pico in the northern region of the Zoo. Additionally, restrooms are provided at 10 different locations throughout the Zoo (Figure 2-2).

Table 2-2. Existing Zoo Development

Development	Area (sf)
Space for Animals	936,540
Administration	50,000
Service Buildings	8,000
Food and Beverage	14,400
Retail	7,300
Visitor Centers (Treetops Terrace)	15,000
Children's Discovery Center	80,586
Winnick Family Children's Zoo	91,476
Gottlieb Animal Health and Conservation Center	56,628

Internal Zoo service facilities are located throughout the Zoo. Staff support services and other administrative uses are found south of the Zoo's entry plaza. The Gottlieb Animal Health and Conservation Center is situated in a visitor-restricted area in the upper western reaches of the Zoo. An additional service area is located at the Zoo's northern boundary, immediately west of Condor East. No comprehensive service center currently exists for deliveries, maintenance, storage, and equipment (Figure 2-3).

Zoo Animal Facilities & Habitats Overview

The Zoo contains over 1,400 animal specimens and over 800 plant and wildlife species, of which 58 animal species are endangered. The Zoo's animal facilities house species from all over the world, from the coastal cliffs of California to the remote Mahale Mountains in Tanzania. Species are featured by a combination of taxonomic, zoogeographic, and bioclimatic animal facilities. The Zoo's taxonomic animal facilities include the flamingos, aviary, Living Amphibians, Invertebrates and Reptiles (LAIR), and hoof-stock. The zoogeographic animal facilities consist of Australia, North America mixed animal facilities, Africa mixed animal facilities, Asia mixed animal facilities, and South America mixed animal facilities. Bioclimatic animal facilities organize species according to the climate and related

activities and distribution of the species. Existing bioclimatic animal facilities at the Zoo include Rainforest of the Americas, Elephants of Asia, Campo Gorilla Reserve, Chimpanzees of the Mahale Mountains, and Red Ape Rainforest, as described further below.

While animal facilities are available throughout the Zoo's developed area, several upgrades have provided key exhibit areas since the early 2000s, including the Entry Complex and Sea Life Cliffs (2001), Children's Discovery Center (2002), Campo Gorilla Reserve (2008), Elephants of Asia (2010), Rainforest of the Americas (2014), and the LAIR (2015) (Figure 2-2).

- **Elephants of Asia** is a 6.2-acre exhibit, built in 2010, and comprised of the Wasserman Family Thai Pavilion and four separate and connected yards, including the Thai Demonstration Yard, Cambodia Yard, Elephant Circle, and India and China Yard. These four yards provide 3.5 acres of elephant habitat space as a home to four Asian elephants, including three females and one male. The Wasserman Family Thai Pavilion features a demonstration yard with a shade structure; an enrichment log for elephant food items; and pools and waterfalls. Behind the Thai Pavilion and located within the center of the animal space is the 16,600-sf Elephant Barn, equipped with elephant sized bedrooms and heated floors. The barn also provides an overhead walkway to enable Zookeeper observation without intruding on the elephants' natural socialization. The elephant animal facility currently meets and exceeds standards established by the Association of Zoos and Aquariums (AZA) and U.S. Department of Agriculture (USDA). In Elephants of Asia, Zoo patrons view the elephants from a boardwalk over a marsh with adjacent habitats for the sarus crane and the muntjac, two additional species of Chinese wildlife. The habitat's varied topography provides complex terrain and over two feet of soft river sand provides a soft substrate for animals.

Elephants of Asia provides 3.5 acres for four elephants. EIR scoping comments indicate a wide public concern for the welfare and exhibit size for the Zoo's elephants.

- **Rainforest of the Americas** is an immersive mixed species habitat built in 2014 featuring a variety of tropical habitat from the forest treetops to the rivers. The animal facility houses a diverse mix of rainforest-dwelling species, such as the aracari, caiman lizard, and giant river otter. This animal facility is one of the Zoo's most recent additions, constructed in 2014.

- The **LAIR**, built in 2012, includes a principal 6,289-sf building and 2,085-sf Desert LAIR building. A total of 49 animal facilities provide habitats for over 60 species of unique and endangered amphibians, invertebrates, and reptiles from around the world. Featured species include the Chinese giant salamander, Southwest speckled rattlesnake, and poison dart frogs. Each animal facility closely resembles the natural ecosystem of its inhabitants. The LAIR is comprised of six diversely themed areas: The Damp Forest, Betty's Bite and Squeeze room (named after Betty White), Care and Conservation room, Behind the Glass, Arroyo Lagarto, and the Desert LAIR.

Additional animal facilities within the Zoo include the Sea Life Cliffs and World Aviary animal facility located on the eastern portion of the Zoo. The Campo Gorilla Reserve, Red Ape Rainforest, and Chimpanzees of the Mahale Mountains are grouped together west of the Elephants of Asia.

- **Sea Life Cliffs** is a 76,767-sf (1.76-acre) aquatic habitat is a replicated rocky cove with two pools of varied depth, three viewing areas with below- and above-water views, and a beach area for the animals. The 160,000-gallon saltwater animal facilities feature harbor seals and sea lions within the Zoo's entry corridor. Weekly seal demonstrations are featured at the animal facility to provide guests with close-up encounters. This animal facility, constructed in 2005 with the Zoo's main gate and parking lot, is one of the few animal spaces near the Zoo's entry.
- The **World Aviary**, a 70,000-sf aviary which opened with the original Zoo in 1966, is one of the largest and most immersive aviaries in the world. The animal facility was constructed to incorporate several waterfalls, pools, and other water features to showcase various species of birds from around the world. In addition to exotic bird species from around the world, the World Aviary also exhibits the Zoo's conservation and breeding successes, which include blue-throated macaws and gray-crowned cranes hatched or raised within the Zoo.
- The **Campo Gorilla Reserve** is a 1.33-acre animal space, completed in 2007, was designed to resemble a West Central African environment with trees, brush, flowers, waterfalls, climbing opportunities, a sunny grass area, and a dark shady retreat. The reserve allows guests to view the western lowland gorillas in two distinct animal spaces, one for the family group and one for the bachelor group. The landscape of Campo Gorilla Reserve is comprised of

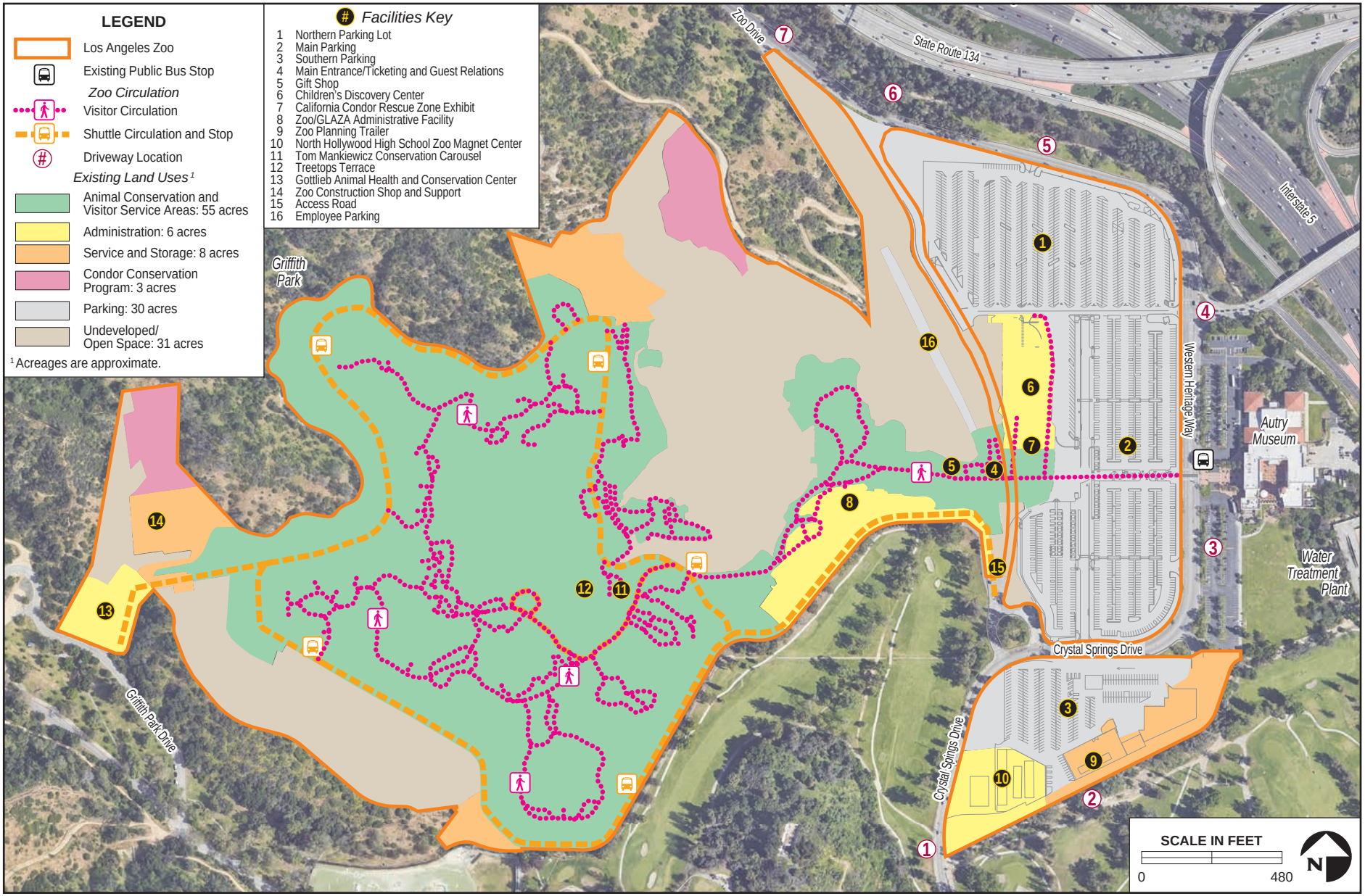
As one of the more contemporary structures, 1.33-acre Campo Gorilla Reserve space was completed in 2008.

hundreds of plants including bamboo, palms, pomegranates, and ferns.

- **Red Ape Rainforest**, completed in 2000, provides a large climbing platform to meet the behavioral enrichment needs of the resident orangutans. A behind-the-scenes living complex features six heated night rooms and an open-air group room for the red apes. The visitor areas are architecturally designed after Borneo and Sumatra and include an immersive bridge that allows visitors to enter and view the animal space from the inside out.
- **Chimpanzee of the Mahale Mountains**, completed in 1998, is a 0.75-acre complex dedicated to chimpanzees native to the region of the Mahale Mountains located in Tanzania. The animal facility is constructed into a small hillside and features a large rock ledge and waterfall. The design allows guests to view the chimpanzees face-to-face at ground level through protective glass viewing windows. The landscape within the animal space consists of several large boulders, palm trees, and an artificial termite mound.

Botanical Garden Features

Ten highlights of the Zoo's Botanical Gardens, including groves and gardens, are spread throughout the Project area. Although the collection is always evolving, the Zoo supports more than 7,000 individual plants, representing more than 800 different species; only those plants that are labeled and catalogued within the Zoo's database are included in the Botanic Garden collection. The Zoo's Botanical Gardens are often arranged based on indigenous locations and matched to regions within the Zoo, such as Africa, South America, and North America. Similar to Zoo animals, plants are generally grouped by their native habitats. Select gardens include the Cycad Garden, Baja Garden, Ferraro Rose Garden, Desert Garden, and Edible Garden. Additionally, several botanical groves are located throughout the Zoo, such as the Mexican Fan Palm Grove, Chilean Wine Palm, and Gingko Grove. The Zoo also highlights the yellowwood tree and an Australian collection. Well-tended specimen eucalyptus trees are featured in the Australian collection, with naturalized eucalyptus growing throughout rest of the Zoo site as well. Native California oak trees are concentrated on the undeveloped hillsides around the Zoo perimeter. As one of 62 Plant Rescue Centers in the nation, the Zoo serves as repository for exotic or rare plants and provides a temporary viable habitat for plants rescued from smuggling or other activities. See *Conservation Programs* below for more information about how the Zoo supports organizations to reduce wildlife trafficking and smuggling activities, habitat destruction, and over-hunting.



wood.

Los Angeles Zoo
Existing Zoo Land Use and Circulation

FIGURE 2-3

Circulation & Parking

Internal Circulation

The Zoo's internal circulation system supports walks and pathways accommodating both visitors and service personnel, and generally range between approximately 25- and 50-feet in width. The circulation system was established by the original 1966 site layout with focused modifications made between 2002 to 2016. Several pathways combine visitor and service traffic to commingle pedestrians and service vehicles (e.g., trucks, carts, trams). With a single entrance, the circulation system traverses the Zoo property in a meandering pattern, where pathways commonly are "one way in, one way out". Existing pedestrian paths are fragmented and include many smaller loops, barriers, and dead ends (Figure 2-3).

From the Zoo entrance, visitors are funneled to a broad staircase that runs approximately 675 feet west to connect to the current circulation system serving both visitors and service personnel.

The Zoo's 40-foot-wide entrance supports a single entry and exit point for Zoo guests. A primary pathway runs from the Zoo entrance west towards the Zoo's exhibit areas, with several shorter loops splitting off from this pathway to individual animal facilities. This pathway also connects to a main circulation system approximately 675 feet west of the Zoo entrance. In compliance with ADA, some pedestrian paths meet the requirements for wheelchair accessibility, primarily along the outer pathways and the central pathway connecting the entrance with the animal facilities. ADA guests and families with strollers are often limited in available routes due to steep grades throughout Project area. Several fragmented, meandering routes through the Zoo's interior animal facilities are not accessible for ADA visitors and may be challenging for families with strollers.

The Zoo operates an internal ground tram service for visitors for a fee. The tram, called the Safari Shuttle, has five stops along the Zoo perimeter. There is no tram service to the interior portions of the Zoo. While the shuttle is wheelchair accessible, the nearest shuttle station to the Zoo's entrance is located approximately 1,350 feet from the main entry. The remaining shuttle stops are located south of the Angela Collier World of Birds Theater, at the Neil Papiano Play Park, the lemur animal facility at the northwest end of the Zoo, and the Australia House.

Several existing pedestrian roads within the Zoo are shared with the tram and service vehicles. Service circulation is provided via two portals, located to the southeast and southwest of the

site (Figure 2.3). Similar to Zoo pedestrian paths, service roads leading to exhibit areas and animal care facilities are short, fragmented routes.

Parking

The main parking lot directly east of the Zoo campus provides parking for both guests and Zoo employees. An additional parking lot is located south of Crystal Springs Drive, adjacent to the North Hollywood High School Zoo Magnet Center (Figure 2-3). A total of 2,282 regular parking spaces and 63 handicap spaces are provided. These lots are the only parking available for visitors; on peak days when the lots are full, visitors are either asked to wait or turned away. Several small parking areas are provided for Zoo staff along the perimeter roads, with a combined total of 100 parking spaces. Up to 66 spaces of additional parking are also available for Zoo employees in a secured lot with entry from Zoo Drive to the north of the Zoo entrance.

The visitor parking lots are also subject to a shared use agreement with the Autry Museum of the American West, which began on January 23, 1987 and is valid for 50 years unless extended by mutual agreement. Per the shared use agreement, the parking lots shall be kept open for general parking for visitors and employees of the Autry Museum of the American West from 5:00 a.m. to 10:30 p.m. daily in accordance with LAMC Section 63.44 B.14. These hours may be extended to 11:30 p.m. for special events conducted by the Museum. No charge shall be made to visitors or employees of the Museum for parking in the lot at any time.

Parking is generally free for visitors, but on busy, peak attendance days, including most holiday weekends and special events, the Zoo charges a nominal fee for preferred parking. On these days, free parking is still available in designated areas (i.e., the far north and far south parking lots), which represent approximately 60 percent of total visitor parking. Preferred parking days generally occur approximately 130 days per year.

Existing Utility Infrastructure

The Zoo currently receives utility service from the following providers and infrastructure systems (see also, Section 3.16, *Utilities*):

- **Water Supply:** The City's Department of Water and Power (LADWP) provides the Zoo with potable and recycled water. Water is supplied to the City from four primary sources: Los Angeles Aqueducts (LAA), local groundwater, Metropolitan Water District (MWD), and recycled water. Currently, this water is delivered to the Zoo from a storage tank west of the Zoo in the Griffith Park hills. The Zoo currently uses recycled water lines for irrigation of landscaping in the parking lot only; however, City-sourced recycled water is available in Griffith Park via the Recycled Water Fill Station at Los Angeles-Glendale Water Reclamation Plant.
- **Wastewater:** Wastewater generated within the Zoo consists of two categories of wastewater – municipal wastewater and animal wastewater – each of which are treated differently. Municipal wastewater generated from restrooms, hand wash

stations, restaurants, administration buildings, etc. is conveyed off site via sanitary sewer mains into the City's sewer system. The Zoo currently provides visitor restrooms at 10 different locations along with those within Zoo administrative and service buildings. Animal wastewater (exhibit ponds and pools) is captured and conveyed within a separate drain system to the Zoo's pumping plant and then is pumped to the Los Angeles-Glendale Water Reclamation Plant, located east of I-5 and the Los Angeles River, less than 1 mile southeast of the Zoo. The Zoo's pumping plant is maintained and operated by the City's Bureau of Sanitation.

- **Energy:** LADWP provides electricity to the Zoo. However, generators provide emergency power to critical sites at the Zoo, such as Sea Life Cliffs, LAIR, Elephants of Asia, and the Gottlieb Animal Health and Conservation Center.
- **Stormwater:** All stormwater and landscape irrigation runoff from the Project site with the exception of the parking lots currently drains to the Zoo's pumping plant and then is pumped to the Los Angeles-Glendale Water Reclamation Plant. Within the recently completed Zoo parking lot, permeable pavements and bio-retention cells allow surface flow to drain through the pavement and into the underlying soils or towards the Los Angeles River. Stormwater runoff generated by Zoo Drive drains to the Zoo Drive Bioswale system, which can capture up to 200,000 gallons of water within the swale system as opposed to flowing to the Los Angeles River.

The recently improved Zoo parking lot features central bioretention swales that capture stormwater from both sides of the parking lot.

- **Solid Waste Management:** Solid waste is collected by Zoo staff from the Perimeter Road every day and is transported to Sunshine Canyon Landfill. Animal bedding is disposed of according to the species. Hoofed stock bedding can be safely composted and is taken to the Griffith Park Composting Facility. Primate and carnivore bedding may contain zoonotic organisms and must be disposed of at a landfill.

As further described in Section 3.16, *Utilities*, the Zoo's utility infrastructure is currently operating at capacity. Several utilities were installed deep underground and covered with extensive fill between 50 and 70 years ago. This increases the difficulty of maintenance and requires relatively deep excavation for repair or replacement.

2.2.3 Existing Zoo Operations

General Operations

Service areas are currently limited and scattered throughout the Zoo.

The City owns the Zoo, its land and facilities, and the animals. All 394 animal care, grounds maintenance, construction, education, public information, and administrative staff are City employees. The Zoo currently employs 231 full-time staff and 163 part-time staff. The Zoo's 161 Animal Health and Animal Care staff consist of 115 full-time employees and 46 part-time employees. Animal Health and Animal Care staff include all employees who work at the Gottlieb Animal Health and Conservation Center and the California Condor Recovery Program. All concessions at the Zoo are handled by a partnership with Service Systems Associates, which employs all staff in gift shops, food stands, trams, and catering. Service Systems Associates currently employs 25 full-time weekday staff and 40 weekday part-time staff for Zoo concessions. An additional 40 full-time staff and 65 part-time staff handle Zoo concessions on the weekends.

The Greater Los Angeles Zoo Association (GLAZA) was created in 1963 as a private, nonprofit, fundraising organization to support the Zoo. GLAZA provides support through fundraising, membership, organizing special events and travel programs, producing publications, coordinating the Zoo's volunteer programs, administering the contract for visitor services concessions within the Zoo, and supporting marketing, community relations, and public relations. GLAZA currently employs 45 full-time employees, 41 part-time employees, and 25 seasonal staff (GLAZA 2018). Total employment at the Zoo is currently 570 full- and part-time employees with the City, GLAZA, and Service Systems Associates.

At present, there is no comprehensive "one-stop" service center for deliveries at the Zoo. Delivery of construction materials, animal feed, other animal supplies, and food and beverage items for guests and employees occurs at the Zoo construction and commissary buildings at the west end of the Zoo, south of Condor West (Figure 2-2). Deliveries are made at a minimum twice per week.

The Zoo is open to the public every day from 10:00 a.m. to 5:00 p.m., 363 days of the year (closed for Thanksgiving day and on December 25). Daily, seasonal, and annual events and programs are provided to visitors of all ages (Table 2-3). Zoo guests can enjoy nearly 20 different weekly tours and shows, such as the elephant care demonstration. The Zoo also hosts private events scheduled with administrative staff.

Table 2-3. Weekly Shows and Presentations at the Zoo

Show	Location	Timing
Muriel's Ranch	Children's Zoo	Daily: 10 a.m. – 1 p.m. and 1:30 p.m. – 4 p.m.
Flamingo Mingle	Flamingo	Daily: 11 a.m., 12 p.m., 2 p.m., and 3 p.m.
Good Morning, Gorillas	Campo Gorilla Reserve	Monday, Wednesday, Friday: 10:30 a.m.
Seal and Sea Lion Demonstration	Sea Life Cliffs	Sunday, Tuesday, Thursday, Saturday: 10:30 a.m.
Animals & You	Various	Weekends: 10:45 a.m., 11:45 a.m., and 12:45 p.m. Weekdays: 10:45 a.m. and 11:45 a.m.
Elephant Care Demonstration	Thai Viewing Pavilion	Daily except Tuesday and Thursday: 11 a.m.
Giraffe Feeding	Giraffe	Daily: 11 a.m. – 1 p.m. and 2 p.m. – 4 p.m.
Tomistoma Talk	The LAIR Outside Pool	Sunday: 11:30 a.m.
Otter Talk	Rainforest of the Americas Stilt House	Weekends: 3 p.m. Tuesday-Thursday: 11:30 a.m.
Alligator Talk	Reggie the Alligator	Saturday: 11:30 a.m.
World of Birds Show	World of Birds Theatre	Daily except Tuesday: 12 p.m. and 2:30 p.m.
Behind-the-Scenes Tour	Outside of the Zoo Entry	Weekends
Chimp Chat	Chimpanzees of the Mahale Mountains	Daily: 12:30 p.m.
Campfire Stories	California Condor Rescue Zone	Weekends: 1 p.m.
Tasmanian Devil Feeding	Tasmanian Devil	Sunday: 1:30 p.m.
Walkabout Australia	Kangaroo/Tasmanian Devil	Saturday: 1:30 p.m.
Exploration Station	Aviary or South America Squirrel Monkey	Daily: 2-3 p.m.

Notes: Flamingo Mingle is not offered the second or fourth Wednesdays of the month. Schedule represents Zoo operations prior to COVID-19 public health restrictions.

Zoo Visitation

Within the past 20 years, attendance at the Zoo has fluctuated between 1.3 and 1.8 million annual visitors. Capital investments between 1992 and 2015 helped to stabilize attendance, which had previously been declining. From 2014 to 2016, attendance grew from 1,550,343 in the 2013-2014 fiscal year to 1,784,786 visitors in the 2015-2016 fiscal year (15.12 percent) due largely to popularity of the L.A. Zoo Lights, an evening festival during the winter holiday season. In 2017, the Zoo experienced a total of 1,743,795 local and tourist (i.e., from outside of Los Angeles County) guests, declining slightly from 2016. While visitation at many family attractions typically peaks during summer months, attendance at the Zoo declines in the summer, most likely due to warmer weather, and despite nighttime programming during these months, such as Roaring Nights and Brew at the L.A. Zoo (see *Special Events &*

Programming below). The highest percentage of visitation at the Zoo is seen during the months of December (during L.A. Zoo Lights) and April/May, with an average of 11 percent of total annual attendance over the past six years.

Approximately 89 percent of Zoo visitors are residents of Los Angeles County that reside within a 60-minute drive time from the Zoo, while the remaining 11 percent of visitors are tourists. Over a period of twenty years, only one percent of all tourists within Los Angeles visited the Zoo; this rate has been declining since 2010 (AECOM 2017).

Table 2-4. Summary of Historic Attendance at the Zoo

Fiscal Year	Daytime	Daytime Events	Nighttime Events	Total*	Change
2001-02	1,517,366	-	-	1,517,366	-
2002-03	1,516,067	-	-	1,516,067	-0.09%
2003-04	1,389,639	-	-	1,389,639	-8.34%
2004-05	1,396,538	18,080	-	1,396,538	0.50%
2005-06	1,523,469	37,207	-	1,523,469	9.09%
2006-07	1,564,674	38,284	-	1,564,674	2.70%
2007-08	1,602,170	41,144	-	1,602,170	2.40%
2008-09	1,556,162	19,641	-	1,556,162	-2.87%
2009-10	1,459,080	19,071	-	1,459,080	-6.24%
2010-11	1,543,232	29,467	-	1,543,232	5.77%
2011-12	1,660,450	18,942	-	1,660,450	7.60%
2012-13	1,506,274	17,249	-	1,506,274	-9.29%
2013-14	1,550,343	37,692	-	1,550,343	2.93%
2014-15	1,566,291	17,642	185,988	1,752,279	13.03%
2015-16	1,566,291	16,757	180,979	1,784,786	1.86%
2016-17	1,524,371	20,236	219,424	1,743,795	-2.30%
2017-18	1,529,028	13,405	273,359	1,802,387	3.36%
2018-19	1,538,931	Not Available	Not Available	1,803,699	0.07%

* Total attendance in FYs 2014-15, 2015-16, 2016-17, 2017-18, and 2018-19 includes Nighttime Ticketed Events.

Special Events & Programming

Zoo camp programs, such as Safari Days and Troop Trek, are scheduled throughout the school year, especially on Los Angeles Unified School District unassigned days and holidays.

The Zoo also hosts special events, including camps and educational programs. The Safari Days Program is a daytime camp provided for kindergarten through fifth grade students on Los Angeles Unified School District unassigned days and holidays. Family Nature Club offers nature play opportunities on select weekends for visitors of all ages. Sleepover programs at the Zoo include Creature Camp Out, Wild Wonder Family Slumber, and Zoopendous Nights. Creature Camp Out includes overnight camping with guided evening and morning tours of the Zoo. Both Wild Wonder Family Slumber and Zoopendous Nights offer indoor overnight experiences for families and groups and feature a nighttime guided tour of the Zoo. In addition, Zoo Camp is offered during the Spring, Summer, and Winter for children in pre-kindergarten (age 4) through fourth grade. The Zoo hosted four nights of Roaring Nights and four Sustainable Wine + Dinner nights in 2018 and 2019.

The Zoo also hosts several seasonal events (Table 2-5). These events can extend Zoo hours into the evening and draw additional visitation. For example, since 2014, the Zoo has hosted L.A. Zoo Lights, with new installations every year. The Zoo Lights festival lasted for 50 nights in Winter 2018/19 and additional attendance for the festival was 238,216.

Table 2-5. Seasonal Special Events at the Zoo

Special Event	Time of Year
Daytime Events	
Big Bunny's Spring Fling	March – April
Boo at the L.A. Zoo	October
Photo Day	November
Evening Events	
Sustainable Wine + Dinner Series	March – September
Brew at the L.A. Zoo	August
Roaring Nights	June – September
L.A. Zoo Lights	November – January

The Zoo hosted 94 birthday parties in 2016, 95 birthday parties in 2017, and 70 birthday parties in 2018, ranging in size from 40 to 200 guests depending on the venue. Venue options for birthday parties include two different gazebos, the Treetops Terrace, Eucalyptus Grove, or

Mahale Mountain. The Zoo also hosted 36 company picnics, retreats, and meetings in 2016 29 in 2017, and 45 in 2018. Holiday parties at the Zoo decreased from 6 events in 2016 to 5 in 2017 and increased to 8 events in 2018. The Zoo offers a variety of venues for other private events, including the entry plaza, Reggie's Bistro, Cambodia, Stilt House, Zoopendous, Elephant Circle, Thai Pavilion, and Tiger Plaza. Private events at the Zoo can range between party sizes of 20 and 2,000 guests. Event attendance ranges from small parties to large corporate events (Table 2-6). To date in 2019, the Zoo hosted 87 birthday parties, 60 company picnics, retreats, and meetings, and 19 holiday parties. The Zoo also hosted wedding receptions/rehearsal dinners (3), proms and formals (5), and walks (2) for the first time in 2019. The Zoo hosted a total of 183 events in 2019.

Table 2-6. Summary of Special Event Attendance at the Zoo

Event Type	2016	2017	2018	2019
Company Picnics	22	16	21	29
Retreats/Meetings	14	13	24	18
Birthday Parties	94	95	70	87
Private Social Events	9	11	7	10
Holiday/Zoo Lights Parties	6	5	8	28
Wedding Reception/Rehearsal Dinner	0	0	0	4
Proms/Formals	0	0	0	5
Walks	0	0	0	2
Total	**145**	**140**	**130**	**183**

Animal Welfare Best Management Practices

Animal welfare is a primary objective at the Zoo. Because each species is so unique, specific procedures and routines are implemented for each area and animal facility of the Zoo. Animal Care staff rely heavily on Animal Care Manuals (ACMs), published by the AZA, to provide the specific care required for the animals. ACMs provide a compilation of animal care and management knowledge that has been gained from recognized experts of certain species such as biologists, veterinarians, nutritionists, reproduction physiologists, behavioralists, and researchers. ACMs are based on state-of-the-art science, practice, and technology of animal management with the goal of continued excellence in animal care and welfare. ACMs cover the husbandry, housing, veterinary care, transportation, and welfare of the species or taxon they are written for.

The Zoo's Animal Care staff observe and track changes in health and behavior of the Zoo's resident animals daily and pay particular attention during and after potentially disruptive events, such as transport, health care, husbandry, construction activities, and evening events at the Zoo. The process by which Animal Care staff measure an animal's change in wellbeing include using forms to chart the wellbeing of an individual animal if there is a change in the animal's status. These forms use "markers" indicating normal or preferred behavior. By

tracking an animal's behavior, the staff can graph changes in behavior or body condition over time and take steps to mitigate negative effects.

The Zoo's Behavioral Research Division is also key to tracking changes in behavior and welfare. This division maintains a Zoo-wide study that monitors behavior of animals before, during, and after specific events. Curators and/or Animal Management identifies animals and facilities at the Zoo that are most likely to be disrupted by construction or other events. These animals are observed using the Zoo-wide protocol before and during an initial phase of construction, or before and after an event, to quickly ascertain if changes need to be made for the animal's welfare. For example, loud events such as prolonged construction noise or music are currently monitored for decibel levels on a regular basis. In some cases, no changes are required to improve the wellbeing of certain species.

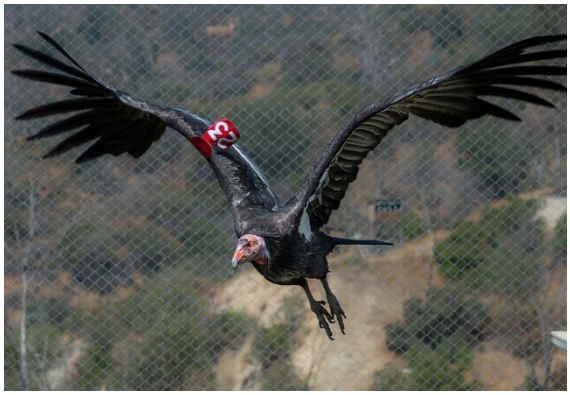
During construction within the Zoo, Animal Care staff develop appropriate approach to animal housing and, if needed, relocation to avoid adverse effects. The Zoo maintains options for ensuring that animal welfare is achieved through new onsite housing or transportation to offsite locations, if necessary, as exemplified by several recent construction projects below:

- Off-Site Temporary Relocation. The Zoo is accredited by the AZA and is an active member of many Species Survival Plans (SSP). As a result, the Zoo is part of a large consortium of accredited zoos that can provide alternative housing for the Zoo's residents if necessary, during construction. The Zoo has supported other AZA-accredited facilities by holding animals for other zoos during construction as well. The Zoo has also requested transfers through the SSP to transport animals for temporary holding at other zoos during the Zoo's own construction projects. For example, during construction of the Campo Gorilla Reserve project, the Zoo's gorilla group was temporarily moved to the Denver Zoo and then returned once the project was complete. The Zoo is currently holding a male sea lion for the Houston Zoo while a new sea lion animal facility is under construction. The plan is to hold this animal for approximately five years and then return him to Houston following completion of their capital project.
- On-Site Temporary Relocation. Another method of maintaining animal welfare during construction is to modify existing space to relocate the Zoo residents onsite. For example, an outdoor "penthouse" was constructed on top of the chimpanzees holding building prior to commencement of construction at the Chimpanzees of Mahale Mountains. This approach allowed the chimpanzees to continue living in a dynamic outdoor space without requiring transportation to another facility. Other examples of modifying existing holding space at the Zoo include construction associated with Elephants of Asia and the LAIR project. When the previous reptile building was demolished to make room for Elephants of Asia, the old veterinary hospital was retrofitted to accommodate the reptiles that were displaced by the demolition activities. The space allowed a variety of climatic conditions and enabled the Zoo to

maintain the animals with Animal Care staff expertise until the new LAIR was completed.

In addition to these practices, the Zoo's grounds maintenance staff currently manages pests on campus without the use of pesticides and rodenticides, in accordance with Assembly Bill 1687 and the City's Resolution to expand the existing law to include a prohibition of pesticides containing additional specified anticoagulants.

Conservation Programs



The California Condor Recovery Program is the Zoo's most successful conservation program, with an increase from 22 individuals in the 1980s to nearly 500 birds today.

The Zoo supports numerous organizations from around the world to reduce habitat destruction, stop over-hunting, create sustainable conservation programs, and inform people about decreasing animal populations. Insurance populations of threatened species from around the world are cared for at the Zoo to maintain healthy and self-sustaining captive populations that are both genetically diverse and demographically stable. These threatened species are managed in accordance with Species Survival Plans (SSPs) so that these animals will exist on Earth as a final barrier to extinction when wild populations dwindle. The Zoo financially supports conservation action of more than 25 programs each year for a broad diversity of species around the globe. These funds support critical conservation activities, including monitoring the growth or reduction of threatened populations, conservation education to reduce human-wildlife conflicts, emergency rescue of injured animals, combatting poaching activities, and caring for critically important ex situ populations of threatened species.

In addition to providing financial support, the Zoo contributes volunteers, husbandry expertise, project recommendations, and veterinary services to these various conservation efforts worldwide, such as the Gorilla Rehabilitation and Conservation Education (GRACE) Center in the Democratic Republic of Congo. Approximately 3.25 acres of land within the Zoo campus is dedicated to the California Condor Recovery Program. The Program, which launched in 1982, has evolved from a focus on building a captive breeding population to one of monitoring and maintaining the populations of wild birds that have been re-established in California. The Zoo's husbandry team developed and continues to revolutionize the way California Condors are bred and raised to grow existing populations and start new populations. Building on the success of the California Condor Recovery Program, the Zoo developed a similar recovery program for southern mountain yellow-legged frogs, in which the Zoo has released over 2,000 frogs into four canyons in two separate mountain ranges.

Using these models, the Zoo collaborated with partners in the United States and Mexico to develop a similar reintroduction program for the critically endangered peninsular pronghorn. The Zoo's staff, including the keepers, learning and engagement team, veterinarians, and curators travel to sites around the globe to contribute their expertise to programs looking for assistance and capacity building.

In addition, the Zoo also plays a large role in wildlife trafficking and smuggling activities. Due to the City's location near the border with Mexico, the sixth busiest airport on the planet (Los Angeles International Airport), and the Port of Los Angeles, the City is a major hub for the multi-billion-dollar industry of illegal wildlife smuggling and trafficking. When the California Department of Fish and Wildlife (CDFW) seizes shipments or conduct raids, the confiscated animals have often been illegally smuggled under inhumane conditions with little to no nutrition or water and require the care of animal care experts. The Zoo's animal care staff have provided their husbandry and veterinary expertise to support the CDFW by directly assisting with seizing dangerous animals, such as highly venomous reptiles, and taking in confiscated animals. The Zoo has been involved with rescue efforts for several species, including monkeys, tortoises, macaws, Asian songbirds, and a pangolin.

The Zoo is a member of the Wildlife Trafficking Alliance, a network of 75 partners aimed to reduce, and eventually eliminate, wildlife trafficking. The Zoo is also a member of the Southern California Wildlife Confiscations Network, whose focus is establishing a framework to identify, triage, and place confiscated animals and plants to qualified facilities capable of accommodating them. The network includes law enforcement agencies, AZA-accredited facilities, universities, botanical gardens, and key conservation organizations.

The Avian Conservation Center (ACC) is at the heart of these efforts. This behind the scenes structure plays a critical role in the fight against wildlife trafficking and illegal wildlife trade by caring for and managing confiscated birds from around the world. Through the ACC and the LAIR, the Zoo has taken in and cared for animals confiscated by wildlife agencies or facilitated their relocation to other accredited facilities. By taking in confiscated animals, the Zoo ensures these animals live with high welfare standards and the wildlife trafficking trade is deterred. The Zoo is committed to be a rescue and care resource for trafficked animals, while also educating the public on what they can do to help with this issue.

The Zoo's animal residents are the conduit through which the Zoo engages the public with conservation and environmental education. People of all ages visit the Zoo to learn about the animals. In turn, the Zoo teaches about the threats facing the natural world and how to have a positive impact on the world.

2.3 PROPOSED PROJECT

2.3.1 Project Overview

The Project involves long-term implementation of the proposed Vision Plan, which would fundamentally guide Zoo development and operations over the next 20 years. The Vision Plan would result in comprehensive redesign and redevelopment of the majority of the Zoo to replace outdated buildings and infrastructure and upgrade animal care and guest amenities. The proposed upgrades and expansion of animal space; external/internal pedestrian and vehicular circulation; and improved operations, maintenance, and visitor-serving (i.e., restaurants, seating) facilities, would better serve resident animals, visitors, and Zoo staff. The proposed Vision Plan components would also improve the Zoo's long-term environmental sustainability and resiliency.

The proposed Vision Plan provides guiding principles that would apply to future ongoing Zoo operations and redevelopment of Zoo buildings and infrastructure within nine themed boundaries, referred to as "planning areas" within the Project area (see Figure 2-4). The Vision Plan would also apply to circulation and infrastructure improvements. The Vision Plan specifies near-term projects and long-term improvements that embody the guiding principles and carry out the vision and development concept for the Zoo. The City would undertake improvements to each planning area step by step through seven implementation phases (see also, Section 2.4, *Vision Plan Implementation*).

The proposed Vision Plan delineates nine themed areas, referred to as planning areas in this EIR, each with a common natural setting and program. Several planning areas reflect diverse regions of the planet (e.g., Africa), while others are intended to provide a common programmatic theme (e.g., Nature Play Park).

In addition to the 9 planning areas within the Zoo, the Vision Plan would guide development, expansion, and improvement of Zoo service, circulation, and animal care facilities in 8 key areas:

Circulation
Dedicated paths for visitors, trams, and service vehicles

Visitor Centers and Retail
3 new visitor centers, with gift shops and restaurants

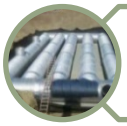
Vehicle Entry & Parking
Roadway relocation and parking structure

Space for Animals
Increase area for animals by more than 35 acres

Animal Service Centers
Consolidate animal care and support facilities in one area

Internal Service Center & Circulation
Centralized service and vehicle access area

Solar
Solar photovolataic systems on up to 70,000 sf of rooftops



Stormwater Management
5 new subterranean cisterns capture up to 80 percent of runoff

With full implementation of the Vision Plan, the area dedicated solely to space for animals within the animal spaces and animal care facilities would increase by roughly 270 percent, or from approximately 22 acres to 59 acres. The proposed Vision Plan would also enhance the sustainability of the Zoo by integrating additional photovoltaic solar panels to power a total of up to 50 percent of the Zoo's energy use and installing a complex stormwater capture and reuse system, including underground storage cisterns to reduce the Zoo's potable water consumption. A detailed description of the proposed changes envisioned in the Vision Plan to meet the proposed guiding principles is provided herein. For further information regarding the phasing of projects during Plan implementation and construction details, see Section 2.5.1, *Construction Phasing and Implementation*.

wood.

Los Angeles Zoo
Proposed Zoo Planning Areas and Conceptual Design

FIGURE 2-4

2.3.2 Project Objectives

Section 15124(b) of the California Environmental Quality Act (CEQA) Guidelines requires a statement of a project's objectives that includes the purpose of the Project. The objectives of the proposed Project include:

1. **Animal Welfare and Care**. Provide an environment for all the animals that call the Zoo home to thrive through development of state-of-the art exhibits and animal care facilities that meet or exceed AZA, USDA and state of the industry care standards, as well as upgraded Zoo service centers and veterinary facilities that ensure optimal animal welfare.
2. **Increase and Modernize Zoo Exhibit Space**. Increase and modernize Zoo exhibit space to maximize animal habitat areas, create infrastructure for innovative and proactive animal care and welfare practices, and represent ecosystems and lifecycles by transforming underutilized and underdeveloped areas of the Zoo.
3. **Conservation**. Advance conservation efforts by developing facilities and programs that will support conservation actions to protect and grow animal populations and habitats.
4. **Learning and Education.** Advance public engagement efforts by developing facilities and experiences that promote lasting relationships with nature, life-long learning, opportunities for outreach beyond the Zoo's campus, and a civic culture of conservation.
5. **Immersive Visitor Experience**. Design Zoo exhibits and visitor spaces to provide nature-based experiences that allow Zoo visitors to engage with environments and animals in seamless, immersive spaces.
6. **World Class Destination**. Enhance Zoo facilities and operations to increase Zoo visitation, create a sense of place that transports visitors to other parts of the world, and generate revenue to support operation of the Zoo, capital improvements, and conservation programs.
7. **Visitor-serving Amenities**. Provide a variety of visitor-serving amenities including food and retail establishments, a range of resting and gathering places, and special event centers that will attract visitors and support a range of special events within the Zoo.
8. **Efficient Circulation System**. Develop an efficient and accessible internal loop circulation system that maximizes access to Zoo exhibits for visitor comfort, operational efficiency, and safety, providing dedicated pathways for pedestrians, trams, and emergency and service vehicles.
9. **Accessibility**. Design the Zoo to serve the needs of a diverse population of all ages and abilities through incorporation of ADA pathways, alternative travel options in the

Zoo such as aerial or ground-based trams, and exhibit features and facilities for families and those with special needs, along with a cohesive approach to wayfinding.

10. **Multi-modal Access**. Improve multi-modal accessibility and regional transportation to the Zoo, including the provision of alternative transportation options to reduce congestion and improve the circulation of vehicle traffic.
11. **Visual Appearance**. Improve the visual characteristics of the Zoo through architectural design, landscaping, lighting, pedestrian-oriented improvements, and incorporation of symbolic design, and create features that reflect architecture of animal habitat theme areas and the Zoo history.
12. **Capital Improvements**. Identify and provide for implementation of capital improvements and investments that are needed to ensure that future demands on the Zoo's infrastructure will be successfully accommodated.
13. **Environmental Sustainability**. Incorporate sustainable design practices into Zoo facilities to ensure resource conservation consistent with City's Sustainable City pLAn, One Water L.A. Plan, and Resilient Los Angeles Plan.
14. **Operational Excellence**. Provide facilities and resources that allow Zoo staff and emergency responders to safely and efficiently support Zoo operations, including safe and quick vehicle access to all parts of the Zoo, as well as ensuring the Zoo is clean, well-maintained, supportive of the organizational culture, and provides high quality customer service.

2.3.3 Vision Plan Guiding Principles

The Vision Plan would result in a substantial increase of animal spaces to improve animal care and welfare.

The Vision Plan provides a set of guiding principles for achieving the project objectives by enhancing the character, environmental sustainability, and operations of the Zoo. The guiding principles strongly influence the proposed development concept and implementation of the Project, including the site layout, internal circulation system, visitor services, zoo animal space, proposed facilities, and infrastructure, as described herein. The guiding principles described below would apply to all individual planning areas projects and guide development of the Zoo over the next 20 years. In addition to the principles detailed in Table 2-7, the Zoo is required to adhere to several requirements of AZA accreditation and other standards, such as City habitat and tree protection requirements. For a list of the applicable requirements and standards regulating development within the Zoo, see Appendix A.

Table 2-7. Vision Plan Guiding Principles and Standards

Animal Care
• Natural settings would be maintained for each animal habitat. • Area dedicated to animal habitat would be maximized. • Animal habitats designed for multiple species or yards that multiple species would rotate through individually at different times of the day or the year. • New habitats would be designed to meet or exceed American Zoological Association (AZA) standards to promote animal welfare. • New night quarters would be created to suit each species' unique needs. • Service areas would be modernized to improve efficiency and quality facilities for animals and Zoo staff, including veterinary care facilities.

Conservation
• Facilities would be constructed to support the needs of the Zoo's breeding programs to advance its work with endangered species preservation. • "Behind the scenes" guest experiences with conservation programs would expand in support of conservation education and allow the greater community to engage in conservation action. • Existing partnerships, including the Condor Conservation Program with the CDFW, and the Gorilla Rehabilitation and Conservation Education Center (GRACE) would expand and new partnerships would be developed to support global conservation efforts with local Zoo resources.

Visitor Experience
• Architecturally themed visitor Centers would be distributed through the Zoo's animal facilities to ensure that visitors can readily access Zoo amenities, including seating, picnic locations, or sit-down restaurants. Visitor Centers would be located no more than 2,000 linear feet apart, or about a 30-minute walk. • Immersive habitats and spaces, those with natural settings and mixed-species habitats, would provide the public with a sensory experience of being within the animals' native community.

Visitor Experience (Continued)

- Interpretive exhibits would provide hands-on learning opportunities and group activity spaces to provide a living classroom and inspiring place for informal and formal learning.
- Conveniently located restrooms and shady seating or rest spots throughout the Zoo would create a welcoming, comfortable experience for all guests.
- Internal circulation improvements would separate service traffic from visitor areas for more efficient and safer flow.
- Walking paths providing primary access from the Zoo entrance and key animal facilities would be designed to have no more than five percent slope to improve accessibility for ADA guests, seniors, and families with strollers.

World Class Destination

- Iconic design features, such as a reconstructed Treetops Terrace as a new Asia-themed visitor center, entry way improvements, and the new architecturally themed California and Africa Visitor Centers, would dramatically improve the Zoo's appeal and enjoyment as a destination.
- Upgraded support facilities, such as parking, circulation, utilities, and infrastructure would support increased annual visitation to the Zoo.
- Expanded special event and conference spaces would support a wide range of events to promote and expand public use and enjoyment of the Zoo.
- Development of new state of the art animal facilities and implementation of a wide range of programs would increase Zoo visitation and provide sustainable funding to support Zoo operations and programs.

Environmental Sustainability

- Throughout all phases of the Project, new structures, infrastructures, utilities, and landscaping would meet the LEED Silver standards of design or better, including all Visitor Centers, to ensure energy- and resource-efficient structures.
- By consolidating service and functional areas of the Zoo to one location, the Zoo would have the space to include enlarged service and food storage areas for more efficient bulk purchasing.
- Photovoltaic solar panels would be considered for all roof-top areas greater than 250 sf to meet the Zoo's goal of providing up to 50 percent of the Zoo's energy demand.

Environmental Sustainability (Continued)

- Stormwater capture cisterns would be installed with an end goal of capturing 80 percent of onsite stormwater for treatment and reuse onsite or release to the Los Angeles River.
- The Zoo administration and facilities buildings would have electric vehicle charging stations. A minimum of two stations shall be provided for each designated parking area of Zoo vehicles.
- Native trees and habitats would be protected where possible. Degraded or removed habitats would be restored and/or replaced to the extent feasible.
- Protection of key desirable specimens and new tree plantings to replace removed trees would maintain or expand the Zoo's tree canopy.

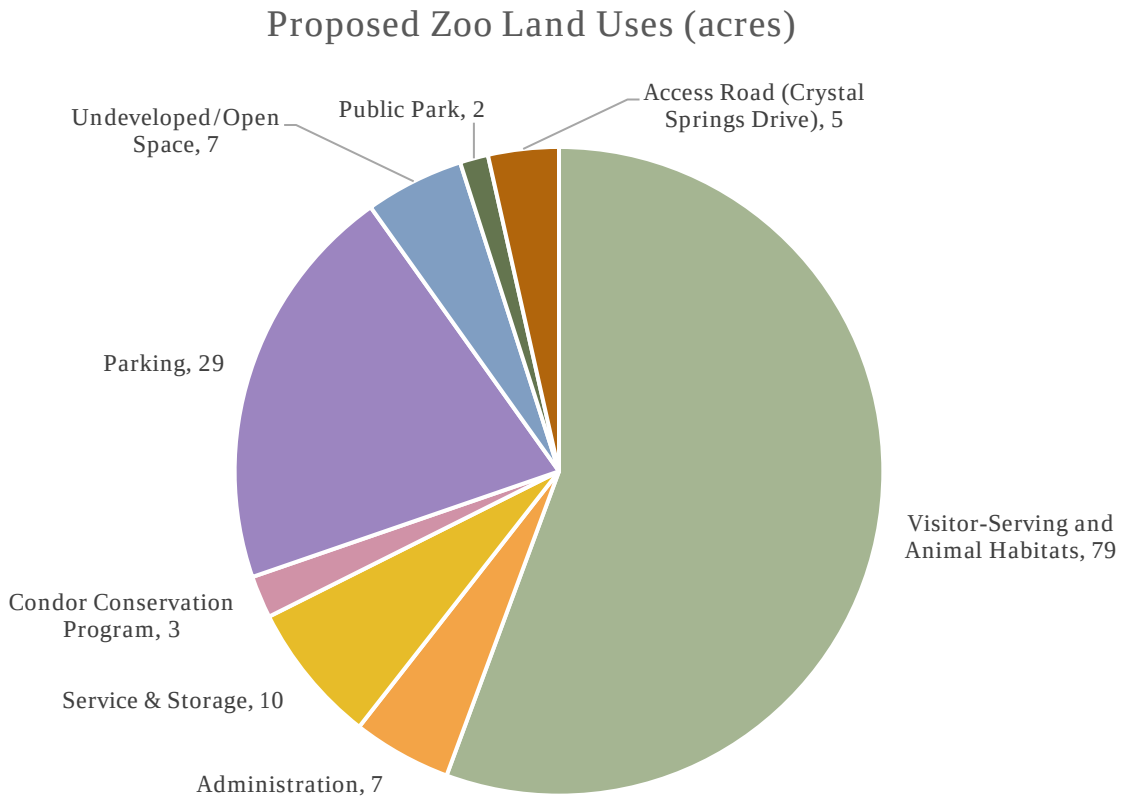
Operational Excellence

- Service facilities would be consolidated to one location for maximum efficiency (e.g., consolidated food storage that allows for bulk purchasing).
- A central delivery location would accommodate larger trucks and increase efficiency of operations.
- Separate service roads from visitor circulation paths would provide more efficient flow, improve the visitor experience, and enhance safety.
- Administration buildings near *Zoo Entry* would improve customer service.
- Aging and outdated facilities and infrastructure would be upgraded throughout the Zoo to improve operational efficiency and safety (e.g., compliance with seismic standards).

2.3.4 Proposed Zoo Land Uses and Design

The Vision Plan provides conceptual redevelopment for most of the existing animal facilities, guest services, and administrative/support uses throughout the Zoo to create a rich, immersive experience for guest and high-quality habitats for resident animals.

The Vision Plan is a conceptual development plan that proposes substantial improvements throughout the 133-acre Zoo. Improvements would include expanded and revitalized immersive animal spaces that provide a natural setting that mimics the species' native habitat. Proposed improvements would also include new architecturally themed visitor-serving buildings, expanded and modernized administrative and services facilities, and circulation improvements for access roads, pedestrian walkways and paths, an enhanced entry way and plaza, and new parking facilities (Table 2-8). Central to the Vision Plan's key goals are substantial expansion of and improvements to animal facilities and enhanced visitor experience through improved facilities, circulation, and visitor centers.



Development of a portion of the Zoo's underutilized land would permit an increase in space available for animal facilities and animal care by over 200 percent, with improved animal mobility and health as well as visitor experiences. The Vision Plan proposes up to 73,800 sf of new visitor center space, including up to 22,400 sf of new food service facilities. Proposed restaurants would be located at the proposed Entry Plaza, California Visitor Center, Treetops Visitor Center, Rainforest Interpretive Center, Nature Play Park, and Africa Visitor Center. Visitor experience and mobility would be further improved though creation of a complete circular loop trail system for pedestrians and a ground tram, a funicular, and an aerial tramway to provide easy access to key animal facilities and amenities. The *Zoo Entry* would undergo major improvements to increase accessibility, provide shade and rest stops, expand guest services, and install a more direct route to animal facilities.

Over the life of the Vision Plan, up to 1,850 additional parking spaces would be provided through improvements of the existing guest parking lot and the addition of a multi-story parking structure. A new 6.1-acre service area at the southern perimeter of the Zoo would expand total service area from 8,000 to approximately 56,000 sf including employee parking, maintenance, animal space fabrication, and other support facilities. Note that all square footages are approximate and will be finalized following Project approval during the final design, engineering, and building processes in the City.

The Vision Plan provides long range goals and objectives within a conceptual planning framework. This EIR provides the reasonable estimates of the size and scale of new development, but these will be subject to refinement over the 20-year development horizon.

Table 2-8. Summary of Proposed Zoo Development for Proposed Project

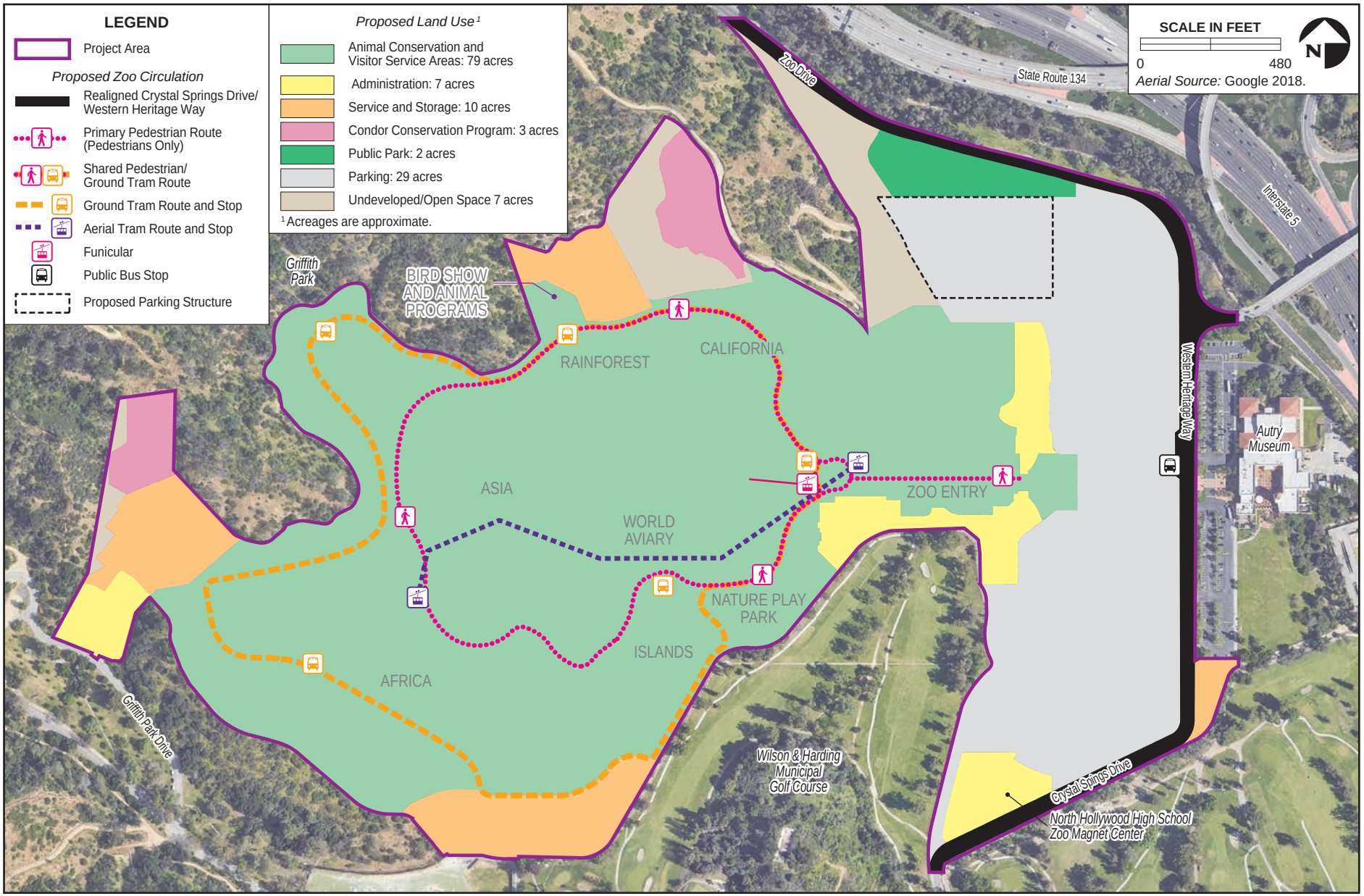
Land Use	Proposed (sf)
Animal Space/Animal Welfare Support	2,556,972 (58.7 acres)
Administration	142,000
Service	56,000
Food and Beverage	22,400
Retail	9,900
Visitor Restrooms	20 Restrooms
Visitor Centers	73,800
California	*18,000*
Treetops	*24,000*
Africa	*31,800*
Children's Discovery Center	No change
Winnick Family Children's Zoo	Removed
Gottlieb Animal Health Center	No change

Note: Given the long-range nature of the Vision Plan, estimated development may adjust slightly. This EIR assumes that proposed percentages and square footages may be adjusted provided such design revisions are in substantial conformance with the Project Objectives and Vision Plan.

2.3.5 Proposed Planning Areas and Projects

The Vision Plan sets forth a guiding principles and broad development proposals for planning areas over the 20-year development horizon. The range of proposed improvements would vary by planning area within the Zoo under the Vision Plan (Table 2-9). The nine planning areas are profiled and summarized below, and the proposed site design and range of projects and improvements is described for each area. As the Vision Plan is a long-range planning document to guide Zoo development and operations over 20 years, the degree of details known about the exact improvements within each planning area varies as well. However, more detailed planning has been completed for planning areas in the first three phases; the design of the remaining four planning areas to be developed are more conceptual. As such, precise square footages and acreages of development projects will continue to be refined and adjusted as each enters the final design phase.

Improvements in planning areas that would be implemented in the near-term (i.e., 5 to 10 years) are more clearly defined and detailed in the proposed Vision Plan, including the *Zoo Entry*, *California*, *Rainforest*, *Asia*, *Nature Play Park*, and *Africa*, along with external roadway, parking, and access improvements. Longer term improvements (i.e., 10 to 20 years) are described conceptually and would be refined into detailed projects at the time of implementation, including *World Aviary, Bird Show/Animal Programs*, and *Islands*, along with construction of up to a 2,000-space parking structure (Table 2-9). As such, the descriptions herein of proposed improvements by planning area vary in their complexity and level of detail according to the Vision Plan's implementation strategy, which is detailed in Section 2.4, *Vision Plan Implementation*. Note that all square footages are approximate and will be finalized following Project approval during the final design, engineering, and building processes in the City.



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Los Angeles Zoo
Proposed Zoo Land Use and Circulation Plan

FIGURE 2-5

Table 2-9. Proposed Project Summary of Improvements

Timing	Planning Area	Size (acres)	Description of Key Improvements
Near-Term (5 – 10 years) Phases 1 - 3	Zoo Entry	8	• Streamlined parking, ticketing, membership services, and wheelchair and stroller rentals to improve accessibility • 80-foot-wide entry pathway with stops for aerial and ground trams • Zoo Orientation Plaza with iconic fountain • Lower terminals for aerial tram and funicular
	California	21	• Enhanced and enlarged animal facilities • A new California Visitor Center featuring Yosemite lodge-style architecture and relocated California Condor Rescue Zone • Condor Canyon • Funicular upper terminal
	Rainforest	3	• An interpretive center and outdoor classroom area with new housing for rare and endangered species • Hands-on conservation education, including interactions with ambassador animals and immersive habitats
	Asia	20	• Substantially enlarged facilities for elephants, tigers, rhinos, and other species with new facilities • Reconstructed Treetops Visitor Center with the iconic spires to function as a beacon and wayfinding feature • Transformation of the buildings and structures to include Asian-themed architecture
	Nature Play Park	2	• Access to natural areas and naturalistic play structures, featuring slides, balancing activities, and climbing structures • A new food and beverage concession stand • Inclusive playground design to give access to play for people of all abilities
	Africa	23	• Open vistas across multiple ecoregions populated with mixed-species groupings • An architecturally themed, thatched-roof Africa Visitor Center with interior classrooms, event spaces, and a veranda overlooking the savanna habitat • Upper terminal for aerial tram
Long-Term (10 – 20 years)	World Aviary	2	• Integrated water features and lush plantings with dozens of bird species from around the globe • Renovated ramps and paths for accessibility • Expanded and improved breeding facilities
	Bird Show and Animal Programs	1	• Enhanced facility featuring encounters with ambassador animals • Improved shade over the amphitheater and updated behind-the-scenes facilities
	Islands	4	• Species from across the islands of Australia, Oceania, and Southeast Asia

ZOO ENTRY

The *Zoo Entry* planning area encompasses 8 acres on the eastern side of the Project area, including the main entrance and ticketing facilities, limited visitor service buildings, and Sea Life Cliffs. The Vision Plan provides for comprehensive redevelopment of the area. Proposed entry complex improvements would involve development of new administration buildings and visitor-serving amenities such as a gift shop and restaurant, a new entry plaza and accessible walkway, and renovations and expansion of the Sea Life Cliffs. Enhancements to the front of the Zoo's entry include installation of a citrus grove outside of the Zoo entrance to greet visitors and provide shade and green relief along the exterior walkway leading to the entry marquee. Development in this area would require demolition of existing structures, grading to achieve a gentle slope for the entry promenade, and limited tree removal or replacement in redeveloped areas.

The Zoo Entry area is currently developed with the iconic Zoo sign, walkways and stairs, limited visitor-serving uses, and one animal facility (Sea Life Cliffs). The Vision Plan would guide complete redevelopment of the area, including new administration buildings, an expanded Sea Life Cliffs, and a redesigned ADA-compliant entrance and walkway.

Key Improvements:

20,000-sf gift shop
7,200-sf restaurant with an outdoor deck with exhibit views
Stops for aerial tram, ground tram, and funicular at Zoo Orientation Plaza

Entry Plaza & Facilities

The proposed Zoo entrance and entry plaza would include up to 40,200 sf of visitor-serving uses and an estimated 142,000 sf of administrative uses, including:

1. a single-story gift shop;
2. a public programming, security and first aid center;
3. a single-story restaurant with an outdoor deck overlooking an expanded Sea Life Cliffs;
4. two-story administrative offices; and
5. additional service and utility buildings.

Guest amenities, such as stroller and wheelchair rental and membership services, would be located at the front entrance for streamlined check-in. The existing California Condor Rescue Zone would be relocated to the proposed *California* planning area, to allow expansion of the administration building at the Zoo's entrance. The existing Children's Discovery Center would be maintained. The existing administration building at the end of the proposed entry promenade would be renovated and integrated with proposed visitor-serving uses. The Entry

Plaza would be strongly integrated with *California* hillside animal spaces to the north and east and the new *Nature Play Park* to the southeast (see planning area profiles below).

The Zoo Entry would include a wide promenade connecting the entrance with the proposed Zoo Orientation Plaza and fountain, with stops for the ground tram, aerial tram, and funicular, as well as consolidated guest services and Zoo administration.

Circulation Improvements

The *Zoo Entry* would include an 80-foot-wide entry promenade to replace the existing stairway and separate ADA-accessible path. The promenade would be lined with ornamental landscaping and be graded as a gently sloping (<5 percent) ADA-accessible path.[1] The proposed promenade would provide pedestrian access to the new Zoo Orientation Plaza centered around a large fountain where stops for the proposed ground tram, aerial tram, or funicular would be located.

Infrastructure Improvements

Infrastructure improvements would include underground sewer, storm drain, and electric utility infrastructure replacements (see Section 2.3.7, *Proposed Utility Infrastructure*). While these new utilities would be installed throughout the Zoo campus, all utility lines would converge at the Zoo entry before connecting to municipal utility lines.

Table 2.10. Key Improvements to Zoo Entry Planning Area

Zoo Entry	
Animal Space	12,000 sf
Examples of Animal Facilities	Sea Life Cliffs
Restaurant (Indoor and Outdoor)	7,200 sf
Retail (Gift Shop)	20,000 sf
Security and First Aid Center	13,000 sf
Administration and Service	142,000 sf
Landscaping	40,000 sf of Citrus Trees, Palm Trees, Ornamental Shrubs
Pathways & Circulation	Promenade and Entry Plaza (700 linear feet), Aerial Tram Lower Terminal, Main Ground Tram Station, Funicular to California
Restrooms	4

[1] The entry plaza would be widened from 40 feet, allowing much freer pedestrian passage on busy days; the existing stairs would be removed permitting full ADA access.

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Los Angeles Zoo
Proposed Zoo Entry

FIGURE 2-6

CALIFORNIA

The 21-acre *California* planning area would provide a new space for California species and landscapes. The new planning area would require development of 16.5 acres of presently undeveloped hillsides west of the *Zoo Entry*, as well as redevelopment of 4.5 acres of existing Zoo animal facilities (e.g., aviary). *California* would also provide a new California Visitor Center, Condor Canyon pathway, and relocated and redesigned California Condor Rescue Zone play space. Development of *California*, particularly Condor Canyon would require grading and excavation to bedrock to create the canyon. Blasting could potentially be required to create the canyon (see Section 2.4.2, *Construction Activities*). Land clearing would result in tree removal, including mature eucalyptus and small to mid-size native oak trees, as well as removal of native chaparral. *California* would include major new landscaping and tree plantings consisting of native species and non-native plantings typical of California, such as the iconic hillside vineyard.

The California planning area is currently undeveloped. The terrain is steep and vegetated with several mature trees and chaparral vegetation. The Vision Plan would guide development of the area with new animal facilities, circulation improvements, and a new visitor center.

Key Improvements:

18,000-sf California Visitor Center
60-foot-deep Condor Canyon path for pedestrians and ground tram

California Visitor Center & Open Space

The proposed two-story 18,000-sf Yosemite lodge-style California Visitor Center would be stepped into the hillside and feature full-service dining options, classrooms, and event rental spaces, with an upper terrace overlooking California habitats to the west and a deck overlooking the entry plaza to the east. A funicular would be installed to take visitors from the Zoo Orientation Plaza (see *Zoo Entry* above) up the hill to the proposed California Visitor Center. A meandering path would travel through the proposed 25,000-sf active hillside vineyard, providing a pedestrian option to reach the proposed California Visitor Center. Native landscaping would create habitat for Zoo animals as well as local wildlife, such as migrating songbirds or insect-eating bats. A proposed open space picnic area, Wildlife Meadows, would be located at the top of *California*'s hill at 600 feet in elevation with facilities for picnicking and overnight campouts.

Animal Facilities

California would provide approximately 4 acres of space for animal facilities and habitats, including expanded space for native California wildlife such as black bears, bighorn sheep,

grizzly bears, wolves, and mountain lions. These exhibit habitats that would incorporate pools, natural terrain, and specialized night quarters. A proposed Peninsular Pronghorn animal facility would feature two large grazing meadows and custom-built housing and an Elk Meadow and Jaguarundi animal facility would add diversity.

Condor Canyon would provide pedestrian and ground tram circulation through a deep canyon cut approximately 60 feet into the hillside. Two bridge crossings would be provided for pedestrians.

Condor Canyon & Circulation Improvements

Condor Canyon would be cut through an existing ridgeline to depths of up to 60 feet both to complete the Primary Path Loop through the Zoo and to provide topographic variation and interest for *California* planning area. Two proposed bridges would span the proposed 60-foot-deep Condor Canyon linking the California Visitor Center to the proposed Condor habitat (see below) and California Condor Rescue Zone, respectively. Condor Canyon would provide access through *California* to *Rainforest* and *Bird Show and Animal Programs* for both pedestrians and the ground tram. From this pathway, visitors may enjoy views of flying condors and tall canyon walls, which could provide opportunities for rock-climbing.

Condor Facility

The Zoo's longest-running conservation project, the California Condor Recovery Program, would remain in *California* and a new dedicated Condor Habitat adjacent to the relocated and redesigned California Condor Rescue Zone play space would be developed. Condor East would remain as a non-public access conservation facility and provide 2,000 sf of animal care and breeding facilities to support continuation of this existing program by the Zoo.

Table 2.11. Key Improvements to California Planning Area

California	
Animal Space	164,700 sf
Examples of Animal Facilities	Grizzly Bear, Mountain Lion, Wolf, Pronghorn, Jaguarundi, Bighorn Sheep, Elk, Black Bear, Beaver/Waterfowl
California Visitor Center and Restaurant	18,000 sf
Retail (front of house / storage)	3,000 sf
Administration and Service	750 sf
Landscaping	25,000 sf vineyards + 204,000 sf native and non-native
Pathways & Circulation	Condor Canyon route, vineyards path, ground tram, funicular
Restrooms	3
Solar	36,000 sf

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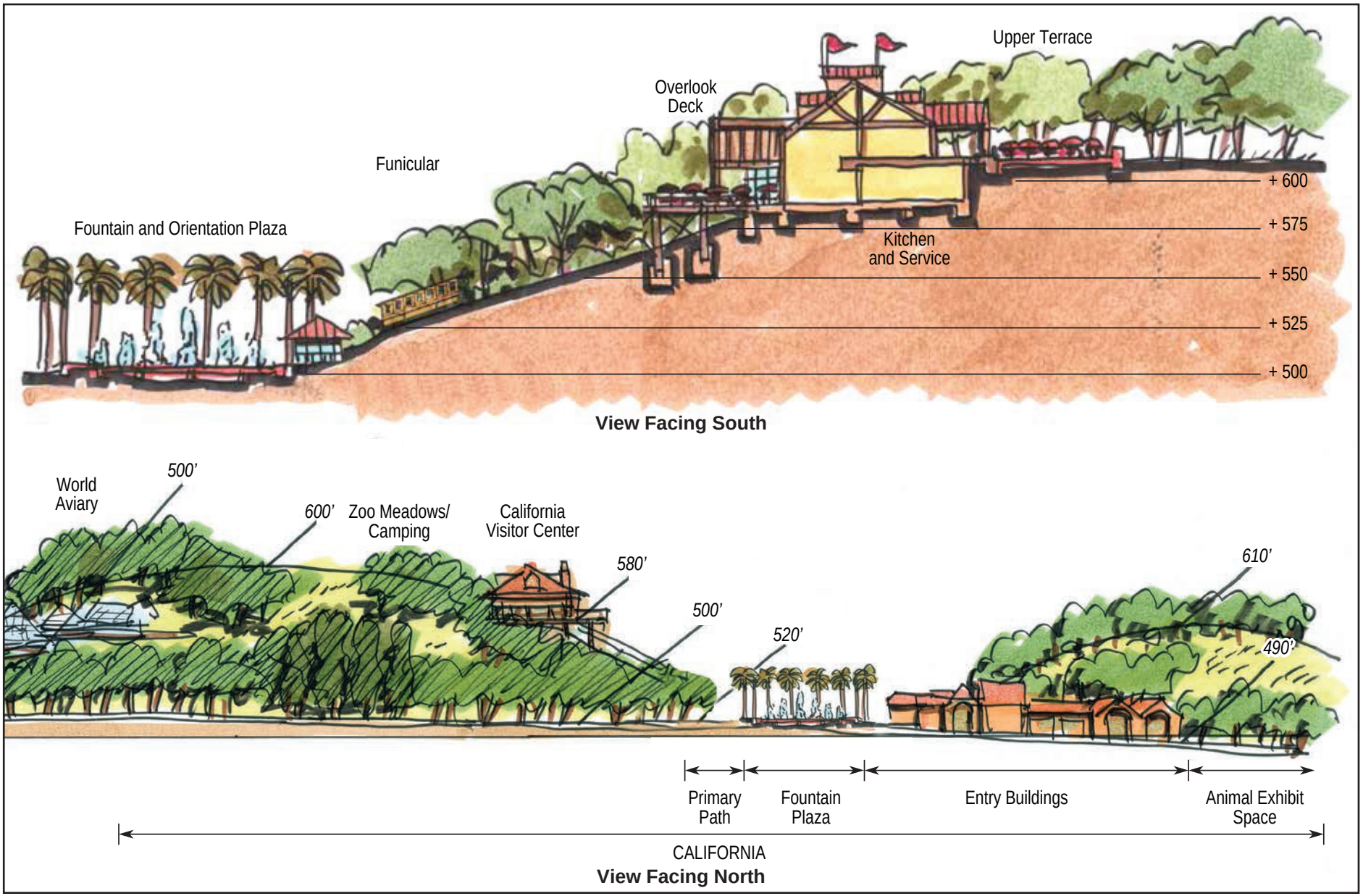
Los Angeles Zoo
Proposed California Exhibit

FIGURE 2-7



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Los Angeles Zoo
Proposed California Visitor Center

FIGURE 2-8

ASIA

The 20-acre *Asia* planning area would substantially expand the existing Elephants of Asia to include expansive animal care spaces for use by multiple species simultaneously or by different species throughout the day, similar to native habitats. The *Asia* planning area would be landscaped with ornamental plants as well as native Asian species to showcase the biodiversity of Asia. These more natural habitats would provide an additional 3.3 acres of space for the Zoo's resident Asian elephants. This proposed expansion was developed and integrated into the Project in response to public comment on the EIR's Notice of Preparation (NOP) in early 2019 after the Draft Vision Plan was published. Comments related to the welfare of the Zoo's four Asian elephants inspired Zoo planners and leadership team to proactively change the Project to provide exemplary accommodation and services for these important species.

The Asia planning area would include construction of the Treetops Visitor Center, including reconstruction of the iconic spires, along with circulation improvements to provide visitors with connections to several planning areas.

Key Improvements:

Increase space for elephants to 6.8 acres
24,000-sf Treetops Visitor Center
Asian Forest with large lagoon
Splash Area to "swim with elephants"

Elephant of Asia

The Elephants of Asia currently provides approximately 3.5 acres of space for the Zoo's elephants, as well as the Elephant Barn and Wasserman Family Thai Pavilion. While both these facilities would remain under the Project, the space for elephants would expand by 3.3 acres, providing a total of 6.8 acres of usable space for the animals. The space would be organized into four separate and connecting enclosures that could inter-shift animals as appropriate, with opportunity to also introduce other species (e.g., Asian rhinos) to the expansive spaces for a multi-species exhibit area. The elephants would have access to the full acreage through Zoo-controlled passages, including below guest walkways. This approach would maximize area for elephant space while providing expansive and immersive views for visitors of the animals and their habitat.

Other Animal Facilities

In addition to the expanded elephant area, *Asia* would provide a diversity of other species in rich habitats. A new orangutan animal facility within the Thai Demonstration Yard would greet visitors at the Asian Forest with other primates and tigers deeper in the forest. The Asian Forest would provide lush vegetation and feature a large animal area at its core surrounded

by lagoons, planned for siamang. The exhibit's habitat complex would support varied wildlife native to Asia, such as fairy bluebird, gharials, cobras, and pythons. The Asian Forest canopy would support langurs, sea eagle, Eurasian eagle owl, hornbills, and other arboreal species. New water features would be created within the animal spaces to provide underwater viewing experiences of animals, such as tigers and gharials. The Cambodian pavilion would provide shade and elephant demonstrations, with double loaded views on both sides of the deep spaces of the elephants.

Splash Area

The new Splash Area would provide an interactive water feature for visitors with views into the large elephant swimming pools. While the Splash Area would be physically separated from the animal space, visually it would appear that visitors could "swim with the elephants". Water for this feature would be cleaned and circulated onsite.

Circulation Improvements

With new, more convenient "shortcuts" to Elephant Circle and *Islands*, and connections to *Rainforest* and *Nature Play Park*, *Asia* would be transformed into an internal circulation hub of the Zoo. New pathways would take visitors from the Elephant Circle directly to the new animal spaces and further into the proposed Asian Forest (Figure 2-9). A tunnel will allow guests an alternative pathway into the Asian Forest. Guests can enter a shortcut from the Asian Forest through a tunnel and ramp up into the forest canopy before descending to the forest floor and the new Splash Area. A trail back from the Splash Area leads to the Cambodian pavilion.

The historic Treetops Terrace, originally constructed in the 1960s, would be reconstructed as a main focal point of the proposed Asia habitat. Currently, the iconic spires are missing from the building. The Vision Plan would include reconstruction of the spires as part of redevelopment of the building to become the Treetops Visitor Center.

Treetops Visitor Center

Treetops Terrace, originally designed by Charles Luckman for the original 1966 Zoo, would be reestablished in its original location as the 15,000-sf Treetops Visitor Center while reconstructing the building's historic key character-defining features (e.g., the roof spires). The new visitor center would include a larger food service area with a kitchen and service area, dining terrace and plaza, and multi-use rooms for a total of 24,000 sf. The new subsurface kitchen and service area would be located below the visitor center. The outdoor terrace seating would feature views out into Elephants of Asia. Additionally, restrooms would be provided adjacent to the existing carousel.

The existing Treetops Terrace venue has the capacity to hold 500 guests for banquet-style private events and 750 guests for reception-style events. The proposed Treetops Visitor Center would expand the venue to accommodate additional capacity for special events.

Table 2.12. Key Improvements to Asia Planning Area

Asia	
Animal Space	281,560 sf
Examples of Animal Facilities	Elephant, Rhinoceros, Orangutan, Siamang, Tiger, Langur
Treetops Visitor Center	24,000 sf (9,000-sf subterranean expansion)
Retail	1,000 sf
Carousel	10,890 sf
Administration and Service	750 sf
Landscaping	35,000 sf increase of Palm Trees and Asian Ornamental Shrubs
Pathways & Circulation	Pedestrian paths to *Africa*, *Islands*, *Rainforest*, and *Nature Play Park*
Restrooms	3
Solar	7,500 sf

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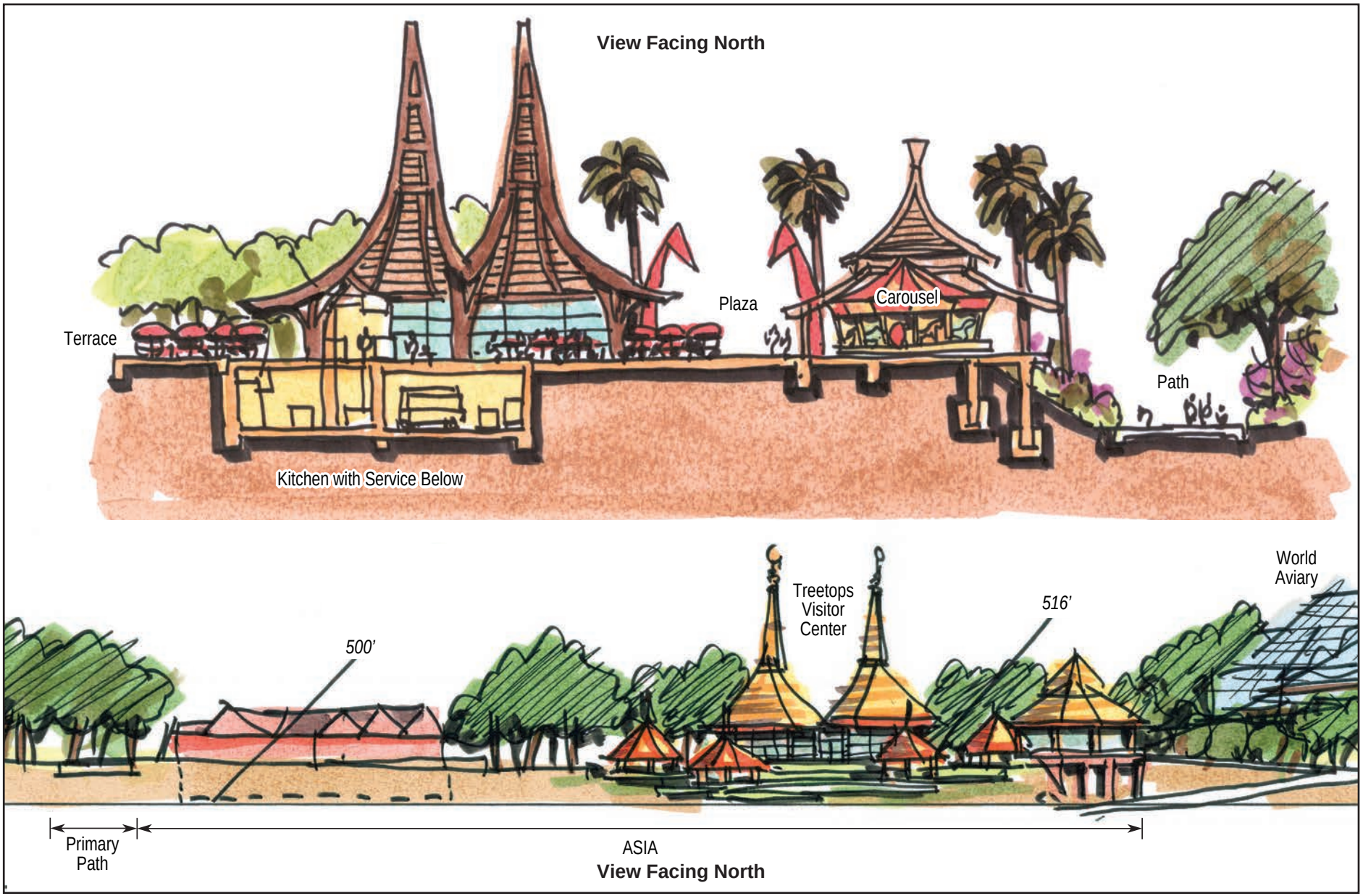
Los Angeles Zoo
Proposed Asia Planning Area

FIGURE 2-9



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Los Angeles Zoo
Proposed Treetops Visitor Center

FIGURE
2-10

RAINFOREST

The Rainforest planning area would update several of the Zoo's original 1966 animal facilities with immersive and educational experiences and integrate with the existing Rainforest of the Americas, which opened to the public in 2014. The existing Zoopendous Park would be demolished and replaced with a new 3,000-sf Rainforest Interpretive Center. This interpretive center would provide restrooms, a 750-sf restaurant, and 200 sf of retail. *Rainforest* would also offer close-up animal interactions and teach visitors about conservation and sustainability with the use of sustainable farming methods in balance with the rainforest. Facilities for species such as anteaters, spider monkeys, and giant river otters would be expanded. The existing roadway between *Asia* and *Rainforest* would transition from a guest path to a service-only road. However, new access would be provided between the two animal facilities via the new pedestrian circulation loop. The *Rainforest* would also include a direct connection to the entry complex via ground tram, with a tram stop located directly adjacent to the proposed Interpretive Center. Approximately 11,500 sf of solar array would be installed in this planning area.

The Rainforest planning area would build on the existing Rainforests of the Americas to provide for an immersive experience supported by a new Interpretive Center, linked pedestrian circulation, and ground tram stop.

Key Improvements:

3,000-sf Interpretive Center and restaurant

Separated service and pedestrian paths with 1 ground tram stop

Table 2.13. Key Improvements to Rainforest Planning Area

Rainforest	
Animal Space	33,000 sf
Examples of Animal Facilities	Spider Monkey, Anteater, Maned Wolf, Jaguar, King Vulture, Sloth, Tamarin, Saki, Capuchin, Otter, Flamingos, and potentially other rainforest species
Rainforest Interpretive Center	3,000 sf
Restaurant/Retail	750 sf/200 sf
Administration and Service	100 sf
Pathways & Circulation	1 ground tram stop, separated service roads and pathways
Restrooms	1
Solar	11,500 sf

NATURE PLAY PARK

The *Nature Play Park* would relocate and expand the existing children's playground, known as Papiano Play Park, to three times the original park's size. The *Nature Play Park* would be located near the proposed Zoo Orientation Plaza and include a 18,300-sf naturalistic play area for children, family restrooms, new retail options, and a new 1,000-sf food and beverage concession stand. Comfortable seating and gated entrances would be designed for caregivers to watch play while still allowing children to freely explore in the play area. An inclusive design will make the play park accessible for families of all abilities. Pedestrian pathways would connect this area directly to several planning areas of the Zoo, including *California*, *World Aviary*, Treetops Visitor Center/*Asia* and the LAIR. In addition, a ground tram stop at the northwest corner of the planning area would provide guests direct connection to and from the *Zoo Entry*.

The Nature Play Park planning area would relocate and expand the Papiano Play Park to three times its existing size and would provide natural play structures and water features.

Key Improvements:

18,300-sf natural play area
1,000-sf food and beverage stand
400 sf of retail

Table 2.14. Key Improvements to Nature Play Park Planning Area

Nature Play Park	
Animal Space	2,000 sf
Examples of Animal Facilities	Alligator
Restaurant	1,000 sf
Retail	400 sf
Playground	18,300 sf
Administration and Service	750 sf
Landscaping	17,000 sf of Citrus Trees, Palm Trees, Ornamental Shrubs
Pathways & Circulation	Ground tram, pedestrian paths to *California*, *World Aviary*, Treetops Visitor Center/*Asia* and LAIR
Restrooms	1
Solar	2,000 sf

AFRICA

The Africa planning area would feature a diverse range of large, flexible habitats and four ecoregions, including forest, savanna, riverine, and kopje, small rocky outcrops found in the veldt or savannah which support unique wildlife. This approach would allow an area to be used by multiple species simultaneously or by different species throughout the day or in rotation, while landscapes change with the seasons. Development of *Africa* would require revitalizing almost 23 acres of existing animal facilities and new development including approximately 7 acres of undeveloped hillside with steep grades. Hillside habitats would rise approximately 60 feet above a proposed new Africa Visitor Center, offering open views of the animal facilities. Development of this acreage would expand area for a range of additional animal habitats built to meet the individual animal care needs of each of its inhabitants.

The Africa planning area would require development of 7 acres of undeveloped hillsides within the Zoo, along with redevelopment of 16 acres of existing animal spaces.

Key Improvements:

31,800-sf Africa Visitor Center
Hillside development for expanded animal space
Aerial tram terminus from Zoo Entry
Separated ground tram experience

Africa Visitor Center

A new two-story 31,800-sf thatched-roof Africa Visitor Center would be developed with interior classrooms, dining options, and rental spaces for private events such as weddings and family reunions. The 17,800-sf first floor would include a 3,000-sf kitchen, an 8,000-sf dining facility, a 4,000-sf hall, and an 8,600-sf meeting space. Additionally, the second floor would open onto a 5,000-sf giraffe area to allow close immersive interaction for visitors. The second floor would also feature several meeting rooms and rotundas, and an 8,000-sf mezzanine. The two-story building would be equipped with an elevator for ADA-accessibility. From both the first and second floors of the visitor center, a veranda would overlook an expansive animal space with giraffes, zebras,

The Africa Visitor Center would provide key guest services on the southwestern side of the Zoo, which expansive seating and viewing areas toward the expanded animal habitat areas.

antelope, and rhinos. Other indoor and outdoor gathering spaces within the visitor center would offer 360° views of the *Africa* exhibit.

Animal Facilities

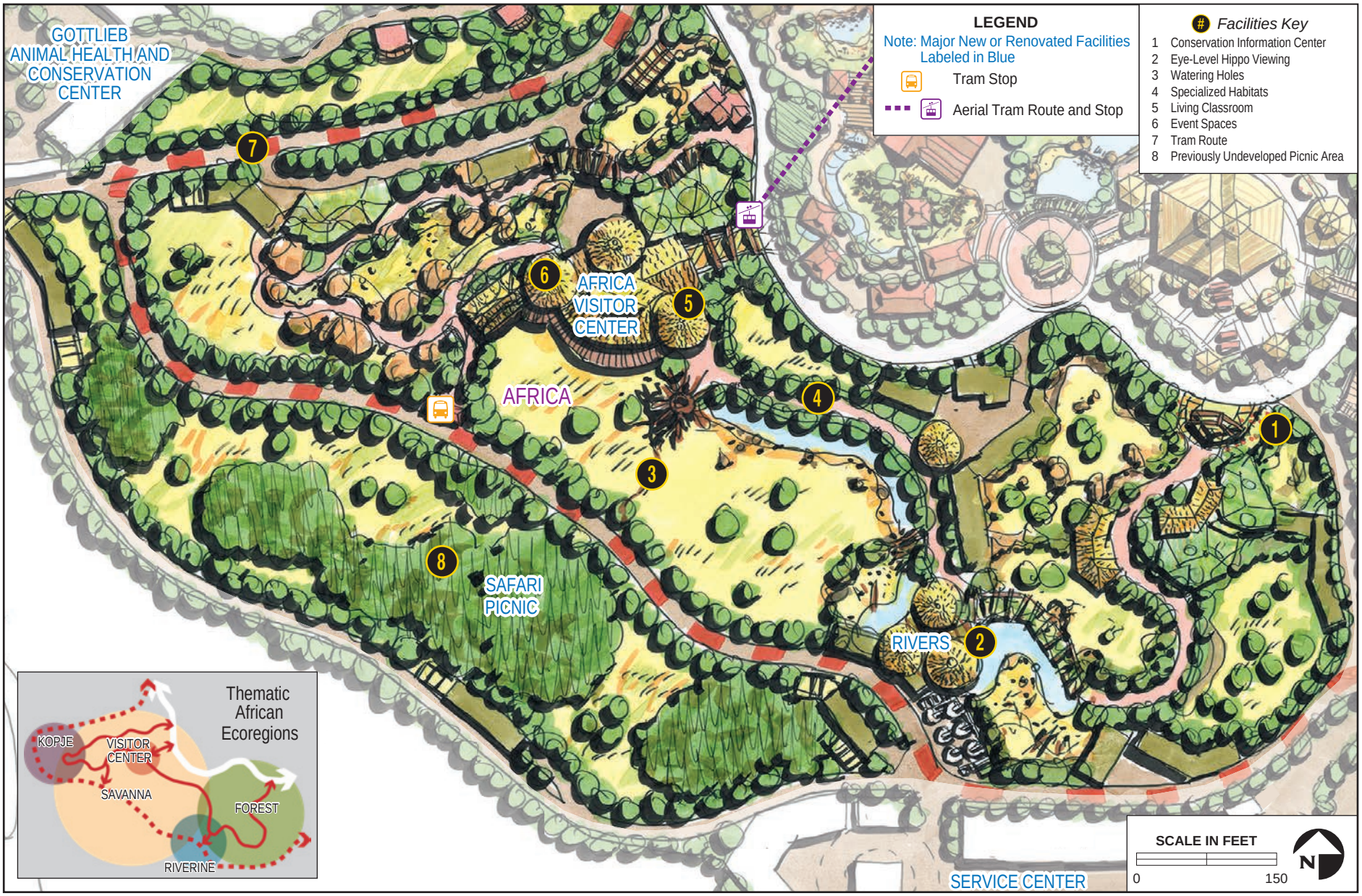
Africa would provide wide, open habitat areas within the combined animal space. Featured species would include wildlife species native to the Sahara, such as lions, gorillas, lemurs, and hippos. Ostrich, zebra, wildebeest, wild dog, and chimpanzee among others could also be resident to *Africa*. Giraffe feedings and behind the scenes tours with animals and animal keepers would be available within the *Africa* planning area. Additionally, a safari picnic space would be nestled in the hillside at the southern boundary of *Africa*.

Circulation Improvements

The western terminus of the new aerial tram would provide access from the entry plaza directly to the Africa Visitor Center, while a ground tram stop would be located approximately 100 feet southwest. A network of pathways would accommodate both pedestrians and ground tram service. In this planning area, the ground tram would be separated from pedestrian traffic, offering passengers exclusive views and animal encounters.

Table 2.15. Key Improvements to Africa Planning Area

Africa	
Animal Space	190,600 sf
Examples of Animal Facilities	Giraffe, Vulture, Mandrill, Hippopotamus, Gorilla, Cheetah, Leopard, Chimpanzee
Africa Visitor Center and Restaurant	31,800 sf
Retail	3,000 sf
Meeting Rooms	8,600 sf
Administration and Service	750 sf
Landscaping	210,000 sf of Acacia, Baobab, Pine Trees, Grasslands
Pathways & Circulation	Aerial tram upper terminal, ground tram, pedestrian paths to *Asia*, Treetops Visitor Center, and *Islands*
Restrooms	2
Solar	25,673 sf



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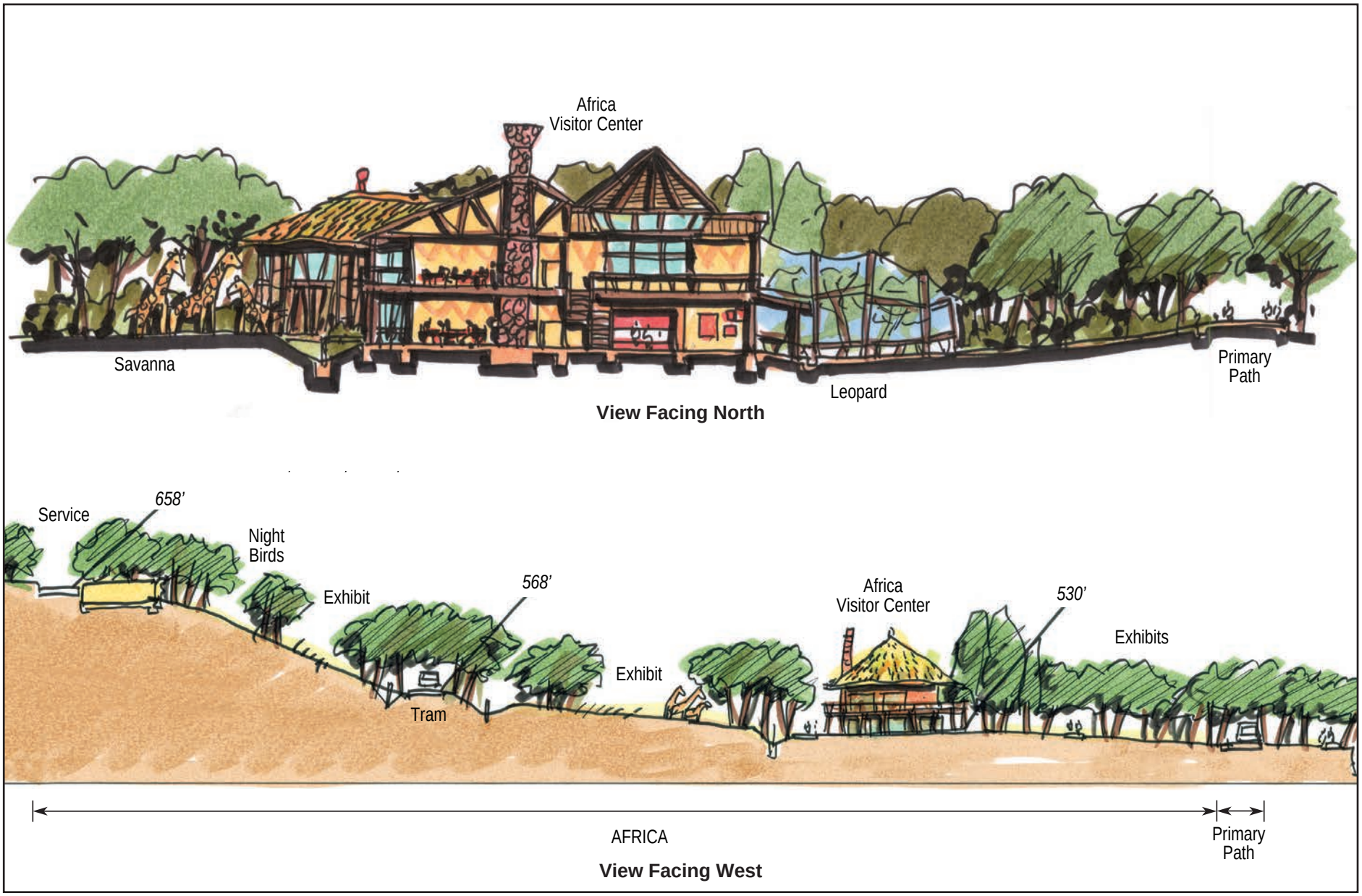
Los Angeles Zoo
Proposed Africa Exhibit

FIGURE 2-11



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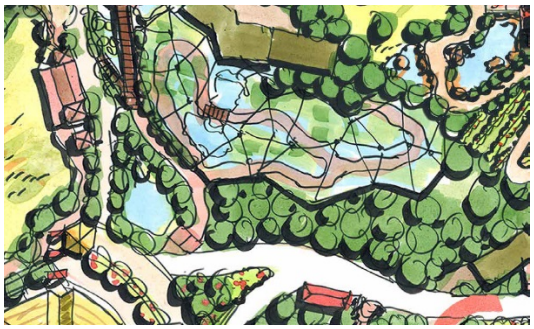
Los Angeles Zoo
Proposed Africa Visitor Center

FIGURE 2-12

WORLD AVIARY

The *World Aviary* planning area would renovate the existing 70,000-sf aviary. This new aviary would feature a new bird breeding and rearing complex, as well as waterfalls, pools, and habitat to support a range of birds from around the world. The 35-foot-tall multi-level building would allow visitors to get a bird's-eye view of the entire facility. Improvements from the existing aviary would also bring the building up to ADA standards. Circulation improvements with multiple entry and exit points from *Asia*, *Rainforest*, and *California* would allow visitors to find and navigate this area more easily.



The World Aviary planning area would renovate a 70,000-sf aviary with a new bird rearing and care complex

Key Improvements:

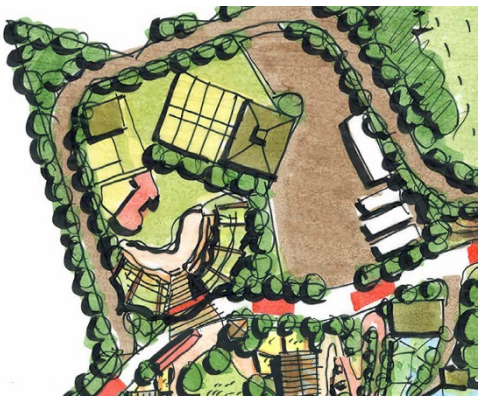
70,000-sf aviary renovation

Bird breeding and rearing facility

Table 2.16. Key Improvements to World Aviary Planning Area

World Aviary	
Animal Space	70,000 Aviary
Examples of Animal Facilities	Mixed bird species
Administration and Service	100 sf
Landscaping	43,000 sf of mixed trees (e.g., oak, eucalyptus)
Pathways & Circulation	Ground tram to the south, pedestrian pathways to *Rainforest*, Treetops Visitor Center, *Nature Play Park*, and LAIR
Restrooms	1
Solar	5,000 sf

BIRD SHOW AND ANIMAL PROGRAMS



The Bird Show and Animal Program planning area would include an improved amphitheater with shading along with expanded animal care facilities and separated service areas.

Key Improvements:

41,800-sf amphitheater renovation
Expanded animal care facilities
1 ground tram stop

The *Bird Show and Animal Programs* planning area would include renovation of the existing 1-acre area to upgrade the 41,800-sf amphitheater with a rocky outcrop and landscaped background, visitor shading, and improved access. New shade structures would provide respite for guests enjoying the updated bird show. Behind the scenes, 100 sf of new facilities at the *Bird Show and Animal Programs* building would be customized to meet the specialized needs of ambassador animals that regularly participate in the bird show. Accessibility to the amphitheater would be improved to meet the Vision Plan's guiding principles and a new ground tram stop would be provided. A dedicated service yard would be expanded behind the amphitheater and *Bird Show and Animal Programs* building. The 30,000-sf existing service area would support a renovated service building and yard to accommodate operations needs and separate noisy and unsightly maintenance work from visitor areas. The existing crate building activities would also be transferred to this service area.

Table 2.17. Key Improvements to Bird Show and Animal Programs Planning Area

Bird Show and Animal Programs	
Amphitheater	41,818 (existing)
Administration and Service	200 sf
Landscaping	7,000 sf of mixed trees (e.g., oak, eucalyptus)
Pathways & Circulation	Ground tram to the south, pedestrian paths to *Asia*, *Rainforest*, and *California*
Restrooms	0
Solar	4,000 sf

ISLANDS

The *Islands* planning area would include renovation of the existing Australia House to create a new building as a nocturnal house or forest floor exhibit. The exhibit would feature plants native to Australia, such as the Victorian box tree and eucalyptus, which would thrive in Los Angeles' Mediterranean climate, given the similarity to Australia's climate. In addition to repurposing the existing Australia House structure, this new animal facility would be updated to LEED Silver standards or better and include installation of solar panels. An elevated pathway or bridge from the Treetops Visitor Center would cross over the Primary Path Loop to link *Asia* and *Islands*, two previously disconnected areas. Additionally, direct access to *Islands* would be available from the immediately adjacent LAIR.

The Islands planning area would renovate the existing Australia House to provide a comprehensive exhibit of island biogeography.

Key Improvements:

Renovation of Australia House
Additional landscaping and vegetation

Table 2.18. Key Improvements to Islands Planning Area

Islands	
Animal Space	19,000 sf
Examples of Animal Facilities	Kangaroo, Wallaby, Wombat, Quoka, Possum
Administration and Service	200 sf
Landscaping	25,000 sf of mixed trees (e.g., eucalyptus trees, Victorian Box Tree)
Pathways & Circulation	Pedestrian paths to LAIR, Treetops Visitor Center, and *Africa*
Restrooms	0
Solar	7,500 sf

2.3.6 Proposed Circulation & Transportation

Internal Zoo Circulation Network

Proposed internal circulation changes would improve pedestrian and tram mobility and wayfinding by simplifying travel through the Zoo campus. At the end of the *Zoo Entry* promenade, a new Zoo Orientation Plaza would offer guests various transportation options for exploring the Zoo, including a ground tram, an aerial tram, improved walking routes, and a funicular which would take visitors to the California Visitor Center (Figure 2-13).

The proposed internal circulation system would separate all service traffic from pedestrian routes to improve the visitor experience and operational efficiencies. However, as previously described, approximately 60 percent of the ground tram's loop would be shared with service vehicles. Service roads would line the boundaries of the Zoo, connecting to the Service Center at the south end with the Gottlieb Animal Health and Conservation Center. These perimeter roads would be accessible for emergency vehicles (e.g., fire and rescue vehicles). Additional smaller routes would take Zoo staff to individual animal habitats and buildings. Additionally, two new 160-foot-diameter turnarounds would be created for large delivery trucks at the Gottlieb Animal Health and Conservation Center and the Service Center. These facilities would be accessed via dedicated service roads to avoid conflicts with visitor traffic. Detailed descriptions of internal circulation improvements are provided below.

Table 2-19. Proposed Internal Circulation Network

Collection Zone	Approximate Length (linear feet)
Entry Plaza	700
Primary Path Loop	4,400
Secondary/Exhibit Paths	19,500
Ground Tram	7,000
Aerial Tram	1,600
Funicular	70
Service Roads	7,800

wood.

Los Angeles Zoo
Proposed Internal Circulation Improvements

FIGURE 2-13

Pathways

Paved roads within the Zoo's internal circulation network are shared by pedestrians, service vehicles, and the shuttle. The Vision Plan would create separate routes.

A key circulation proposal would include completion of the Primary Path Loop, an approximate 4,400-foot long circular walking path that would provide a complete and intuitive circulation loop for visitors to enjoy all the Zoo's animal facilities, rather than the current out-and-back path Zoo visitors use today. This circulation route would include improvements to existing roads and paths and an alignment through the newly excavated Condor Canyon, linking *California* with *Rainforest* and *Asia*. Approximately 19,500 linear feet of secondary exhibit paths would provide access to individual Zoo animal facilities throughout the park, for a combined length of approximately 24,000 linear feet (4.5 miles) of new and redesigned walkways. Clear guest pathways would streamline circulation and avoid confusion or "cutting through" landscaping and animal areas. These internal circulation improvements would also be graded at no more than 5 percent slope to provide more ADA-accessible and pedestrian-friendly navigation for visitors.

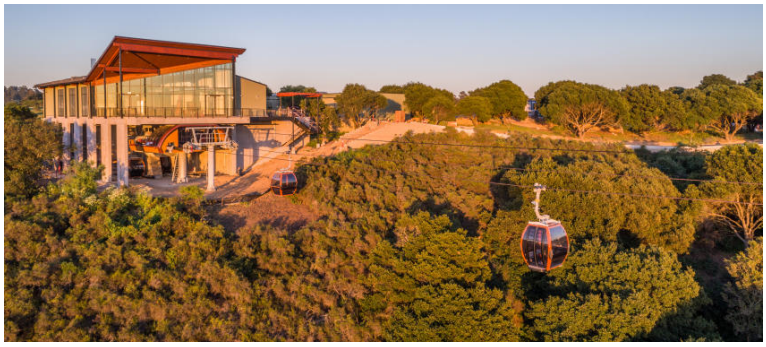
Ground Tram Route

The expanded 7,000-foot ground tram circulation loop would share only 40 percent (2,800 feet) of its path with pedestrians, primarily around the front Zoo animal facilities. The remaining 60 percent (4,200 feet) of the tram's route would be shared with service roads (Figure 2-13). Within the entry plaza, the first tram station would be located at the foothill of the California Visitor Center. From this tram stop, the ground tram would travel north towards Condor Canyon before turning west to the *Nature Play Park*, south through *Africa*, and back east through the *Islands* exhibit.

Aerial Tram and Funicular

The Vision Plan delineates an aerial tram route to efficiently transport visitors uphill to reach interior portions of the Zoo. A proposed aerial tram would transport visitors from *Zoo Entry*'s Zoo Orientation Plaza at the base of *California* to the Africa Visitors Center. Visitors would overlook the *World Aviary* and *Asia* planning areas during the journey. This service would be accessible for ADA guests and families with strollers. This service would permit quick access to Zoo animal facilities further from the entrance, allow families with strollers, the elderly, or physically impaired a transportation option beyond walking or the ground tram. The aerial tram would also provide visitors with unique views across the Zoo landscape and into Griffith Park and the surrounding communities. In addition, a funicular would take

guests from the entry plaza up the hill to the California Visitor Center, a 70-foot elevation change. Both the Zoo aerial tram and funicular would improve mobility within the Zoo and provide interesting experiences for visitors.



A 1,600-foot-long aerial tram would transport guests from the Zoo's entry plaza over the California vineyards and Asia exhibit to the Africa Visitor Center. Photo: Oakland Zoo; hoodline.com

The proposed aerial tram would consist of support structures ranging from approximately 50 to 80 feet high; a cable system; a lower terminal located approximately 50 feet from the Zoo Orientation Plaza, next to the Entry Plaza and funicular to the *California* planning area; and an upper terminal located at the proposed Africa Visitor Center. Each of the support structures would have a base that would be a maximum of approximately 12 feet by 12 feet in size. The aerial tram would travel west up the east-facing slope over a total length of approximately 1,600 feet. A total of 24 eight-passenger tram cars would be attached to the haul rope. The aerial tram would be capable of carrying approximately 1,500 passengers one-direction per hour. Level loading and unloading access would be provided for all the tram cars to offer guests an ADA-compliant aerial ride. The support structures and cars would be matte-finish and forest green color or other earth tone color. The support structures would not include any night lighting.

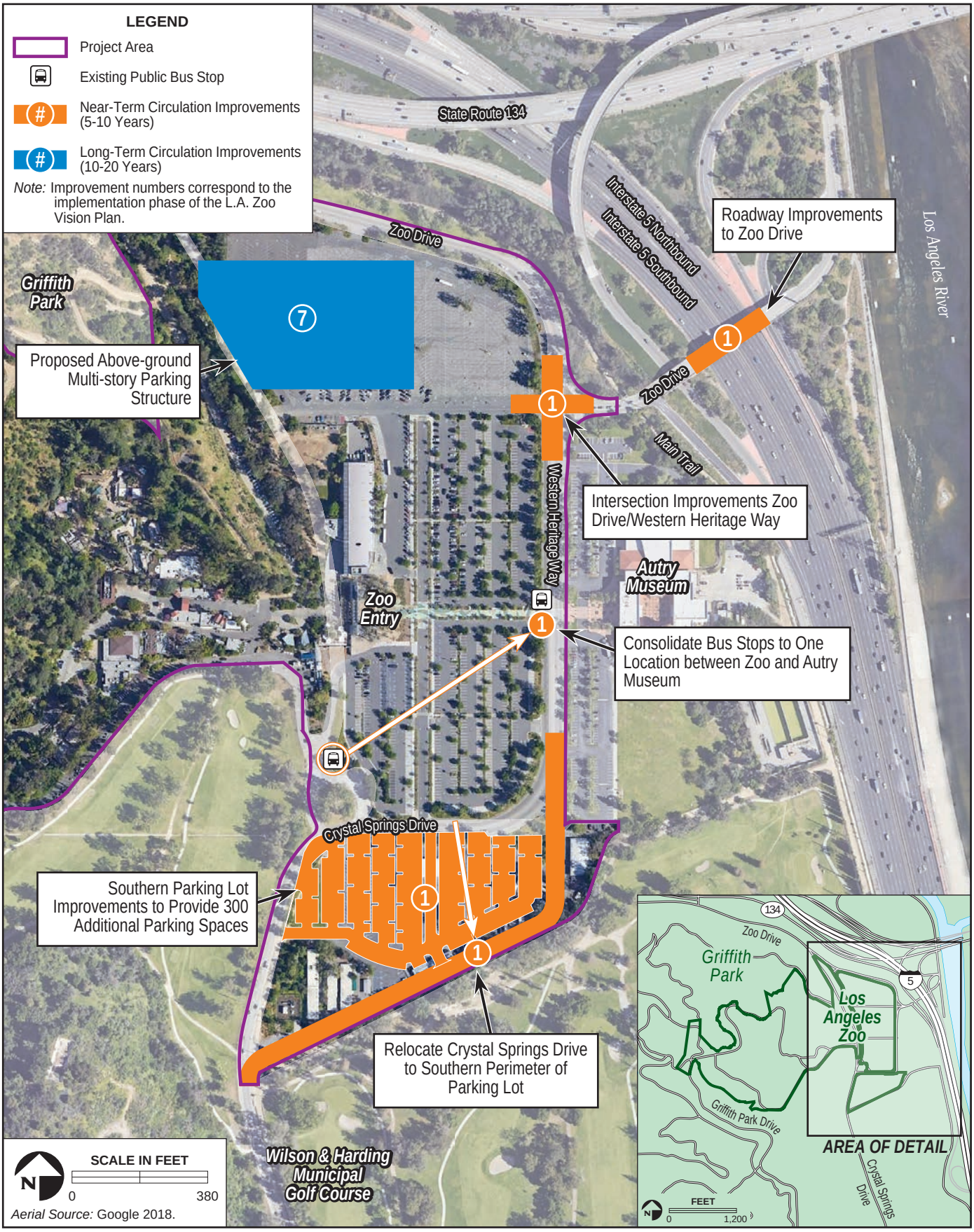
Roadway Improvements

The Vision Plan proposes both onsite and offsite roadway improvements to address internal parking lot circulation deficiencies and offsite vicinity congestion. Proposed offsite improvements at the intersection of Zoo Drive and Western Heritage Way would involve intersection signalization as an initial needed upgrade, but may also consider larger improvements to the intersection such as a below-grade bypass or a roundabout, to address peak backups and congestion on both I-5 and SR-134. The Project would signalize the Zoo Drive/Western Heritage Way intersection during Phase 1 and provide pedestrian crosswalks and walking signals to increase safety for bicycles, pedestrians, and equestrians crossing Zoo Drive. The Vision Plan also contemplates alternate long-term improvements to this intersection to address vehicular congestion, including a roundabout or grade separation of the intersection planned for Phase 7. The grade separation option would place the north-south movements below the east-west movements with connections by ramps. However, based on modeled future traffic conditions, at this time, intersection signalization would suffice to accommodate future vehicular traffic (see Section 3.15, *Transportation*). For the purposes of analysis, intersection signalization in the near-term and more extensive improvement of the intersection in the long-term is considered in the analysis of the Vision Plan in Section 3.0, *Environmental Impact Analysis and Mitigation.*

To address Zoo parking area circulation problems, Western Heritage Way/Crystal Springs Drive would be realigned to the southern perimeter of the parking lots for efficiency and safety, creating a unified guest parking lot, and reducing pedestrian street crossings (Figure 2-14). This would more strongly link existing parking slots and the North Hollywood High School Zoo Magnet Center to the main Zoo campus, eliminating the need for Zoo visitors to cross this busy street. This proposed road realignment would also allow the Zoo's southbound bus stop to be moved to Western Heritage Way between the Zoo and Autry Museum of the American West, improving the efficiency of public transportation access to these attractions. All such roadway improvements and realignments would require cooperation with Griffith Park, the Autry Museum, Los Angeles Department of Transportation, Caltrans, and other interested agencies and stakeholders.

Parking Improvements

The Vision Plan proposes to create a unified parking area to serve the Zoo through relocation of Crystal Springs Drive to the eastern perimeter of the existing parking lots. This change would eliminate the pedestrian crossing between the southern parking lot and the main parking lot. In addition, approximately 300 guest surface parking spaces would be added north and east of the North Hollywood High School Zoo Magnet Center through removal of existing uses and restriping of parking spaces, bringing Zoo parking to a total of 2,500 spaces. The Vision Plan also proposes eventual conversion over the long term (e.g., post 2035) of the western portion of the north parking lot to a multi-story above-ground parking structure, dependent upon demand, along with installation of a grass area park to provide picnic facilities adjacent to the parking lot. Although no conceptual plans are available, preliminary review indicates such a structure could be accomplished under two separate scenarios. The two scenarios for design of the parking structure would include: 1) a parking structure within a 3-acre footprint constructed entirely above ground, to a height of up to 5 stories; and 2) a parking structure within a 3-acre footprint with a maximum of 3 stories above ground and at least 2 stories below ground, if feasible. The first design option would also result in a much taller structure and involve less earthwork, while the second design option would result in a shorter structure but a much greater degree of construction and earthwork. Both options for design of the parking structure are considered in the analysis of the Vision Plan in Section 3.0, *Environmental Impact Analysis and Mitigation*.



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Los Angeles Zoo
Proposed Circulation Improvements

FIGURE 2-14

The Vision Plan also proposes dedicated staff parking lots located at the Gottlieb Animal Health and Conservation Center at the west end of the Zoo (92 spaces) and the Service Center building along the south perimeter (56 spaces) with a total of 148 employee parking spaces. Four interior service roads leading to the Gottlieb Animal Health and Conservation Center and three service roads leading to the Service Center building would provide employees easy access, allowing staff to park near their work area and maximize guest parking during peak demand.

Table 2-20. Proposed Parking Improvements

Phase	Parking Area	Estimated Spaces
1	Expanded Southern Parking Lot	300
3	Service Center	56
4	Gottlieb Animal Health and Conservation Center	92
7	North Lot Parking Structure	2,000

2.3.7 Proposed Utility Infrastructure

Staged utility and infrastructure improvements would be implemented over the 20-year project horizon to replace and upgrade aging systems, serve anticipated growth in visitation through the project horizon, substantially improve water and energy conservation, and reduce maintenance costs and resource demands. Such improvements are anticipated to include major upgrades to stormwater conveyance, onsite storage, and recycling through onsite treatment and retention, which would allow onsite reuse onsite or permit release of treated water to the Los Angeles River. Major electrical energy initiatives would include generation of substantial electrical energy onsite, installation of photovoltaic solar panels, increased efficiency through use of LEED construction, and visitor space environmental climate controls. The Vision Plan also proposes improvements to water delivery systems, wastewater collection, and new restrooms.

Water

Potable water would continue to be supplied from existing City infrastructure, which would be connected to new water mains and pipelines installed throughout the Zoo campus during each phase of Vision Plan implementation. Within the Zoo, water mains would be installed beneath service roads for efficient

A large portion of water consumption at the Zoo is due to draining of water tanks within animal spaces.

maintenance capabilities without interruption to pedestrian circulation or animal facilities. Main lines would distribute potable water to the Zoo's kitchens, utility service sink rooms, restrooms, and select animal facilities (e.g., elephant Splash Area). A water meter is proposed at the point of connection to the public main at the Gottlieb Animal Health and Conservation Center at the west end of the Zoo. Service lines to animal facilities and dining and restroom facilities would connect to the Zoo's proposed new 8-inch water main. The fire suppression water system would share the water main routed along Zoo service roads and connect to the public mains within the southern Zoo perimeter road. The Zoo's internal water main system would be protected at each connection to the public system with a double detector check assembly. Similar to existing conditions, fire hydrants would be located adjacent to service roadways and spacing would be no greater than 500 feet.

As previously mentioned, recycled water use is currently limited to irrigation of landscaping in the Zoo parking lot; however, City-sourced recycled water is available throughout Griffith Park and potential exists for development of a recycled water system for use within restrooms, animal space/treatment systems (i.e., ponds, aesthetics, etc.), washdown of animal holding areas, power-washing walkways, and irrigation of landscaping within the Zoo. Proposed conservation measures, recycling of tank water and capture and reuse of storm runoff would substantially decrease the Zoo's consumption of potable water (see Section 3.16, *Utilities*). The point of connection to the City's water recycling system would be at the existing recycled water main at the west end of the Zoo parking lot, which would convey irrigation water to landscaped areas within the Zoo campus.

Wastewater

Wastewater generated within the Project area would be conveyed to an existing City sewer main along Western Heritage Way. Site topography would allow for gravity flow of wastewater to the east, downhill from Condor East towards the guest parking lot. Within the Project area, public sewer mains would run beneath the proposed service roads to restroom facilities. Future wastewater generation would increase due to addition of a new employees, as well as an increase of approximately 1.2 million annual visitors. Wastewater would continue to be treated at the 20-MGD reclamation plant, then recharged into the underlying Glendale Narrows, which conveys the Los Angeles River in the vicinity of the Zoo.

Energy

Growth in visitation and new development proposed under the Vision Plan could substantially increase Zoo power demand. However, consistent with the goals of the City' *Sustainable City pLAn*, the Vision Plan proposes use of LEED Silver construction techniques to reduce power demand. In addition to the LADWP's independent solar installation project[2]

[2] LADWP is currently pursuing plans to install approximately 163,000 sf of solar panels at the Zoo, including 149,000 sf of solar panels on carports in the Zoo's north parking lot and 14,000 sf of solar panels on rooftops within the Zoo entry. This separate project would be completed prior to commencement of the proposed Project.

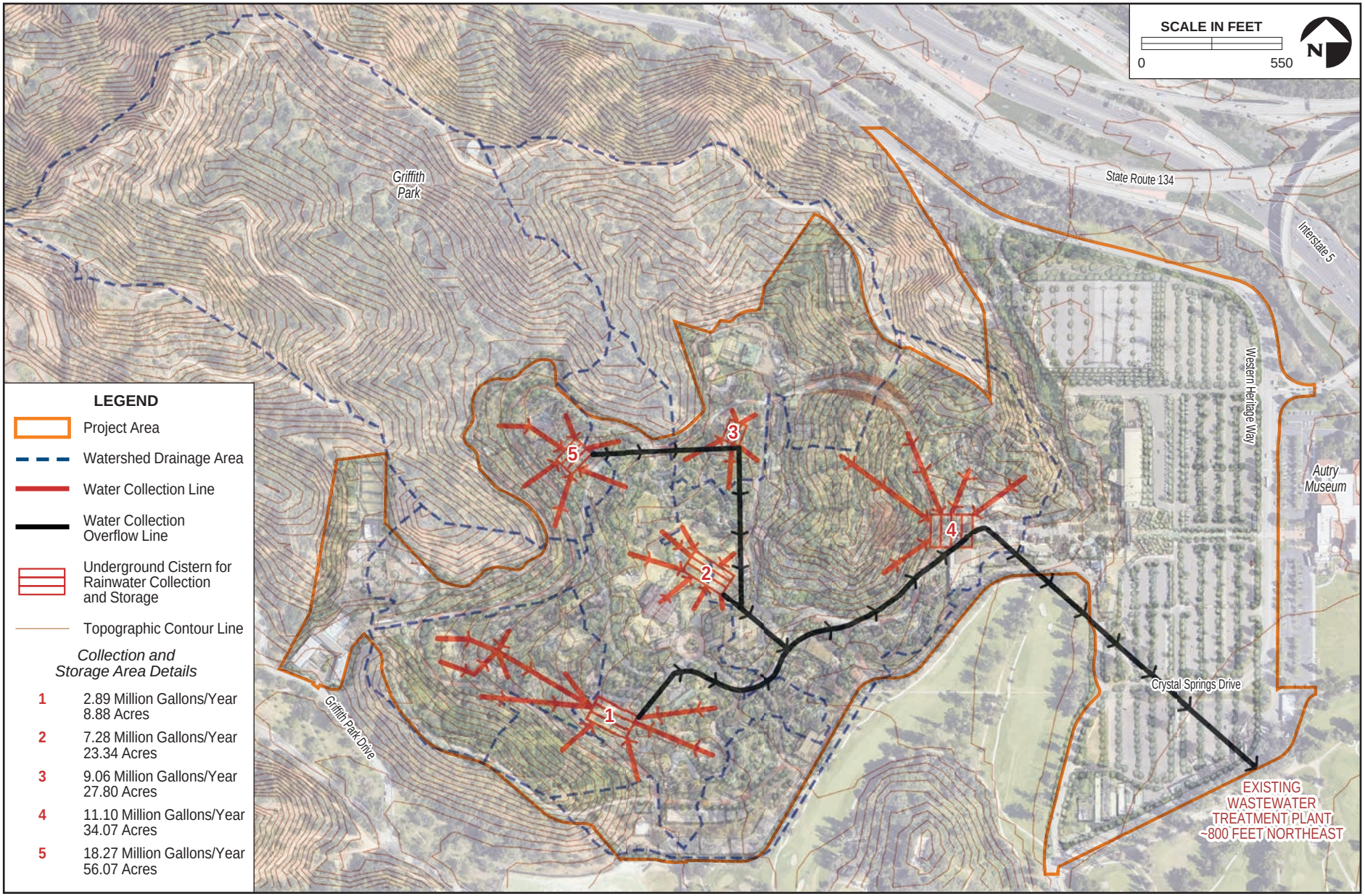
(separate from the proposed Project), the Vision Plan would include installation of up to 70,000 sf (1.6 acres) of solar panels on several buildings and structures throughout the Zoo campus. The Zoo's entire photovoltaic system would cover approximately 232,000 sf of rooftops and produce up to 50 percent of the Zoo's total energy use in 2016, or a substantial portion of the increases in power demand. Additional improvements across all phases include the installation of electronic communications lines to automatically control animal facility utilities and environmental conditions, further reducing power potential future demand.

Stormwater

Five subsurface cisterns would collect and treat runoff for reuse within the Zoo.

The Vision Plan proposes the closure and abandonment of the existing stormwater system in place to allow major new stormwater improvements, including a new system of storm drain inlets, storm drain lines, and underground storage systems to capture, treat, retain, and reuse stormwater runoff from paved surfaces. Recently completed improvements to Zoo parking areas exemplify the proposed approach and include permeable paving and bio-retention cells as best management practices (BMPs) for storm water capture. In addition to such measures, the Vision Plan also proposes use of five subsurface cisterns (i.e., underground reservoirs) within different Zoo drainage areas to store capture runoff. The cisterns would range in capacity from 2.89 million gallons per year (mg/yr) to 18.27 mg/yr (Figure 2-15).

- Area 1 would encompass a drainage area of 8.88 acres beneath the *Africa* exhibit and would collect approximately 2.89 mg/yr.
- Area 2 would encompass a drainage area of 22.34 acres across a majority of *Asia* and would collect approximately 7.28 mg/yr within a centralized collection cistern.
- Area 3 covers the northern portion of the Zoo, including Condor Canyon and the *Bird Show and Animal Programs* amphitheater, and surrounding foothills and would drain approximately 9.06 mg/yr for a total of 27.8 acres.
- Area 4, underlying the *Zoo Entry* and *California*, would collect 11.10 mg/yr within a drainage area of 34.07 acres.
- Area 5 would be the largest drainage area at 56.07 acres, encompassing the *Nature Play Park* and neighboring hill sides, and would collect approximately 18.27 mg/yr.



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Los Angeles Zoo
Proposed Stormwater Management Plan

FIGURE 2-15

Stormwater water collection lines would branch from each underground cistern to collect stormwater from drains throughout each watershed. These large subsurface cisterns would allow large volumes of stormwater runoff to be retained onsite and be infiltrated into the ground, treated and pumped out for use later or released to Los Angeles River. During periods of heavy rainfall, a large water collection line connecting to each subsurface cistern would carry overflow directly to the Los Angeles-Glendale Water Reclamation Plant. The use of these storage tanks would retain and reuse an estimated 80 percent of all rainfall on the Zoo's site and is projected to provide the Zoo with 149 acre-feet of useable water per year, consistent with the goals of the City's One Water L.A. plan.

Solid Waste

The Vision Plan includes provisions for new enclosures for trash, recycling, and food waste materials to serve visitor and employee uses. The Zoo would manage trash and recycling generated by animal care, dining facilities, restrooms, and other visitor-serving facilities within the campus. Solid waste would be collected from a centralized facility at Service Center at minimum once per week. Zoo staff would continue to collect and transport trash to Sunshine Canyon Landfill. The City's Bureau of Sanitation would collect all recyclable materials from the Service Center. Animal bedding and waste from hoofed stock and other herbivores would continue to be taken to the Griffith Park Composting Facility every morning. All other bedding and waste would be transported to the landfill.

Communications

A complete underground conduits infrastructure, including telephone, data, intercom, public address system, fire alarm mass evacuation system, and energy management system would be provided by installing a loop of underground conduits around the Zoo with precast pull boxes to stub out connections to buildings and habitat areas. Wifi and audio systems for events would also be provided throughout the Zoo campus.

2.3.8 Proposed Vegetation & Landscaping

The Vision Plan would entail major improvements to Zoo landscaping and habitats over the 20-year project horizon. Zoo botanical collections and gardens would be protected and enhanced to the extent feasible. New landscaping and vegetation appropriate to each habitat would be installed, maintaining and expanding the Zoos tree canopy and urban forest to enhance animal welfare and the visitor experience such as provision of shade in key locations. Healthy and desirable tree species would be retained wherever possible and hundreds of new trees planted. However, in areas where major grading and animal facility expansion would occur such as *California* and *Africa*, hundreds of trees, including some native oaks and chaparral vegetation, as well as a much larger number of nonnative specimens such as eucalyptus, could be removed over the 20-year construction period. Problematic trees such as eucalyptus species would be removed due to potential hazards to visitors and wildlife associated with potential tree fall or dropping branches. To date, broad landscaping concepts

and urban forest/tree canopy management goals have been established, but the Zoo is also a Botanical Garden and as such, preservation and expansion of its botanical collections, landscaping, and forest canopy is central to Zoo goals.

The Project would develop approximately 22 acres of undeveloped areas within the Zoo, as well as major renovations, building demolitions, and animal space and facility expansion and enhancements throughout developed portions. Such development would require the removal and/or relocation of hundreds of mature trees over 20 years.

The Zoo features lush vegetation to highlight plant species within the botanical gardens, provide essential habitat for animal facilities, and eliminate views of service areas. The Zoo would maintain its urban tree canopy and expand arboretum spaces, while removing problem trees and those necessary to accommodate essential proposed development.

Substantial new landscaping and hundreds of new trees would be installed for each phase of the Project. Vegetation proposed for the *California* exhibit would focus on native trees and plant species endemic to the state, including oak, desert willow, California sagebrush, and coyote brush, but include iconic California introduced vegetation such as a proposed vineyard and fruit orchard. A mix of landscaping and vegetation would fill the *Africa* exhibit for each of the proposed ecoregions. A mix of grassland, shrubs, and isolated trees cover the savanna and riparian species would buffer the riverine corridor. Tall trees would be planted in the forest ecoregion, including a mix of species native to *Africa* as well as some ornamentals that would be suitable for southern California's climate. Similarly, the *Asia* exhibit would include a mix of ornamentals and plants native to Thailand, China, Cambodia, and other Asian countries. The *Islands* exhibit would feature plants native to Australia, such as the Victorian box tree and eucalyptus. Similar to the existing Rainforest of the Americas, *Rainforest* would be comprised of colorful and tropical plants that would support animals of the rainforest.

2.3.9 Project Operation

Annual Attendance Projections

Vision Plan implementation and improved animal facilities, visitor experience, and new visitor-serving facilities (e.g., event rental spaces), is projected to substantially increase visitation over the 20-year planning horizon (AECOM 2017). Approximately 2.5 million visitors per year would visit the Zoo beginning in 2034, based on projections based on

attendees per acre. For the purposes of this EIR, population is projected to increase to a total of 3.0 million to account for regional population growth and expansion of Zoo programming and events. Based upon recent and historic trends in Zoo attendance and planned facility improvements, the proposed Project is estimated to increase annual Zoo attendance by 1,256,200 visitors or by 72 percent (Table 2-21).

Table 2-21. Projected Growth at the Zoo

	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6	Phase 7
Estimated Operational Year	2025	2027	2030	2032	2034	2037	2040
Annual Attendance	2,218,025	2,432,678	2,808,150	2,943,765	3,000,000	3,000,000	3,000,000
% Change in Annual Attendance	*27.2%*	*12.3%*	*21.5%*	*7.8%*	*3.2%*	*0.0%*	*0.0%*
Visitor Origin							
Resident	*85%*	*85%*	*80%*	*80%*	*80%*	*80%*	*80%*
Tourist	*15%*	*15%*	*20%*	*20%*	*20%*	*20%*	*20%*

Source: Draft Los Angeles Zoo Vision Plan ; AECOM 2017; Appendix A
Notes: The proposed Project would be implemented in seven phases over 20 years, likely starting in 2022. However, for the purposes of the environmental analysis, the EIR discusses Project implementation beginning in 2020 and full buildout in 2040, consistent with the Draft Vision Plan phasing plan.
Baseline annual attendance = 1,743,800 (2017) per Draft Vision Plan
Phase 1 combines growth projected by the AECOM Financial Feasibility Study for Circulation/Parking improvements, California, Zoo Entry and Sea Lions (Phase 1 and 2 per the Draft Vision Plan)
Phase 2 assumes growth projections for Asia, Nature Play, and Rainforest (Phase 4 in the Draft Vision Plan)
Phase 3 assumes growth projections for Africa and southern service area (Phase 3 in Draft Vision Plan)
Phase 4 assumes growth projections for World Aviary (Phase 5 in Draft Vision Plan, and formerly included the Water exhibit, which was eliminated from the Project through EIR scoping)
Phase 5 assumes growth projections for Islands (Phase 6 in the Draft Vision Plan)
Phases 6 and 7 does not incite or facilitate attendance growth
Visitor Origin assumes uptick in tourism following implementation of Phase 2 and the 2028 Summer Olympics.

Historic attendance at the Zoo has been relatively stable over the last 20 years until the recent addition of the L.A. Zoo Lights in 2014, which resulted in spikes of the visitation during the winter months.

Visitor-Serving Uses & Special Events

The Project would include substantial improvement to and expansion of visitor-serving facilities, particularly event rental space, broadening Zoo attractions and supporting increased attendance and an expansion of special events. These in turn would meet Zoo goals to become a world class Zoo and destination. The proposed improvements and expansion would provide increased revenues to support Zoo conservation, learning, and engagement programs, development, operations, and maintenance. Overall visitor-serving space would increase by 58,800 sf in 2034 with the development of three visitor centers. Major visitor-serving improvements would include reconstruction of the iconic spires for the new Treetops Visitor Center and construction of major new visitor centers in *California* and *Africa*, with new restaurants, classrooms, and event spaces. Three additional visitor service areas, including the *Nature Play Park*, Rainforest Interpretive Center, and gift shop, are proposed as part of Vision Plan implementation. Expansion of the gift shop at the Zoo's entry would provide additional retail at the Zoo. With these venues and services, the Zoo could support and accommodate increases in educational programs, weddings, private corporate or civic events, birthday parties, and other private events. By 2034 (Phase 5 of the Vision Plan), the Zoo is projected to host an average of 210 events per year, including birthday parties, company picnics, evening events, and walks.

Service Operations and Employment

Development under the Vision Plan would result in substantial changes and improvements to service operations at the Zoo, including consolidation of service and "back of house" facilities, expanded retail and event facilities. Specialized and improved animal facilities with different service needs and changes in operations such as reuse or treatment of tank water, recycled water and stormwater recapture would also change operations, with these improvements all affecting Zoo employment.

A major change in operations would include construction of a new 6.1-acre service area at the southern perimeter of the Zoo. This new dedicated service area would expand the total service area within the Zoo from 8,000 to 56,000 sf, including employee services, maintenance, animal space fabrication, and other support facilities. To facilitate deliveries by large trucks and improve efficiency, the new service center would include improved roadway access and two new 160 radius turn around locations for larger trucks. In addition, the Condor West animal facility would receive two new aviaries along with a new conservation/classroom building. Immediately south of Condor West, the existing construction services area would be renovated to include an approximately 21,500-sf animal feed storage and commissary operations structure, employee parking, and delivery truck access. This area is planned to support future "behind the scenes" tours at the Zoo. During project construction, the Zoo would experience an increase in deliveries for construction materials and equipment in addition to the regular deliveries for food and animal care supplies. Following implementation of the Vision Plan, an estimated three additional deliveries per week for

animal care materials and an additional two deliveries per week for food and beverage supplies for visitors would be expected.

Expansion of Zoo facilities set forth under the Vision Plan is projected to increase employment at the Zoo, including new City, concessionaire, and GLAZA full and part time employees. Proposed dining, retail, event facilities, and programs within the Zoo would all result in increased employment opportunities. Over the 20-year horizon of Vision Plan implementation, the Zoo may hire up to an additional 531 full-time and part-time employees in the areas of animal care, administration, grounds maintenance, construction, admissions, learning and engagement, public relations, concessions, fund raising, membership services, publications, and special events.

2.4 VISION PLAN IMPLEMENTATION

During construction, the Zoo will remain open during normal operational times. The proposed Project would be implemented in seven phases over 20 years, likely starting in 2022. However, for the purposes of the environmental analysis, the EIR discusses Project implementation beginning in 2020 and completing in 2040, consistent with the Draft Vision Plan. Adjustments to the construction timing estimated in the Vision Plan would have negligible effects on the extent and range of Project impacts analyzed in the Program EIR. Phased development would allow continued visitation and to support animal care services during development of the proposed improvements. The Zoo would remain open and operational during the construction for each phase of the Project, but guest access would be prohibited to areas under construction. Pre-planning, permitting, and mobilization for each phase would overlap with construction of previous phases. For example, planning and mobilization of the *Africa* planning area and Service Center under Phase 3 would commence prior to the completion of the proposed *Asia* and *Nature Play Park* planning areas under Phase 2. There would be no overlap in construction of the proposed phases.

At the time of construction, each phase would be subject to permit review to ensure conformity with the City's General Plan and consistency with applicable regulations. Each phase would include specifications to address the development activities to be performed during the phase and define specific mitigation measures and best management practices (BMPs) that would apply.

2.4.1 Phasing & Implementation

The proposed Vision Plan would be implemented through seven phases of development in different areas of the Zoo (Figure 2-16). Phases of Zoo development would occur sequentially. All phases would be guided by the Vision Plan's guiding principles (see Sections 2.3.2, *Project Objectives*, and Section 2.3.3, *Vision Plan Guiding Principles*). For the purposes of this EIR, Phases 1, 2, and 3 are near-term improvements (within 10 years) and would be completed by 2030 (see Table 2-22).

Table 2-22. Phases 1 - 3: Near-Term Project Components

Phase	Project Components
1	**Zoo Entry** • Excavation of outdated utility lines • Install utility trunk lines at the Zoo entry • Grade entry corridor at 5 percent slope or less • Construct a new gift shop, security and first aid center, public programming space, restaurant, and administration buildings • Construction main ground tram station • Expand Sea Life Cliffs • Install water collection lines for subsurface cisterns • Landscaping at entrance (e.g., citrus grove) and around buildings
	California Planning Area • Demolish existing buildings (e.g., Children's Zoo) • Excavate Condor Canyon • Construct California Condor Rescue Zone • Construct expanded animal facilities • Construct new California Visitor Center with funicular • Install lower terminal for aerial tram and associated infrastructure • Install new vegetation, including active vineyard
	Circulation and Parking • Install signal at the intersection of I-5 and Western Heritage Way • Demolish Zoo planning trailer in the southern parking lot • Grading and reconfiguration of Crystal Springs Road • Repave lot and paint parking space lines to add 300 additional parking spaces
2	**Asia Planning Area** • Demolish existing outdated buildings and animal facilities • Expand elephant space • Construct the Asian Forest with lagoon and island • Renovate and expand existing animal facilities and habitats • Install new underwater viewing for tiger and gharial spaces and new water elements • Grade and construct new pathways with neighboring animal facilities (e.g., *Islands* and *Nature Play Park*) • Reconstruct Treetops Visitor Center into restaurant/event center • Install Splash Area • Install needed aerial tram infrastructure
	Rainforest Planning Area • Demolish existing Zoopendous Park • Construct a new Rainforest Interpretive Center • Construct expanded animal facilities • Construct restaurant and restrooms • Install new vegetation, including dense rainforest trees

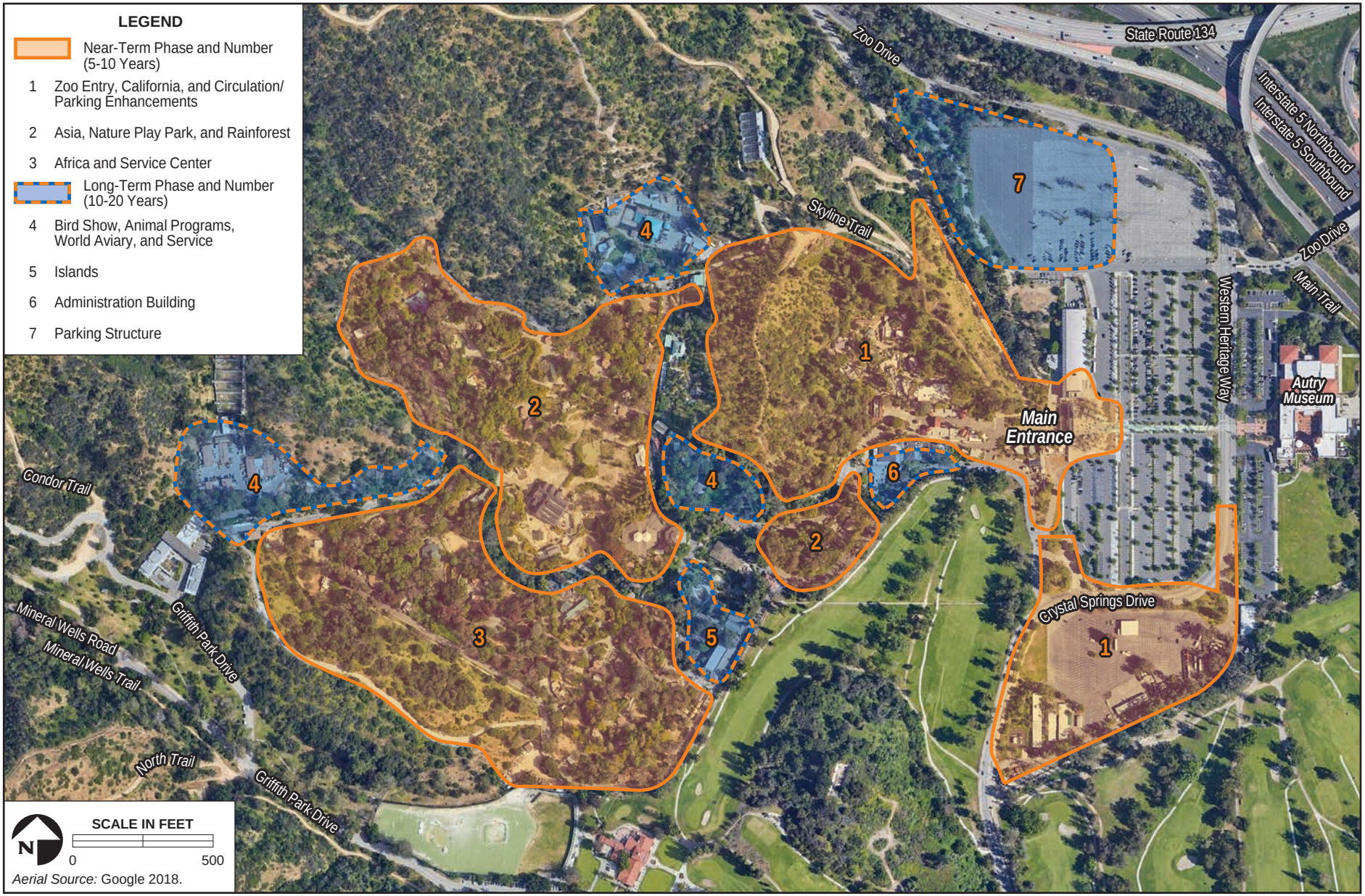
Table 2-22. Phases 1 - 3: Near-Term Project Components (Continued)

Phase	Project Components
	Nature Play Park • Relocate and renovate existing natural play area • Construct a new restaurant with deck and terrace • Construct new restrooms
3	**Africa Planning Area** • Demolish existing outdated buildings and animal facilities • Excavate hillside for development • Construct the Africa Visitor Center • Construct expanded animal facilities and habitats • Install a manmade river • Install aerial tram
	Service Areas • Demolish outdated North America animal facility buildings • Construct a new service area to include: • Paint 56 new employee parking spaces

The Vision Plan also includes several long-term elements (10 – 20 years), including conceptual development plans for Phases 4, 5, 6, and 7 that are expected to be implemented through the Vision Plan's horizon (2040). These later Project phases have not been developed to the point where design details are complete. Additional design details for Phases 4 through 7 are expected to be developed as funding and planning become available (see Table 2-23).

Table 2-23. Phases 4 - 7: Long-term Project Components

Phase	Project Components
4	**World Aviary Planning Area** • Renovate the existing aviary to meet ADA requirements • Construct a new bird rearing complex • Construct new roads connecting to *Rainforest* and *California*
	Bird Show and Animal Programs • Renovate the existing amphitheater area with shade structures • Construct specialized animal care facilities • Renovate service space behind amphitheater for operations
	Service Areas (Condor West) • Construct two aviaries and one new conservation/classroom building at the Condor West animal facility • Create a new animal feed storage and commissary operations structure • Reconfigure truck access to the construction services area • Repaint 92 employee parking spaces
5	**Islands** • Renovate and expand the existing Australia House • Install new pathways and landscaping
6	**Administration Building** • Construct a new Administration Building
7	**Parking Structure and Zoo Drive Intersection Improvements** • Excavation and grading • Construct multi-level parking structure and further intersection improvements (if needed) • Install adjacent public park • Replacement of signalized intersection at Zoo Drive/Western Heritage Way with either a roundabout or sub-grade bypass, if needed.



wood.

Los Angeles Zoo
Project Phasing

FIGURE
2-16

2.4.2 Construction Activities

The Vision Plan defines a 20-year development program encompassing most of the Zoo campus in seven phases. As a long-range planning document, the Vision Plan does not include fully developed construction details. The discussion provided below has been compiled by the EIR team in consultation with Zoo staff, Vision Plan authors and technical team, and the City of Los Angeles Bureau of Engineering. Construction details are provided to support impact analyses and help guide the Zoo as it formulates a more detailed construction program. These estimates are conservative to provide a reasonable worst-case analysis of construction-related impacts (e.g., grading volumes, tree removal etc.) and will be refined throughout the approval process to provide the best possible description of Project construction details.

Each phase of the Project would generally entail the following stages: pre-construction design and permitting; demolition and grading; site preparation (including installation of utilities and stormwater infrastructure); construction; architectural coatings/finishing; and final landscaping. Each phase would also require temporary relocation of Zoo animals displaced during construction (see Section 2.2.3, *Existing Zoo Operations* for the Zoo's Animal Welfare Best Management Practices). Accommodations for the Zoo animals would be developed during the planning process for each phase and details would be included in final construction plans. Building construction, paving, and architectural coating activities would occur within each phase, sequentially. A list of equipment anticipated to be used during these activities can be found in Table 2-24.

Table 2-24. List of Construction Equipment

Typical Construction Equipment	
Backhoe	Grader
Boom Lift	Loader
Compactor (Roller)	Miscellaneous Small Tools
Concrete Pump (Tow)	Office Trailers
Concrete Truck	Paving Machine
Crane	Scaffolding
Dozer	Scissor Lift
Dump Truck	Scraper
Electric Man Lift	Sheepsfoot
Excavator	Skip Loader
Flatbed Truck	Tractor
Forklift	Water truck
Pile driver	Jackhammer

Site Preparation, Demolition, and Grading

Site preparation for each phase would be performed through grading along proposed circulation routes, building and exhibit pads, and installation of onsite utilities. Mobilization

and staging of earth moving equipment would be required to bring the site and building pads to engineered elevations. During grading operations, standard dust control and construction runoff BMPs would be implemented. During mass grading activities, erosion control, sediment barriers and temporary sediment basins would be constructed to minimize the extent of construction site impacts to the Los Angeles River corridor. Additional requirements would be specified in detail during the design of final engineered drawings prior to issuance of grading permits. Cut and fill estimates for each phase are provided in Table 2-25. Activities would include but not be limited to:

- Demolition of structures to be removed (i.e., Children's Zoo, marine animal facilities, African mixed animal facilities, Zoo construction buildings, etc.);
- Renovation of the existing buildings such as the Australia House and the California Condor Rescue Zone as an expanded administration building;
- Removal of underground stormwater conveyance facilities, water, wastewater and energy utilities;
- Full mobilization and set up of onsite construction temporary facilities;
- Potential blasting of bedrock and excavation within the undeveloped hillside for the new Condor Canyon;
- Movement, placement, and compaction of stockpiled soils;
- Over-excavation and recompaction of soils at building pads;
- Pile driving for aerial tram footings and potentially hillside building foundations;
- Coordination of loading and trucking activities, truck routes, import and export sites;
- Delivery, staging, and storing of materials;
- Planning for accommodations for visitors and animals;
- Trenching and installation of utilities (water, sewer, storm drain, natural gas, electric, telephone, cable television, and irrigation lines);
- Environmental monitoring, including fugitive dust control and implementation and monitoring of construction storm water runoff; and
- Monitoring and recording of BMPs.

Most Project components would require some localized cut of the land and placement of that cut into fill areas within the phase; therefore, stockpiling of soils would occur onsite. However, approximately 26,000 cubic yards (cy) of soils from the undeveloped hillside west of the Zoo's entry would require export to allow development of Condor Canyon, as only minimal fill is required for other proposed development within the Zoo (Table 2-25). Note that all grading estimates are approximate and will be finalized following Project approval during the final design, engineering, and building processes in the City for each phase of Project implementation. This EIR assumes mass grading to estimate need for heavy haul trucking and earthmoving equipment.

Table 2-25. Project Grading Estimates by Phase

Phase	Cut (cy)	Fill (cy)	Export/Import (cy)
1	74,000	0	74,000 (export/stockpile)
2	0	0	0
3	0	10,000	10,000 (import/stockpile)
4-7	0	38,000	38,000 (import/stockpile)
Grading Total	74,000	48,000	26,000 (net export)

Phased implementation of the Project would also involve extensive ground disturbance within existing developed portions of the Zoo. While detailed construction plans are not yet available, the following construction assumptions related to soil disturbance and excavation to depths are anticipated:

- Condor Canyon in the California planning area could require excavation up to 60 feet below ground surface.
- Aerial tram footings and/or foundations could extend up to 30 feet below ground surface, cover approximately 100 sf to 200 sf, and may require pile driving. The aerial tram alignment could require this scale of ground disturbance in the Zoo Entry, California, World Aviary, Asia, and Africa planning areas.
- The California Visitor Center, Treetops Visitor Center, and Africa Visitor Center would require foundation and/or footings extending 20 feet to 30 feet below ground surface. Treetops Visitor Center would include a subterranean level to support a restaurant and service facilities. Given existing topography, the California Visitor Center would require hillside cuts with footings that may require pile driving.
- Five underground stormwater cisterns proposed for the Zoo Entry, Asia, Rainforest, and Africa would require excavation up to 20 feet below ground surface. Installation of stormwater pipes and infrastructure within 4 feet to 10 feet below ground surface would occur throughout these planning areas, and the overflow line would disturb soils beneath the existing southern surface parking lot to connect to the Zoo's existing wastewater treatment plant.
- Proposed transportation improvements in Phase 1 would include improvements to Zoo Drive and Western Heritage Way, which may require excavation approximately 30 feet below ground surface to lower the grade and install a bridge/overpass. The proposed 2,000-space parking structure in the northern surface parking lot is envisioned to have all levels above ground; however, in case a subterranean structure is contemplated, this analysis assumes the parking structure may require excavation up to 30 feet below ground surface.

Infrastructure Improvements

The construction of infrastructure would include installation of underground site utilities (e.g., five subsurface stormwater cisterns), precise site grading, paving of roads, and deep pile driving of supporting foundations for aerial tram infrastructure. Infrastructure

improvements would occur along roadways service roads to avoid conflict with pedestrian circulation and visitor-serving uses. Adjacent roadway segments and animal facilities may experience closures during construction phases. All work would be subject to traffic control, pedestrian and animal protection, and notification. Project traffic control and pedestrian re-routing plans would be revised to reflect the changing conditions during construction.

Underground site utilities would be connected to the existing utility infrastructure and precise grading, concrete, underground utility work, and paving would be performed onsite. Work would take place primarily within the Zoo entrance and along service roads. Activities would include, but not be limited to:

- Trenching for underground wet and dry utilities;
- Precise grading and compaction of soils for roadways and new structures;
- Precise grading for curb and gutter installation;
- Installation of concrete curb, gutter, and site concrete;
- Trenching, installation, and roadway repair for underground wet and dry utilities along service roads;
- Lighting and landscaping of roadways and medians;
- Reconfiguration of Crystal Springs Drive;
- Traffic control and lane closures on an intermittent basis;
- Road striping and signage work;
- Intersection installation with signal at I-5 and Western Heritage Way; and
- Installation of the proposed five underground stormwater collection cisterns and the connecting water collection lines.

Building Construction

Construction would occur concurrently at multiple locations within the Vision Plan area based on Project phasing (Figure 2-16). Building construction would involve foundation, framing, roofing, interior and exterior finishes, architectural coatings, and landscaping.

2.5 REQUIRED ACTIONS AND APPROVALS

The City is the CEQA Lead Agency for the proposed Project, consistent with CEQA Guidelines Section 15065(b). As such, this EIR will be used by the City to both evaluate the potential Project environmental impacts and develop conditions of approval and adopt mitigation measures. The City Council will consider adoption of the proposed Project concurrently with certification of the Final EIR. Pursuant to CEQA Guidelines Section 15093, the decision-makers must "balance, as applicable, the economic, legal, social, technological, or other benefits of a proposed project against its unavoidable environmental risks when determining whether to approve the project. If the specific economic, legal, social, technological, or other benefits of a proposal project outweigh the unavoidable adverse environmental effects, the adverse environmental effects may be considered "acceptable." If the City, as Lead Agency,

approves the proposed Vision Plan, a statement of overriding considerations must be written, which shall state the specific reasons to support its action based on the Final EIR and/or other information in the administrative record for the environmental review process.

Project approval would require the following actions by the City Council, with recommendation from the Central Area Planning Commission:

- Vision Plan adoptions;
- Certification of the Final EIR; and
- Consideration and approval of a Findings and a Statement of Overriding Considerations, as necessary.

Following adoptions, the following permits and approvals identified in Table 2-26 would also likely be required to construct the proposed Project.

Table 2-26. Responsible Agencies and Anticipated Permits, Approvals, or Consultation

Responsible Agency	Anticipated Permits, Approvals, and Related Issues
State Agencies	
Department of Toxic Substances Control	Any applicable permits for remediation or installation of hazardous material storage facilities (e.g., fuel tanks)
California State Historic Preservation Office	Section 106 consultation for any potential adverse effects to historic resources
California Department of Transportation (Caltrans)	Potential permit for roadway improvements, and any additional applicable permits
Regional Agencies	
Regional Water Quality Control Board (RWQCB)	National Pollutant Discharge Elimination System (NPDES) Construction General Permit
Los Angeles County Metropolitan Transit Authority (L.A. Metro)	Any applicable permits and coordination related to public transit and adjacent facilities
Los Angeles County Fire Department	Consultation on any site remediation plans or emergency access issues
Local Agencies	
Los Angeles City Council	Project approval and certification of EIR
City of Los Angeles Recreation and Parks Department	Coordination with the Recreation and Parks Department, which is responsible for operation and maintenance of portions of Griffith Park
City of Los Angeles Planning Department	Approval of changes to street designations, building permits, and entitlements Any applicable permits
Los Angeles Sanitation	Low Impact Development (LID) Compliance, system design coordination (if applicable), system design approval (if applicable), and maintenance of a portion of stormwater infrastructure (if applicable)
City of Los Angeles Fire Department	Any applicable permits and coordination related to emergency access
City of Los Angeles Department of Transportation (LADOT)	Traffic management plans and roadway design issues consultation
City of Los Angeles Department of Building and Safety	Any applicable permits (e.g., building and grading permits)
Los Angeles Zoo Board	Advisory to the Mayor and City Council

3.0 ENVIRONMENTAL IMPACT ANALYSIS AND MITIGATION

This section of the Environmental Impact Report (EIR) addresses the potential environmental impacts of the proposed Los Angeles Zoo Vision Plan (Vision Plan). The EIR addresses potential impacts that could result from the construction and operation of uses and development anticipated to occur with implementation of the Vision Plan (proposed Project). The proposed Vision Plan would guide Zoo development and operations for the next 20 years, establishing a phased development program and guidelines.

3.0.1 Environmental Resources Analyzed in the Environmental Impact Report

The scope of this EIR is based on the Project Description in Section 2.0 and the Notice of Preparation (NOP) (Appendix B), focusing on potentially significant impacts of the proposed Project on environmental resources. This section evaluates the potential for environmental impacts on the following resource areas:

Section 3.1, Aesthetics and Visual Resources
Section 3.2, Air Quality
Section 3.3, Biological Resources
Section 3.4, Cultural and Tribal Resources
Section 3.5, Energy
Section 3.6, Urban Forestry Resources
Section 3.7, Geology and Soils
Section 3.8, Greenhouse Gas Emissions
Section 3.9, Hazards and Hazardous Materials
Section 3.10, Hydrology and Water Quality
Section 3.11, Land Use and Planning
Section 3.12, Noise and Vibration
Section 3.13, Public Services
Section 3.14, Recreation Resources
Section 3.15, Transportation
Section 3.16, Utilities
Section 3.17, Wildfire
Section 3.18, Cumulative Impacts

Sections 3.1 through 3.18 provide detailed discussions of the regulatory setting and environmental baseline or setting, methodology for impact assessment for the resource, impacts associated with implementation of the near-term and long-term improvements proposed under the Vision Plan, and mitigation measures designed to reduce significant impacts where required and when feasible. The level of impact that will remain after mitigation is implemented is discussed.

3.0.2 Organization of Environmental Impact Analysis

Each section addresses an environmental resource area. Each environmental resource section addresses the Project under the following subsections; for resource areas where unique or supplementary information is available, additional subsections are provided section to section:

- **Introduction.** Introduces the environmental resource and provides a general approach to the assessment.
    - **Environmental Setting**. A description of the applicable regulatory framework associated with the environmental topic and applicable to the proposed Project,

followed by the existing environmental setting, or baseline conditions, against which the proposed Project's environmental impacts are analyzed;

- **Impact Assessment Methodology**. A list of the impact significance thresholds and criteria applicable to the environmental topic and a description of the methodology employed in the impact analysis. The criterion or threshold for a given environmental effect is the level at which the City finds the effect to be significant. The significance criteria can be a quantitative or qualitative standard, or set of criteria, pursuant to which the significance of a given environmental effect may be determined. (State CEQA Guidelines, Section 15064.7);
- **Environmental Impacts Analysis**. An analysis of the proposed Project impacts relative to the applicable thresholds of significance used to determine whether the proposed Project would have a significant effect on the environmental resource being addressed;
- **Mitigation Measures**. Measures necessary to reduce potentially significant project impacts; and
- **Impacts Summary**. Summarizes final impact determination for each resource after the implementation of mitigation measures and discloses any remaining significant and unavoidable impacts.

3.0.3 Assessment Methodology

Key CEQA Principles Guiding EIR Analysis

The Guidelines for Implementation of the California Environmental Quality Act (CEQA Guidelines) identify key principles that allow for complete understanding of the environmental context, impacts analysis methods, and conclusions presented in this EIR. These principles are intended to inform the reader and facilitate objective and sound interpretation of the analyses and conclusions presented in the EIR by decision makers. Per CEQA Guidelines Section 15021, it is the duty of public agencies to avoid or minimize environmental damage where feasible but recognizes that a public agency also has an obligation to balance a variety of public objectives including economic, environmental, and social factors. In determining the significance of potential environmental effects, CEQA Guidelines Section 15064 requires findings of significance of each adverse effect and indicates that findings shall be based on scientific and factual data and in consideration of substantial evidence in the whole record before a lead agency. CEQA Guidelines Section 15144 notes that drafting an EIR necessarily involves some degree of forecasting, and while foreseeing the unforeseeable is not possible, an agency must use its best efforts to discover and disclose all that it reasonably using a general "rule of reason". CEQA Guidelines Section 15145 notes that if, after thorough investigation, a lead agency finds that a particular impact is too speculative for evaluation, the agency should note its conclusion and terminate discussion of the impact. This section deals with a difficulty in forecasting where a thorough investigation is unable to resolve an issue and the answer remains purely speculative.

Establishing the Baseline Environmental Conditions

Baseline conditions are defined as the existing physical setting that may be affected by the Project (CEQA Guidelines, Section 15125, subd. (a)). Baseline conditions are the local and regional physical environmental conditions as they existed at the time of the NOP, which was published on January 24th, 2019. This environmental setting constitutes the baseline physical conditions against which the City will determine whether impacts from the proposed Project and alternatives are significant. Physical change from Vision Plan implementation, such as new development on undeveloped hillside and excavation of soils for new infrastructure, would affect this physical setting. Project impacts are defined as changes to the environmental setting that are attributable to implementation of the Vision Plan. Existing Zoo operational activities are part of the baseline because they are part of the existing environmental condition at the Zoo. Therefore, it is only the projected new and expanded Zoo planning areas and operational activities, which are not part of the baseline, that are the focus of this EIR.

Per CEQA Guidelines, impacts may result from changes to the physical setting of the Project area. Several investigations were conducted to establish physical baseline conditions in the Project area. The EIR consultant team performed reconnaissance-level surveys in October and December 2018 and February and April 2019 of the existing Zoo, including visitor-serving spaces and service areas, to observe and document existing facilities, land uses, structures, layout, and operations at the Zoo. Existing uses and facilities were photographed and delineated on a GIS-based map to estimate acreage of different land use types (e.g., visitor-serving and animal environments, parking, administration) and indicate existing transportation and utility infrastructure on site (refer to Figure 2-3).

Based on this analysis, the Project area comprises approximately 142 acres, of which approximately 117 acres are developed and approximately 25 acres are undeveloped (Figure 2-3). Within the developed areas, 55 acres are dedicated to visitor-serving and animal habitat uses and 29 acres are provided as parking for visitors and employees. Approximately 3 acres are dedicated to conservation programs, such as the California Condor Recovery Program. There are approximately 8 acres of internal Zoo administration facilities near the Zoo's western and northern boundaries and approximately 6 acres of staff support services and storage. Additionally, based on the proposed Vision Plan, approximately 9 out of the 55 acres of visitor-serving and animal habitat area are considered under-developed, inadequate, and/or inconsistent with the Zoo's current standards.

As further described in each individual resource section, information on existing environmental baseline has been obtained from existing literature review as well as through the review of technical studies prepared specifically for the City to analyze the potential impacts of the proposed Project.

Key EIR Assumptions for the Vision Plan

Development Under the Vision Plan

As described in Section 2.0, *Project Description*, the purpose of the Vision Plan is to guide future development and operations at the Zoo over the next 20 years. This EIR assumes the development of 25 acres of currently undeveloped/underutilized land for visitor-serving and animal habitat uses. The proposed Project would also result in redevelopment of approximately 85 percent of the existing 117-acre developed area within the Zoo property. The proposed Project would occur within the existing Zoo and would not expand the Zoo property beyond the existing boundary. Some proposed transportation and circulation improvements would occur in the public right of way, beyond Zoo property.

Zoo Operations and Attendance

Physical impacts may occur from changes in operations of the Zoo as a result of the proposed Project. In particular, changes in annual attendance and peak daily attendance that would occur under the proposed Project may result in physical changes to the environment from increased demand for services and infrastructure. Attendance at the Zoo has fluctuated between 1.3 and 1.8 million annual visitors within the past 20 years. Total annual attendance at the Zoo during fiscal year 2017/2018 was 1,802,387 and total annual attendance in fiscal year 2016/2017 was 1,743795. The Vision Plan projects growth in attendance from 1,743,800 to 3 million over 20 years. This growth would occur through a combination of expanded visitor-serving and animal habitat space and increased special events, including nighttime events which extend Zoo operational hours. The proposed Project would convert 25 acres of undeveloped/under-utilized land within the Zoo to visitor-serving/animal habitat area, which would increase the capacity of the Zoo for additional visitors.

For the purpose of this EIR, baseline attendance was considered 1,743,800 annual visitors to ensure analysis is aligned with the growth magnitudes described in the Vision Plan and in its technical studies. Specifically, the increase in annual attendance projected under the Vision Plan is based upon an economic analysis completed in October 2017 (Appendix A). However, since the Project phasing was adjusted in response to NOP comments in 2019, the economic analysis evaluated annual attendance increases under the Vision Plan using a slightly different phasing scenario than evaluated in this EIR. As such, the annual attendance data was adjusted to align with the proposed Project's phasing plan by the EIR consultant team (refer to Section 2.0, *Project Description*). Further, the Vision Plan projected growth in attendance up to 3 million annual visitors through Project implementation, which is 523,500 annual visitors more than estimated in the October 2017 economic analysis. The EIR consultant team assigned this additional growth to each phase relative to growth increments estimated by the economic analysis. As a result of this analysis, this EIR assumes annual attendance growth with implementation of the Vision Plan would be 1,265,200.

Based on Zoo attendance records and ingress/egress surveys conducted in 2019, the EIR also assumes that a maximum daily attendance would be approximately 14,000 visitors with a

maximum occupancy inside the Zoo of approximately 10,000 visitors at any one time. However, on a typical busy day at the Zoo entails approximately 7,850 visitors per day and approximately 5,500 visitors at any one time in the Zoo.

As increases in Zoo attendance would be partially driven by an increase in visitor-serving space within the Zoo. Changes to visitor-serving space would only occur in Phases 1 through 5 of the Project. Increases in administrative space and the proposed parking structure in Phase 6 and 7 would not incite or facilitate attendance growth; rather, these improvements would serve the increased demand generated by the new and expanded attractions within the Zoo. As such, increases in visitation are expected occur within each new phase of development through 2034. Further, the majority (85 percent) of the projected growth is expected to occur during implementation of Phases 1, 2, and 3 of the Vision Plan when most of the exhibit improvements and development of the proposed visitor centers would occur (Appendix A).

Impact Analysis of Near-Term and Long-Term Project Improvements

As described Section 2.0, *Project Description*, the Vision Plan includes near-term improvements (i.e., 5 to 10 years) and long-term improvements (i.e., 10 to 20 years). Phases of Zoo redevelopment would generally occur sequentially with no overlap. Improvements envisioned for near-term phases of the Project area more well-defined in the Vision Plan than the proposed long-term phases. As such, impact analysis is organized to address near-term improvements at a greater level of detail with more specific or targeted mitigation approaches than the long-term improvements. The EIR analysis provides as much detail as possible about each phase of Vision Plan implementation, as described in Section 2.0, *Project Description*.

- **Near-Term Impacts.** Considers the potential impacts resulting from implementation and operation of Vision Plan Phases 1-3. Where impacts are similar, findings are combined to simplify analysis, with separate findings where impacts materially differ by scenario. Near-term impacts are analyzed more on an individual project/development level of detail.
- **Long-Term Impacts.** Considers the potential impacts resulting from long-term implementation and operation of Vision Plan Phases 4-7. Where impacts are similar, findings are combined to simplify analysis, with separate findings where impacts materially differ by scenario. Long-term impacts are analyzed more at a programmatic level of detail.

While the criteria for determining potentially significant impacts are specific to each issue area, the analysis applies a uniform classification of the impacts based on the following definitions:

- **Significant and Unavoidable**: Significant impacts that cannot be feasibly mitigated or avoided to a less than significant level. Measures could be taken to avoid or reduce these adverse effects, but not to a level of less than significant. Even after application of feasible mitigation measures, the residual impact would be significant. If the Vision Plan is approved with significant and unavoidable impacts, decision-

makers are required to adopt a Statement of Overriding Considerations pursuant to CEQA Section 15093 explaining how they have balanced the various factors and why benefits of the proposed Project outweigh the potential damage caused by the significant unavoidable impact.

- **Less than Significant with Mitigation**: Significant impacts that can be reduced to a less than significant level with feasible mitigation, which can include incorporating changes to the Vision Plan prior to adoption and implementation. If the proposed Vision Plan is approved with significant but mitigatable impacts, decision-makers are required to make findings pursuant to CEQA Section 15091, stating that impacts have been mitigated to the maximum extent feasible and the residual impact would be less than significant.
- **Less than Significant**: Potentially adverse but less than significant impacts that do not require mitigation and do not require findings to be made prior to adoption or approval. Measures may be recommended to further reduce environmental effects and/or improve consistency with policies in the City's General Plan and applicable Community Plans and regulations of City Code, but are not required mitigation measures under CEQA needed to reduce impacts to less than significant.
- **Beneficial impacts**: Effects that are beneficial to the environment.
- A determination of **No Impact** is given when no adverse changes or benefits in the environment are expected.

3.1 AESTHETICS AND VISUAL RESOURCES

While the Zoo is not highly visible through topography, vegetation, and intervening development within Griffith Park, several proposed new structures would extend above the existing tree canopy and potentially intrude into views from Griffith Park trails across the Zoo or towards urban skylines. The proposed Project would also replace existing landscaping, temporarily changing the aesthetic quality of Zoo and its dense urban canopy as viewed from within the zoo and from surrounding public trails in Griffith Park; however, impacts from construction would be temporary. Based on visual simulations of select proposed improvements, the Project would not adversely affect public views of the Zoo itself and, with mitigation would not generate significant light or glare. However, construction of the proposed parking structure and a below-grade crossing or roundabout intersection improvement would substantially change the visual character of the Zoo Drive gateway to Griffith Park, which would result in significant and unavoidable impacts to aesthetic and visual resources.

This section describes the existing visual resources within the Los Angeles Zoo (Zoo) and the surrounding vicinity, and analyzes the potential impacts on public views and scenic resources that could result from implementation of the Los Angeles Zoo Vision Plan (Vision Plan; Project). Per the City's Conservation Element, scenic views or vistas are the panoramic public view access to natural features, including views of the ocean, striking or unusual natural terrain, or unique urban or historic features. Public access to these views is from park lands, private and publicly owned sites, and public rights-of-way. This analysis identifies visual or scenic resources and considers both short-term construction impacts and long-term impacts of Project development on those resources.

3.1.1 Environmental Setting

Regulatory Setting

Local laws and regulations have been enacted to preserve visual resources within the City. There are no federal regulations that apply to the Project.

State Regulations

Caltrans Scenic Highway Program.

Caltrans defines a scenic highway as any freeway, highway, road, or other public rights-of-way that traverses an area of exceptional scenic quality. Suitability for designation as a State Scenic Highway is based on vividness, intactness, and unity. There are no designated scenic highways in the Project vicinity (Caltrans 2019).

Local Regulations

City of Los Angeles General Plan

The Los Angeles General Plan includes multiple elements, including state-mandated elements (e.g., Mobility, Housing, Conservation, etc.) that address citywide topics, as well as community plans that guide land use and development for individual communities in the City. Griffith Park is located within both the Hollywood Community Plan and Northeast Los Angeles Plan areas.

City of Los Angeles Conservation Element

Section 15 of the Conservation Element defines scenic views or vistas as "the panoramic public view access to natural features, including views of the ocean, striking or unusual natural terrain, or unique urban or historic features." The Conservation Element contains goals and policies to protect scenic vistas. It describes the Santa Monica Mountains, visible from Griffith Park, as the most important visible topographic feature throughout much of Los Angeles. Related policies and programs acknowledge scenic vistas as being irreplaceable resources and propose the protection and conservation of natural and scenic resources, although no specific scenic vistas are designated or mapped. The Conservation Element adopts the following policies related to scenic vistas and landforms:

- **Objective**: protect and reinforce natural and scenic vistas as irreplaceable resources and for the aesthetic enjoyment of present and future generations.
- **Policy**: continue to encourage and/or require property owners to develop their properties in a manner that will, to the greatest extent practical, retain significant existing land forms (e.g., ridge lines, bluffs, unique geologic features) and unique scenic features (historic, ocean, mountains, unique natural features) and/or make possible public view or other access to unique features or scenic views.

City of Los Angeles Framework Element

The Framework Element provides strategies for long-term development and growth that sets a citywide context to guide the subsequent amendments of the City's community plans, zoning ordinances, and other pertinent programs. These plans together form the City's Land Use Element per state general plan law. Chapter 6 of Framework Element contains goals, objectives, and policies for the provision, management, and conservation of Los Angeles' open space resources. Objective 6.1 recommends the protection of the City's natural setting from the encroachment of future development and Policy 6.1.2 recommends preserving natural viewsheds, whenever possible, in hillside and coastal areas, such as those encompassing Griffith Park.

City of Los Angeles Mobility Plan 2035

The City of Los Angeles Mobility Plan 2035 guides transportation and mobility decisions in the City through year 2035, coupled with supporting documents and discretionary actions to

further align the City's street standards, processes and procedures with the goals of the Mobility Plan 2035. This plan includes an inventory of designated scenic highways. No scenic highways are designated within or near the Project site. The nearest City designated scenic roadway/highway is a segment of Riverside Drive, just south of Griffith Park and approximately 2.3 miles south of the Project site.

Hollywood Community Plan 2012

From 2005 to 2012, the Hollywood Community Plan Update, which covers the entire geographical area of Griffith Park, underwent a comprehensive planning process with extensive community outreach. In 2011 the Hollywood Community Plan Update's Draft and Final EIR was published. A year later, the Hollywood Community Plan Update was adopted by the City Council and signed by Mayor Antonio Villaraigosa in late June 2012 (City of Los Angeles Department of City Planning 2012). The plan became effective on August 6, 2012. However, following plan adoption, a legal challenge to the 2012 Environmental Impact Report (EIR) occurred and the 2012 Hollywood Community Plan Update was rescinded. The City reverted to the 1988 Hollywood Community Plan and prior zoning regulations. In 2018, a new draft plan EIR was published. As of fall 2020, the latest Hollywood Community Plan Update, referred to as (HCUP2) has been presented to the public during a virtual open house and public hearing on December 9, 2020. Adoption of the HCPU2 is projected to occur in early 2021. If approved, the HCPU2 would adopt the following guiding principles applicable to aesthetics and visual resources:

- Enhance the livability of all neighborhoods by upgrading the quality of development and improving the quality of the public realm.
- Maximize the use of the City's existing open space network and recreation facilities by investing in the existing community and enhancing those facilities and providing access and linkages, particularly from targeted growth areas and economically disadvantages areas, to the existing regional and community open space systems.
- Ensure that the City's open spaces contribute positively to the stability and identity of the communities and neighborhoods in which they are located or through which they pass.
- Conserve natural resource and minimize detrimental impacts.

Hollywood Community Plan 1988

Until the previously described 2012 Hollywood Community Plan receives approval, the 1988 Hollywood Community Plan shall remain in effect. The 1988 Hollywood Community Plan includes objectives to encourage the preservation of open space and the preservation of views, natural character, and topography of mountainous parts of the Community for the enjoyment of both residents and visitors throughout the Los Angeles region. The plan also encourages creation of the Los Angeles River Greenbelt corridor which would be integrated with existing and proposed parks, bicycle paths, equestrian trails, and scenic routes.

1978 Griffith Park Master Plan (Non-adopted Local Plan)

Although not officially adopted, the 1978 Griffith Park Master Plan established an important informal policy framework that has helped guide planning and facilities development within the park over the last few decades. A major goal presented by the Griffith Park Master Plan involves creating visual quality and visual coherence throughout Griffith Park. The Griffith Park Master Plan identifies six focal areas within Griffith Park: Zoo Gateway at the proposed Project site, Valley Gateway (Forest Lawn Drive), Toyon Meadow (Park wilderness area), Green Park Corridor (connections between Valley Gateway and other popular attractions within the easterly portion of Griffith Park), Natural Zone (Park interior), and the Los Feliz (Boulevard) Gateway. Other objectives specific to Park aesthetics include:

- Enhancing the beauty and scale of the vast natural areas to promote Griffith Park's scenic and open space values;
- Improving and expanding trail systems;
- Improving the visual and environmental quality of developed recreation areas at Park entrances as well as around the perimeter of Griffith Park;
- Making efficient use of existing facilities and developed areas prior to utilizing additional parklands for new facilities;
- Integrating new facilities into Griffith Park landscape in such a way "...as to strengthen Griffith Park's image and to complement the recreational environment;"
- Continuing "the established civic function" of Griffith Park;
- Achieving better Park edge definition through use of earth berms and native and riparian landscape elements; and
- Rehabilitating natural vegetation.

Griffith Park Vision Plan

In 2013, the City Department of Recreation and Parks (RAP) released the draft "Vision Plan for Griffith Park: An Urban Wilderness Identity." The plan was originally conceived as a "Master Plan," then changed to a "Vision Plan" and finally adopted as "A Vision for Griffith Park" by the Los Angeles Recreation and Park Commission on January 8, 2014. The Plan states that while it is not a Master Plan for Griffith Park, the Griffith Park Master Plan Working Group, the City, and RAP intended the Plan to guide decisions made for Griffith Park until a full Master Plan is developed and adopted. However, the Griffith Park Vision Plan has neither the force nor effect of a master plan since it was not adopted as such. Further, the Griffith Park Vision Plan states that it does not apply to the 133-acre Zoo property because RAP has no jurisdiction over the Zoo property, including the Zoo parking lots. Therefore, the vision, planning, and decision-making process for the Zoo property is independent of RAP since it is operated and controlled by the Zoo Department.

The Griffith Park Vision Plan states that Griffith Park should retain an urban wilderness identity. The Griffith Park Vision Plan states that "there is a growing recognition that one of the Park's greatest values for 21st century Los Angeles is its ability to reconnect people with

the natural world". The Griffith Park Vision Plan also acknowledges the unique developed portions of the park, including the Zoo and the Autry Museum of the West. North Zoo Drive is designated a Park Gateway for motorists and other visitors. The Griffith Park Vision Plan includes the following goals and objectives that are specific to visual resources within the park:

- Motorized Vehicle Gateways should distinguish the park from its urban environment.
- Consistent with the park's Urban Wilderness Identity, any gateway structures should be modest in scale, with minimal surrounding hardscape.
- Any reconfiguration of Park Gateways should include the prioritization of an entrance to the park from Interstate 5 (southbound) as the lack of an exit from Interstate 5 (southbound), serving the northeast corner of the Park, likely increases traffic on both Los Feliz Boulevard and Griffith Park Drive.
- Promote natural qualities, minimize new urban intrusions in the Wilderness Area and provide for informal recreation.
- Evaluate new uses, programs and facilities, or expansion of existing uses, programs, and facilities, against the criteria of enhancing the Park's natural attributes and resources and preserving and maintaining the Urban Wilderness Identity.
- Promote an Urban Wilderness Identity in the Park Reinforced by the Design of Facilities and Amenities
    - Define and consistently reinforce the unique character of the Park.
    - Develop and implement design guidelines throughout the Park for improvements and repairs to existing facilities, amenities, and infrastructure.
    - Develop Park signage and Park information consistent with the Urban Wilderness Identity.
- Manage the built environment of the park in such a manner that maintenance, rehabilitation, restoration, and new construction maintain a character compatible with the urban wilderness identity.

City of Los Angeles Municipal Code Lighting Requirements

Lighting is regulated by various sections of the Los Angeles Municipal Code (LAMC). The lighting provisions require that parking lot lighting be directed away from streets and residences, requires exterior light sources to be designed, located, and arranged to direct light away from any adjacent streets and residences, and limits the amount of exterior light intensity or glare on residential windows, porches, or recreational areas. These requirements apply to lighting and glare as viewed or cast onto residential properties.

Existing Setting

Visual Character of the Project Vicinity

The City lies central to the Los Angeles Basin where the San Gabriel and Santa Susana Mountains bound the City on the north, the Santa Monica Mountains extend across the middle of the City, and the Palos Verdes Hills and Pacific Ocean are on the south and west. The topography rises from sea level to 5,074 feet (Sister Elsie station in the San Gabriel Mountain foothills in Tujunga). The Santa Monica Mountains are the most visible feature from many areas of the city. They are 60 miles long and stretch from Elysian Park and Griffith Parks in the City to Point Mugu State Park in Ventura County. The Los Angeles River and its associated tributaries and flood plains also are prominent topographic features.

Griffith Park is the largest regional park within the City and provides an island of natural wilderness within an otherwise extensively developed areas of Los Angeles, Burbank and Glendale. Photo Source: californiabeaches.com.

The Zoo is in the east central area of the City within Griffith Park, one of the largest municipal parks with urban wilderness in the U.S. and the largest park in the City. Griffith Park offers open space and a natural wilderness within a highly urbanized area otherwise characterized by extensive urban development. Located at the base of eastern foothills of the Santa Monica Mountains, Griffith Park is comprised of steep terrain ranging in elevations from 384 to 1,625 feet above sea level. Peak elevation points are generally located along ridgelines at the center and central west area of Griffith Park. Ridgelines sprawl outwards towards the edges of Griffith Park forming steep canyons and flatter areas at the edges of Griffith Park, where most development is located. Griffith Park's topography and high ridgelines separate development and structures located at the northern and western edges of Griffith Park from those located at southern end.

Griffith Park is a natural mountainous area surrounded by the developed communities within the City, as well as adjacent cities of Glendale and Burbank. Adjacent City neighborhoods or communities include Los Feliz to the south, Atwater Village to the east, and Hollywood Hills to the west. These communities are generally characterized by large single-family homes on large lots. Glendale communities neighboring Griffith Park to the east and northeast include low-density residential, commercial, and industrial uses, including the DreamWorks animation studios, Walt Disney studios, and ABC studios. Burbank communities neighboring Griffith Park to the north also include single-family residential, commercial, and industrial uses, such as Warner Brothers studios. Development in these communities is generally low-lying but dense and organized on roadway networks.

Griffith Park is generally undeveloped open space with rich vegetation, including oak woodlands and other native habitat areas (see Section 3.3, *Biological Resources*). Development is limited to specific visitor attractions and City service buildings. Notable built structures in Griffith Park contributing to the built aesthetic of Griffith Park include the Greek Theater, Griffith Observatory, the Travel Town Transportation Museum, the Autry Museum of the American West, and the Griffith Merry-Go-Round. There are also playgrounds, picnic areas, and hiking trails available throughout the park. Buildings are low-lying (generally less than two stories). The general architectural designs of the buildings include the use of stone, stucco, and natural or colored concrete with muted colors, contributing to the natural character of Griffith Park. Parking is provided in surface parking lots near attractions and trailheads and on-street parking. There are currently no parking garages in the park.

Built setting within Griffith Park maintains a high value visual quality. Notable structures include the Travel Town museum (upper left), the Merry-Go-Round (upper right), the Autry National Center (lower left), and Greek Theater (lower right). Photo Source: City of Los Angeles Department of Parks and Recreation 2017

Project Site and Vicinity

The Zoo lies in an area of Griffith Park dominated by dense chaparral and oak woodland vegetation, and the Zoo and segments of bordering roads are heavily forested, including Zoo Drive and Crystal Springs Drive. Surrounding terrain and mountainous slopes are milder than the central ridgelines of Griffith Park. The Zoo sits within a hilly area with vertical rise ranging from 460 to 650 feet above mean sea level. The Zoo is bounded by open natural lands

within Griffith Park and the skyline trail, Zoo Drive, a dense windrow of mature trees (e.g., eucalyptus) and the Main Trail, and SR-134, an 8-lane freeway to the north. Western Heritage Way, the Autry Museum of the American West, the 12-lane I-5, and the Los Angeles River lie to the east. Wilson and Harding Golf Courses lies to the south and southeast, Griffith Park Drive and the hillsides rising to Amir's Garden overlook to the southwest, and mostly natural, hilly terrain and the Condor Trail to the west.

The Zoo lies at the base of Griffith Park hillsides that descend to relatively flat and level terrain near the Los Angeles River. As a result, the Zoo is tucked into the landscape where the natural hillsides surrounding the interior canyon of the Zoo and the dense tree canopies along Zoo Drive act as natural visual buffers. These natural features effectively shield the Zoo from outside public views from the two adjacent freeways and adjacent communities. Views into the Zoo are generally distant and only available from overview points along the Skyline Trail, Condor Trail, and Amir's Garden. Because the Zoo is heavily vegetated with mature trees and vegetation and the existing structures within the Zoo are generally low-lying and small scale (i.e., less than two stories), the Zoo is not highly visible to the public. Zoo facilities are generally shrouded by dense trees and vegetation. Similarly, views from within the Zoo are limited to interior areas since natural topography and Zoo vegetation generally block views Griffith Park ridgelines, hillsides, and other regional features.

The Condor Trail overlooks the hilly landscape and canyons of Griffith Park, providing views of the Verdugo hills and the city of Glendale in the distance.

The Zoo occupies approximately 133 acres consisting of 102 acres of development and 32 of undeveloped area and open land. The developed area of the Zoo embodies an exotic and natural character, as is lushly landscaped, including thousands of mature trees. Many of the Zoo animal environmental are open, uncovered, and/or designed to mimic the natural terrain of the bioclimate they naturally inhabit. For example, the Sea Life Cliffs include an aquatic habitat that replicates a rocky cove for harbor seal and sea lions. Further, some animal environments were constructed by excavating into the terrain and forming artificial topography, giving the sense that the animal environment is built into the Zoo's natural environment. For example, the Chimpanzees of Mahale Mountain, which was added to the Zoo in 1988, was constructed by building into the hillside and adding large boulders and a waterfall. Existing development, animal environments, and walkways are concentrated within the Zoo's central and eastern areas on level and gently sloping valley bottom areas.

Dense landscaping and tree cover occurring throughout the Zoo provides visually pleasing green space and largely screen views into the Zoo from surrounding areas.

Some development, such as the aviary and otter animal environments, extend up steeper hillsides near the Zoo's perimeter, and are bordered by dense native habitats or mixed eucalyptus woodlands. Built structures that lie on the Zoo periphery are typically reserved for service or conservation uses such as equipment yards, storage, the Gottlieb Animal Health and Conservation Center, the California condor (*Gymnogyps californianus*) conservation facilities, and a perimeter access road.

Most structures within Zoo grounds are older and reflect architecture from the 1960s when Zoo construction initially first began, or when Zoo redevelopments occur between the 1970s and the early 2000s. Approximately one-third of visitor serving areas have been completely remade since 1998. These areas include: the elephants of Asia, LAIR, Rainforest, the entry plaza, Campo Gorilla Reserve, the conservation center, Chimpanzees of Mahale Mountain, Red Ape Rainforest, the Angela Collier Bird Show Theater, and the Winnick Family Children's Zoo, the carousel, Francois' langur, Children's Discovery Center, the Condor conservation areas, and the main parking lot. Consequently, the built structures occupying the Zoo are inconsistent in their visual and historic character (see also, Section 3.4, *Cultural and Tribal Cultural Resources*).

However, taken together, the structures and layout of the Project site are characteristic of a zoo campus, providing visitor-serving uses and Zoo facilities within buildings designed with animal and conservation themes and with styles representative of locations and cultures around the world. Development is very low density, separated by a network of walking paths and animal environment areas. Open areas, walking paths, and animal environments have been landscaped with lush and dense vegetation with a mature urban forest canopy in many places to create a wild and exotic aesthetic for Zoo guests. Zoo guests first enter the Zoo from a 40-foot-wide expanse of concrete walkways and stairs ascending to the animal environment areas from the main entrance gates. Guests are greeted by lines of palm trees immediately

visible from the entryway. Walking paths leading from the entrance to the Zoo's animal environment areas are wide and meandering.

A substantial portion of the Zoo grounds is comprised of the botanical gardens and lushly vegetated areas adjacent to developed walkways. Plants throughout the Zoo are grouped based on their indigenous habitats and match the geographic themes of the Zoo (Africa, South America, North America, etc.) With more than 7,000 individual plants representing more than 800 species growing within the Zoo's botanical gardens, the landscaping creates a vigorous green vegetation cover surrounding visitors as they walk throughout the Zoo. Even the undeveloped hills that have not undergone selective or ornamental landscaping contribute to the Zoo's densely vegetated character with their dense, native chaparral and oak woodland, as well as over 30 acres of mixed eucalyptus woodland.

The entrance to the Zoo comprises an expansive surface parking lot, local two-lane roadways, and pathways connecting pedestrians, equestrians, and cyclists with Griffith Park trails and facilities. This area of the Project site is relatively open and flat, providing access to sunlight and open sky views. The iconic Zoo sign is highly visible from the parking lot and local roadways, including Zoo Drive, Western Heritage Way, and Crystal Springs Drive, but becomes hidden beyond this immediate vicinity. The Project site in this area is surrounded by mature trees, including eucalyptus and oaks, which imparts a natural setting, welcoming visitors to the Zoo. Given the location of the Project site at the I-5 off-ramp, this area is a gateway to Griffith Park, as designated by the Griffith Park Vision Plan. Here, visitors leave urbanized neighborhoods and regional freeways and transition to the natural wilderness of Griffith Park.

Public Views and Scenic Vistas

Scenic views or vistas are panoramic public views access to natural features, including views of the ocean, striking or unusual natural terrain, or unique urban or historic features (City of Los Angeles Department of City Planning 2001). Griffith Park is recognized as an important scenic area within the City. Griffith Park offers a unique blend of natural environment and built cultural structures to visitors. Though no official designation exists for the scenic resources of Griffith Park, the official RAP trail map for Griffith Park identifies multiple locations for "scenic vistas". The closest RAP recommended vistas to the Zoo are Dante's View and Mount Hollywood, both located roughly one mile from the Zoo. The Zoo is only distantly visible from either of these viewpoints.

The scenic value offered of natural resources and views within Griffith Park are considered by many to have iconic or intrinsic scenic value, and the importance of these values is

North Trail provides high elevation views of the Griffith Park. The built environment of the Zoo is visible from a scenic vista located near Amir's Garden.

emphasized in the Griffith park Vision Plan. Many of the popular attractions in Griffith Park also serve as cultural icons such as the Hollywood Sign, Griffith Observatory, and the Zoo. Park roads carry thousands of vehicle trips from park visitors, sight seers, and cut-through traffic, as well as heavy volumes of bicycle traffic. Hikers, runners, and equestrians use the Park's trail system, with four major trails offering some views of the Zoo, including North Trail, Skyline Trail, Mineral Wells Trail, and Condor Trail.

Views from Adjacent Trails

Miles of trails connecting landscaped parkland with elevated scenic viewpoints on the areas natural undeveloped ridges and hillsides make Griffith Park a popular hiking spot for City residents and tourists alike. Hiking trails also provide access and views to important cultural structures within Griffith Park, nearby mountain ranges such as the San Gabriel and Santa Monica mountains, iconic city skylines such as downtown Los Angeles or downtown Glendale, the urban night sky, and surrounding urban lights. These natural dirt trails generally lack railing or development, adding to their rugged, natural aesthetic. Various destination points along the trails provide views of Griffith Parks natural landscape and hillsides covered in natural chaparral communities and vegetation native of southern California as well as distant views of surrounding communities.

Higher elevation trails at Griffith Park's northern region, such as North Trail, Skyline Trail, Mineral Wells Trail, and Condor Trail, reaching up to roughly 1,200 feet provide views of facilities in Griffith Park's north end, including the Los Angeles Zoo, the Wilson and Harding Golf Course, and the Mount Sinai Memorial Park adjacent to Griffith Park. The Skyline Trail and Condor Trail traverse ridgelines surrounding the Zoo to the west. These trails sometimes pass close to the Zoo boundary fence but are mostly well separated from the Zoo by intervening canyons or ridgelines in Griffith Park. The North Trail is more removed from the Zoo, but its higher elevation allows some more open views overlooking the Zoo. The Main Trail runs along Zoo Drive to the north and provides some views through to the Zoo. However, dense vegetation bordering these trails, the urban forest within the Zoo and the distance of these trails from existing Zoo development, limit the prominence of Zoo structures, roads, or other development from these vantage points.

Regionally, the Project site is only partially visible from local roads or elevated locations, such as upper elevation trails in Griffith Park, but clear views are highly limited by distance and

intervening topography, vegetation, and development in the region. Views of the Project site from identified key viewing locations are further described below in Section 3.1.3, *Environmental Impact Analysis.*

Views from Adjacent Highways

Griffith Park and the Zoo vicinity is generally bordered by State Route 134 (SR-134) and Interstate 5 (I-5) on the north and east. Views from segments of I-5 and SR-134 that run near Griffith Park are generally characterized by the residential, commercial, and industrial buildings with ornamental landscaping adjacent to the roadways. Griffith Park provides some visual relief along these transportation corridors. Distant views of the Verdugo Hills and San Gabriel Mountains are available to vehicles traveling east or west on SR 134 and northbound vehicles on the I-5. A small network of roadways within Griffith Park surround the Project site. While the Zoo and its interior are typically not visible from these roadways, the hillsides surrounding and enclosing the Zoo often contribute to the scenery available to drives along these roads.

Designated State Scenic Highways

The California Scenic Highway Program, maintained by the California Department of Transportation (Caltrans), protects State Scenic Highway corridors from changes that would diminish the aesthetic value of lands adjacent to highways. According to the California State Scenic Highway Program, the section of SR-134 and I-5 in the Project vicinity are not designated or eligible for State Scenic Highway designation (Caltrans 2020).

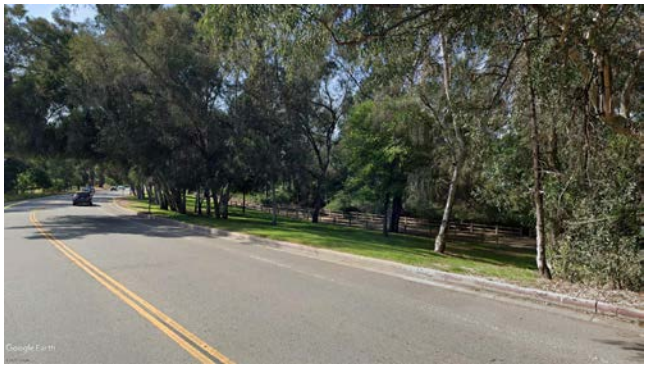
The hillsides and thick vegetation of Griffith Park provides visual relief along SR-134 near the Project site, but surrounding areas can otherwise be characterized by the adjacent developed neighborhoods and roadside vegetation.

Local Roadways

Views of the Project site from local roadways are available in the immediate vicinity of the Project site from Griffith Park Drive, Zoo Drive, Crystal Springs Drive, and Western Heritage Way. Views afforded from these roadways are described further below, and generally include those of undeveloped, forested or natural lands within Griffith Park, open space such as the Wilson and Harding Golf Course, and distinctive, isolated structures such as the Autry Museum of the American West; however, while offering attractive views, none of these roadways are formally designated as scenic roadways or routes. The nearest designated scenic roadway to the Project site is a segment of Riverside Drive that extends from Stadium Road to Los Felix Boulevard, approximately 2.3 miles south of the Project site, just below Griffith

Park (City of Los Angeles Department of City Planning 2001). The Zoo is not visible from this segment of Riverside Drive.

- **Zoo Drive:** Located along the northern edge of the Zoo and Zoo parking lot, Zoo Drive is one of the main roads used to reach the Zoo. The road courses along the edge of Griffith Park through a tree-lined corridor to the main Zoo parking lot entrance. From its intersection with Riverside Drive roughly 1 mile to the west, travelers on Zoo Drive experience bucolic views of natural hillsides of Griffith Park to the south and mature tree-lined parkway to the north. Approaching the Zoo, views available to vehicles and cyclists travelling along Zoo Drive, as well as to hikers, equestrians and runners of the adjacent Main Trail, include direct views of the Zoo's 10-acre northern parking lot through evenly spaced trees lining the roadways, and a backdrop of rising vegetation-covered hillsides within portions of the Zoo and Griffith Park. The Zoo parking lot generally lacks trees or planters and on busy days can support a sea of roughly 1,000 parked cars. Except for peeks of the Zoo sign, Zoo structures are mostly obscured from this roadway. Along the northern side of Zoo Drive, the dense treelined parkway buffers Griffith Park from SR 134 and Los Angeles River and provides a green corridor traversed by the Main Trail. Occasional breaks in this tree corridor allow for short glimpses of the SR 134. Regardless of the relative visual prominence of the Zoo parking lot, the visual character of this corridor is softened by adjacent irrigated lawn, mature sycamore and eucalyptus trees and the split rail lined trail.



Zoo Drive is a 2-lane local road that serves as a gateway to Griffith Park. Dense, wooded vegetation provides a visual transition from the urbanized setting of the I-5 and SR 134 corridors in Glendale and Burbank to the wilderness of Griffith Park. Photo Source: Google 2020

- **North Zoo Drive/Zoo Entrance Driveway**: North Zoo Drive provides a primary access to the Zoo from SR 134 and I-5. The Griffith Park Vision Plan designates this route as one of four gateways to the park. This roadway provides direct regional vehicular access to the Zoo and runs for roughly ¾ of a mile along the Los Angeles River corridor, terminating at the intersection of Zoo Drive and Western Heritage Way with the main Zoo entrance driveway. Drivers approaching the Zoo along this roadway have direct views between street trees down the main Zoo entry driveway and across portions of the northern parking lot toward an undeveloped hillside vegetated with native vegetation. Visitors entering the Zoo along this main driveway have views east

of the natural hillside and to the north of the large open paved areas of the northern parking lot backed by windrows of large specimen along Zoo Drive. Views to the south and southeast toward the Zoo entry are largely blocked by maturing parking lot trees in the main parking lot.

Zoo Drive brings drivers from I-5 directly to the Zoo's main parking lot through a 4-way stop with Western Heritage Way. This gateway provides a visual transition and welcome to Griffith Park. Photo Source: Google 2020

- **Western Heritage Way:** Western Heritage Way is a segment of roadway that runs primarily north-to-south for approximately 1,100 feet along the east end of the Zoo parking lot before merging into Zoo Drive; at its southern end, the road "dog legs" west for 600 feet along the southern edge of the Zoo parking lot to merge into Crystal Springs Drive. Western Heritage Way separates the Zoo from the Autry Museum of the American West. Travelers on this road pass along a tree lined corridor with the Autry Museum of the American West and its parking lot visible to the east. Landscaped trees and vegetation along and within the Zoo's parking lot to the west soften views of the parking lot and screen most views of the Zoo's entrance and of the hillsides of Griffith Park in the background. However, breaks in vegetation at parking lot ingress/egress points provide short views of the Zoo sign for passing motorists. The towering Verdugo Hills make up the scenic distant backdrop to the north. On road bikes also have limited views of the Zoo. Further, the Main Trail passes east of Autry Museum of the American West and, therefore, trail users' views toward the Zoo are obscured by the Autry Museum of the American West along this reach.
- **Crystal Springs Drive:** Crystal Springs Drive travels north-to-south through the Wilson and Harding Golf Course for approximately 0.9-mile before intersecting with Western Heritage Way at the south end of the Zoo parking lot. Views from this roadway are dominated by the grass fairways of the golf course and tall eucalyptus trees lining the roadside and the fairways. The hills and ridgelines of Griffith Park form a backdrop to the west, while the Verdugo Hills are visible as a distant background to the north. For a brief segment of Crystal Springs Drive south of the Zoo, the trees lining the roadway thins and breaks. In this area, the southern border of the Zoo and associated structures is visible across the across the golf course fairways. The Zoo Magnet Center and parking lot is also briefly visible east of the road.
- **Griffith Park Drive:** Griffith Park Drive stems off Crystal Springs Drive south of the Zoo and winds through the surrounding hills. Griffith Park Drive approaches the Zoo's southwest edge and a Zoo service and employee access gate to the Gottlieb Animal Health and Conservation Center is visible from the road. Griffith Park Drive travels

northwest to southeast and passes by the Griffith Park Composting Facility, weaves between the hillside of the Zoo and the slopes and hillsides of the surrounding Griffith Park, providing some of chaparral and oak woodland covered hillsides. Travelers on the road can see a brief section of the Zoo's perimeter fencing, service entrance, and the Gottlieb Animal Health and Conservation Center. The Mineral Wells Trail and picnic area is also visible through breaks in the vegetation along the southern boundary of the road. Further east, the road diverges from the hillside, towards the Griffith Park Golf Shop and driving range. At this point, vegetation separating the Zoo from the roadway is characterized as a well-manicured lawn and limited shrubbery and trees to keep the driving range unobstructed. Consequently, the Zoo perimeter fencing may be visible from Griffith Park Drive; however, views of this section of fencing are largely obstructed by exterior fencing separating the driving range from Griffith Park Drive and shrubbery and trees that grow against the fence. The Golf shop and driving range parking lot, Wilson and Harding Golf Course, Shane's Inspiration playground, and associated parking lots are also visible from Griffith Park Drive.

Light and Glare

Public exposure to light and glare varies substantially in the Project vicinity with urban developments in the cities of Los Angeles, Burbank, and Glendale having relatively high levels of lighting and glare. Effects of light and glare depends on the amount and location of outdoor light sources, reflective materials, and amount of traffic on roadways. Light impacts generally occur during the evening and nighttime hours. Light sources can have adverse effects if they affect public views, including direct light intrusion and indirect effects such as diminishing access to dark night skies. Glare is largely a daytime phenomenon, occurring when sunlight is reflected off highly polished surfaces or objects (e.g., windows, windshields) or light-colored surfaces. Glare can also result from vehicle headlights on adjacent roadways. Excessive glare not only restricts visibility but can also increase the ambient heat reflectivity in each area.

The Project site is in Griffith Park where light and glare levels in Griffith Park are virtually absent compared to surrounding developed areas in the City, Burbank, and Glendale. The urbanized areas surrounding the park and the Project site produce high levels of light and glare from interior building illumination, streetlights, exterior security lighting, and vehicle lights, causing a glow of light throughout the region that is highly visible from the hillsides in Griffith Park. Griffith Park provides visual relief from these sources with nearly 4,500 acres of undeveloped land and limited light sources.

Although the Project site is bordered by relatively intense development to the north and east, the parkways and bands of trees lining park roads reduce light spillover and the darker hills of Griffith Park lie to the west. As result, the site setting is relatively dark at night and does not experience predominant sources of glare during the day from structures. Within the Project site, light sources include typical building security lighting, indoor lighting, pathway

and street lighting, light from vehicle headlights, and flood lighting of the Zoo entrance sign. The Zoo's main parking lot is lit at nighttime with light standards of roughly 15 feet in height spaced about 125 apart on each parking aisle. Although hood and directed downward, these light fixtures are a primary source of light spillover from the Zoo to immediately adjacent areas, such as Zoo Drive. Another lesser source of light spill into Griffith Park is from the well-lit Zoo entry and sign and adjacent buildings, though these sources are centrally located within the Zoo and light does not project substantially beyond the Project site. The Zoo's northern parking lot is largely unlit.

The Zoo regularly hosts special after-hour events, including Brew at the Zoo, overnight camp programs, Roaring Nights, and its popular seasonal winter event, L.A. Zoo Lights where the Zoo extends operating hours from 6:00 P.M. to 10:00 P.M. and features light displays. Such activities use moderate decorative and security lighting that does not substantially escape the Zoo boundaries and does not exceed the intensity of surrounding light sources such as the adjacent golf course driving range.

The LA Zoo Lights event is one of many special events held at the Zoo. For this after-hours event, the Zoo is transformed into a seasonal holiday wonderland and light show featuring decorative lighting and high-tech interactive lighting displays. Photo source: LA Zoo 2019.

Land uses that are typically sensitive to excess light and glare include residential uses, parks, senior housing, health care facilities, and other types of uses where excessive light and glare may disrupt sleep or other activities. In addition, light and glare may interfere with the vision of drivers. There are no residential or health care uses near the Project site that would be sensitive to light and glare. The recreational users within Griffith Park itself may be sensitive to light and glare, particularly public trail hikers that may experience diminished visual quality within the park if daytime glare or evening lighting spilled into natural areas. Public hiking trails within Griffith Park surrounding the Zoo or the Mineral Wells Picnic Area are public recreational amenities that could be affected by light and glare.

In addition to human receptors, natural biological resources such as bats and native wildlife can be sensitive to man-made light sources, as the lighting can disrupt feeding or movement patterns or reduce the suitability of potential habitat. Detailed discussion of potential impacts of light and glare on biological resources are discussed in Section 3.3, *Biological Resources*.

3.1.2 Impact Assessment Methodology

Significance Thresholds

According to Appendix G of the State CEQA Guidelines, a project would have a significant impact related to aesthetic and visual resources if it would:

a. Have a substantial adverse effect on a scenic vista?
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings along a scenic highway?
c. In non-urbanized areas, substantially degrade the existing visual character or quality of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?
d. Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?

In addition to the thresholds identified in Appendix G of the State and CEQA Guidelines, the *L.A. CEQA Thresholds Guide* holds that the determination of significance shall be made on a case-by-case basis after considering the following factors:

- Effects on a scenic vista.
- Scenic resources within a state scenic highway.
- Existing visual character or quality of the site and surroundings.
- New sources of light or glare and existing day and nighttime views.

Non-applicable threshold(s):

- Threshold (b) (*Scenic resources along a scenic highway)*: There are no existing designated scenic highways adjacent to or with views of the Zoo. The nearest designated scenic roadway is a segment of Riverside Drive within the City that extends from Stadium Road to Los Felix Boulevard, approximately 2.3 miles south of the Project site, just south of Griffith Park. The Project site is in the northeast corner of Griffith Park. Neither the Project site nor its immediate surroundings are visible from this City-designated scenic roadway. Therefore, the proposed Project would not result in significant impacts to scenic resources located along or viewed from a scenic highway, and the issue will not be analyzed further in this EIR.

Methodology

Analysis of visual impacts of the Project is based upon field reconnaissance of the Project site and surroundings, documentation of public views from nearby roads and trails, and review and photographs of existing visual resources (e.g., trees, buildings, and view corridors). Visual reconnaissance of the Project site and surrounding areas was conducted by Wood Environment & Infrastructure Solutions on February 25, 2018 and by EIR subconsultant VIZf/x on January 2, 2020. The team hiked the Skyline, Condor and North Trails, and

informal spur trails or overlooks to observe and photograph the Project site and consider potential changes in scenic vistas or views that may occur under the Project. The team also drove Zoo Drive, Western Heritage Way, Crystal Springs Drive and Griffith Park Drive on multiple occasions, pausing to observe views of the Zoo and parking lots and consider potential Project effects on scenic resources and visual character provided along many segments of these roads. Field notes and photographs of existing visual resources of the Project site and vicinity are used to support this analysis. This information was utilized to identify important visual resources present on the Project site and in the vicinity. In addition, the Project site's relationship to the surrounding natural environment and communities, and the relationship of relevant existing City policies for protecting visual resources was considered, along with Griffith Park planning documents.

Scenic Views and Visual Character

Existing trails and local roads near the Zoo provide the key public views or scenic viewpoints of the Zoo, as well as across the Zoo of the Los Angeles, Burbank, and Glendale urban environments (particularly the Glendale downtown skyline), and natural hillside and ridgelines of Griffith Park. Impact assessment for these scenic views depends upon the sensitivity of the resource, viewer susceptibility, viewing conditions (e.g., angle of view, distance, and primary viewing directions), degree of change, and visual contrasts to surroundings. These could include a change to existing features that no longer appear characteristic of the area or development that substantially or entirely blocks public views or removes key aesthetic features.

This analysis focuses on changes to public views such as those from local roads and public vantage points, including public open space and trails within Griffith Park. This analysis considers the field of view for different viewers; drivers and cyclists on local roadways are generally forward-facing in the direction of the traffic flow, whereas pedestrians and hikers can perceive views in any direction. This analysis also considers the different expectations of viewers; drivers and cyclists on roadways may be occupied with travel mechanics, other vehicles, and the immediate vicinity, whereas pedestrians, hikers, runners, and equestrians may seek aesthetic relief and enjoyment of views as part of recreational activity. Because assessment of aesthetics is inherently subjective, concerns raised by the public during the scoping process were considered.

Impact assessment of visual character focuses on whether development of the Project would substantially degrade the existing visual character of the Project site or vicinity. Considerations include potential visual contrast and/or the compatibility of scale and character of future development to existing visual conditions.

To evaluate potential Project-related impacts to scenic and visual resources, this analysis employs photosimulations of key structural components of the Project, including the three proposed visitor centers, the aerial tram, the multi-story parking structure, and Condor Canyon, that would be visible from Key Viewing Locations (KVLs). Four (4) KVLs were

identified around the edges of the Project site in publicly accessible areas (Figure 3.1-1). KVLs represent views from public trails and roadways where a clear view of the Project is available and overall quality of the scenic view is moderate to high. The KVL analysis focuses on changes from existing conditions as they would be experienced by motorists, bicyclists, equestrians, pedestrians, and runners. The following four KVLs were selected for analysis.

- **KVL 1: North Trail near Amir's Garden looking northeast**. This KVL represents views of the Project site afforded from public trails in Griffith Park around the Zoo. This KVL was selected because Amir's Garden is a popular hiking destination and reflects typical views overlooking the interior of the Project site from the south, including its dense urban forest canopy which breaks up or blocks views Zoo facilities. In addition, the KVL provides clear views of more distant scenic resources, including the San Gabriel Mountains and Glendale skyline.
- **KVL 2: Condor Trail north of Zoo looking south**. This KVL represents views into the Project site from the popular Condor Trail. This KVL was selected because it provides one of the closest and clearest views into the interior portions of the Zoo, allowing viewers to discern some key features or development of the Zoo from the north and west.
- **KVL 3: Intersection of Zoo Drive and Western Heritage Way looking southeast**. As a gateway to Griffith Park, this KVL represents one of the first views of the Project site for visitors of the Zoo or its surrounding land uses. The KVL captures views by pedestrians, bicyclists, and vehicles passing through or stopped at the intersection of Zoo Drive, the Main Trail, and Western Heritage Way from the north and east. This KVL was selected because it provides a clear view across the Zoo parking lot in the foreground towards the Zoo entrance, with natural hillside areas and ridgelines of the Zoo and Griffith Park in the mid- and background. Views of both the Zoo entrance, a majority of the parking lot, and much of Griffith Park are partially obstructed or interrupted by Zoo parking lot trees and landscaping, while views across the Zoo's northern parking lot are relatively unobstructed. This view captures the visual character of the Zoo Drive gateway as the transition from the urbanized communities outside the park to the open, vegetated, and slower pace within the park.
- **KVL 4: Zoo Drive north of Zoo parking lot looking southwest**. This KVL represents public views of the Project site for motorists, pedestrians, equestrian and bicyclists along Zoo Drive and the Main Trail looking southwest across the Zoo's northern parking lot in the direction of the Zoo's interior. This KVL was selected because it provides views of the Project site in the direction of the interior of the Zoo, where most of proposed improvements would occur and depicts how views are largely obstructed by the existing hillside. It also provides open views of the proposed multi-story parking structure.

wood.

Los Angeles Zoo
KVL Locations

FIGURE 3.1-1

The 3D model developed for this analysis includes digital renderings and constructed models of key proposed improvements and terrain modifications needed for Condor Canyon. Except for the proposed structure, these modeled improvements would be located within the interior of the Zoo.

To prepare photosimulations of the key Project components, each KVL was photographed as a panoramic base image. 3D models of the proposed California Visitor Center, Africa Visitor Center, Treetops Visitor Center, aerial tram, and multi-level parking structure were constructed in a computer-aided design (CAD) program by the EIR consultant's licensed architect. The 3D models reflect conceptual details about the structures to simulate the approximate size, bulk, scale, and potential visibility of key major new structures. The models were then placed on a terrain model according to the Project conceptual design plan (refer to Figure 2-4). Existing terrain was also modified to depict the hillside cut required for Condor Canyon in the California planning area. This 3D model was then inserted into the georeferenced base photographs for each KVLs with the intent to show the general location, height, scale, and overall visibility of the key structural features from surrounding public areas.

As described in Section 2.3.6, *Proposed Circulation & Transportation*, the Vision Plan proposes a new multi-story parking structure capable of providing an addition 2,000 parking spaces within approximately 3.3 acres in the northern parking lot based on the conceptual Project design (Figure 2-4); however, the exact design of the parking structure remains conceptual. To estimate the height and scale of this parking structure, a 3-D model was built based on standard parking design metrics, resulting in approximately 410 vehicles per level on 3.3 acres, which would result in 5 stories to provide approximately 2,000 spaces. The siting

of this 3D model was also based on the conceptual plan (Figure 2-4) but assumed that the parking structure was located near the main entrance for access efficiency. Due to programmatic nature of the Vision Plan and lack of detailed building or grading plans, the KVL photosimulations of the Project are conceptual and represent the anticipated design and scale of the Project, including proposed topographic changes, final structure locations, or other design or landscaping specifications.[1] However, the key KVLs provide representative maximum levels of development that would be visible and estimates the potentially required footprints and heights of proposed structures.

The KVL photosimulations inform the assessment of the Project's potential to substantially degrade or conflict with the existing visual character of the site and Project vicinity. Existing KVL visual characteristics are compared to computer-based visual simulations of key Project elements in Section 3.1.3, *Environmental Impact Analysis*, below. The analysis focuses on changes from existing conditions as they would be experienced by viewers from adjacent public locations, including roadways around the Zoo and trails in Griffith Park. Given data availability, this assessment of impacts is qualitative, as detailed Project design is not available to support a quantitative analysis of potential changes to visual resources.

Light and Glare

Light and glare impact assessment reviews the new light and glare sources that would be introduced under the Project and determines whether light/glare would substantially affect views or viewers in the Project vicinity. A key element in this assessment methodology involves consideration of the existing light and glare standards in the LAMC.

3.1.3 Environmental Impact Analysis

VIS-1: Would the project have a substantial adverse effect on a scenic vista?

The City's General Plan Conservation Element defines scenic views or vistas as "the panoramic public view access to natural features, including views of the ocean, striking or unusual natural terrain, or unique urban or historic features." There are areas within Griffith Park surrounding the Project site that provide scenic vistas or vistas due to the expansive, panoramic views of the natural terrain, more distant urban landscapes, and background of the majestic San Gabriel Mountains, although such views and vistas are not officially designated or mapped. The views afforded from public trails within Griffith Park meet the City's definition of scenic views and thus are considered scenic vistas in this analysis. While existing public roadways such as Zoo Drive, Crystal Springs Road, and Griffith Park Drive offer scenic segments and some views of the Zoo (see Impact VIS-2 below), these generally

[1] The 3D model and photosimulations represent the best available effort to simulate building visibility and general size bulk and scale. However, because the Vision Plan is a long-range conceptual planning document for 20 years of Zoo improvements, detailed architectural drawings, precise building elevations and architectural exterior treatments (e.g., (paint colors, trim, architectural details, etc.) were not available.

do not include scenic vistas across the Zoo. The Zoo is most visible and lies within a greater viewshed from specific locations or whole segments of nearby trails, primarily Skyline Trail, Condor Trail, and North Trail.

The Project would visually enhance interior areas of the Zoo, including restoring features that hold cultural and visual significance such as the Treetops Terrace spires.

The Project would have several components that would be visible from scenic vistas within Griffith Park, including from popular hiking trails uphill from the Zoo. Most Project development would be low-lying and hidden within terrain and landscaping, similar to the existing visual setting for the Zoo. Taller structures such as the three proposed visitor centers and the aerial tram would extend above the urban forest canopy within the Zoo, adding structural features not currently visible from surrounding areas. For example, the Treetops Terrace Visitor Center would reconstruct the iconic spires originally designed by architect Charles Luckman in the first Zoo plans (see also, Section 3.4, *Cultural and Tribal Cultural Resources*). These spires were intended to be highly visible as a wayfinding beacon in the original plans and would serve a similar role in the Project. These changes would manifest in in the California, Asia, and Africa planning areas in Phases 1, 2, and 3 of Project implementation.

Views of the Zoo from these trails are distant in most locations, and are often obstructed by intervening hillsides, ridgelines, fencing, and both native vegetation and the Zoo's urban forest canopy. Although the Skyline, Condor, and North Trails provide views over the Zoo from various locations, future development within the Zoo's interior would not be easily visible due to the dense tree canopy and the location of such development within a canyon bottom or on lower ridgelines surrounded by elevated hillsides and ridgelines.

Construction

Construction occurring within the Zoo would be potentially visible from limited public vistas along high elevation trails surrounding the Zoo.

The Project would result in ongoing construction in seven sequential phases over the course of 20-years. Each phase of development would involve varying degrees of vegetation removal and replanting. In this way, the Project would incrementally and temporarily affect the visual quality of the Zoo's urban forest as viewed from scenic vistas. During construction of a Project phase, vegetation would be modified or removed to clear areas for new development of animal environment, visitor-serving, and Zoo facility spaces. Extensive tree and vegetation removal within both the undeveloped hillside areas in the California and Africa planning areas, as well as throughout existing developed visitor serving and animal environments, would occur. The Project would also result in the construction of several new structures, features, or animal environments. Such activities would involve large-scale grading and excavation for the proposed Condor Canyon and other areas requiring terracing, deeper foundations, and grade changes (e.g., Zoo Entry plaza). These activities, particularly the clearing of trees and vegetation, would be at least partially visible from public trails in some locations and the loss of tree canopy may temporarily open views of existing or planned structures. Further, views of large construction equipment and active construction sites (e.g., large graded areas) may be considered unsightly and partially diminish the visual quality of scenic vistas from surrounding trails. Thus, construction activities would create temporary adverse changes in the existing scenic vistas or views.

However, potentially adverse changes in the quality of scenic vistas across the Zoo from local trails would be short-term. Impacts to scenic vistas or views from vegetation removal and diminishment of the urban forest canopy would also be short term, as the Vision Plan proposes extensive landscaping and tree replanting. Landscaping of affected areas would result in revegetation and regeneration of the visual quality of the area within 5 to 10 years following completion of phase construction. Over the mid to longer term, the urban forest tree canopy would return to conditions similar to the Zoo's existing setting, limiting, or avoiding permanent changes in the quality of scenic vistas.

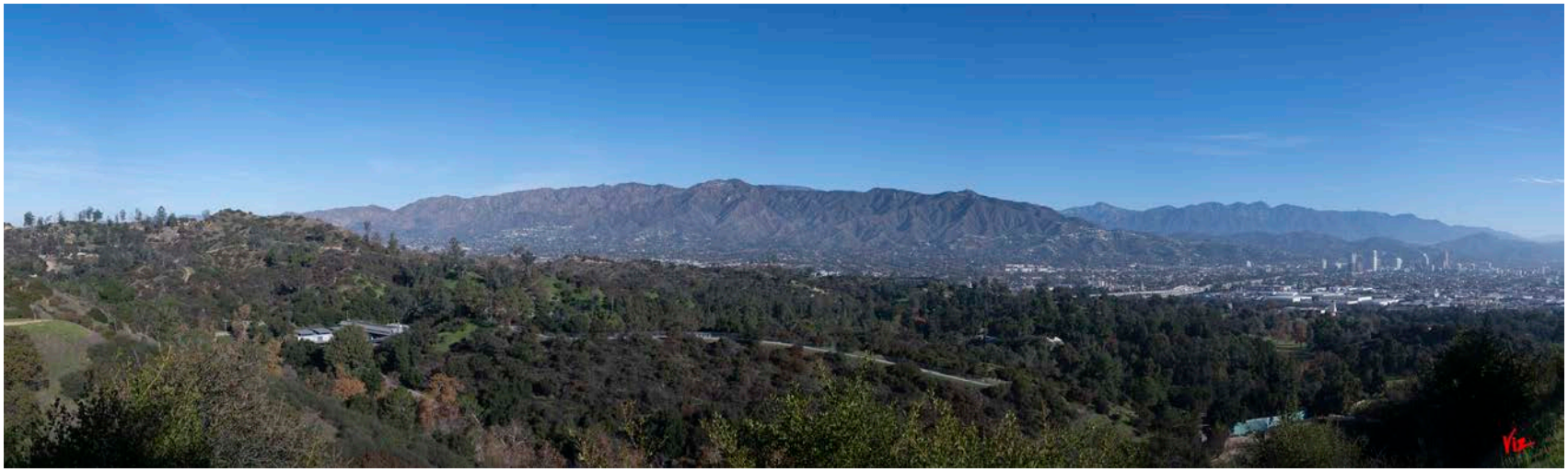
Operation

Once operational, the Project's improvements would be generally hidden within existing or reestablished vegetation and urban forest canopy within the Zoo. Exceptions would be for taller structures that extend above the canopy and into the public view from surrounding

scenic vistas. These structures include the three proposed visitor centers, the aerial tram, and the Condor Canyon hillside cut. These improvements would be visible from adjacent areas of Griffith Park and potentially obstruct or alter scenic vistas or views from as the Condor, Skyline or North Trails.

Based on visual simulations for proposed structures prepared by a licensed architect, Project implementation would not substantially adversely affect scenic vistas or views from trails in Griffith Park.[2] Despite the addition of several taller structures or features, such as the reconstructed Treetops Visitor Center and the aerial tram and associated towers, existing distant views of Griffith Park or urban environment from surrounding trails would not be substantially altered or intruded into. For instance, from KVL 1 near Amir's Garden, the proposed Treetops Visitor Center, aerial tram, and the California Visitor Center in the distance would be visible but largely set into the existing topography and urban forest tree cover within the Zoo. From this KVL, the Africa Visitor Center would lie below the ridgeline. Views from KVL 2 also would be slightly altered, but again changes to scenic vistas would be minimal. Proposed structures would blend into the Zoo topography and urban forest landscape and would not substantially intrude into or interrupt more distant scenic vistas. Further, reconstruction of the Treetops Visitor Center spires, which were a prominent historic feature of the Zoo, may bring aesthetic and cultural value to these views by restoring an iconic and historic feature to the viewshed. Because these scenic vistas are more distant and higher in elevation than the Zoo, obstruction, or interference of views by proposed development would be minimal, and scenic vistas of distant prominent features would not be substantially altered. Overall, the Project would have a *less than significant* impact on existing scenic views and vistas.

[2] The white color of simulated structures is due to the limited information on detailed architectural treatment; white also increases the visibility of planned structures in the photosimulations, allowing for a "worst case" assessment of visual changes.



KVL 1: Mid-range views of the Project site from the North Trail near Amir's Garden would be incrementally altered by Project construction (pictured). Views from this KVL of the Zoo's interior, namely the Gottlieb Animal Health and Conservation Center and Treetops Visitor Center would remain substantially unchanged. Views into much of the Zoo's interior are limited by the south-facing ridgeline above the Africa planning area existing vegetation and the Zoo's dense urban forest canopy obscure both existing and proposed new structures. More scenic, distant views beyond the Zoo of the San Gabriel Mountains and the City of Glendale skyline from this KVL would not be interrupted or substantially altered by new structures. Planned new structures would incrementally change these views as the aerial tram and the reconstructed Treetops Terrace would rise above the urban forest canopy. However, these new structures would generally be subordinate to the surrounding topography and urban forest would not result in the loss or obstruction of mid-range or distant views of the San Gabriel Mountains or Glendale skyline.

KVL 2: Scenic Vistas and mid-range views from the Skyline Trail of the interior of the Zoo, including the undeveloped California planning area hillside, the Angela Collier World of Birds Theater, and the Condor East facility would be incrementally affected by new construction. More distant views of the San Gabriel Mountains to the northeast, the Glendale skyline to the east, and natural hillsides and ridgelines of Griffith Park to the southeast would not be blocked or substantially interrupted by new structures. However, development of the interior portions of the Zoo would be somewhat more visible from this KVL. For instance, prominent new development visible from this location of the Skyline Trail would include the aerial tram, Treetops Visitor Center, and the substantial hillside cut for the proposed Condor Canyon. Nevertheless, these improvements would remain subordinate to local topography and the urban forest canopy and distant scenic vistas would not be interrupted. Therefore, changes in scenic vistas and views are not anticipated to substantially alter the visual experience of trail users from this trail.

VIS-2: Would the project conflict with applicable zoning and other regulations governing scenic quality?

The Project would substantially change the existing visual character of the interior of the Zoo, particularly through substantial short-term vegetation removal and modifications to the urban forest canopy and grading. Proposed interior improvements to the Zoo would not change the existing zoning and would not conflict with applicable regulations governing scenic quality. Given that there are no designated scenic highways or residences within or near the Project site, the City of Los Angeles Mobility Plan and LAMC Lighting Requirements do not apply to the proposed Project (see also Impact VIS-3 for further discussion of light and glare impacts). The Project would also modify the existing visual character of exterior public areas fronting the Zoo, including the Zoo Drive gateway to Griffith Park, through roadway, intersection, and parking improvements, including construction of a new multi-story parking structure that would be visible from Zoo Drive. These visual changes would affect public visual resources to a degree that would cause a conflict with the City's General Plan Conservation Element, Framework Element, 1988 Hollywood Community Plan, and Griffith Park Vision Plan, as further discussed herein and in Section 3.11, *Land Use and Planning* (refer to Impact LU-1 for detailed analysis of Project consistency with applicable regulations governing scenic quality).

Changes Within the Zoo Property

The Project would facilitate redevelopment of the Zoo, as well as the expansion of visitor-serving and animal environment space into approximately 25 acres of existing undeveloped areas characterized mainly by vegetated ridges and hillsides. Given the existing developed nature of the site as a Zoo, proposed development would not drastically change the character of the Zoo. The Zoo would remain a Zoo with rich animal environments and lively, engaging visitor areas. Development would remain low density and integrated with lush, diverse landscaping. The Project would modernize existing Zoo facilities to become more visually consistent and interesting. Further, expansions into undeveloped areas within the Zoo would develop unique and visually desirable facilities, particularly within the California and Africa planning areas where two modern visitor centers would be developed, set amongst engaging animal environments, walking paths, and wayfinding signage.

Each phase of development would entail closure of an area of the Zoo using fencing and signage to prevent public access. As a result, construction, including equipment, demolition, and vegetation removal, would not be highly visible to the public within the Zoo. Photo Source: Fort Wayne Children's Zoo

The greatest change in visual character within internal areas of the Project site would result from temporary removal of substantial areas of the urban forest (e.g., mixed eucalyptus woodland; specimen trees), grading and terrain reshaping to recreate animal environments and visitor amenities such as Condor Canyon, and construction on undeveloped hillsides within the California and Africa planning areas. Visual changes would occur incrementally and sequentially over seven phases of development through 2040. Each phase of development would entail closure of an area of the Zoo using fencing and signage to prevent public access. As a result, construction, including equipment, demolition, and vegetation removal, would not be highly visible to the public within the Zoo. Incidental views of the construction would potentially occur as Zoo patrons move long walkways, ride the aerial or ground trams, and visit new and remodeled animal environments, but these effects would be temporary and minor. Further, these changes to the interior of the Zoo would not be highly visible from outside of the Zoo (refer to Impact VIS-1).

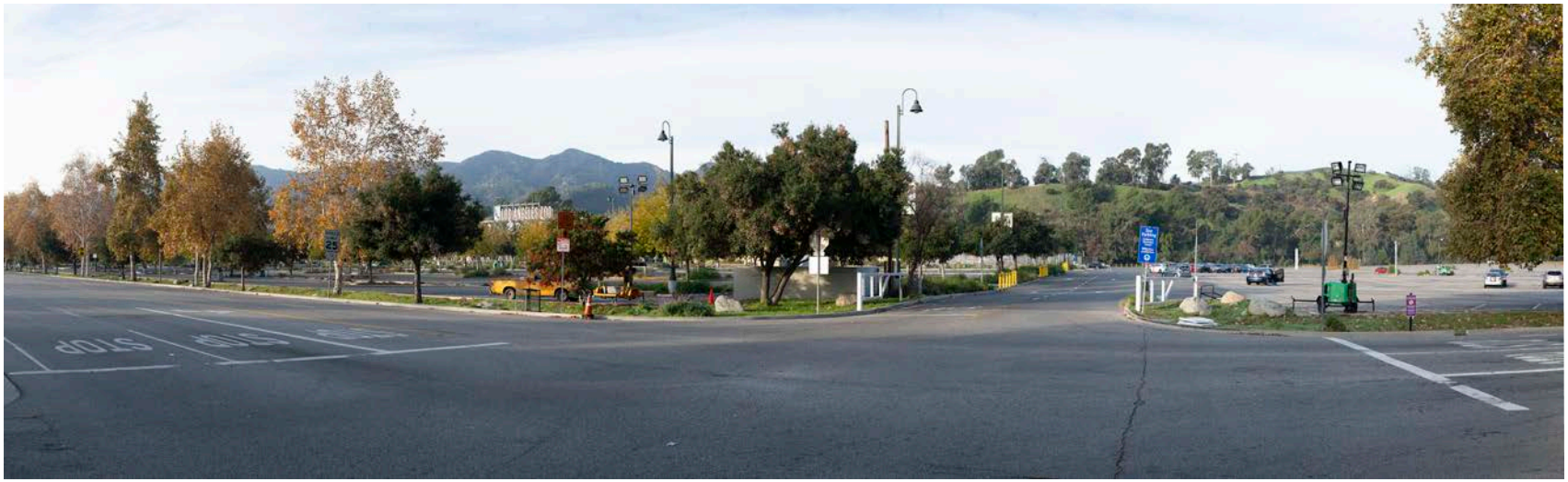
Visual changes from loss of vegetation and tree canopy would potentially be inconsistent with the City's General Plan Conservation Element, Framework Element, and 1998 Hollywood Community Plan goals and policies to retain significant landforms, unique scenic features, and natural viewsheds. However, extensive new landscaping and tree replanting throughout the Zoo would maintain and expand the dense urban forest present within the Zoo's interior over the long term, which would maintain and improve the existing visual character of the site. As described in Section 3.6, *Urban Forestry Resources*, changes to existing trees and vegetation would be substantial, but the Project would include replanting mature vegetation, trees, and landscaping for each phase throughout the Zoo similar to the existing condition. This impact is further mitigated with preservation in place or replacement of mature trees as part of Project landscaping with implementation of **MM UF-1** and **MM UF-2**. These measures would also ensure regeneration of the visual quality of the Zoo as a rich, urban forest canopy and lush landscape, further ensuring that impacts to visual character within the Zoo and associated impacts to policy consistency would be *less than significant with mitigation*.

The Project's transformation of the Zoo's interior character would be consistent with the existing character of the Zoo and would support long-term improvements to that character and history as an iconic, modern Zoo.

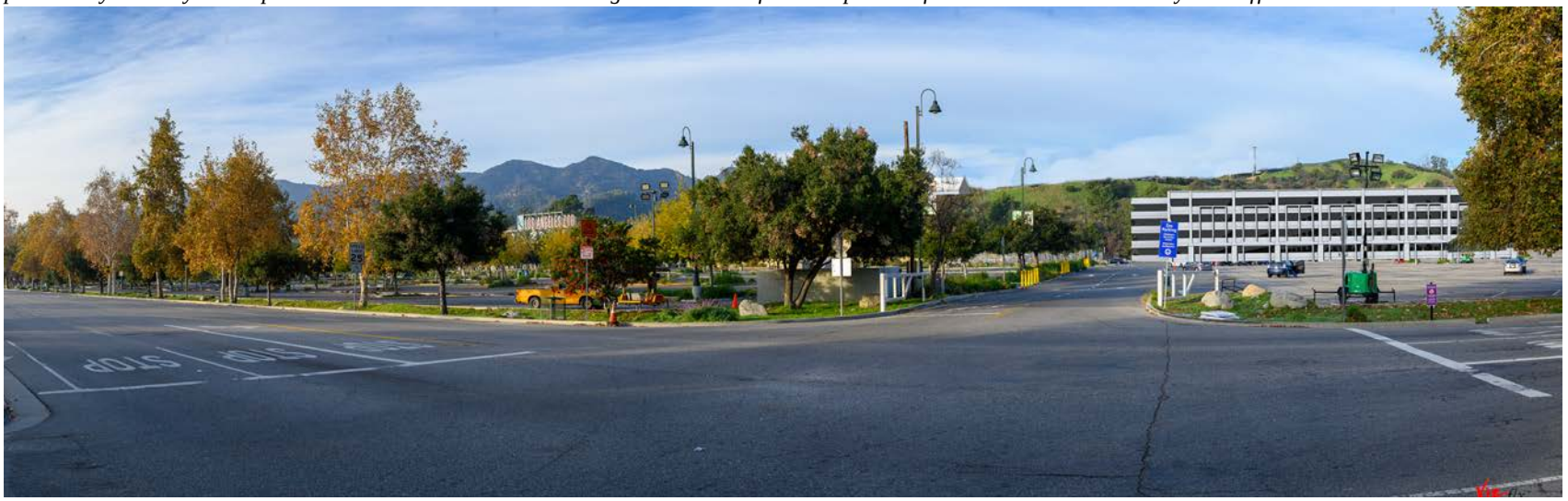
The features that would be visible through the tree canopy would not substantially alter visual character or aesthetic quality of the site. Instead, proposed development may incrementally transition undeveloped portions of the site to developed Zoo facilities, set in lush, landscaped grounds. This transition would be consistent with the existing character of the Zoo and would support long-term improvements to that character and history as an iconic, modern Zoo (see also, Section 3.4, *Cultural and Tribal Cultural Resources*). With

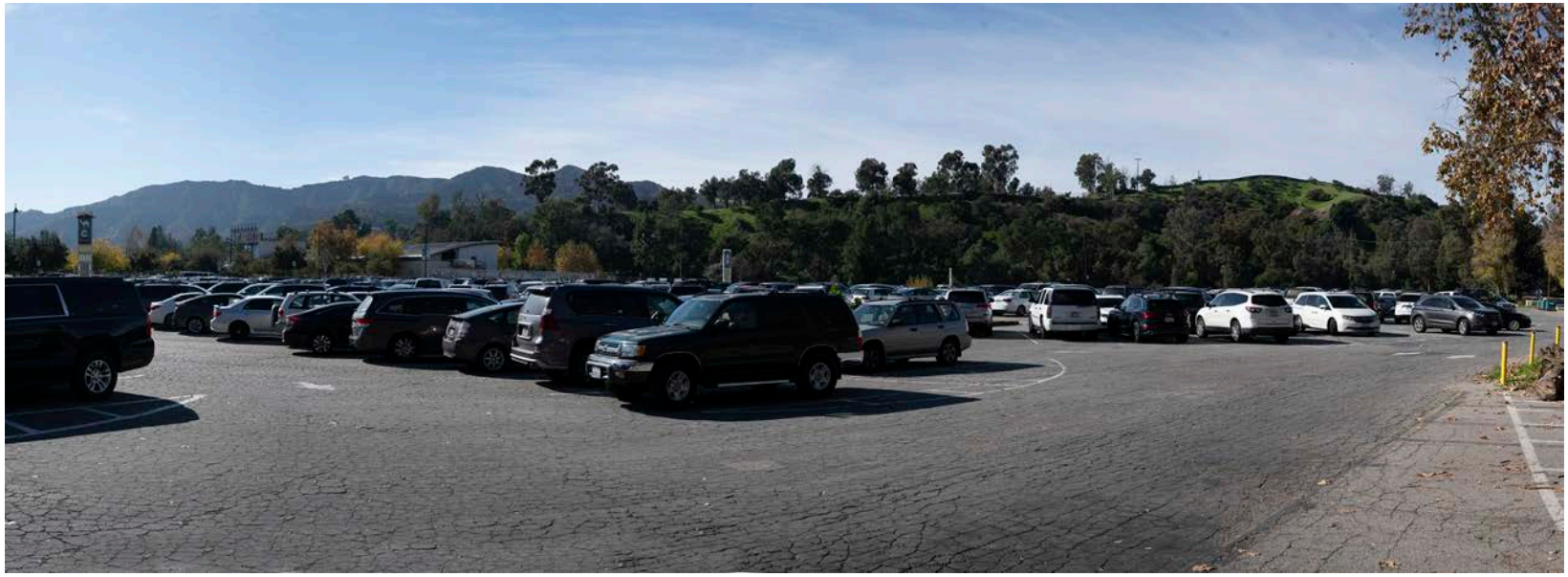
completion and operation of all seven phases of the development, the Project would have a beneficial effect on the visual character and quality of the Zoo, particularly as vegetation installed as part of landscape plans becomes mature and reestablishes the urban forest within the Zoo. Much of the existing development within the Zoo is antiquated, and due to gradual redevelopment of the Zoo over the years, has resulted in a built environment that does not share a consistent aesthetic theme or design. The Project would guide development uniformity in design of proposed improvements, along with planned improvements to landscaping and the urban forest would improve the quality of design and visual character of the Zoo's interior areas as viewed by Zoo patrons over the long term. Therefore, with landscaping and mitigation to preserve and replant trees, interior improvements within the Zoo would be consistent with applicable policies governing scenic quality from the Conservation Element, Framework Element, 1998 and the Hollywood Community Plan.

The Project would also result in major changes in the visual character of the Zoo Drive gateway to Griffith Park the construction of a new multi-story parking structure in the northern parking lot on Zoo property (Figure 2-4 and Figure 2-14). Although no conceptual plans are available, preliminary review indicates such a structure would be approximately five stories in height with a footprint of approximately three acres if no subterranean levels were included. This structure would accommodate the 2,000 spaces proposed in the Vision Plan. This proposed multi-story parking structure would be highly visible from Zoo Drive, Western Heritage Way, and the main entrance to the Zoo (see KVL-3 and KVL-4 below). This structure would substantially change the character of Zoo Drive gateway fronting the Zoo from an open, tree-lined surface parking lot with clear views of vegetated hillsides to a large, bulky parking structure dominating and blocking views of surrounding features. Development of the parking structure may be inconsistent with Conservation Element, Framework Element, 1998 Hollywood Community Plan, and Griffith Park Vision Plan goals and policies to retain views from public areas of the natural topography and character of Griffith Park, including views of ridge lines and mountains, and natural resources, such as trees.



***KVL 3**: Views from North Zoo Drive at the intersection of Zoo Drive and Western Heritage Way towards the Project site and across the northern parking lot include a backsrop of natural undeveloped hillsides and are partially interupted by existing street trees and parking lot landscaping; the interior of the Zoo is not visible from this location. Under the proposed Project, the existing visual quality and character of the Project site could be substantially altered and adversely affected through construction of a parking structure in the northern parking lot estimated to be 5 stories tall. Such a parking structure would be potentially visually incompatible with the Zoo and surounding area and conflic with policies for the Zoo Drive Gateway to Griffith Park.*

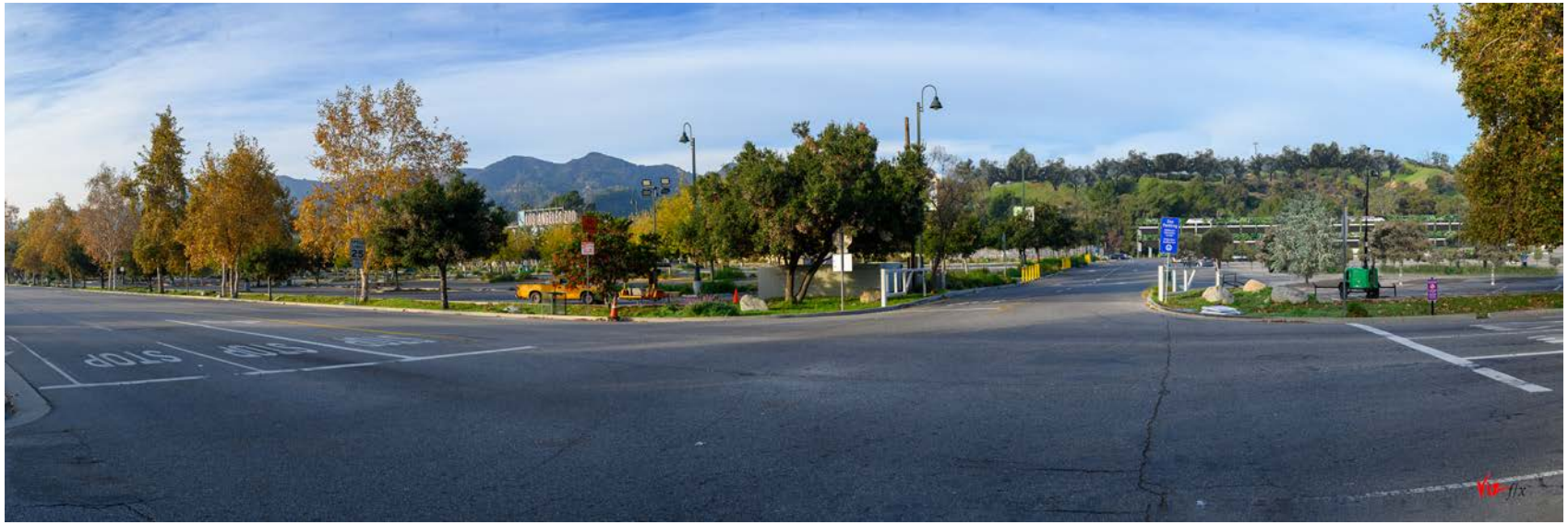




***KVL 4**: Views from Zoo Drive between the row of trees are available across the Zoo's northern parking lot of the natural hillside east of the parking lot and more distant peaks within Griffith Park. Under the Project almost ½ of the roughly 5 acres northern parking lot would be utilized for construction of a 2,000-space parking structure of approximately 5 stories in height on the the western portion of the lot. This new structure would obstruct views of the natural hillside, and would be one of the largest structures in Griffith Park, substantially changing the character of the area as viewed from the Zoo Drive Gateway.*

To buffer the proposed structure, the Project includes a 2-acre park between the parking structure and Zoo Drive and conceptual plans depict a triple line of trees adjacent to the structure along with major tree planting within the proposed public park and the remaining northern surface parking lot and along Zoo Drive (refer to Figure 2-4). However, details regarding the design of these improvements, proposed in Phase 7, are not known. In addition, as no parking structures exist within Griffith Park, this structure would be the tallest structure in Griffith Park, and the size, bulk, and scale of the structure may be visually inconsistent with surrounding development within Griffith Park. Additionally, the proposed parking structure would obstruct views of the natural hillside area to the west (see KVL 4) and potentially disrupt the viewer experience for travelers entering or traversing Griffith Park, substantially altering the aesthetic and expectation of views from Zoo Drive and Western Heritage Way and from adjacent trailheads to Condor and Skyline Trails. The size, bulk, and scale of the proposed parking structure could also detract from the aesthetic of the Zoo's main entry.

The Griffith Park Vision Plan states that parking structures are inconsistent with the Park's wilderness identity and that associated increased vehicular traffic may damage the park-like nature of adjacent picnic areas and recreational facilities; the Plan recommends that no new parking structures should be introduced within the boundaries of the Park. However, the Griffith Park Vision Plan does not apply to Zoo owned property as the Zoo was not a party to the Griffith Park Vision planning process and the Zoo Commission has not adopted the Griffith Park Vision Plan. The Griffith Park Vision Plan, itself, states that it does not apply to the Zoo property because RAP has no jurisdiction over the Zoo property, including the Zoo parking lot, and it further states that the vision, planning, and decision-making process for the property is independent of RAP since it is operated and controlled by the Zoo Department (RAP 2013). While implementation of the proposed parking structure would substantially alter the visual character of the Zoo's main entry, it would be developed within Zoo property and, therefore, would not conflict with the Griffith Park Vision Plan.



KVL 3 (above) and KVL 4 (below), (Post-Mitigation): *The KVLs depicted here represents a possible design of the parking structure with implementation of* ***MM VIS-2*** *under a 5-10 year post-development condition, where landscaping and screening vegetation provide visual shielding of the relocated, down-scaled parking structure. Implementation of proposed mitigation would result in a reduction in the size, bulk, and scale of the proposed parking structure, while proposed landscaping along the exterior of the structure in accordance with* ***MM VIS-2****, as well as landscaping within the parking lot, would help to reduce visual obtrusion by blending the structure with surrounding vegetation.*

However, the proposed parking structure would be highly visible for motorists, bicyclists, and pedestrians traveling through the Zoo Drive gateway to Griffith Park (KVL 3). Implementation of **MM VIS-2** would require the parking structure to be redesigned to reduce structure height and visibility of the parking structure to the extent feasible to help maintain the visual aesthetic and viewer experience of Griffith Park, including the Zoo Drive gateway, which may include design of the parking structure to be partially subterranean and/or shielded to reduce visibility of the structure. However, if subterranean levels for the parking structure are infeasible, alternative design may involve a larger structure within a greater building footprint. Based on architectural review and the intent of providing for an additional 2,000 parking spaces, such a design may result in development of a 3-story, above ground structure across the entirety of the Zoo's northern parking lot. Such a design would result in a reduced structure height but would result in development of an approximately 30-foot tall structure along much of the Zoo's boundary with Zoo Drive. Such a design could reasonably result in a channelized view corridor obstructing passer-by views of Griffith Park, particularly when considered along with proposed at-grade intersection improvements at Zoo Drive/Western Heritage Way, which may create greater impacts to aesthetics as a result of increased size, bulk, and scale (see below). This mitigated structure would remain large, tall, and bulky, conflicting with the existing visual character and policies to maintain the Zoo Drive gateway in a wilderness setting. However, the mitigated structure would preserve views of the natural topography in the background and the landscaped tree buffer would retain views of natural resources. Therefore, with proposed landscaping and reduced height under **MM VIS-2**, the proposed parking structure would be substantially consistent with visual resource policies of the Conservation Element, Framework Element, and 1998 Hollywood Community Plan policies to retain views of the natural ridge lines and trees. Therefore, implementation of the proposed improvements within the Zoo property would be consistent with applicable zoning and other regulations governing scenic quality. See Section 3.11, *Land Use and Planning*, for further discussion of the proposed Project's consistency with applicable zoning and land use regulations.

Changes Outside of the Zoo Property

Proposed improvements outside of the Zoo property would substantially change the urban wilderness character of the Zoo Drive gateway area and may affect viewsheds of natural topography and resources across the park to the west and south. The improvements combined with the proposed multi-story parking structure discussed above would compound changes to visual character of the gateway. Project elements outside of the Zoo property that would be most visible to visitors to Griffith Park and affect the visual character of areas surrounding the Zoo would include roadway and circulation improvements, including the following proposals:

- intersection improvements at the Zoo Drive and main entrance-Western Heritage Way intersection with potentially a traffic signal, roundabout, or a below-grade crossing; and

- realignment of Crystal Springs Drive and a short segment of Western Heritage Way.

The Project's envisioned below-grade crossing at the intersection of Zoo Drive/Western Heritage Way would require substantial engineering and change in the scale and function of the public roadways fronting the Zoo.

These envisioned improvements would collectively affect visual character of the Zoo and Griffith Park as viewed from adjacent roads and trails (refer to Figures 2-4 and 2-16). The improvements would affect North Zoo Drive, Zoo Drive, and Crystal Springs Drive, identified as gateways to Griffith Park under the Griffith Park Vision Plan. Such changes in visual character would be both adverse and beneficial, as further described below.

The proposed Vision Plan presents three options for improving traffic flows and reducing or eliminating vehicle queueing at the congested Zoo Drive/Western Heritage Way/Zoo entrance intersection: 1) installation of traffic signals, 2) a roundabout, or 3) a below-grade crossing of Zoo Drive, allowing Western Heritage Way to pass under a new bridge (Figure 2-14). Signalization would occur during Phase 1 of the Project and, if needed, either a roundabout or below-grade crossing would replace the intersection in Phase 7. Installation of traffic signals or a roundabout would not substantially alter existing visual character of this intersection in context of the Zoo or Griffith Park, although roundabout construction may require expansion outside of existing paved roadways and removal of mature eucalyptus, western sycamore, and other trees. Alternately, new bridge construction and an on- and off-ramp configuration for access between Zoo Drive, North Zoo Drive, and Western Heritage Way would require extensive grading and removal of a substantial number of existing street trees and roadside vegetation. Short-term construction impacts on visual character would be substantial as dozens of trees would likely be removed and such construction would also extend over a period of two or more years. Improvements would likely extend into Zoo and Autry Museum of the American West parking lots, eliminating or substantially altering existing landscaping and mature trees.

If installed, the grade-change and interchange improvement at Zoo Drive/Western Heritage Way would dramatically transform the visual character of this intersection and entrance to the Zoo, as well as the Zoo Drive gateway to Griffith Park. Travelers entering from North Zoo Drive would proceed over the new bridge to the Zoo parking lot, while those accessing Zoo Drive or Western Heritage Way would use an on- and off-ramp system with those proceeding along Zoo Drive and Western Heritage Way would pass under a new bridge. This envisioned infrastructure project would dramatically change this travel corridor, from what currently feels visually like a “country road” with a 4-way stop to a concrete interchange with dramatic terrain modification. The improvement would alleviate congestion at the intersection, which is the intent of the Project in Phase 7, but would increase travel speeds and separate travelers

from views of the Zoo Drive gateway and the Zoo entrance, potentially diminishing the sense of arrival currently afforded by the local roadways, open sky views, and iconic Zoo entrance sign setback from the street. The visual character of the adjacent Main Trail could also be altered due to vegetation removal and users may experience increased noise and exposure to traffic. While the roundabout or grade change, bridge and interchange option may have long-term visual benefits, because plans are entirely conceptual, the potential remains for significant visual impacts to community character. Therefore, these improvements outside of Zoo property would conflict with the goals and policies of the Conservation Element, Framework Element, 1998 Hollywood Community Plan, and Griffith Park Vision Plan to maintain the wilderness character of Griffith Park and the Zoo Drive gateway, as well as views of ridgelines, vegetation, and iconic structures.

Project implementation would also include realignment of approximately 1,200 feet of Western Heritage Way and Crystal Springs Drive to pass east and south of Zoo open storage areas in the southern parking lot along an existing 15+ foot-wide service road, which is a continuation of Western Heritage Way south of the Zoo Magnet Center, then rejoining the existing alignment of Crystal Springs Road (refer to Figure 2-15). This realignment may require widening of this road from its current 15+ feet to the typical 30 to 35-foot cross section of Crystal Springs Drive. Although no conceptual designs are available, realignment of this road could potentially impact dozens of roadside trees, diminishing the rural visual character of an adjacent park trail that would become exposed to vehicular traffic, similar to that associated within its southward continuation along Crystal Springs Drive. However, the visual character of the realigned roadway would be similar or improved as the Zoo southern parking to the north is proposed for major new landscaping and the Wilson and Harding Golf Course, which lies to the south, would provide visual relief. However, uncertainty over design, potential for tree removal and impacts to views from the existing trail may create potentially significant impacts to community character.

For Project elements occurring in the public right of way, **MM VIS-1** would ensure the Zoo Drive/Western Heritage Way intersection improvements would be designed to maximize visual compatibility with Griffith Park and the Zoo entrance and retain the wilderness identity of the park. **MM VIS-1** would require intersection improvements to be designed with stone or other natural materials and sized consistent with surrounding structures and facilities in Griffith Park to the extent feasible, as well as incorporating iconic design elements, signage, and art/decorations that reflect the gateway to both the Zoo and Griffith Park. Even with these required mitigation measures, the visual changes proposed would be substantial and would not be consistent with the visual character of the Zoo Drive gateway and existing Zoo entrance or the urban wilderness identity of Griffith Park, as defined in the Griffith Park Vision Plan. For example, intersection improvements would substantially alter the Zoo Drive gateway, creating a more urban, engineered intersection with increased speeds, which would continue to substantially change the visual character of the Griffith Park Zoo Drive gateway area. Consequently, with mitigation, the proposed intersection and roadway improvements outside

of Zoo property, with the compounding effect of the proposed parking structure within the Zoo that would be visible from these roadways, would not be consistent with the Conservation Element, Framework Element, 1998 Hollywood Community Plan, and Griffith Park Vision Plan goals and policies to retain viewsheds of topography and natural resources (e.g., trees) and preserve the urban wilderness identity of Griffith Park and the Zoo Drive gateways. Therefore, the Project's proposed exterior circulation improvements would not be consistent with applicable regulations governing scenic quality, and impacts would be *significant and unavoidable*. See Section 3.11, *Land Use and Planning*, for further discussion of the proposed Project's consistency with applicable zoning and land use regulations.

VIS-3:	Would the project create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?

Construction

The Project would result in ongoing construction in seven sequential phases over the course of 20 years. Each phase of development would entail closure of an area of the Zoo using fencing and signage to prevent public access. As a result, construction, including equipment that may be a source of light and glare, would not be highly visible to the public within the Zoo during operating hours of 10 A.M. to 5 P.M. Light and glare from the construction within the interior of the Zoo would not be highly visible from outside of the Zoo given intervening topography, vegetation, and distance (refer to Impact VIS-1). Incidental exposure to construction lights and glare from equipment and materials within closed portion of the Zoo would potentially occur as Zoo patrons move long walkways, ride the aerial or ground trams, and visit new and remodeled animal environments, but these effects would be temporary and minor during the day. Further, any construction activities requiring night lighting would be contained within the closed area of the Zoo and would occur when the Zoo was closed. Therefore, nighttime lighting would be localized and not perceived by the public and construction impacts related to light and glare would be *less than significant*. Nighttime light effects on wildlife and Zoo animals is discussed in Section 3.3, *Biological Resources*.

Operation

Under the Project, the Zoo would expand the ability to host additional special events, including seasonal after-hour events like LA Zoo Lights.

New sources of lighting under the Project would include lighting in new structures, safety lighting of the aerial tram, and parking lot, roadway, and pathway lighting, as well as nighttime security lighting of Zoo service areas and administrative facilities. Griffith Park is open from 5:00 AM to 10:30 PM daily, which allows visitors in the park after dark to use park facilities, including trails near the Project site. Most new lighting sources would not be highly visible from the outside of the Zoo due to the hillsides, vegetation, perimeter fencing and the Zoo's urban forest obstructing views into the Zoo (see also, Impact VIS-1). However, the proposed California and Africa planning areas constructed on the Zoo's higher elevations would support structures with night lighting that could be seen from distant vistas described by KVA-1 and KVA-2 above. The proposed aerial tram would also hover above vegetation and structures within the Zoo with security lights potentially visible at night from these locations. The Project would also increase the frequency of nighttime events, which may involve lighting after the Zoo has closed. Further, reflective materials used in the aerial tram or visitor centers (e.g., view windows) could potentially catch sunlight during the day and project glare toward the public trail overlooks in Griffith Park.

Light Effects

Proposed parking lot improvements would include installation of fully shielded lighting to direct light downward and prevent spillover to wilderness areas in Griffith Park, similar to the existing main parking lot. Photo source: Google 2020

The most visible new lighting on the Project site would be from parking lot security and roadway lighting in the public areas fronting the Zoo. As described in Impact VIS-2, this area is a designated gateway to Griffith Park where increased lighting may diminish visual quality in the area. The existing main parking lot is currently lit with hooded lighting to direct light down and prevent spill over into wilderness area of the Griffith Park; this type and extent of lighting would persist under the Project, including the proposed multi-story parking structure. While additional lighting may be inconsistent with visual character of the area, as address in Impact VIS-2, the additional lighting itself would not dominate surrounding roadways, as the

additional lighting would be hooded and directed downward similar to lighting that currently occurs at the Zoo.

The Project would also increase the frequency and projected attendance of special events held at the Zoo, potentially requiring longer durations of nighttime lighting prior to Zoo daily shutdown. Events may be held in proposed hilltop visitor centers in the California and Africa planning areas, which may be visible from public views in Griffith Park. However, lighting used during such events would be internal to the Zoo and, as noted in Impact VIS-1 above, such special event lighting visibility from within the Zoo would highly limited due to distance from viewing points and intervening trees and vegetation.

The Zoo is not visible from nearby communities in the City, Glendale, or Burbank and, therefore, would not be affected by Project lighting or glare. Residential communities outside of Griffith Park in proximity to the Zoo are separated from the Zoo by approximately 3 miles and intervening hillsides, the Los Angeles River, and travel corridors of SR 134 and I-5 which provide lighting for traveling vehicles, completely block views of the Zoo. Therefore, additional lights sources at the Zoo would not adversely impact sensitive residential communities surrounding the Zoo. Uses surrounding the Zoo that have the potential to observe Project lighting include the Autry Museum of the American West and the Wilson and Harding Golf Course. However, the Autry Museum closes at 4:00 PM, and therefore, no visitors or staff would be impacted by current or future nighttime lighting occurring at the Zoo. The Wilson and Harding Golf Course closes at 10:00 PM; therefore, visitors and staff may detect night lighting at the Zoo. However, lighting from the Zoo is not anticipated to create a nuisance to the Wilson and Harding Golf Course, as the golf course is located behind a Zoo ridgeline in the Africa planning area, which would block views of lighting within the Zoo and the parking lots. Further, the golf course provides substantial lighting at its driving range and parking lot so that visitors may continue their activities after sundown. Other facilities in Griffith Park that may be sensitive to night lighting include the Griffith Observatory and the Greek Theater. However, the natural topography of Griffith Park includes a large hillside that divide these areas from one another, thereby obstructing direct views and minimizing potential light spillover.

Zoo lighting would comply with LAMC Section 93.0117, which limits the amount of exterior light intensity on surrounding areas and requires parking lot lighting to face away from streets and residences. Increased lighting would be substantially visible to surrounding uses or cause impacts to Zoo visitors. Therefore, light impacts from the Project would be *less than significant.*

Glare Effects

The Project would potentially create sources of glare from bright or reflective surfaces. Given the programmatic nature of the Vision Plan, detailed designs of proposed improvements, including specifications on building materials and architectural coatings or treatment are not available. Based on the proposed conceptual design and visual simulations, several proposed

new structures would be visible from higher-elevation trails located in the Project vicinity. For example, the larger developments proposed in Phases 1 through 3 such as the California and Treetops Visitors centers and the aerial tramway towers, would be visible from public trails (see KVL 1 and 2 above). These structures and features may be constructed or designed with some reflective surfaces (e.g., large windows, polished surfaces) or architectural surfacing that may reflect light during certain hours of the day. Glare may be reflected from proposed hilltop visitor centers in the California and Africa planning areas, which may be visible from public views in Griffith Park. However, as noted in Impact VIS-1 above, views of these areas would highly limited due to distance from viewing points and intervening trees and vegetation. Even if some degree of glare results, these structures would only be visible in the distance from public trails and viewpoints within Griffith Park. Due to the Zoo's dense urban forest, the intermittent duration of views from pedestrians along the trails, distance of the views, and anticipated lack of large reflective surfaces or features, most Project development would not generate significant impacts from glare.

However, one proposed feature has the potential to generate substantial new glare. The proposed aerial tram would be an elevated structure rising above the Zoo's urban forest canopy and visible from adjacent public trails in Griffith Park (see KVLs 1 and 2 above). Though the specific materials are not known, aerial tram gondolas are typically constructed with large, rounded glass panels to allow 360° views for riders or may include other reflective features that could generate glare. The glare generated from the gondolas could create a nuisance and distract from the scenic views overlooking the Zoo. Implementation of **MM VIS-3** would require the Zoo utilize tram gondolas that would have matte finishing and earth tone colors to blend with the landscape and reduce or eliminate substantial glare. In addition, the measure would require all glass features of the gondolas to use non-reflective glass or film covers to reduce reflectivity. With implementation of this mitigation measure, Project impacts from generation of glare would be *less than significant with mitigation*.

3.1.4 Mitigation Measures

The following measure is identified to address impacts of the Project resulting from changes in the visual quality and character of the site and from generation of glare visible from public areas of Griffith Park.

MM UF-1 and MM UF-2 shall apply.

MM VIS-1 Roadway and Parking Lot Improvement Design

Improvements to the intersection of Zoo Drive/North Zoo Drive/Western Heritage Way and the main Zoo entrance, Zoo parking lots, and the realignment of Crystal Springs Drive shall be designed to respect and enhance the visual quality and natural character of Griffith Park, especially designated gateways to Griffith Park as follows:

- A licensed landscape architect experienced with road and infrastructure design within highly scenic parks shall be part of any design team and charged with maintaining and enhancing visual quality and natural character the public spaces fronting the Zoo, including the parking, roadways, intersections and trails.
- For improvements at the intersection of Zoo Drive/North Zoo Drive/Western Heritage Way and the main Zoo entrance, major structural changes, including but not limited to a new bridge, below-grade crossing, and slip ramps or a roundabout, a licensed architect experienced with road and infrastructure design within highly scenic parks shall be part of any design team and charged with creating a scenic and iconic gateway feature, including:
  - Use of stone or other natural materials consistent with surrounding structures and facilities in Griffith Park.
  - Minimize size, bulk, scale of structures to the extent feasible while also adhering to required engineering standards for safety and operations.
  - Installation of iconic design elements, signage, and art/decorations (e.g., emblematic animals or habitats, sculpture, topiary/vegetation, water feature) that reflect the gateway to both the Zoo and Griffith Park such that the bridge or roundabout become beneficial visual features.
- All improvements to access roads and intersections shall be designed to preserve existing vegetation, particularly healthy mature trees, and characteristic park features (e.g., split rail fences), and to protect views from these roads and adjacent trails.
- As part of design of these road and intersection improvement projects, a master landscape plan shall be prepared to guide tree and landscape retention and protection along these road corridors along with tree replanting and replacement landscaping.
- The Zoo shall coordinate with RAP on design of all road and intersection improvements, and parking lot perimeter plantings.

MM VIS-2 Parking Structure Design and Screening

The proposed parking structure shall be designed in such a manner as to limit size, bulk, and scale and to reduce visibility of this new parking structure. The goal for redesign of the parking structure should be reduce the structure height as much as possible. Possible ways to reduce impacts of views of the structure from adjacent roadways and public areas may include:

- Siting the parking structure in the far western corner of the parking lot as far from Zoo Drive as possible;
- Design of the structure to a height no greater than three stories above grade with development of additional subterranean construction levels as necessary to achieve the intended number of new parking spaces;
- Screening of the structure through planting of dense stands of trees and landscaping around the exterior of the structure;
- Installation of lattices or climbing vines along the exterior of the structure and;

- Use of natural materials (e.g., stone facing) or earth-tone colors to reduce the urban character of the structure.

Proposed plans for the parking structure shall demonstrate screening and compatible design with Griffith Park and the intended goal of reducing structure height to the extent feasible. If the design of the structure within the proposed footprint identified in the Vision Plan and with a reduced structure height is determined to be infeasible due to cost or other environmental factors (e.g., shallow groundwater), redesign of the structure to achieve a reduced structure height may include consideration of a design of a structure within a larger footprint and no subterranean levels. All plans for the proposed parking structure shall be subject to review and approval by the City Bureau of Engineering and Cultural Affairs Commission prior to approval of permits.

MM VIS-3 Aerial Tram Glare Reduction

The proposed aerial tram support structures and gondolas shall have matte-finishing and painted with earth-tone colors to blend with the landscape. All glass features of the gondolas shall utilize non-reflective or low-reflectivity glass or film covers to avoid any potential for glare. Requirements for the use of no or low reflective materials shall be indicated on all plans for the aerial tram and be subject to review and approval by City Bureau of Engineering prior to approval of permits.

3.1.5 Impacts Summary

With implementation of **MM UF-1, MM UF-2, MM VIS-1**, **MM VIS-2,** and **MM VIS-3** to reduce impacts to the visual character and glare from the proposed aerial tram, Impacts VIS-1 and VIS-3 would be reduced *to less than significant*. While it may be possible to partially or largely obscure views of the structure from surrounding roads and public trails, the construction of a 3-acre parking structure of approximately five stories in height would alter and substantially degrade the visual character and quality of key gateway roads into the Park through loss of openness of views and intrusion of a major structure of incompatible size, bulk, and scale with surrounding open space and development. If the structure were developed within a larger footprint in order to achieve a reduce structure height, it is possible the structure could be developed nearer to the public roadways which could continue to degrade the viewer's experience of Griffith Park and disrupt views from public areas. Even partial subterranean construction would not fully reduce these impacts. However, the Griffith Park Vision Plan does not apply to Zoo property and implementation of the proposed parking structure would not conflict with any other applicable regulations governing scenic quality.

For Impact VIS-2, no feasible mitigation measures are available to fully address the potential impacts associated with the change in visual character of the Zoo Drive gateway into Griffith Park and associated conflicts with the Griffith Park Vision Plan. Combined with reengineering of the Zoo Drive/Western Heritage Way intersection as either a roundabout or below-grade crossing, which would substantially change landscaping and character of the gateway roads,

the overall character of this public area would be transformed from a rural entryway to the Griffith Park wilderness areas to a more urbanized and developed, automobile-focused area. These changes would conflict with Therefore, while most impacts on aesthetics and visual resources would be less than significant with mitigation, overall impacts to aesthetics and visual resources from Impact VIS-2 due to the proposed improvements to the Zoo Drive/Western Heritage Way intersection (e.g., signalization, roundabout, below-grade crossing) and realignment of Western Heritage Way would remain *significant and unavoidable*.

3.2 AIR QUALITY

Environmental impacts to air quality may arise from atmospheric discharges of pollutants produced by sources involved in facility construction and operation. A significant air quality impact would occur if emissions of criteria pollutants or ozone (O_3) precursors resulted in an increase in ambient air concentrations of regulated pollutants, or if sensitive receptors would be exposed to other emissions such as toxic air contaminants or those characterized by a visible dust plume or noxious odors. Sources of emissions involved in construction activities include heavy-duty off-road equipment, fugitive dust and vapors, and on-road vehicle trips. Construction of near-term improvements have potential to result in exceedance of applicable thresholds for NOx; however, mitigation requiring use of construction equipment equipped with Tier 4 engines would reduce emissions to a less than significant. Operational emissions would be predominantly attributed to mobile source vehicle trips by employees and patrons, and additional emissions associated with facility maintenance vehicles and equipment and other energy and area sources. Net increases in pollutant emissions generated from operation of the Project would not exceed applicable thresholds. Impacts to air quality from construction and operations would be less than significant.

This section analyzes the potential for implementation (i.e., construction and operation) of the Los Angeles Zoo and Botanical Gardens (Zoo) Vision Plan (Vision Plan; Project) to generate emissions of air pollutants of sufficient nature and magnitude to cause significant impacts to the environment pertaining to public health and nuisance, and implementation of the Air Quality Management Plan (AQMP).

3.2.1 Topical Background

In the United States (U.S.), air quality is primarily characterized by ambient ground-level concentrations of seven specific pollutants identified by the U.S. Environmental Protection Agency (USEPA) to be of concern with respect to health and welfare of the public. These specific pollutants—known as "criteria air pollutants"—are pollutants for which the federal and state governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. The federal ambient concentration criteria are known as the National Ambient Air Quality Standards (NAAQS), and the California ambient concentration criteria are referred to as the California Ambient Air Quality Standards (CAAQS). Federal criteria air pollutants include ground-level ozone (O_3), nitrogen dioxide (NO2), carbon monoxide (CO), sulfur dioxide (SO2), respirable particulate matter ten microns or less in diameter (PM_{10}), fine particulate matter 2.5 microns or less in diameter ($PM_{2.5}$), and lead (Pb). Table 3.2-1 shows the CAAQS and NAAQS concentrations for the criteria air pollutants with the corresponding averaging times. The following descriptions of

each criteria air pollutant and their health effects are based on information provided by the South Coast Air Quality Management District (SCAQMD) (2012).

Table 3.2-1. Criteria Air Pollutant Standards

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

Source: CARB 2020.
Notes: ppm = parts per million; µg/m^3 = micrograms per cubic meter.

Federal and State Criteria Air Pollutants

Ozone (O_3) is a colorless gas with a sharp odor, is a highly reactive form of oxygen. High O_3 concentrations exist naturally in the stratosphere. However, it is also formed in the atmosphere when volatile organic compounds (VOC) and nitrogen oxides (NO_X) react in the presence of ultraviolet sunlight (also known as smog). The primary sources of VOC and NO_X,

the components of O_3, are automobile exhaust and industrial sources. Some mixing of stratospheric O_3 downward through the troposphere to the earth's surface does occur; however, the extent of O_3 transport is limited.

The propensity of O_3 for reacting with organic materials causes it to be damaging to living cells and cause health effects. O_3 enters the human body primarily through the respiratory tract and causes respiratory irritation and discomfort, makes breathing more difficult during exercise, and reduces the respiratory system's ability to remove inhaled particles and fight infection. Individuals exercising outdoors, children and people with preexisting lung disease, such as asthma and chronic pulmonary lung disease, are considered to be the most susceptible subgroups for O_3 effects.

Particulate matter (PM_{10} and $PM_{2.5}$) refers to particles small enough to be inhaled into the deepest parts of the lung, which are of great concern to public health. Major sources of PM_{10} include crushing or grinding operations; dust stirred up by vehicles traveling on roads; wood burning stoves and fireplaces; dust from construction, landfills and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions. Emissions of $PM_{2.5}$ result from fuel combustion (e.g., motor vehicles, power generation and industrial facilities), residential fireplaces and wood stoves. In addition, $PM_{2.5}$ can be formed in the atmosphere from gases such as SO_2, NO_X, and VOC.

Respirable particles (particles less than 10 microns in diameter, denoted as PM_{10}) can accumulate in the respiratory system and aggravate health problems such as asthma, bronchitis, and other lung diseases. Children, the elderly, exercising adults, and those suffering from asthma are especially vulnerable to adverse health effects of PM. A consistent correlation between elevated ambient fine particulate matter (particles less than 10 microns in diameter, denoted as $PM_{2.5}$) levels and an increase in mortality rates, respiratory infections, number and severity of asthma attacks and the number of hospital admissions has been observed in different parts of the U.S. and various areas around the world. Studies have reported an association between long-term exposure to air pollution dominated by $PM_{2.5}$ and increased mortality, reduction in lifespan, and an increased mortality from lung cancer.

Daily fluctuations in $PM_{2.5}$ concentration levels have also been related to hospital admissions for acute respiratory conditions, to school and kindergarten absences, to a decrease in respiratory function in normal children and to increased medication use in children and adults with asthma. Studies have also shown lung function growth in children is reduced with long-term exposure to PM. In addition to children, the elderly, and people with pre-existing respiratory and/or cardiovascular disease appear to be more susceptible to the effects of PM_{10} and $PM_{2.5}$.

Carbon Monoxide (CO) is a colorless, odorless, relatively inert gas. It is a trace constituent in the unpolluted troposphere and is produced by both natural processes and human activities. In remote areas far from human habitation, CO occurs in the atmosphere at an

average background concentration of 0.04 ppm, primarily as a result of natural processes such as forest fires and the oxidation of methane. Global atmospheric mixing of CO from urban and industrial sources creates higher background concentrations (up to 0.20 ppm) near urban areas. The major source of CO in urban areas is incomplete combustion of carbon-containing fuels, mainly gasoline.

Individuals with a deficient blood supply to the heart are the most susceptible to the adverse effects of CO exposure. The effects observed include earlier onset of chest pain with exercise, and electrocardiograph changes indicative of worsening oxygen supply to the heart. Inhaled CO has no direct toxic effect on the lungs but exerts its effect on tissues by interfering with oxygen transport by competing with oxygen to combine with hemoglobin present in the blood to form carboxyhemoglobin. Hence, conditions with an increased demand for oxygen supply can be adversely affected by exposure to CO. Individuals most at risk include patients with diseases involving heart and blood vessels, fetuses (unborn babies), and patients with chronic hypoxemia (oxygen deficiency) as seen in high altitudes.

Nitrogen dioxide (NO_2) is a reddish-brown gas with a bleach-like odor and is responsible for the brownish tinge of polluted air. Nitric oxide (NO) is a colorless gas, formed from nitrogen (N_2) and oxygen (O_3) under conditions of high temperature and pressure which are generally present during combustion of fuels (e.g., motor vehicles); NO reacts rapidly with the oxygen in air to form NO_2. The two gases, NO and NO_2, are referred to collectively as NO_X. In the presence of sunlight, atmospheric NO_2 reacts and splits to form a NO molecule and an oxygen atom. The oxygen atom can react further to form O_3, via a complex series of chemical reactions involving hydrocarbons.

Population-based studies suggest that an increase in acute respiratory illness, including infections and respiratory symptoms in children (not infants), is associated with long-term exposures to NO_2 at levels found in homes with gas stoves, which are higher than ambient levels found in Southern California (fewer or no stoves). In healthy subjects, increase in resistance to air flow and airway contraction is observed after short-term exposure to NO_2. Larger decreases in lung functions are observed in individuals with asthma and/or chronic obstructive pulmonary disease (e.g., chronic bronchitis, emphysema) than in healthy individuals, indicating a greater susceptibility of these sub-groups. More recent studies have found associations between NO_2 exposures and cardiopulmonary mortality, decreased lung function, respiratory symptoms, and emergency room asthma visits.

Sulfur Dioxide (SO_2) is a colorless gas with a sharp odor. It reacts in air to form sulfuric acid, which contributes to acid precipitation, and sulfates, which are components of particulate matter. Main sources of SO_2 include coal and oil used in power plants and industries. Exposure of a few minutes to low levels of SO_2 can result in airway constriction in some asthmatics. All asthmatics are sensitive to the effects of SO_2. In asthmatics, increase in resistance to air flow, as well as reduction in breathing capacity leading to severe breathing

difficulties, is observed after acute higher exposure to SO_2. In contrast, healthy individuals do not exhibit similar acute responses, even after exposure to higher concentrations of SO_2.

Lead (Pb) in the atmosphere is present as a mixture of a number of lead compounds. Leaded gasoline and lead smelters have been the main sources of lead emitted into the air. Due to the phasing out of leaded gasoline, there was a dramatic reduction in atmospheric Pb over the past three decades. Exposure to low levels of Pb can adversely affect the development and function of the central nervous system, leading to learning disorders, distractibility, inability to follow simple commands, and lower intelligence quotient. Fetuses, infants, and children are more sensitive than others to the adverse effects of Pb exposure. In adults, increased Pb levels are associated with increased blood pressure. Pb poisoning can cause anemia, lethargy, seizures, and death. There is no evidence to suggest that there are direct effects of Pb on the respiratory system.

California Criteria Air Pollutants

The California Environmental Protection Agency (CalEPA) establishes statewide standards and the California Air Resources Board (CARB) establishes local standards for the six common air pollutants identified above. In addition, CARB has established standards for the following four additional pollutants.

Visibility-reducing particles are a byproduct of various processes and activities involved in land use development. Deterioration of visibility is one of the most obvious manifestations of air pollution and plays a major role in the public's perception of air quality. Visibility reduction from air pollution is often due to the presence of sulfur and NO_X, as well as PM.

Sulfates ($X\text{-}SO_4^{2-}$) are chemical compounds which contain the sulfate ion (SO_4^{2-}) and are part of the mixture of solid materials that comprise PM_{10}. Most of SO_X in the atmosphere are produced by oxidation of SO_2. Oxidation of SO_2 yields sulfur trioxide, which reacts with water to form sulfuric acid, which contributes to acid deposition. The reaction of sulfuric acid with basic substances such as ammonia yields SO_4^{2-}, a component of PM_{10} and $PM_{2.5}$. Both mortality and morbidity effects have been observed with an increase in ambient SO_4^{2-} concentrations. However, studies to separate the effects of SO_4^{2-} from the effects of other pollutants have generally not been successful. Clinical studies of asthmatics exposed to sulfuric acid suggest that adolescent asthmatics are possibly a subgroup susceptible to acid aerosol exposure.

Hydrogen Sulfide (H_2S) is a colorless, flammable, poisonous compound having a characteristic rotten-egg odor. It is used as a reagent and as an intermediate in the preparation of other reduced sulfur compounds. It is also a by-product of the desulfurization processes in the oil and gas industries and rayon production, sewage treatment, and leather tanning. Geothermal power plants, petroleum production and refining, and sewer gas are specific sources of H_2S in California. High H_2S exposure has been documented as a cause of sudden death in the workplace.

Vinyl Chloride (C_2H_3Cl) is a colorless, flammable gas at ambient temperature and pressure. It is also highly toxic and is classified as a known carcinogen by the American Conference of Governmental Industrial Hygienists and the International Agency for Research on Cancer. At room temperature, vinyl chloride is a gas with a sickly-sweet odor that is easily condensed. However, it is stored at cooler temperatures as a liquid. Due to the hazardous nature of vinyl chloride to human health, there are no end products that use vinyl chloride in its monomer form. Vinyl chloride is a chemical intermediate, not a final product.

Vinyl chloride is an important industrial chemical chiefly used to produce polyvinyl chloride (PVC). The process involves vinyl chloride liquid fed to polymerization reactors where it is converted from a monomer to a polymer PVC. The final product of the polymerization process is PVC in either a flake or pellet form. From its flake or pellet form, PVC is sold to companies that heat and mold the PVC into end products such as PVC pipe and bottles. Vinyl chloride is not only used to make PVC products, but it is also a natural degradation product of chlorinated industrial solvents (e.g., perchloroethylene, trichloroethene, etc.). Vinyl chloride emissions are historically associated primarily with landfills and sites contaminated with chlorinated solvents.

Toxic Air Contaminants (TACs) are generally defined as those contaminants that are known or suspected to cause serious health problems, but do not have a corresponding ambient air quality standard. Air toxics are also defined as an air pollutant that may increase a person's risk of developing cancer and/or other serious health effects; however, the emission of a toxic chemical does not automatically create a health hazard. Air toxics include metals, other particles, gases absorbed by particles, and certain vapors from fuels and other sources. The majority of the estimated health risks from air toxics can be attributed to relatively few compounds, the most important being PM from the exhaust of diesel-fueled engines (diesel PM). Diesel PM differs from other air toxics in that it is a complex mixture of hundreds of substances rather than a single substance.

Common stationary sources of TAC emissions include gasoline stations, dry cleaners, and diesel backup generators, which are subject to local air district permit requirements. The other, often more significant, sources of TAC emissions are motor vehicles on freeways, high-volume roadways, or other areas with high numbers of diesel vehicles, such as distribution centers. Off-road mobile sources are also major contributors of TAC emissions and include construction equipment, ships, and trains.

TACs can be separated into carcinogens and non-carcinogens based on the nature of the effects associated with exposure to the pollutant. For regulatory purposes, carcinogens are assumed to have no safe threshold below which health impacts would not occur. Any exposure to a carcinogen poses some risk of contracting cancer. Non-carcinogens differ in that there is generally assumed to be a safe level of exposure below which no negative health impact is believed to occur. These levels are determined on a pollutant-by-pollutant basis.

Acute exposure to diesel exhaust may cause irritation to the eyes, nose, throat and lungs, and some neurological effects, such as lightheadedness. Acute exposure may also elicit a cough or nausea, as well as exacerbate asthma. Chronic exposure to diesel PM in experimental animal inhalation studies has shown a range of dose-dependent lung inflammation and cellular changes in the lung and immunological effects. Based upon human and laboratory studies, there is considerable evidence that diesel PM is a likely carcinogen. Human epidemiological studies have demonstrated an association between diesel PM exposure and increased lung cancer rates in occupational settings.

Other types of air pollutant emissions associated with greenhouse gas (GHG) emissions are addressed in Section 3.8, *Greenhouse Gas Emissions*.

3.2.2 Environmental Setting

Regulatory Setting

Federal, state, and local laws and regulations have been enacted that address concentrations of air pollutants and other metrics of air quality conditions. Provision of the federal Clean Air Act (CAA) govern air quality in the U.S. and control sources of emissions. In addition to being subject to the requirements of CAA, air quality management in California is also administered by more stringent regulations under the California Clean Air Act (CCAA). At the federal level, the CAA is administered by the USEPA, and in California the CCAA is administered by CARB at the state level and by the air quality management districts and air pollution control districts at the regional and local levels.

Federal Regulations

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

As part of its enforcement responsibilities, the USEPA requires each state with nonattainment areas to prepare and submit a State Implementation Plan that demonstrates the means to attain the federal standards. The State Implementation Plan must integrate federal, state, and local plan components and regulations to identify specific measures to reduce pollution, using

a combination of performance standards and market-based programs within the timeframe identified in the State Implementation Plan.

In addition to the criteria pollutants, the air toxics provisions of the CAA require the USEPA to develop and enforce regulations to protect the public from exposure to airborne contaminants that are known to be hazardous to human health. In accordance with Section 112 of the CAA, the USEPA establishes National Emission Standards for Hazardous Air Pollutants. The list of Hazardous Air Pollutants or air toxics includes specific compounds that are known or suspected to cause cancer or other serious health effects.

On September 27, 2019, the USEPA and the National Highway Traffic Safety Administration published the "Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program" (84 Fed. Reg. 51,310 [September 27, 2019]). The Part One Rule revokes California's authority to set its own GHG emissions standards and set zero-emission vehicle (ZEV) mandates in California. Both the GHG emission standards and the ZEV sales standards reduce criteria pollutants; as a result of the loss of ZEV sales requirements, there may be fewer ZEVs sold and thus additional gasoline-fueled vehicles sold in future years. Emissions of hydrocarbons, NO_X, carbon monoxide, and particular matter would increase as a result of each additional gasoline-fueled vehicle. California expects Part Two of these regulations to be adopted in 2020, and it is anticipated that the federal government may adopt revised GHG emission standards and fuel efficiency standards.

State Regulations

State Implementation Plan

Air quality in California is also governed by more stringent regulations under the CCAA. The CCAA is administered by the CARB at the state level and by the air quality management districts at the regional and local levels. Under the CCAA, regional jurisdictions of the state are required to develop plans to achieve and maintain the CAAQS by the earliest feasible date, which is determined in the most recent State Implementation Plan based on existing emissions and reasonably foreseeable control measures that will be implemented in the future. California is divided into 35 regions with local air quality agencies that determine the degree of reductions needed to lower concentrations of pollutants under the applicable air quality standards and improve protection for public health. The 1977 Lewis Air Quality Management Act established the SCAQMD in order to coordinate air quality planning efforts throughout Southern California.

Toxic Air Contaminants

CARB also controls emissions of TACs throughout the state. Particulate exhaust emissions from diesel-fueled engines (diesel PM) were identified as a TAC by CARB in 1998. State efforts to reduce diesel PM emissions have focused on the use of improved fuels, adding particulate filters to engines, and requiring the production of new technology engines that emit fewer exhaust particulates. TACs in California are regulated primarily through the Tanner Air

Toxics Act (Chapter 1047, Statutes of 1983) and the Air Toxics Hot Spots Information and Assessment Act (Chapter 1252, Statutes of 1987). Assembly Bill 1807 sets forth a formal procedure for CARB to designate substances as TACs. Research, public participation, and scientific peer review must occur before CARB can designate a substance as a TAC. The Air Toxics Hot Spots Information and Assessment Act requires that TAC emissions from stationary sources be quantified and compiled into an inventory according to criteria and guidelines developed by CARB. Under Airborne Toxic Control Measure 2485, all diesel-fueled commercial trucks are subject to a strict limit on idling of no more than five minutes at any location within 100 feet of sensitive receptors.

CARB Gasoline Vehicle Emissions Adjustment Factors

The CARB developed the mobile source emissions model EMFAC2017 as the preferred tool for estimating air pollutant emissions from on-road vehicle travel for land use development and transportation projects in California. The September 2019 federal revocation of the statewide authority to set GHG emissions standards and set ZEV mandates compromised the validity of emission factors contained within the EMFAC2017 model, as fewer ZEVs may be sold in future years thereby indirectly increasing emissions from gasoline-fueled vehicles. To account for the potential reduction in market share of ZEVs in future years, the CARB published *EMFAC Off-Model Adjustment Factors to Account for the SAFE Vehicle Rule Part One* (CARB 2019b) that were approved by the USEPA in March 2020. The CARB guidance includes multipliers for EMFAC2017 output rates that apply to emissions of NO_X, total organic gases and reactive organic gases/volatile organic compounds (ROG/VOC), particulate matter (PM_{10} and $PM_{2.5}$), and CO from gasoline fueled light and medium duty vehicles.

California Code of Regulations (CCR) – Asbestos and Lead

The CCR regulate potential asbestos exposure in construction when construction, alteration, repair, maintenance, renovation or demolition of structures, substrates, or portions thereof contain asbestos [8 CCR §1529 (a)(1)(C)]. Additionally, in California, materials containing greater than one-tenth of one percent (>0.1%) asbestos by weight are regulated as asbestos-containing material.

The CCR Title 17, Division 1, and Chapter 8 (Title 17) pertains to all public and residential buildings in California. Pursuant to Title 17 and USEPA regulations, lead-based paint (LBP) is defined as paint or other surface coatings containing an amount of lead equal to or greater than one milligram per square centimeter (1.0 mg/cm^2) or more than half of one percent [>0.5% or 5,000 parts per million(ppm)] by weight. Title 17 also defines a lead hazard as deteriorated LBP, disturbance of LBP or presumed LBP without containment, or any other nuisances which may result in persistent or quantifiable lead exposure. Additionally, worker exposure to materials containing lead during construction work is regulated by CCR Title 8 §1532.1(a). These regulations require worker protection during construction "where lead or materials containing lead are present."

Regional and Local Regulations

South Coast Air Quality Management District (SCAQMD)

The SCAQMD has jurisdiction over a total area of 10,743 square miles, consisting of the South Coast Air Basin (SCAB)—which comprises 6,745 square miles, including Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties—and the Riverside County portion of the Salton Sea and Mojave Desert Air Basins. The Project site is located in the City of Los Angeles (City), which is situated in the SCAB portion of Los Angeles County and is within the jurisdiction of the SCAQMD.

The SCAQMD is tasked with preparing regional programs and policies designed to improve air quality within the SCAB, which are assessed and published in the form of the AQMP. The AQMP is updated every four years to evaluate the effectiveness of the adopted programs and policies and to forecast attainment dates for nonattainment pollutants to support the State Implementation Plan based on measured regional air quality and anticipated implementation of new technologies and emissions reductions. The most recent publication is the 2016 AQMP, which is intended to serve as a regional blueprint for achieving the federal air quality standards and healthful air.

The 2016 AQMP represents a thorough analysis of existing and potential regulatory control options, and includes available, proven, and cost-effective strategies to pursue multiple goals in promoting reductions in GHG emissions and toxic risk, as well as efficiencies in energy use, transportation, and goods movement. The 2016 AQMP focuses on demonstrating NAAQS attainment dates for the 2008 8-hour O_3 standard, the 2012 annual $PM_{2.5}$ standard, and the 2006 24-hour $PM_{2.5}$ standard. The 2016 AQMP acknowledged that the most significant air quality challenge in the SCAB is the reduction of NO_X emissions sufficient to meet the upcoming O_3 standard deadlines. The 2016 AQMP includes both stationary and mobile source strategies to ensure that rapidly approaching attainment deadlines are met, that public health is protected to the maximum extent feasible, and that the region is not faced with burdensome sanctions if the NAAQS are not met by the established date.

The 2016 AQMP includes an element that is related to transportation and sustainable communities planning. Pursuant to California Health and Safety Code Section 40450, the Southern California Association of Governments (SCAG), the Metropolitan Planning Organization for Southern California, has the responsibility of preparing and approving the portions of the 2016 AQMP relating to regional demographic projections and integrated regional land use, housing, employment, and transportation programs, measures, and strategies. The analysis incorporated into the 2016 AQMP is based on the forecasts contained within the SCAG 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). Land use strategies outlined in the 2016–2040 RTP/SCS that will contribute to regional air quality improvements include: focusing new growth around transit/high quality transit areas, planning for growth around livable corridors, providing more options for short trips/neighborhood mobility areas, and supporting local sustainability

planning. SCAG published the *Proposed Final Connect SoCal* 2020-2045 RTP/SCS in early 2020, which is expected to be adopted by the regional council on May 7, 2020. The *Connect SoCal* 2020-2045 RTP/SCS has not been adopted by SCAG at the time this Report was prepared, and details are not included as they may change during the final approval process.

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

- Rule 401 (Visible Emissions) prohibits discharges of any pollutant into the atmosphere from any single source of emissions that is as dark or darker in shade as that designated No. 1 on the Ringelmann chart (opacity equal to or greater than 20 percent) for up to or more than three minutes in any one hour.
- Rule 402 (Nuisance) states that a person should not emit air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.
- Rule 403 (Fugitive Dust) controls fugitive dust through various requirements including, but not limited to, applying water in sufficient quantities to prevent the generation of visible dust plumes, applying soil binders to uncovered areas, reestablishing ground cover as quickly as possible, utilizing a wheel washing system to remove bulk material from tires and vehicle undercarriages before vehicles exit the project site, limiting vehicle speeds on unpaved roads to 15 miles per hour, and maintaining effective cover over exposed areas. Rule 403 also prohibits the release of fugitive dust emissions from any active operation, open storage piles, or disturbed surface area beyond the property line of the emission source and prohibits particulate matter deposits on public roadways.
- Rule 1113 (Architectural Coatings) establishes limits on the VOC content of specific architectural coating applications. Non-residential building envelope coatings are required to have VOC content less than 50 grams per liter.
- Regulation XIII (New Source Review) authorizes the SCAQMD to deny any Permit to Construct for any new or modified source which results in an emission increase of any nonattainment air contaminant, any ozone depleting compound, or ammonia, unless Best Available Control Technology is employed (Rule 1303) and it can be demonstrated through emissions modeling that the source would not cause or contribute to air quality violations.

City of Los Angeles General Plan

The City General Plan Air Quality Element sets forth the goals, objectives, and policies that guide the city in the implementation of its air quality improvement programs and strategies. The Air Quality Element was reviewed for applicability to the proposed Project. Goal AQ-1 of the Air Quality Element is to provide "good air quality and mobility in an environment of continued population growth and healthy economic structure." Goal AQ-4 is to ensure, "minimal impact of existing land use patterns and future land use development on air quality by addressing the relationship between land use, transportation, and air quality."

Existing Air Quality Conditions

Topographical Influence

The Project site is situated in the portion of Los Angeles County within the SCAB. The SCAB includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. SCAB is bounded by the Pacific Ocean to the west; the San Gabriel, San Bernardino and San Jacinto Mountains to the north and east; and the San Diego County line to the south. SCAB is in an area of high air pollution potential due to its climate and topography. The general region lies in the semi-permanent high-pressure zone of the eastern Pacific Ocean, resulting in a mild climate tempered by cool sea breezes with light average wind speeds. SCAB experiences warm summers, mild winters, infrequent rainfalls, light winds, and moderate humidity. This usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds. SCAB is a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean to the west and high mountains around the rest of its perimeter.

SCAB experiences frequent temperature inversions. Temperature typically decreases with height. However, under inversion conditions, temperature increases as altitude increases, thereby preventing air close to the ground from mixing with the air above it. As a result, air pollutants are trapped near the ground. During the summer, air quality problems are created due to the interaction between the ocean surface and the lower layer of the atmosphere. This interaction creates a moist marine layer. An upper layer of warm air mass forms over the cool marine layer, preventing air pollutants from dispersing upward. Additionally, hydrocarbons and NO_2 react under strong sunlight, creating smog.

Light, daytime winds, predominantly from the west, further aggravate the condition by driving air pollutants inland, toward the mountains. During the fall and winter, air quality problems are created due to CO and NO_2 emissions. CO concentrations are generally worse in the morning and late evening (around 10:00 p.m.). In the morning, CO levels are relatively high due to cold temperatures and the large number of cars traveling. High CO levels during the late evenings are a result of stagnant atmospheric conditions trapping CO in the area. Since CO emissions are produced almost entirely from automobiles, the highest CO concentrations in SCAB are associated with heavy traffic. NO_2 concentrations are also generally higher during fall and winter days.

Local Climatology

The mountains and hills within the SCAB contribute to the variation of rainfall, temperature, and winds throughout the region. The nearest meteorological station that collects data describing local climate conditions in the Project area is at the University of Southern California (USC) campus, approximately 8.5 miles to the south. The USC campus meteorological station continuously measures and records temperature and precipitation levels throughout the year. The annual average temperature in the Project area is 65.4 degrees Fahrenheit (°F). The Project site and surrounding area experience a mean winter temperature of 58.9 °F and a mean summer temperature of 72.6 °F. Within the Project site and its vicinity, the average wind speed is approximately 2.8 miles per hour from the west.

Precipitation in the San Fernando Valley ranges from 15 to 23 inches per year and averages about 17 inches (California Department of Water Resources [DWR] 2004). Annual average precipitation for the City, excluding mountain areas, is 15 inches but has ranged between 4 and 40 inches since record keeping began in 1880. Mountain areas experience higher rainfall levels than the valley bottoms during the same storm event. The annual rainfall between 2013 and 2019 ranges from 5.34 inches to 18.92 inches and has an average annual rainfall for those seven years of 10.12 inches (Los Angeles Almanac 2019). According to the USC campus meteorological station data, total precipitation in the Project area averages approximately 14.9 inches annually. Precipitation occurs mostly during the winter and relatively infrequently during the summer. Precipitation averages 2.8 inches during the winter, 0.75 inches during the spring, 1.0 inch during the fall, and less than 0.1 inch during the summer.

Regional Attainment Status

The state and federal environmental protection agencies assign an attainment designation for each criteria pollutant. The attainment designation identifies if the regional criteria air pollutant concentrations meet the health-based standards defined in the CAAQS and NAAQS. If the air quality in a geographic area meets or is cleaner than the national standard, it is called an attainment area (designated unclassifiable/attainment); areas that do not meet the national standard are called nonattainment areas. In some cases, the USEPA is not able to determine an area's status after evaluating the available information. Those areas are designated unclassifiable. As shown in Table 3.2-2, under the federal standards, Los Angeles County is currently designated Nonattainment (Extreme) for eight-hour average O_3 concentrations and Nonattainment (Moderate) for 24-hour average $PM_{2.5}$ concentrations. Los Angeles County is a maintenance area for PM_{10}, CO, and NO_2 under the NAAQS. For the more stringent CAAQS, Los Angeles County is designated Nonattainment for O_3, PM_{10}, and $PM_{2.5}$, and is in attainment of all other state standards.

Table 3.2-2. State and Federal Attainment Status

Pollutant	State Attainment Status	Federal Attainment Status
Ozone (O_3)	Nonattainment	Nonattainment (Extreme – 1-hour and 8-hour)
Respirable Particulate Matter (PM_{10})	Nonattainment	Attainment – Maintenance (Serious)
Fine Particulate Matter ($PM_{2.5}$)	Nonattainment	Nonattainment (Moderate – 24-hour)
Carbon Monoxide (CO)	Attainment	Attainment – Maintenance (Serious)
Nitrogen Dioxide (NO_2)	Attainment	Attainment – Maintenance (Primary)
Sulfur Dioxide (SO_2)	Attainment	Attainment – Unclassified
Lead (Pb)	Attainment	Nonattainment (Partial)
Visibility-Reducing Particles	Attainment	N/A
Sulfates	Attainment	N/A
Hydrogen Sulfide	Unclassified	N/A
Vinyl Chloride	N/A	N/A

Source: CARB 2020; USEPA 2020.

Local Air Monitoring Data

The SCAQMD monitors air quality conditions at 37 locations throughout the SCAB. Each monitoring station measures concentrations of air pollutants that are considered representative of the air quality in the respective subregion of the SCAB, referred to as the Source Receptor Area (SRA). The Project site is located in SRA 1 – Central Los Angeles County. The monitoring station that collects ambient air quality data in SRA 1 is the Los Angeles-North Main Street Monitoring Station located at 1630 North Main Street in the City.

Table 3.2-3 displays measured pollutant concentrations, the state and federal standards, and the annual frequencies of concentrations recorded above the standards during the three-year period from 2016 to 2018. The SCAQMD has suspended monitoring of CO and SO_2 in the SCAB due to continued demonstration of attainment status in recent years. Concentrations of O_3, PM_{10}, and $PM_{2.5}$ exceeded applicable standards at various times throughout the most recent three-year period. The monitored concentrations are consistent with the attainment status designations for the SCAB.

Table 3.2-3. Ambient Air Quality Data

Pollutant	Statistics and Standards	Annual Maximum Concentrations and Exceeded Standard Frequencies		
		2016	2017	2018
Ozone (O_3)	Maximum 1-hr Concentration (ppm)	0.103	0.116	0.098
	Days > 0.09 ppm (State 1-hr Standard)	2	6	2
	Maximum 8-hr Concentration (ppm)	0.078	0.086	0.073
	Days > 0.070 ppm (State 8-hr Standard)	4	14	4
	Days > 0.070 ppm (National 8-hr standard)	4	16	4
Nitrogen Dioxide (NO_2)	Maximum 1-hr Concentration (ppm)	0.067	0.081	0.070
	Days > 0.18 ppm (State 1-hr Standard)	0	0	0
	Days > 0.100 ppm (National 1-hr Standard)	0	0	0
Respirable Particulate Matter (PM_{10})	Maximum 24-hr Concentration (µg/m3)	74.6	96.2	81.2
	Days > 50 µg/m3 (State 24-hr Standard)	21	40	31
	Days > 150 µg/m3 (Federal 24-hr Standard)	0	0	0
	Annual Concentration (µg/m3)	30	27	34
	Exceed State Annual Standard (20 µg/m3)	Yes	Yes	Yes
Fine Particulate Matter ($PM_{2.5}$)	Maximum 24-hr Concentration (µg/m3)	49.4	61.7	65.3
	Days > 35 µg/m3 (National 24-hr Standard)	2	6	6
	Annual Concentration (µg/m3)	12.0	16.3	16.0
	Exceed State Annual Standard (12 µg/m3)	Yes	Yes	Yes
	Exceed Federal Annual Standard (12.0 µg/m3)	Yes	Yes	Yes

Source: CARB 2019a; 2020; SCAQMD 2019.
Notes: ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter.

Project Site Emissions

The Zoo is developed with approximately 1,259,930 square feet (sf) of animal care and exhibit spaces, visitor-serving facilities, food and beverage facilities, retail, administration buildings, service buildings (refer to Table 2-2). These facilities are managed by 570 full- and part-time employees, and the Zoo is visited by over 1.7 million people annually. Operation of the Zoo, as well as vehicle trips generated by employees and visitors generates criteria pollutant emissions. As discussed in Section 3.15, *Transportation,* operation of the Zoo generates an estimated and 69,638,350 annual vehicle miles traveled (VMT). The estimated annual operational air emissions associated with existing Zoo operations have been calculated utilizing the California Emissions Estimator Model (CalEEMod Version 2016.3.2) as recommended by the SCAQMD and are shown in Table 3.2-4.

Table 3.2-4. Estimated Operational Emissions for the Existing Project Site

Air Pollutant	SCAQMD Thresholds[2]	Operational Emissions[1] (pounds/day)				
		Maintenance Sources	Energy Sources	Fugitive Area Sources	Mobile	Total
VOC	55	8.7	<0.1	4.8	8.1	21.6
NOx	55	3.0	1.4	-	21.1	25.5
CO	550	55.0	0.6	-	265.0	320.6
SOx	150	<0.1	<0.1	-	0.7	0.7
PM_{10}	150	0.4	<0.1	-	9.6	9.9
$PM_{2.5}$	55	0.3	<0.1	-	4.1	4.4

[1] Refer to Appendix D for CalEEMod output sheets; overall = emissions based on rounded totals.
[2] SCAQMD Thresholds discussed in Section 3.2.3, *Impact Assessment and Methodology*.

Sensitive Receptors

Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. The CARB has identified the following groups who are most likely to experience adverse health effects due to exposure to air pollution: children less than 14 years of age, the elderly over 65 years of age, athletes, and people with cardiovascular and chronic respiratory diseases (CARB 2005). According to the SCAQMD, land uses that constitute sensitive receptors include residences, schools, playgrounds, childcare centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. SCAQMD guidance for assessed localized air quality impacts requires the identification of sensitive receptors within 500 meters (1,640 feet) of emission sources (SCAQMD 2005).

Sensitive receptors within 500 meters of the Project site include the parks and recreational facilities surrounding the Zoo within Griffith Park, including John Ferraro Athletic Fields (approximately 0.3 miles northwest of the Project site) and Mineral Wells Picnic Area (just west of the Gottlieb Animal Health and Conservation Center, approximately 75 feet from the Project site boundary), and the Zoo Magnet Center located on the Project site in the southern parking lot. Within the Zoo, sensitive receptors to air pollution are Zoo visitors, including children, as well as resident animal species that may be sensitive to pollutant emissions; however, it is noted that captive animal species may have a unique sensitivity to the air quality setting of an urban environment.

3.2.3 Impact Assessment Methodology

Significance Thresholds

According to Appendix G of the CEQA Guidelines, the Project would have a potentially significant effect on air quality if it would:

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

For local thresholds of significance, the SCAQMD published its CEQA Air Quality Handbook to guide air quality assessments for CEQA projects within its jurisdiction (SCAQMD 2003), and supplemental updates have been published to the agency website as air quality impacts assessment procedures evolved over time. To assist in the impact assessment of air pollutant emissions, the SCAQMD established mass daily threshold screening values for air pollutant emissions from CEQA projects within the SCAB (SCAQMD 2019b). The mass daily thresholds were derived using regional emissions modeling techniques to prevent the occurrence of air quality violations that would obstruct implementation of the regional AQMP and hinder efforts to improve regional air quality and are discussed in greater detail below.

Methodology

The methodology used in this assessment focuses on characterizing daily air pollutant emissions that would be generated by Project-related activities during construction and future operations. As described in Section 2.0, *Project Description* and Section 3.0, *Introduction to the Environmental Impact Analysis*, Project improvements have been separated into near-term improvements occurring within the first 10 years of the Vision Plan (2020–2030) and long-term improvements that would occur during the latter 10 years of the Vision Plan (2030–2040). The near-term improvements are separated into three phases and summarized in Table 2-22, and the long-term improvements are separated into four phases and summarized in Table 2-23.

As described in Section 3.0, *Introduction to the Environmental Impact Analysis*, the Vision Plan represents a programmatic plan for redevelopment of the Zoo over the next 20 years. Though more detail is provided for near-term improvements, such as those anticipated to occur in the near-term Phases 1 through 3, sufficient detail necessary to perform a detailed estimate of air emissions from construction and operation is not feasible. Given the lack of detail regarding specific improvements and their associated emissions rates, the following analysis of Project impacts reflects a programmatic approach based on growth projections and new development areas, estimating reasonable worst-case emissions for peak construction activity and ongoing Zoo operation. As such, the construction activities assessment characterizes the daily emissions that would occur during each activity involved in the three near-term phases, and the operational assessment characterizes daily air pollutant emissions that would be generated by source activity in the interim development

years of 2025, 2027, 2030, as well as the ultimate completion year of 2040, as further detailed below.

Construction Emissions Estimates

Air pollutant emissions that would be generated by the near-term construction activities involved in Phases 1 through 3 and summarized in Table 2-22 were quantified using CalEEMod, Version 2016.3.2. CalEEMod is the preferred emissions estimation model for land use development projects in California. Long-term activities involved in Phases 4 through 7 and summarized in Table 2-23 are evaluated qualitatively, as detailed information describing their implementation is not available at the time of CEQA document preparation. Construction would adhere to a schedule such that each phase would be completed prior to the commencement of the subsequent phase construction, eliminating the possibility of overlapping emissions between phases of the Vision Plan. Each phase under the Vision Plan is assumed to begin immediately following completion of the prior phase, resulting in a continuous 20-year long construction schedule. Generally, each phase of construction activities would involve demolition, grading and excavation, site preparation including installation of utilities and stormwater infrastructure, construction and paving, and architectural coating and finishing. The equipment inventories and maximum daily activities would be consistent between Phases 1 through 3.

CalEEMod produces estimates of daily air pollutant emissions from sources including off-road equipment exhaust, on-road vehicle trips, and area source emissions including fugitive dust particulate matter and evaporative emissions from paving and architectural coating activities. Practical equipment inventory combinations were populated for each of the activities described in Table 2-22 using information contained in Section 2.0, *Project Description* and the general equipment list provided in Table 2-24. Detailed equipment and vehicle inventories for each activity outlined in Table 2-22 can be found in the Air Quality Emissions Modeling files in Appendix D. Assumptions for equipment quantities, duration of operation, number of truck trips per day, and number of construction employees were estimated based on a level of reasonableness for typical and similar types of construction. Table 3.2-5 provides a general summary of the input parameters for CalEEMod.

Table 3.2-5. Summary of Near-Term Construction Emissions Input Parameters

Near-Term Improvements Schedule and Daily Activities			
Parameter	**Phase 1**	**Phase 2**	**Phase 3**
Start and End Dates	2020–2025	2025–2027	2027–2030
Approx. Redevelopment Area (Acres)	40	25	25
Demolition Max. Equipment Count	8	8	8
Demolition Max. Truckloads/Day	40	40	40
Demolition Maximum Crew Size	50	50	50
Grading Max. Equipment Count	10	10	10
Grading Excavation (Approx. Cubic Yards)	74,000	-	-
Grading Fill Import (Approx. Cubic Yards)	-	-	10,000
Grading Max. Truckloads/Day	40	-	20
Grading Maximum Crew Size	50	40	40
Site Prep Max. Equipment Count	8	8	8
Site Prep Max. Vendor Deliveries/Day	20	20	20
Site Prep Maximum Crew Size	50	50	50
Bldg. Construction Max. Equip. Ct.	12	12	12
Bldg. Construction Max Vendor Deliveries/Day	40	40	40
Bldg. Construction Maximum Crew Size	50	50	50
Approx. Paving Area (Acres)	11	1	1
Paving Max. Equipment Count	8	8	8
Paving Max. Material Trucks/Day	20	20	20
Paving Maximum Crew Size	20	20	20
Architectural Coating Max. Equipment Count	8	8	8
Architectural Coating Maximum Crew Size	20	20	20

In addition to characterizing emissions from the individual stages of redevelopment within each phase of construction, the air quality analysis assessed a scenario involving maximum potential emissions source activity on a single day. The parameters presented in Table 3.2-5 represent conservative inventories of the equipment and vehicle fleets that would be employed to complete each stage of redevelopment involved in project construction. On a daily basis, active sources of emissions—such as the number of equipment in operation, hours of equipment use, construction crew size, and daily truck trips—would be variable throughout the 10-year near term improvements, and several facility components would be under construction concurrently at various times during each of the first three phases. Based on the site configuration and the size of the redevelopment areas, the maximum potential daily construction activity would occur during the early stages of Phase 1 and comprise a combination of:

- Realigning Western Heritage Way around the perimeter of the southern parking lot;
- Improving and repaving the intersection of Zoo Drive and Western Heritage way;

- Redesigning the southern parking lot at the North Hollywood High School Zoo Magnet Center;
- Blasting and excavating to expand Condor Canyon and exporting displaced material;
- Limited grading of hillsides within California Planning Area for pedestrian pathways;
- Demolition and regrading of the Zoo Entry and Sea Lion Exhibit; and
- Excavation of soils for stormwater infrastructure installation within the Zoo Entry

Table 3.2-6 below presents the emission source inventory for Phase 1 combined activity. In accordance with SCAQMD guidance, air pollutant emissions that would be generated by sources involved in construction of the Project are analyzed on both regional and localized scales, and are evaluated in the context of the corresponding SCAQMD Air Quality Significance Thresholds for mass daily emissions.

Table 3.2-6. Phase 1 Emissions Source Inventory – Maximum Daily Activity Scenario

Equipment and Vehicle Fleets for Simultaneous Phase 1 Improvements			
Activity Description	**Equipment (#) Type [Hr/Day]**	**Crew Trips (Workers/Day)**	**Haul Trucks (Rd. Trips/Day)**
Roadway Realignments	(1) Backhoe [8] (1) Compactor [8] (1) Dozer [8] (1) Paver [8]	10	10
Intersection Improvements	(1) Crane [4] (1) Backhoe [8] (1) Paver [8] (1) Boom Lift [8]	10	10
Southern Parking Lot Redesign	(1) Compressor [6] (1) Backhoe [8]	5	-
Condor Canyon Excavation	(1) Tractor [8] (2) Excavator [8] (2) Loader [8] (1) Pile Driver	10	20
California Hillside Grading	(1) Grader [8] (1) Dozer [8] (1) Compactor [8]	5	10
Zoo Entry Demo & Regrading	(1) Excavator [8] (1) Backhoe [8] (1) Dozer [8]	10	20
Stormwater System Installation	(1) Excavator [8] (2) Forklift [8]	10	10
Totals	**25**	**60**	**80**

Regional emissions refer to air pollutant emissions that would be generated by all sources involved in construction of the Project, including sources located on the Project site (equipment and area sources) as well as remote emissions associated with mobile on-road vehicle trips. The regional mass daily thresholds were derived as screening metrics for average daily emissions associated with temporary construction-related sources. Daily pollutant emissions were estimated for each construction activity during Phase 1 through Phase 3, and the maximum daily emissions were determined and compared to the SCAQMD regional mass daily thresholds are shown below in Table 3.2-7.

Table 3.2-7. SCAQMD Air Quality Significance Thresholds – Construction

Mass Daily Thresholds (lbs/day)						
Scale	**VOC**	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Regional	75	100	550	150	150	55
Localized	-	134	1,454	-	12	6

In addition to total daily regional emissions, SCAQMD recommends that daily emissions of air pollutants generated by sources exclusively situated on a project site be evaluated to ensure that substantial localized pollutant concentrations would not materialize at sensitive receptor locations in close proximity to the construction activities. Based on local ambient air quality data obtained from the nearest air monitoring station, SCAQMD derived localized significance threshold (LST) screening values applicable only to those emissions produced by sources on the Project site, namely equipment exhaust and fugitive area sources. The SCAQMD jurisdiction is divided into 38 SRAs based on locations of air monitoring stations. The Project site is located in SRA 1 – Central Los Angeles County. SCAQMD's *Final Localized Significance Threshold Methodology* (SCAQMD 2008) and LST screening approach is intended to apply only to project sites smaller than 5 acres and with sensitive receptors located within 500 feet of the site. As previously described, the Project site encompasses an area of 142 acres, with a maximum single construction area of 40 acres during Phase 1 (see Table 3.2-5). Given these conditions, SCAQMD's LST screening approach would not normally apply; however, this assessment presents an analysis of the Project's estimated construction emissions and the SCAQMD's LST screening approach as a conservative assessment to aid in the determination of impacts associated with the potential exposure of sensitive receptors to criteria pollutant concentrations.

For the purposes of this analysis, the appropriate LST values were determined using the *Mass Rate Lookup Tables* included as *Appendix C* to the *Final Localized Significance Threshold Methodology* (SCAQMD 2008), the SCAQMD guidance contained in the *Fact Sheet for Applying CalEEMod to Localized Significance Thresholds* (SCAQMD 2013), and the Project-specific equipment inventories. The applicable localized significance thresholds are summarized in Table 3.2-7 for a four-acre construction site within SRA 1. Though the nearest sensitive receptor to the Project site (Mineral Wells Picnic Area) is located approximately 75 feet west of the Project site, the localized significance thresholds applied for this analysis

utilize a distance of only 25 feet from construction emissions sources in the attempt to present a conservative assessment.

The potential significance of air quality impacts related to the magnitude of emissions resulting from construction activities was determined by the comparison of daily pollutant emissions to applicable regional mass daily thresholds and LST values. SCAQMD guidance states that if regional and localized emissions remain below the corresponding thresholds, construction emissions would not result in a significant air quality impact. The emissions comparison is used to determine the potential significance of air quality impacts in the context of the criteria outlined in the Environmental Checklist Form included as Appendix G to the CEQA Guidelines. The emissions were evaluated for consistency with the applicable air quality management plan and whether a public nuisance may be consequential.

Operational Emissions Estimates

Operational emissions were analyzed in the interim near-term improvement years of 2025, 2027, and 2030, as well as ultimate buildout in 2040. Future operational air pollutant emissions would be predominantly attributed to new on-road vehicle trips by new Zoo employees and visitors. Additional minor area and energy source emissions would be generated by chemically formulated products use (i.e., cleaners and solvents), landscaping, and reapplication of architectural coatings, and natural gas combustion, respectively. Operational mobile source emissions from on-road vehicle travel were estimated using the results of trip generation and VMT data produced by the *Los Angeles Zoo Vision Plan Transportation Assessment* (Fehr & Peers 2020), included as Appendix N of this EIR. Daily VMT under Existing Conditions and in 2025, 2027, 2030, and 2040 were multiplied by corresponding air pollutant emission factors produced by the CARB mobile source emissions model EMFAC2017, which are provided in units of grams of pollutant emitted per VMT. The default regional vehicle fleet mix was used.

Operational emissions attributed to consumer products use, landscaping, reapplication of architectural coatings, and natural gas combustion were estimated using the recommended methodologies contained in the *CalEEMod User's Guide – Appendix A Calculation Details for CalEEMod*. The consumer products and architectural coating reapplication emissions are estimated based on the building square footage and applicable CalEEMod emissions factors. Existing and future natural gas use was estimated using CalEEMod utility factors in conjunction with estimates of existing and proposed Zoo facilities. The incremental difference in daily operational emissions between Existing Conditions and each interim and ultimate analysis year were compared to the applicable SCAQMD regional significance thresholds for operations presented in Table 3.2-8. The air quality significance determination for operational emissions assessment focuses on operational emissions that would be present under full buildout of the Project in 2040 and evaluates them in the context of the Existing Plus Project condition in 2019 relative to Existing Conditions.

Table 3.2-8. SCAQMD Air Quality Significance Thresholds – Operation

Mass Daily Thresholds (lbs/day)						
Scale	**VOC**	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Regional	55	55	550	150	150	55

Construction or operation of the Project may result in a significant air quality impact if daily pollutant emissions exceed the regional air quality significance thresholds from the SCAQMD Air Quality Handbook presented in Table 3.2-7 and Table 3.2-8, or if daily emissions resulted in incremental increases in localized criteria pollutant concentrations exceeding CEQA air quality standards derived from SCAQMD Rule 1303 (Table A-2) and Rule 403 for particulate matter:

- NO_2 and CO: significant impacts occur if CAAQS or NAAQS are exceeded.
- PM_{10} and $PM_{2.5}$: significant impacts occur if emissions cause incremental increase in 24-hour average concentrations of 10.4 µg/m^3 (construction) or 2.5 µg/m^3 (operation).

The impact assessment also considers Project emissions on a cumulative scale and the potential for public nuisances related to dust and odors to arise during construction and operations.

3.2.4 Environmental Impacts Analysis

AQ-1: Would the proposed Project conflict with or obstruct implementation of the applicable air quality plan?

The applicable air quality plan is the SCAQMD 2016 AQMP, which in part is based on underlying growth projections within the SCAG 2016–2040 RTP/SCS. Although the SCAG has published the Proposed Final 2020-2045 RTP/SCS, it has not been formally adopted by SCAG and is therefore not considered in this analysis. In accordance with the procedures established in the SCAQMD's CEQA Air Quality Handbook, the impact discussion addresses the following criteria to determine whether the Project is consistent with applicable planning objectives:

- Would the Project result in any of the following?
  - An increase in the frequency or severity of existing air quality violations;
  - Causing or contributing to new air quality violations; or
  - Delaying timely attainment of air quality standards or the interim emission reductions specified in the AQMP.
- And, would the Project exceed the assumptions utilized in preparing the AQMP?
  - Is the project consistent with the population and employment growth projections upon which AQMP forecasted emission levels are based;
  - Does the project include air quality mitigation measures; or
  - To what extent is project development consistent with the AQMP land use policies?

Air quality violations occur when facilities are out of compliance with applicable SCAQMD rule requirements, permit conditions or legal requirements, or with applicable state or federal air pollution regulations. The regional and localized air quality significance thresholds were designed as a screening tool to avoid the potential occurrence and exacerbation of air quality violations resulting from construction and operation of individual CEQA projects based on the designation of emissions sources warranting advanced permitting and regulation. The second indicator of AQMP consistency is assessed by determining potential effects of permanent facility operations on population, housing, and employment assumptions that were used in the development of the AQMP and the RTP/SCS. If implementation of the Project would render the assumptions invalid, a significant air quality impact may occur.

As discussed in further detail below, the proposed Project would generate temporary employment opportunities during construction and approximately 531 new long-term employment opportunities as a result of expanded Zoo operations and facilities. Most of these new employees are expected to come from the existing City or regional workforce and would not increase regional population. This negligible increase in the regional population would be consistent with adopted City growth forecasts, which informs regional population estimates for SCAG and the 2016 AQMP. Therefore, the proposed Project would not exceed the 2016 AQMP's population forecast.

Construction

Construction activities would not introduce population or employment growth to the SCAG region and would have no impact related to underlying assumptions factored into the AQMP inventories. The assessment of consistency with the AQMP focuses on the potential for construction of the proposed Project to create or contribute to air quality violations and possibly delay air quality standards attainment. As described above in Section 3.2.3, *Impact Assessment Methodology*, sources of air pollutant emissions that would be involved in construction activities include off-road equipment exhaust, on-site ground disturbance and material displacement creating area source fugitive dust, evaporative emissions from architectural coating and paving, and on-road trips by the crew and hauling vehicle fleet.

As discussed in detail in Section 2.0, *Project Description*, construction of the proposed Project facilities will be separated into near-term improvements to be completed by 2030 (Phase 1 through Phase 3) and long-term improvements (Phase 4 through Phase 7) to be developed between 2030 and 2040. Given the scope of work to be completed in each phase—and acknowledging that construction equipment and vehicle emissions will decrease on average in future years as more stringent emissions standards and newer fleets are introduced—it is anticipated that daily emissions would be higher during the near-term improvements than during the latter 10 years of the Vision Plan. Furthermore, a greater degree of detail regarding the schedule of improvements and required construction inventories is available for Phase 1 through Phase 3. Therefore, daily emissions were estimated using CalEEMod for activities comprising Phase 1, Phase 2, and Phase 3 construction described in Table 3.2-5. Additionally,

maximum daily emissions from potentially concurrent site facility improvements during Phase 1 characterized in Table 3.2-6 were estimated in CalEEMod and evaluated in the context of the SCAQMD mass daily thresholds of significance under CEQA.

Phase 1 improvements would occur between approximately 2020 and 2025 and would be completed prior to construction of Phase 2. Table 3.2-9 presents the daily emissions that would be generated by sources during each of the individual activities involved in Phase 1 improvements, as well as the applicable SCAQMD mass daily thresholds for construction. The emissions correspond to the maximum crew size and equipment inventory that would be needed to complete each activity. All construction activities would be subject to the provisions of SCAQMD Rules 401 (Visible Emissions), 402 (Nuisance), and 403 (Fugitive Dust). Best management practices for fugitive dust control include application of at least three times daily to disturbed surface areas and open storage piles, as well as demolition debris and material stockpile stabilization. Application of water to disturbed surface areas and open storage piles reduces fugitive dust by 61 percent. The emissions modeling of Project construction activities includes consideration of these existing regulations.

Table 3.2-9 lists the maximum daily emissions by each construction activity phase during Phase I improvements, assuming that each activity phase (i.e., demolition, grading, site preparation, building construction, etc.) would occur independently and sequentially. When evaluated independently, the construction activities comprising Phase 1 improvements would not generate emissions of air pollutants in excess of any applicable SCAQMD regional or localized threshold.

Phase 2 improvements would occur between approximately 2025 and 2027 and would be completed prior to construction of Phase 3. Generally, the equipment inventories would be similar to Phase 1 for each Phase 2 activity. Table 3.2-10 presents the daily emissions that would be generated by sources during each of the individual activity phases involved in Phase 2 improvements, as well as the applicable SCAQMD mass daily thresholds for construction. All construction activities would be subject to the provisions of SCAQMD Rules 401 (Visible Emissions), 402 (Nuisance), and 403 (Fugitive Dust). As shown in Table 3.2-10, when evaluated independently, the construction activities comprising Phase 2 improvements would not generate emissions of air pollutants in excess of any applicable SCAQMD regional or localized threshold.

Phase 3 improvements would occur between approximately 2027 and 2030. Table 3.2-11 presents the daily emissions that would be generated by sources during each of the individual activity phases involved in Phase 3 improvements, as well as the applicable SCAQMD mass daily thresholds for construction. All construction activities would be subject to the provisions of SCAQMD Rules 401 (Visible Emissions), 402 (Nuisance), and 403 (Fugitive Dust). As shown in Table 3.2-11, when evaluated independently, the construction activities comprising Phase 3 improvements would not generate emissions of air pollutants in excess of any applicable SCAQMD regional or localized threshold.

Table 3.2-9. Phase 1 Improvements Daily Construction Emissions

Estimated Daily Pollutant Emissions by Activity – Phase 1						
Activity Phase and Source Location	**Daily Emissions (Pounds Per Day)**					
	VOC	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
DEMOLITION						
On-Site Emissions	3.9	38.3	26.7	<0.1	2.4	1.9
Off-Site Emissions	1.2	23.7	9.4	<0.1	3.4	0.9
Total	***5.1***	***62.0***	***36.2***	***<0.1***	***5.8***	***2.9***
GRADING						
On-Site Emissions	5.7	63.3	36.7	<0.1	8.7	5.2
Off-Site Emissions	1.2	22.0	9.0	<0.1	3.0	0.9
Total	***6.9***	***85.3***	***45.7***	***<0.1***	***11.7***	***6.1***
SITE PREPARATION						
On-Site Emissions	2.6	28.3	19.2	<0.1	6.0	3.8
Off-Site Emissions	0.7	7.7	5.5	<0.1	1.7	0.5
Total	***3.3***	***35.9***	***24.7***	***<0.1***	***7.6***	***4.2***
BUILDING CONSTRUCTION						
On-Site Emissions	1.4	16.6	22.1	<0.1	0.7	0.6
Off-Site Emissions	0.6	5.8	5.0	<0.1	1.6	0.5
Total	***2.0***	***22.5***	***27.1***	***<0.1***	***2.3***	***1.1***
PAVING						
On-Site Emissions	1.5	12.4	19.1	<0.1	0.6	0.6
Off-Site Emissions	0.2	2.9	2.1	<0.1	0.7	0.2
Total	***1.7***	***15.3***	***21.2***	***<0.1***	***1.3***	***0.8***
ARCHITECTURAL COATING						
On-Site Emissions	18.8	8.2	14.0	<0.1	0.3	0.3
Off-Site Emissions	0.2	0.1	1.1	<0.1	0.5	0.1
Total	***19.0***	***8.3***	***15.1***	***<0.1***	***0.8***	***0.4***
REGIONAL ANALYSIS						
Maximum Regional (On-Site and Off-Site) Emissions for Activity Phase	**19.0**	**85.3**	**45.7**	**<0.1**	**11.7**	**6.1**
Regional Significance Threshold	75	100	550	150	150	55
Exceed Regional Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
LOCALIZED ANALYSIS						
Maximum Localized (On-Site) Emissions	--	**63.3**	**36.7**	--	**8.7**	**5.2**
Localized Significance Threshold	--	134	1,454	--	12	6
Exceed Localized Threshold?	--	**No**	**No**	--	**No**	**No**

Source: Appendix D, CalEEMod Estimate Worksheets

Table 3.2-10. Phase 2 Improvements Daily Construction Emissions

Estimated Daily Pollutant Emissions by Activity – Phase 2						
Activity Phase and Source Location	**Daily Emissions (Pounds Per Day)**					
	VOC	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
DEMOLITION						
On-Site Emissions	2.5	22.9	24.3	<0.1	1.5	1.0
Off-Site Emissions	0.8	13.2	7.5	<0.1	2.5	0.7
Total	***3.3***	***36.1***	***31.8***	***<0.1***	***4.0***	***1.7***
GRADING						
On-Site Emissions	3.9	38.0	30.9	<0.1	7.5	4.1
Off-Site Emissions	0.4	0.2	2.7	<0.1	1.1	0.3
Total	***4.2***	***38.3***	***33.6***	***<0.1***	***8.6***	***4.4***
SITE PREPARATION						
On-Site Emissions	2.1	22.0	17.9	<0.1	5.6	3.4
Off-Site Emissions	0.5	5.7	4.3	<0.1	1.6	0.5
Total	***2.7***	***27.6***	***22.2***	***<0.1***	***7.2***	***3.9***
BUILDING CONSTRUCTION						
On-Site Emissions	1.3	14.7	22.0	<0.1	0.5	0.5
Off-Site Emissions	0.5	5.6	4.1	<0.1	2.2	0.9
Total	***1.8***	***20.3***	***26.1***	***<0.1***	***2.2***	***0.9***
PAVING						
On-Site Emissions	1.2	11.3	19.0	<0.1	0.5	0.5
Off-Site Emissions	0.2	2.8	1.8	<0.1	0.7	0.2
Total	***1.4***	***14.0***	***20.8***	***<0.1***	***1.2***	***0.7***
ARCHITECTURAL COATING						
On-Site Emissions	10.0	8.2	14.0	<0.1	0.3	0.3
Off-Site Emissions	0.1	0.1	0.9	<0.1	0.5	0.1
Total	***10.1***	***8.3***	***14.9***	***<0.1***	***0.7***	***0.4***
REGIONAL ANALYSIS						
Maximum Regional (On-Site and Off-Site) Emissions for Activity Phase	**10.1**	**38.3**	**33.6**	**<0.1**	**8.6**	**4.4**
Regional Significance Threshold	75	100	550	150	150	55
Exceed Regional Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
LOCALIZED ANALYSIS						
Maximum Localized (On-Site) Emissions	--	**38.0**	**30.9**	--	**7.5**	**4.1**
Localized Significance Threshold	--	134	1,454	--	12	6
Exceed Localized Threshold?	--	**No**	**No**	--	**No**	**No**

Source: Appendix D, CalEEMod Estimate Worksheets

Table 3.2-11. Phase 3 Improvements Daily Construction Emissions

Estimated Daily Pollutant Emissions by Activity – Phase 3						
Activity Phase and Source Location	**Daily Emissions (Pounds Per Day)**					
	VOC	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
DEMOLITION						
On-Site Emissions	2.5	22.9	24.3	<0.1	1.2	1.0
Off-Site Emissions	0.8	12.8	7.2	<0.1	9.2	2.4
Total	***3.3***	***35.7***	***31.5***	***<0.1***	***10.4***	***3.4***
GRADING						
On-Site Emissions	3.9	38.0	30.9	<0.1	7.5	4.1
Off-Site Emissions	0.5	6.4	4.7	<0.1	2.1	0.6
Total	***4.4***	***44.4***	***35.6***	***<0.1***	***9.6***	***4.7***
SITE PREPARATION						
On-Site Emissions	2.1	22.0	17.9	<0.1	5.6	3.4
Off-Site Emissions	0.5	5.5	3.8	<0.1	1.6	0.5
Total	***2.6***	***27.4***	***21.7***	***<0.1***	***7.2***	***3.9***
BUILDING CONSTRUCTION						
On-Site Emissions	1.3	14.7	22.0	<0.1	0.5	0.5
Off-Site Emissions	0.5	5.5	3.8	<0.1	1.6	0.5
Total	***1.8***	***20.2***	***25.7***	***<0.1***	***2.2***	***0.9***
PAVING						
On-Site Emissions	1.8	9.2	20.5	<0.1	0.4	0.4
Off-Site Emissions	0.2	2.7	1.6	<0.1	0.7	0.2
Total	***2.0***	***11.9***	***22.1***	***<0.1***	***1.1***	***0.6***
ARCHITECTURAL COATING						
On-Site Emissions	14.4	6.9	14.8	<0.1	0.2	0.2
Off-Site Emissions	0.2	2.7	1.6	<0.1	0.7	0.2
Total	***14.6***	***9.6***	***16.4***	***<0.1***	***0.9***	***0.4***
REGIONAL ANALYSIS						
Maximum Regional (On-Site and Off-Site) Emissions for Activity Phase	**14.6**	**44.4**	**35.6**	**<0.1**	**9.6**	**4.7**
Regional Significance Threshold	75	100	550	150	150	55
Exceed Regional Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
LOCALIZED ANALYSIS						
Maximum Localized (On-Site) Emissions	**--**	**38.0**	**30.9**	**--**	**7.5**	**4.1**
Localized Significance Threshold	--	134	1,454	**--**	12	6
Exceed Localized Threshold?	**--**	**No**	**No**	**--**	**No**	**No**

Source: Appendix D, CalEEMod Estimate Worksheets

The near-term improvements emissions modeling demonstrates that if construction activity phases within each planning Phase were completed sequentially, daily pollutant emissions would not exceed any applicable SCAQMD regional or localized threshold. However, it is anticipated that improvements would be developed at several sites across the Zoo property simultaneously during each planning Phase, and daily activity would fluctuate throughout the course of each activity phase. For example, during Phase 1, construction activities would occur within the Zoo to redevelop the Zoo Entry and expand into the California planning area, overlapped with exterior improvements to realign Western Heritage Way/Crystal Springs Drive, install a signalized intersection at Zoo Drive, and raze the south parking lot to accommodate 300 additional spaces and provide low impact development (LID; e.g., bioswales, permeable paving, etc.). Based on preliminary scheduling and site feasibility constraints, maximum daily activities were determined to occur during Phase 1, as it involves a greater number of individual improvements and more intensive construction activities, and would be characterized by the emissions source inventory presented in Table 3.2-6, above. Since the maximum daily construction activities were determined to occur during Phase 1, this represents the maximum daily emissions that would be generated during all of the proposed near-term improvements. Table 3.2-12 presents the maximum daily emissions that would be generated by simultaneous improvements during Phase 1 construction. The results of the maximum daily emissions modeling demonstrate that construction of Phase 1 with an overlap in construction activity phases could potentially result in a significant air quality impact related to emissions of NO_X, as emissions would exceed the applicable regional threshold value.

Table 3.2-12. Phase 1 Maximum Daily Emissions - Unmitigated

Proposed Project Construction Estimated Maximum Daily Pollutant Emissions						
	Daily Emissions (Pounds Per Day)					
Proposed Project Source	**VOC**	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
On-Site Off-Road Equipment	8.0	84.5	61.6	0.1	3.9	3.6
On-Site Fugitive Area Sources	52.1	-	-	-	4.9	1.6
Off-Site Mobile Vehicle Trips	1.9	43.8	15.1	0.1	4.3	1.3
REGIONAL ANALYSIS						
Maximum Regional Emissions	**62.0**	**128.3**	**76.7**	**0.3**	**13.1**	**6.5**
Regional Significance Threshold	75	100	550	150	150	55
Exceed Regional Threshold?	**No**	**Yes**	**No**	**No**	**No**	**No**
LOCALIZED ANALYSIS						
Maximum Localized Emissions	--	**84.5**	**61.6**	--	**8.8**	**5.2**
Localized Significance Threshold	--	134	1,454	--	12	6
Exceed Localized Threshold?	--	**No**	**No**	--	**No**	**No**

Source: Appendix D, CalEEMod Estimate Worksheets

NOx emissions are most closely associated with diesel engines in off-road equipment. To address these potentially significant emissions, **MM AQ-1** would reduce air pollutant

emissions from off-road equipment during construction of the proposed Project. **MM AQ-1** would require that all diesel-powered construction equipment with engines greater than 50 horsepower (hp) shall meet, at a minimum, Tier 4 Final emissions standards. Tier 4 standards were introduced in 2004 and have been phased in from 2008 through 2015. As a result of gradual replacement of equipment with outdated emissions technologies with equipment meeting Tier 4 standards, equipment fleets with engines meeting these standards are widely available in the commercial sector, and utilization of a full fleet of Tier 4 equipment is considered feasible for the Project. Table 3.2-13 presents the estimated maximum daily emissions during construction with implementation of this mitigation. The emissions presented therein demonstrate the effectiveness of **MM AQ-1** in reducing emissions of air pollutants from off-road construction equipment. Thus, with implementation of **MM AQ-1**, maximum daily emissions during the entirety of Vision Plan construction would remain below applicable SCAQMD mass daily thresholds of significance at both the regional and localized scales.

Table 3.2-13. Phases 1 Maximum Daily Emissions - Mitigated

Proposed Project Construction Estimated Maximum Daily Pollutant Emissions						
	Daily Emissions (Pounds Per Day)					
Proposed Project Source	**VOC**	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
On-Site Off-Road Equipment	1.5	7.2	72.5	0.1	0.2	0.2
On-Site Fugitive Area Sources	52.1	-	-	-	4.9	1.6
Off-Site Mobile Vehicle Trips	1.9	43.8	15.1	0.1	4.3	1.3
REGIONAL ANALYSIS						
Maximum Regional Emissions	**55.5**	**51.0**	**87.6**	**0.3**	**9.3**	**3.1**
Regional Significance Threshold	75	100	550	150	150	55
Exceed Regional Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
LOCALIZED ANALYSIS						
Maximum Localized Emissions	--	**7.2**	**72.5**	--	**5.1**	**2.2**
Localized Significance Threshold	--	134	1,454	--	12	6
Exceed Localized Threshold?	--	**No**	**No**	--	**No**	**No**

Source: Appendix D, CalEEMod Estimate Worksheets

The mitigated emissions would not have the potential to conflict with or obstruct implementation of the 2016 AQMP by exacerbating air quality violations or delaying attainment of the air quality standards. Therefore, proposed Project impacts related to the applicable air quality plan would be *less than significant with mitigation*.

Operation

Implementation of the Vision Plan would expand Zoo capacity and accommodate more attendance over the next 20 years. Operation of the proposed Project would create new jobs in the City but would not directly introduce new population or housing growth to the region.

Under existing conditions, Zoo operations employ a total of 570 full- and part-time employees, generating approximately 524 to 652 daily employee vehicle trips depending on the day of the week. By 2040, the daily employees and associated vehicle trips at Zoo facilities are anticipated to nearly double with implementation of the Vision Plan to between 1,012 to 1,259 daily employee vehicle trips depending on the day of the week (see Section 3.15, *Transportation*). According to SCAG projections, employment within the City is anticipated to increase by approximately 472,700 between 2012 and 2040, to which the increase in employment under the Project (531 new employees) would represent only 0.1 percent. The approximate doubling of daily Zoo employment under the Vision Plan and corresponding increase in daily vehicle trips and vehicle miles traveled would not introduce sufficient new growth to the area to render the SCAG employment growth projections for the City invalid in the underlying assumptions for the AQMP.

Operation of the Zoo facilities would expand incrementally over time with implementation of the Vision Plan. Phase 1 would be completed in 2025, Phase 2 in 2027, Phase 3 in 2030, and all long-term improvements would be completed in 2040. Operational emissions associated with the incremental improvement of the Zoo facilities were estimated for the three interim years and 2040 to determine potential air quality impacts related to exacerbation of air quality violations and air quality standards attainment. Operational emissions are predominantly generated by on-road vehicle trips. Datasets of daily vehicle trips and VMT associated with employee and patron trips were provided by Fehr & Peers for existing conditions and operational conditions in 2025, 2027, 2030, and 2040 (see Appendix N). The highest combined daily VMT for employee and Zoo patron trips occurs on Saturdays and Sundays; therefore, operational emissions account for weekend daily emissions as a reasonable worst-case scenario. Additional operational emissions are associated with facilities maintenance, natural gas use, and consumer products use.

In 2025, total VMT associated with implementation of Phase 1 of the Vision Plan would increase maximum daily VMT generated by both employees and visitors by approximately 27 percent relative to existing conditions. Phase 1 improvements would redevelop the Zoo Entry, expand the California planning area, and reconfigure circulation, providing additional visitor center, restaurant, gift shop, and administrative/service facilities, as well as expanding animal exhibit space and landscaped areas. Air pollutant emissions from maintenance, natural gas, and fugitive area sources were estimated based on the land use buildout assumptions and estimated using extrapolation. Table 3.2-14 presents daily operational emissions in 2025 and analyzes the change from existing conditions.

Table 3.2-14. Proposed Project Operational Emissions – 2025 Analysis

Proposed Project Operation Estimated Daily Pollutant Emissions						
	Daily Emissions (Pounds Per Day)					
Source	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
On-Site Maintenance Sources	10.9	3.1	68.1	<0.1	0.4	0.4
On-Site Energy Sources	<0.1	2.2	1.0	<0.1	<0.1	<0.1
On-Site Fugitive Area Sources	7.3	-	-	-	-	-
Off-Site Mobile Vehicle Trips	10.3	26.9	339.3	0.8	12.3	5.2
Total	***28.5***	***32.2***	***408.4***	***0.8***	***12.7***	***5.6***
Existing Conditions						
On-Site Maintenance Sources	8.7	3.0	55.0	<0.1	0.4	0.3
On-Site Energy Sources	<0.1	2.2	1	<0.1	<0.1	<0.1
On-Site Fugitive Area Sources	4.8	-	-	-	-	-
Off-Site Mobile Vehicle Trips	8.1	21.1	265.0	0.7	9.6	4.1
Total	***21.6***	***25.5***	***320.6***	***0.7***	***9.9***	***4.4***
Regional Analysis						
Net Operational Emissions	**6.9**	**6.7**	**87.8**	**0.2**	**2.7**	**1.2**
Regional Significance Threshold	55	55	550	150	150	55
Exceed Regional Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Source: Appendix D, CalEEMod Estimate Worksheets

As shown in Table 3.2-14, the incremental change in operational emissions with implementation of Phase 1 improvements would not exceed any applicable SCAQMD mass daily threshold of significance. Operation of Phase 1 would not have the potential to exacerbate air quality violations in the SCAB or possibly delay attainment of the air quality standards as set forth in the 2016 AQMP. Furthermore, operation of the proposed Project after Phase 1 implementation would not expand Zoo facilities beyond the existing site boundary and would not conflict with land use policies promulgated by SCAQMD and SCAG.

In 2027, total ADT and VMT associated with implementation of Phase 2 of the Vision Plan would increase maximum daily VMT by approximately 40 percent relative to existing conditions. Phase 2 improvements would expand the Asia planning area and develop the Rainforest and Nature Play Park, providing additional animal exhibit space, landscaping area, visitor center and amenities space, retail, and security and administrative buildings. Air pollutant emissions from maintenance, natural gas, and fugitive area sources were estimated based on the land use buildout assumptions and estimated using extrapolation. Table 3.2-15 presents daily operational emissions in 2027 and analyzes the change from existing conditions.

Table 3.2-15. Proposed Project Operational Emissions – 2027 Analysis

Phase 2 Operation Estimated Daily Pollutant Emissions						
	Daily Emissions (Pounds Per Day)					
Source	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
On-Site Maintenance Sources	13.0	3.2	81.2	<0.1	0.5	0.4
On-Site Energy Sources	<0.1	2.4	1.1	<0.1	<0.1	<0.1
On-Site Fugitive Area Sources	8.0	-	-	-	-	-
Off-Site Mobile Vehicle Trips	11.3	29.6	374.4	0.9	13.5	5.7
Total	***32.3***	***35.2***	***456.7***	***0.9***	***14.0***	***6.1***
Existing Conditions						
On-Site Maintenance Sources	8.7	3.0	55.0	<0.1	0.4	0.3
On-Site Energy Sources	<0.1	1.4	0.6	<0.1	<0.1	<0.1
On-Site Fugitive Area Sources	4.8	-	-	-	-	-
Off-Site Mobile Vehicle Trips	8.1	21.1	265.0	0.7	9.6	4.1
Total	***21.6***	***25.5***	***320.6***	***0.7***	***9.9***	***4.4***
Regional Analysis						
Net Operational Emissions	**10.7**	**9.7**	**136.1**	**0.3**	**4.1**	**1.7**
Regional Significance Threshold	55	55	550	150	150	55
Exceed Regional Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Source: Appendix D, CalEEMod Estimate Worksheets

As shown in Table 3.2-15, the incremental change in operational emissions with implementation of Phase 2 improvements would not exceed any applicable SCAQMD mass daily threshold of significance. Operation of Phase 2 would not have the potential to exacerbate air quality violations in the SCAB or possibly delay attainment of the air quality standards as set forth in the 2016 AQMP. Furthermore, operation of the proposed Project after Phase 2 implementation would not expand Zoo facilities beyond the existing site boundary and would not conflict with land use policies promulgated by SCAQMD and SCAG.

In 2030, total ADT and VMT associated with implementation of Phase 3 of the vision plan would increase maximum daily VMT by approximately 65 percent relative to existing conditions. Phase 3 improvements would expand the Africa planning area including additional visitor center, meeting rooms, retail, and administrative space. Animal space and landscaped areas would be improved and enlarged, and additional 56 parking spaces would be provided. Air pollutant emissions from maintenance, natural gas, and fugitive area sources were estimated based on the land use buildout assumptions and estimated using extrapolation. Table 3.2-16 presents daily operational emissions in 2027 and analyzes the change from existing conditions.

Table 3.2-16. Proposed Project Operational Emissions – 2030 Analysis

Phase 3 Operation Estimated Daily Pollutant Emissions						
	Daily Emissions (Pounds Per Day)					
Source	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
On-Site Maintenance Sources	15.1	3.3	94.3	<0.1	0.5	0.5
On-Site Energy Sources	<0.1	2.7	1.2	<0.1	<0.1	<0.1
On-Site Fugitive Area Sources	8.9	-	-	-	-	-
Off-Site Mobile Vehicle Trips	13.2	34.5	437.2	1.1	15.8	6.7
Total	***37.2***	***40.5***	***532.7***	***1.1***	***16.3***	***7.2***
						Existing Conditions
On-Site Maintenance Sources	8.7	3.0	55.0	<0.1	0.4	0.3
On-Site Energy Sources	<0.1	1.4	0.6	<0.1	<0.1	<0.1
On-Site Fugitive Area Sources	4.8	-	-	-	-	-
Off-Site Mobile Vehicle Trips	8.1	21.1	265.0	0.7	9.6	4.1
Total	***21.6***	***25.5***	***320.6***	***0.7***	***9.9***	***4.4***
Regional Analysis						
Net Operational Emissions	**15.6**	**14.9**	**212.0**	**0.4**	**6.3**	**2.8**
Regional Significance Threshold	55	55	550	150	150	55
Exceed Regional Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Source: Appendix D, CalEEMod Estimate Worksheets

As shown in Table 3.2-16, the incremental change in operational emissions with implementation of Phase 3 improvements would not exceed any applicable SCAQMD mass daily threshold of significance. Operation of Phase 3 would not have the potential to exacerbate air quality violations in the SCAB or possibly delay attainment of the air quality standards as set forth in the 2016 AQMP. Furthermore, operation of the proposed Project after Phase 3 implementation would not expand Zoo facilities beyond the existing site boundary and would not conflict with land use policies promulgated by SCAQMD and SCAG.

In 2040, total ADT and VMT associated with implementation of the long-term Vision Plan improvements would increase maximum daily VMT by approximately 74 percent relative to existing conditions. Long-term Vision Plan improvements would expand the World Aviary planning area, implement bird show and animal programs, expand service areas, and renovate the Islands area. Additionally, a new administration building would be constructed, and a 2,000-space parking structure would be built in the north lot. Air pollutant emissions from maintenance, natural gas, and fugitive area sources were estimated based on the land use buildout assumptions and estimated using extrapolation. Table 3.2-17 presents daily operational emissions in 2027 and analyzes the change from existing conditions.

Table 3.2-17. Proposed Project Operational Emissions – 2040 Analysis

Complete Vision Plan Operation Estimated Daily Pollutant Emissions						
	Daily Emissions (Pounds Per Day)					
Proposed Project Source	**VOC**	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
On-Site Maintenance Sources	17.2	3.5	107.4	<0.1	0.6	0.5
On-Site Energy Sources	<0.1	2.7	1.2	<0.1	<0.1	<0.1
On-Site Fugitive Area Sources	9.0	-	-	-	-	-
Off-Site Mobile Vehicle Trips	14.2	37.2	475.0	1.2	17.2	7.3
Total	***40.4***	***43.4***	***583.6***	***1.2***	***17.8***	***7.8***
Existing Conditions						
On-Site Maintenance Sources	8.7	3.0	55.0	<0.1	0.4	0.3
On-Site Energy Sources	<0.1	1.4	0.6	<0.1	<0.1	<0.1
On-Site Fugitive Area Sources	4.8	-	-	-	-	-
Off-Site Mobile Vehicle Trips	8.1	21.1	265.0	0.7	9.6	4.1
Total	***21.6***	***25.5***	***320.6***	***0.7***	***9.9***	***4.4***
Regional Analysis						
Net Operational Emissions	**18.8**	**17.9**	**263.0**	**0.5**	**7.8**	**3.4**
Regional Significance Threshold	55	55	550	150	150	55
Exceed Regional Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Source: Appendix D, CalEEMod Estimate Worksheets

As shown in Table 3.2-17, the incremental change in operational emissions with implementation of long-term improvements would not exceed any applicable SCAQMD mass daily threshold of significance. Operation of the Vision Plan would not have the potential to exacerbate air quality violations in the SCAB or possibly delay attainment of the air quality standards as set forth in the 2016 AQMP. Furthermore, operation of the proposed Project after Phase 3 implementation would not expand Zoo facilities beyond the existing site boundary and would not conflict with land use policies promulgated by SCAQMD and SCAG. As iterated above, incremental increases in employment and associated vehicle trips and VMT would not result in an induction of growth that would render the underlying assumptions of the 2016 AQMP invalid. All operational emissions would remain below applicable thresholds without mitigation. Therefore, operational emissions would be *less than significant*.

AQ-2: Would the proposed Project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

The Los Angeles County portion of the SCAB is currently designated nonattainment of the NAAQS for eight-hour average O_3 and 24-hour average $PM_{2.5}$ and the CAAQS for O3, PM_{10}, and $PM_{2.5}$. A significant air quality impact may occur if construction or operation of the proposed Project would generate emissions exceeding applicable SCAQMD air quality significance thresholds. The SCAQMD has promulgated guidance that if daily emissions

generated by construction or operation of a project remain below the regional mass daily thresholds, those emissions would not result in a significant air quality impact either at the project level or under regionally cumulative considerations. Conversely, if construction or operation of the project would generate emissions exceeding the project-level mass daily thresholds, and would remain above the thresholds with mitigation, those emissions would be considered cumulatively significant in addition to being significant at the project level.

Construction

Without mitigation, construction of the proposed Project would generate emissions of NO_X, an O_3 precursor, in excess of the applicable SCAQMD regional mass daily threshold. As shown in Table 3.2-13, mitigated emissions of pollutants generated by construction activities would not generate emissions of pollutants exceeding project-level significance thresholds. Implementation of mitigation measure **MM AQ-1** would ensure that maximum daily pollutant emissions generated by construction of the proposed Project would not result in a significant increase in emissions of O_3 precursors or particulate matter at either the regional or local assessment scale. Therefore, impacts related to cumulatively considerable net increases in nonattainment pollutants would be *less than significant with mitigation*.

Operation

Air pollutant emissions that would be generated by incremental improvement of the project site under the Vision Plan were quantified and analyzed in the previous impact analyses. Although operational of the proposed Project would increase daily vehicle trips and corresponding emissions, as well as emissions from sources located on the project site, the incremental increases in daily air pollutant emissions during all stages of operations throughout Vision Plan improvements would remain below applicable SCAQMD mass daily thresholds of significances. In accordance with SCAQMD guidance, operational emissions of O_3 precursors and particulate matter would be below project-level thresholds and would not result in a cumulatively considerable net increase of any criteria pollutants for which Los Angeles County is currently designated nonattainment. Operational impacts to air quality related to cumulatively considerable emissions of nonattainment pollutants would be *less than significant*.

AQ-3: Would the proposed Project expose sensitive receptors to substantial pollutant concentrations?

Zoo operations would continue during improvements associated with implementation of the Vision Plan. The sensitive receptors with greatest susceptibility to air quality impacts from implementation of the proposed Project would be visitors and employees of the Zoo, as well as receptors at the North Hollywood High School Magnet Center located in the southern parking lot on the Project site. Substantial pollutant concentrations would be those of sufficient level to warrant health concerns related to exposure, or any occurrence of pollutant

concentrations meeting or exceeding ambient air quality standards as a result of Project-related emissions.

Construction

Source of pollutant emissions involved in construction activities would at times be in close proximity to Zoo visitors and employees, as Zoo operations would continue throughout implementation of the Vision Plan. The proposed Project components that would be implemented in the immediate vicinity of the North Hollywood High School Magnet Center are the circulation and parking improvements and Zoo Entry renovation in Phase 1. The propensity for substantial pollutant concentrations resulting from construction activities to occur at sensitive receptor locations is generally driven by the source magnitude, receptor proximity, and exposure duration. The nature of construction activities involved in Vision Plan improvements would spread equipment out across the 142-acre Project site, reducing the likelihood that elevated pollutant concentrations would occur. Construction activities would be conducted in accordance with the California Code of Regulations related to lead and asbestos exposure in the event that materials potentially containing these contaminants are encountered during demolition or renovation activities.

The SCAQMD derived the LST screening values as a tool for determining whether construction site emissions in close proximity to sensitive receptors would create significant incremental increases in localized pollutant concentrations. As discussed previously, the LST screening values consider the magnitude of emissions, receptor proximity, and the size of the area from which the emissions are emanating. As shown in Tables 3.2-9 through 3.2-12, at no time during construction of the proposed Project would maximum daily emissions from sources located on the site meet or exceed applicable LST screening values. Furthermore, implementation of mitigation measure **MM AQ-1** would substantially reduce on-site emissions of NO_X and diesel particulate matter from off-road equipment. Requiring that construction equipment meet Tier 4 Final emissions standards, as well as ensuring compliance with the best management practices outlined in SCAQMD Rule 403 (Fugitive Dust), would ensure that construction of the proposed Project would not expose sensitive receptors to substantial pollutant concentrations. Impacts related to sensitive receptor exposures would be *less than significant with mitigation*.

Operation

After construction is complete and the heavy equipment is removed from the Project site, the operational emissions sources on the Project site would be similar to existing conditions. There would be no substantial stationary source of air pollutant emissions associated with operation of the proposed Project. Increases in landscaped and building areas would primarily produce minor increases in VOC, NO_X, and CO emissions from maintenance sources and consumer products use that would be spread throughout the 142-acre Project site. Operation of the proposed Project would not result in a land use change or alteration to the site that would place sensitive receptors in closer proximity to substantial sources of air

pollutant emissions. Therefore, operational impacts related to exposure of sensitive receptors to substantial pollutant concentrations would be *less than significant*.

Effects of Construction Emissions on Zoo Animals

As further analyzed in Section 3.3, *Biological Resources*, air pollutant emissions generated by construction may also be disruptive to Zoo animals. The Zoo is dedicated to the health and wellbeing of all its animals. Zookeepers and animal caretakers are trained in the monitoring of the Zoo's animals and implement measures appropriate for each individual species to ensure their safety and wellbeing in accordance with the Animal Welfare Act (AWA)and the American Zoological Association (AZA), which governs the care, handling, and transport of zoo animals. As the Zoo has done in the past during construction of prior improvements, measures to protect these animals may include their temporary relocation away from construction activities, closure of exhibits, or even the transfer of animals to other zoos. Accommodations specific to each animal would be developed during the planning process for each phase and details would be included in final construction plans. The Zoo is accredited by the AZA and is an active member of many Species Survival Plans. As a result, the Zoo is part of a large consortium of accredited zoos that can provide alternative housing for the Zoo's residents if necessary during construction. With continued management of each species of animal exhibited or rehabilitated at the Zoo and required compliance with the AWA, there would be no adverse effects on Zoo animals from air pollutant emissions generated during construction of the Vision Plan.

AQ-4: Would the proposed Project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Construction

Potential sources that may produce objectionable odors during construction activities include equipment exhaust, application of asphalt and architectural coatings, and other interior and exterior finishes. Odors from these sources would be localized and generally confined to the immediate area surrounding the project site and would be temporary in nature and would not persist beyond the termination of construction activities. The proposed Project would utilize standard construction techniques, and the odors would be typical of most construction sites and temporary in nature. In addition, as construction-related emissions dissipate away from the construction area, the odors associated with these emissions would also decrease and would be quickly diluted. LADWP will ensure that activities comply with SCAQMD Rules 402 (Nuisance) and 401 (Visible Emissions) to prevent the occurrence of public nuisances and visible dust plumes traveling off-site. Therefore, air quality impacts related to construction odors and dust would be *less than significant*.

Operation

Facilities existing at the Zoo include animal habitats characterized by natural odors. With the exception of expansion of animal habitats and development of new animal exhibits and enclosures, implementation of the Vision Plan would not substantially change any land use designation or facility operations under existing conditions and would not introduce a new substantial source of odors onto the Project site. Currently, Zoo operations generate approximately 1,310 tons of solid waste annually that are directed to the local landfill. The Zoo engages in composting for green waste and herbivore animal wastes in Griffith Park. Recycling is sorted and picked up by the Bureau of Sanitation. The effective waste management system and landfill diversion program endeavored by the Zoo minimizes the presences of sources of noxious odors and other potential nuisances during facility operations. Implementation of the Vision plan would not place sensitive receptors in closer proximity to sources of odors or other emissions that could create nuisance conditions. Therefore, impacts related to other emissions would be *less than significant*.

3.2.5 Mitigation Measures

MM AQ-1 Off-Road Construction Equipment Meeting Tier 4 Final Emissions Standards

All off-road diesel-powered construction equipment greater than 50 horsepower used for Project construction shall meet, at a minimum, Tier 4 Final off-road emissions standards. Construction contractors shall ensure that all off-road equipment meet the standards prior to deployment at the Project site and the Zoo shall demonstrate compliance with this measure to the City Bureau of Engineering prior to the start of construction. The City Bureau of Engineering shall monitor for continual compliance with these requirements throughout the course of construction.

3.2.6 Impacts Summary

With implementation of mitigation measures **MM AQ-1**, impacts to air quality would be *less than significant*. Therefore, significant unavoidable adverse impacts to air quality would not occur.

3.3 BIOLOGICAL RESOURCES

The Project site contains natural vegetation that provides wildlife habitat supporting common and some special-status species. A total of 124 plant taxa (40 native) and 18 wildlife (all native) species have been recorded onsite. At least 17 sensitive or special status species are either known to be present or have moderate to high potential to be present on the Project site. The Project site lies in Griffith Park, which provides urban wilderness and diverse habitats that support sensitive species in the immediate vicinity of the Zoo. This Project setting may also support wildlife movement and plant propagation between the Zoo, Griffith Park, and the Los Angeles River. The Project would involve redevelopment of Zoo exhibits, visitor-serving areas, and facilities, which would remove native, mature trees and shrubs and buildings potentially serving as habitat for migratory and nesting birds and sensitive bat species. The Project would also involve new development within natural vegetation communities serving as potential habitat for special-status species, such as sensitive legless lizard, woodrat, and bat species. Avoidance and preservation of native vegetation communities and special-status species to the maximum extent feasible would minimize adverse effects. With implementation of MM BIO-1 through MM BIO-5, impacts to biological resources would be less than significant. Mitigation required includes onsite and potentially offsite habitat protection and restoration.

This section describes existing biological resources within presently undeveloped portions of the Los Angeles Zoo and Botanical Gardens (Zoo) and analyzes the potential for impacts to special-status biological resources related to the development or disturbance of existing undeveloped natural communities that could result from implementation of the proposed Zoo Vision Plan (Project) in the City of Los Angeles (City). Biological resources include native vegetation communities (i.e., habitat) supportive of sensitive or special-status species, riparian habitat, wetlands or other sensitive natural community, and wildlife corridors, as further described herein. In addition, important biological resources at the Zoo include some tree and shrub species that are protected or proposed for protection under the City's Tree Preservation Ordinance and proposed amendments. This section identifies biological resources within the Project site that may be adversely affected by the Project and provides mitigation measures to reduce impacts to biological resources.

While captive species within the Zoo's resident animal population are not considered biological resources per local and state standards, this section provides analysis of potential impacts to Zoo animals, including sensitive species, in the interest of public disclosure and planning; see Section 3.3.6, *Potential Effects on Zoo Animals*.

3.3.1 Environmental Setting

Regulatory Setting

Federal Regulations

Animal Welfare Act (AWA)

The Animal Welfare Act (AWA) is the only statute that protects the welfare of individual zoo animals per the United States Department of Agriculture (USDA). Under the AWA, animals in the custody of a dealer or exhibitor are protected by regulations governing their care, handling, and transport. All cold-blooded animals are exempt from the AWA's definition. The AWA gives authority to the Secretary of Agriculture, whose authority is further delegated to the Animal Plant and Health Inspection Service, to administer and enforce the AWA.

Clean Water Act (CWA) Section 404

These provisions regulate the discharge of dredged or fill material in waters of the United States, including rivers and wetlands. The Los Angeles River is considered waters of the United States. Consequently, the CWA Section 404 protects sensitive wetland habitats and riparian species that dwell in or adjacent to wetland areas and rivers. Activities that discharge dredge or fill material into waters of the United States can be authorized by the U.S. Army Corps of Engineers (USACE).

Federal Endangered Species Act (FESA) Sections 7 and 9

The *Federal Endangered Species Act* (FESA) prohibit the "take" (i.e., harm, harass, or kill individuals, or destroy associated habitat) of species federally listed as threatened or endangered. Take incidental to otherwise lawful activities can be authorized by the U.S. Fish and Wildlife Service (USFWS) through a permit under Section 4(d), 7 or 10(a).

The FESA applies only to animals designated as Endangered or Threatened by the USFWS, the authority that enforces the FESA. The FESA prohibits taking or harassing of listed animals, but the regulations exempt animal husbandry, including exhibition of animals. Therefore, exhibiting an endangered species alone is not a violation of the Act.

The FESA does not regulate possession of endangered species, nor the welfare of those possessed. Rather, it regulates only the movement of those species within the U.S. and even then, only where interstate commerce or a "take" is involved. Section 7 of the FESA makes it unlawful to import or export listed species from the U.S. or to take any species within the U.S. The term "take" is defined in Section 3 of the Act, "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." "Harass" is further defined in the regulations as "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns, which include, but are not limited to, breeding, feeding, or sheltering.

Migratory Bird Treaty Act

The Federal *Migratory Bird Treaty Act* prohibits the direct or indirect take of migratory birds and their active nests unless permitted. The USFWS periodically updates the list of Migratory Birds protected by the Act by both adding and removing species, based on new taxonomy and new evidence of natural occurrence in the U.S. or U.S. territories, removing species no longer known to occur within the United States or U.S. territories, and changing names to conform to accepted use. This list was last updated in March 2020. The net increase of 67 species (75 added and 8 removed) brings the total number of species protected by the Act to 1,093.

State Regulations

Birds of Prey Protection Provision

This provision prohibits the taking of birds of prey (Order Falconiformes and Strigiformes) including their nests and eggs.

California Endangered Species Act (CESA)

Section 2050 of the *California Fish and Game Code* constitutes the *California Endangered Species Act* (CESA) and prohibits any activities that would jeopardize or take a species designated as threatened or endangered by the state.

California Fish and Game Code Section 1602

Section 1602 regulates water resources in the State of California. Activities that divert or obstruct the natural flow of, or change or use material from the bed, channel, or bank of any river stream or lake may be authorized by the California Department of Fish and Wildlife (CDFW). CDFW jurisdiction includes intermittent and perennial watercourses and extends to the top of the bank of a stream or lake if unvegetated, or to the limit of the adjacent riparian vegetation, located contiguous to the watercourse, if the stream or lake is vegetated.

California Fish and Game Code Section 3503

Section 3503 of the *California Fish and Game Code* prohibits the take, possession, or needless destruction of the nests or eggs of any birds, except as otherwise provided by the code or any regulation made pursuant thereto.

California Fully Protected Wildlife Species Provision

These provisions prohibit the taking of fully protected birds, mammals, amphibians, and fish.

California Native Plant Protection Act of 1977

These provisions preserve, protect, and enhance endangered or rare native plants of the state.

California Native Plant Society

The California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants is a widely recognized database that directly guides rare plant protection, conservation planning,

and land acquisition and management in California. CNPS published the first edition of its Inventory of Rare and Endangered Plants in 1974 and published its last print edition (V. 6) in 2001. In 2001, the Inventory switched to being online (V. 7) and is currently in its 8th edition. This Inventory focuses on plants that are native to and rare in California. A very small number of plants that are still somewhat common in California are included because they are in decline and face further immediate threats. The CNPS ranking system includes the following plant ranks and threat ranks:

Plant Ranks

- California Rare Plant Rank 1A: Plants presumed extirpated in California and either rare or extinct elsewhere
- California Rare Plant Rank 1B: Plants rare, threatened, or endangered in California and elsewhere
- California Rare Plant Rank 2A: Plants presumed extirpated in California but common elsewhere
- California Rare Plant Rank 2B: Plants rare, threatened, or endangered in California but more common elsewhere
- California Rare Plant Rank 3: Review List: Plants about which more information is needed
- California Rare Plant Rank 4: Watch List: Plants of limited distribution

Threat Ranks

- 0.1-Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
- 0.2-Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
- 0.3-Not very threatened in California (less than 20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

The Southern California black walnut is designated on the CNPS Inventory of Rare and Endangered Plants with a rating of 4.2.

Regional Water Quality Control Board (RWQCB)

The Regional Water Quality Control Board (RWQCB) regulates impacts to water quality under Section 401 of the CWA. A project must comply with Section 401 of the CWA before the USACE can issue a Section 404 Permit. The RWQCB will issue a Section 401 Water Quality Certification or Waiver of Certification, depending upon the extent of impacts to waters of the United States. The RWQCB also regulates impact to "waters of the State" (usually limited to "isolated" waters or swales that may not fall under USACE jurisdiction) under the Porter Cologne Water Quality Control Act.

Local Regulations

City of Los Angeles Tree Preservation Ordinance

City Ordinance No. 177404 constitutes the City's Tree Preservation Ordinance, which aims to secure the preservation and sustain the health of native Southern California tree species recognized for their ecological and cultural value. This ordinance regulates the protection, removal, and replacement of trees deemed to be protected by the City, which include the following four native Southern California tree species measuring four inches or more in cumulative diameter at four and one-half feet above the ground level at the base of the tree:

- Oak trees, including valley oak (*Quercus lobata*) and California (coast) live oak (*Quercus agrifolia*), or any other tree of the oak genus indigenous to California but excluding the scrub oak (*Quercus dumosa*)
- Southern California black walnut (*Juglans californica* var. *californica*)
- Western sycamore (*Platanus racemosa*)
- California bay (*Umbellularia californica*)

All trees meeting the criteria above are protected trees and removal or relocation would require a permit from the Board of Public Works and replacement of each tree removed by a ratio of at least 2:1. A protected tree report is required to be submitted to the Board of Public Works to apply for a tree removal permit and must contain the required information listed in the City's Standard Tree Removal Application Checklist.

In January of 2017, a Protected Tree Code Amendment was proposed to the City to amend the existing Tree Preservation Ordinance and expand the definition of "Protected Tree" to include Mexican elderberry (*Sambucus mexicana*) trees species, and toyon (*Heteromeles arbutifolia*)-shrub species. Under the proposed amendment, the defined term "Protected Tree" would be changed to "Protected Tree or Shrub" to accommodate addition of these two species. Further, the proposed amendment would increase the current replacement requirement from a ratio of 2:1 to 4:1.

City of Los Angeles General Plan, Framework, and Conservation Elements.

The City's General Plan is a comprehensive declaration of purposes, policies, and programs for the development of the City. The Citywide General Plan Framework Element (Framework Element) establishes the overall policy and direction for the General Plan. It includes a long-range strategy to guide the comprehensive update for the General Plan's other elements. Chapter 6, Open Space and Conservation of the Framework Element includes goals, objectives, and policies for the provision, management, and conservation of the City's open space resources, including Significant Ecological Areas, wildlife corridors, and natural animal ranges. The Conservation Element of the General Plan addresses endangered species, habitats, wildlife corridors, and wetlands occurring in the City and identifies policies intended to protect, restore, and enhance these biological resources. Goals, objectives, and policies

from the Framework and Conservation Elements related to biological resources and relevant to the proposed project are listed below in Table 3.3-1.

Table 3.3-1. City of Los Angeles General Plan Open Space and Conservation Element Relevant Policies

Goal/Objective/Policy	Description
Framework Element – Chapter 6 Open Space and Conservation	
Objective 6.1	Protect the City's natural settings from the encroachment of urban development, allowing for the development, use, management, and maintenance of each component of the City's natural resources to contribute to the sustainability of the region.
Policy 6.1.2	Coordinate City operations and development policies for the protection and conservation of open space resources, by: a) Encouraging City departments to take the lead in utilizing water re-use technology, including graywater and reclaimed water for public landscape maintenance purposes and such other purposes as may be feasible; b) Preserving habitat linkages, where feasible, to provide wildlife corridors and to protect natural animal ranges; and c) Preserving natural viewsheds, whenever possible, in hillside and coastal areas.
Policy 6.1.3	Reassess the environmental importance of the County of Los Angeles designated Significant Ecological Areas (SEAs) that occur within the City of Los Angeles and evaluate the appropriateness of the inclusion of other areas that may exhibit equivalent environmental value.
Policy 6.1.4	Conserve, and manage the undeveloped portions of the City's watersheds, where feasible, as open spaces which protect, conserve, and enhance natural resources.
Policy 6.1.5	Provide for an on-site evaluation of sites located outside of targeted growth areas, as specified in amendments to the community plans, for the identification of sensitive habitats, sensitive species, and an analysis of wildlife movement, with specific emphasis on the evaluation of areas identified on the Biological Resource Maps contained in the Framework Element's Technical Background Report and Environmental Impact Report.
Policy 6.1.6	Consider preservation of private land open space to the maximum extent feasible. In areas where open space values determine the character of the community, development should occur with special consideration of these characteristics.
Policy 6.1.7	Encourage an increase of open space where opportunities exist throughout the City to protect wild areas such as the Sepulveda Basin and Chatsworth Reservoir.
Conservation Element – Endangered Species	
Policy 1	Continue to require evaluation, avoidance, and minimization of potential significant impacts, as well as mitigation of unavoidable significant impacts on sensitive animal and plant species and their habitats and habitat corridors relative to land development activities.

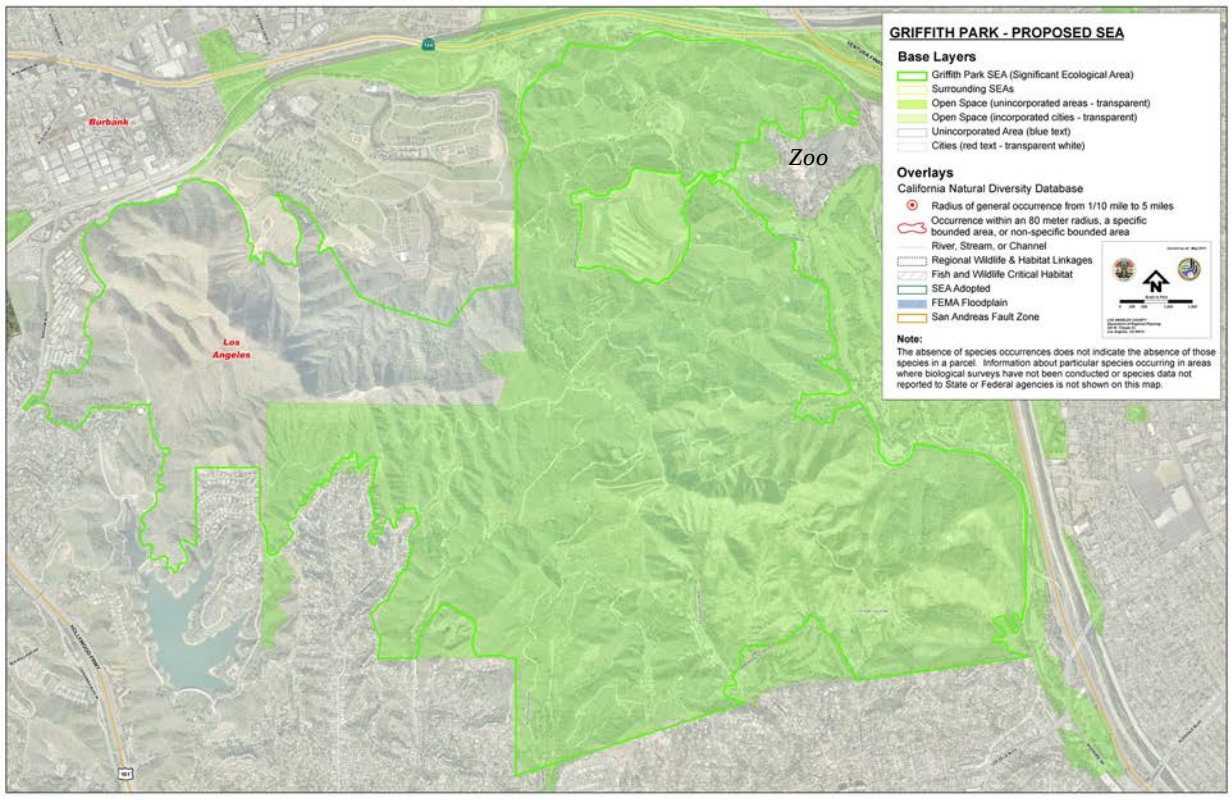
Table 3.3-1. City of Los Angeles General Plan Open Space and Conservation Element Relevant Policies (Continued)

Goal/Objective/Policy	Description
Policy 2	Continue to administer city-owned and managed properties to protect and/or enhance the survival of sensitive plant and animal species to the greatest practical extent.
Conservation Element - Habitats	
Policy 1	Continue to identify significant habitat areas, corridors, and buffers and to take measures to protect, enhance and/or restore them.
Policy 2	Continue to protect, restore, and/or enhance habitat areas, linkages, and corridor segments, to the greatest extent practical, within City owned or managed sites.
Policy 3	Continue to work cooperatively with other agencies and entities in protecting local habitats and endangered, threatened, sensitive, and rare species.

Source: City of Los Angeles 2001.

Los Angeles County Significant Ecological Areas

The County of Los Angeles has designated Significant Ecological Areas (SEAs) to allow controlled development in areas of critical biodiversity. A majority of Griffith Park is within SEA 37, which encompasses the coastal sage scrub, chapparal, riparian, and southern oak



The Griffith Park SEA encompasses the majority of Griffith Park but excludes the Zoo. Source: Los Angeles County Department of Regional Planning

woodland plant communities within Griffith Park. The Zoo property is outside of SEA 37 with the nearest the SEA boundary on the west and north of the Zoo.

Existing Conditions

Regional Setting

The Zoo is situated at the base of the foothills of the eastern Santa Monica Mountains, part of the Transverse Ranges physiographic region. The climate of the region is Mediterranean, with hot dry summers and wet winters, and semi-arid. Total precipitation for the year is about 16 inches of rainfall, with most falling between November and April. Winter low temperatures average about 42° Fahrenheit (° F), while summer highs average about 86° F (Western Regional Climate Center 2019). The 133-acre Zoo is located in the northeast corner of the 4,310-acre Griffith Park, and is one of the largest urban parks in the United States. Griffith Park supports an extensive, relatively undisturbed island of natural vegetation in an urbanized, metropolitan area. Other land uses surrounding Griffith Park include residential neighborhoods, open space, commercial/manufacturing uses, the Los Angeles River, and the U.S. Highway 101 (Hwy 101) and Interstate 5 (I-5) freeways within heavily urbanized portions of the cities of Los Angeles, Glendale, and Burbank.

Griffith Park supports an extensive, relatively undisturbed island of natural vegetation in an urbanized, metropolitan area. Existing extensive stands of chaparral and oak woodland in Griffith Park provide significant areas of wildlife habitat. Griffith Park also has channelized connections through urban development to open lands in the vicinity that support wildlife movement and sustain biological diversity. Runyon Canyon Park lies to the west, separated from Griffith Park by Hwy 101 and provides 160 acres of parkland. Both parks are managed by the Los Angeles Department of Recreation and Parks (RAP). Further west, Topanga State Park (managed by California State Parks) covers 11,500 acres. Together, these three parks and other parks and open spaces within the Santa Monica Mountains provide extensive natural undeveloped coastal sage scrub, chaparral, oak woodlands, and other habitats that

The Zoo is located within Griffith Park, one of the largest urban parks in the U.S. and second largest municipally managed park in California. Griffith Park is home to large and significant populations of wildlife and provides significant biological value to the Los Angeles Basin.

act as important natural resources to the Los Angeles area. Griffith Park is also linked to the Los Angeles River, which provides some regional wildlife connectivity to other open lands and the Pacific Ocean.

The migration of the famed cougar P-22 (*Puma concolor*) from the Santa Monica Mountains to Griffith Park is an important illustration of the suitability of the area as habitat and the role the park plays in regional wildlife connectivity. Other larger more common wildlife that utilize Griffith Park include bobcat (*Lynx rufus*), coyote (*Canis latrans*), mule deer (*Odocoileus hemionus*), raccoon (*Procyon lotor*), and striped skunk (*Mephitis mephitis*) (Cooper Ecological Monitoring, Inc. and USGS 2012). Western gray squirrel (*Sciurus griseus*), California ground squirrel (*Otospermophilus beecheyi*), the non-native Fox Squirrel (*Sciurus niger*), Brush Rabbit (*Sylvilagus bachmani*), Botta's pocket gopher (*Thomomys bottae*), California vole (Microtus californicus), and woodrat (*Neotoma* spp.) are relatively common small mammals that utilize Griffith Park. Other characteristic wildlife species include birds like the acorn woodpecker (*Melanerpes formicivorus*), oak titmouse (*Baeolophus inornatus*), and purple finch (*Haemorhous purpueus*). Griffith Park also provides roosting and some foraging habitat for several bat species, including Yuma myotis (*Myotis ymanensis*), California myotis (*Myotis californicus*), Western pipistrelle (*Parastrellus hesperus*), big brown bat (*Eptesicus fuscus*), western red bat (*Lasiurus blossevillii*), hoary bat (*Lasiurus cinereus*), and Mexican free-tailed bat (*Tadarida brasiliensis*) (Remington, S. and Cooper Ecological Monitoring, Inc. 2009).

Project Site and Vicinity

The Zoo is bordered to the north, west, and east by several hundred acres of chaparral, oak woodland, and coastal sage scrub habitats located within the surrounding hillsides, ridges, and canyons of Griffith Park. The Project site is in the Bull Canyon planning watershed. This includes three canyons with limited watersheds that support ephemeral drainages that discharge into small Zoo catchment or sediment basins from the north and northwest, and then are conveyed into underground storm drains which ultimately discharge to the Los Angeles River. The topography of the site ranges from relatively level to hilly, with elevations ranging from about 440 feet to 660 feet (135 meters to 200 meters) above mean sea level, with most public spaces lying below 540 feet (165 meters) in elevation. Regional geologic maps indicate that the lower elevations of the site, including the parking lot and the central portion of the Zoo, are underlain by younger alluvium consisting of moderately to poorly consolidated clay, sand, and gravel. The alluvium is overlain in the central portion of the Zoo by fill soils placed during the original construction of the Zoo in the mid-1960s and during later projects. The hills located on the northern and northwestern portions of the Zoo are composed of igneous quartz diorite bedrock. The quartz diorite is moderately to intensely weathered and composed of plagioclase feldspar, quartz, biotite, and hornblende. The hills along the southern edge of the site and south of the Zoo are composed of sedimentary sandstone and shale of the Topanga Formation.

The hillside and canyon areas within the Zoo support a range of common species and potentially some special-status species. Although direct habitat connectivity is somewhat disrupted by trails, roads, clearing of fire buffers, and perimeter security fencing, wildlife movement and plant propagation between Griffith Park and the Zoo appears to occur. For example, areas such as Amir's Garden to the south support dense stands of coast live oak woodlands and chaparral, which support diverse avian and small wildlife that can cross narrow Griffith Park Drive to access Zoo habitats. Similarly, the chaparral and coastal live oak woodland habitats located along the ridges and canyons bordering the Zoo also support avian, bat, and small mammal populations that likely have some interaction with habitats and wildlife within the Zoo, despite the presence of public trails (e.g., Skyline and Condor), vegetation management activities, and perimeter fencing.

The Zoo sits on formerly rough terrain that historically supported steep ridges and hillsides drained by several canyons. Development of the former Roosevelt Golf Course entailed hillside grading and associated fill of onsite canyons to create level greens and fairways. During development of the Zoo in place of the golf course in the mid-60s, the bottoms of canyons and drainages were further graded and filled to provide level areas with overall fill depths reaching up 10 to 30 feet in the central portions of the canyons (Appendix E). Soils are generally well-drained without substantial amounts of organic materials. Three ephemeral streams were placed in culverts underlain the artificial fill to carry runoff from upstream canyons through the Zoo to downstream drainage facilities and into the Los Angeles River. These generally level, filled canyons are where most of the currently developed Zoo facilities are located. The surrounding hillsides within the Zoo are mostly undeveloped and support native or mixed woodland habitats. Development in these hillside areas is limited to administrative offices, conservation programs facilities, and support facilities for Zoo programming.

About 55 percent of the Zoo area is developed with exhibit and visitor-serving space and administrative and support facilities. These developed area areas are often heavily landscaped with mature trees and shrubs, representing the "botanical garden" aspect of the Zoo. Another 22 percent is utilized to provide parking, and the remaining 24 percent is largely not utilized and undeveloped. Natural, undeveloped areas in the Zoo are commonly bordered by mixed woodlands of both planted and naturalizing non-native species (gum trees [eucalyptus], for example), and represent a blending ecotone between the developed portion of the Zoo and the more natural hillsides in the Project site and in Griffith Park.

Vegetation Communities

Vegetation communities are a collection or assemblage of plants sharing a common environment that interact with each other, other plant and animal species, and the larger ecosystem. Each community is defined by the physical conditions of the environment (e.g., elevation, steepness of slope, soils, climate), dominant species, species composition and diversity, canopy cover, and percentage of species native to the region.

Mapped native vegetation communities within the Project site are contained within the California and Africa planning areas. The California planning area contains 12.7 acres of laurel sumac shrubland, 0.4 acres of coast live oak woodland, and a 0.1 acres of coastal sage scrub community. The Africa planning area contains 6 acres of coast live oak woodland. Common to both areas is a mostly non-native mixed woodland, often with predominantly planted or naturalized eucalyptus or pine trees. The Africa planning area also contains 0.3 acres of non-native grassland. These undeveloped areas serve as a transitional zone between the developed Zoo grounds and native habitats either within the Zoo or in adjacent Griffith Park. Developed areas cover 102 acres of the Zoo, including 67.4 acres of developed park area to denote portions of the Zoo used for exhibits, conservation uses, and support and administrative facilities, and 34.6 acres of urban/developed area to denote parking lots and roadways (see Figure 3.3-1). A summary of the areas covered by each vegetation community or land use type is shown in Table 3.3-2 below.

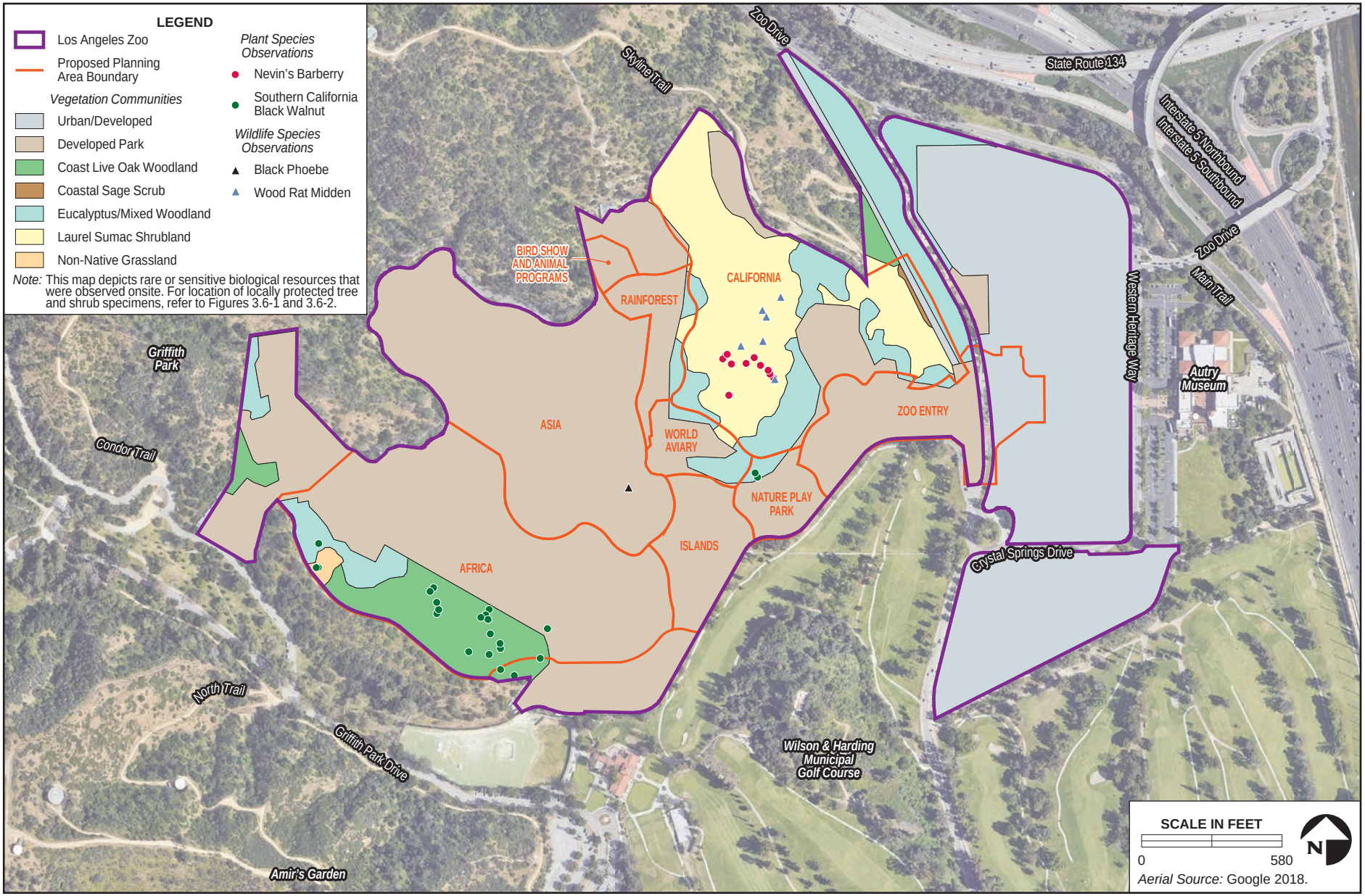
Table 3.3-2. Vegetation Communities and Land Use

Community/Type	Acres*	Species Diversity	Percent Native
Coast Live Oak Woodland	6.41	53	67
Coastal Sage Scrub	0.11	19	79
Developed Park	67.35	(33)**	29
Eucalyptus/Mixed Woodland	13.53	44	32
Laurel Sumac Shrubland	12.67	49	53
Non-Native Grassland	0.32	9	33
Urban/Developed	34.60	NA	-
Total	**134.98**		

Source: Appendix E
* Acreage based on digitized GIS boundary areas and may not reflect actual site boundaries.
** Developed lands within the Zoo were only incidentally examined and were not subject to an intensive floristic inventory.

Coast Live Oak Woodland

The largest area of roughly 6 acres of coast live oak woodlands is found on the western side of the Zoo on an undeveloped, northeast-facing hillside surrounded by paved access roads and a retaining wall on the east side, within the proposed Africa planning area; a roughly 0.15-acre of coast live oak woodland is located northeast of the Gottlieb Animal Health and Conservation Center. An additional 0.15-acre area of coast live oak woodland is located on the east side of the Zoo north of the Zoo entrance above an employee parking lot in the California planning area (refer to Figure 3.3-1).



wood.

Los Angeles Zoo
Vegetation Communities and Species Observations

FIGURE 3.3-1

The undeveloped hillside within the Africa planning area supports 6 acres of coast live oak woodland and many mature oak specimens.

Mature coast live oaks are the dominant species providing a mostly non-continuous woodland canopy over an understory of predominantly non-native annual grass species, interspersed with native understory plant species and a variety of primarily native shrubs. A total of 120 mature coastal live oak trees exist within the three areas, with the vast majority (113) are concentrated with the 6 acres of coast live oak woodlands within the proposed Africa planning area. These oaks range from an average of 13 inches diameter at breast height (DBH) and 19 feet tall in the planned California area to 18 inches DBH and 25 feet tall in the planned Africa exhibit, with some oaks of between 20 and 30 inches DBH. Most oak trees are in good health (Appendix E). The coast live oak woodland within the Africa planning area hosts the highest observed species diversity of the native habitats of the Zoo, with 54 plant species being observed, of which 67 percent were native. The west side oak woodland in the proposed African exhibit also hosts 22 mostly small-diameter Southern California black walnut trees, a species of conservation concern (Figure 3.3-1). These areas appear largely free of recent disturbance, although ongoing vegetation management and clearing for fire protection has impacted this habitat, as exhibited by stump sprouting Southern California black walnut trees. Due to apparent past fire clearing activities, most of the latter appear to be stump sprouts and fall below the 4-inch DBH that would require protection under the *Los Angeles Municipal Code* (LAMC). The Africa planning area also supports non-natives grasses dominated by wild oats (*Avena* sp.) and brome grasses (typically ripgut [*Bromus diandrus*]).

Laurel Sumac Shrubland

Laurel sumac is a chaparral species. This species is dominant, due to cumulative ground cover, height and density of the shrubs. This community is found on undeveloped portions on the east side of the Zoo, the larger portion surrounding a ridgetop trail, and most probably represents a late seral stage of community development following disturbance. Laurel sumac shrublands often develop post-fire, as the species is a prolific resprouter; however, no evidence of a recent fire was noted in the Zoo.

Once a much denser shrubland, intensive vegetation management activities in July 2019 have removed laurel sumac shrubland observed on site.

Laurel sumac is a spreading, evergreen, leathery-leaved, multi-stemmed shrub that grows up to about 20 feet tall (though usually ranging from 10 to 15 feet). Individual shrubs are widely spaced to clumped in patches. Openings are populated by mix of bare ground and non-native annual grasses occasionally with other tree or shrub species, including gum trees (*Eucalyptus* spp.), oaks (live oak and scrub oak), elderberry (*Sambucus nigra*), lemonade berry (*Rhus integrifolia*), California sagebrush (*Artemisia californica*), big pod ceanothus (*Ceanothus macrocarpa*), and toyon (*Heteromeles arbutifolia*) among others. The federal and state listed endangered Nevin's barberry is present below the ridgeline, within this vegetation community; a single plant with characters approaching Hubby's phacelia (*Phacelia hubbyi*) was also noted. This vegetation community was the second-most diverse on the site, with 49 species being observed, with just over half (53 percent) being native. However, this community has been impacted by trail and road use, wildfire fuel management activities, and erosion and the significant presence of non-native plants. Substantial portions of this habitat were cleared in July 2019 for fire suppression purposes following completion of the site reconnaissance and rare plant survey, including removal of a substantial amount of laurel sumac, and potentially including the Nevin's barberry.

Coastal Sage Scrub

A small, coastal sage scrub community dominated by California sagebrush (*Artemisia californica*) persists on the lower, very steep slopes along the perimeter of an employee parking lot on in the California planning area (Figure 3.3-1). This community is different from the laurel sumac shrubland described above, although more than half the species noted here were also common in laurel sumac shrubland. Beyond supporting California sagebrush, California buckwheat (*Eriogonum fasciculatum*) and white sage (*Salvia apiana*) are also typical of coastal sage scrub. This community hosted 8 species that were not observed elsewhere, including California fuchsia (*Epilobium canum*) and California coffeeberry (*Frangula californica*). A total of 19 species were observed in this vegetation community fragment, with only a few non-native invaders; natives represent about 75 percent of the total diversity. The area is heavily impacted by erosion and features some vertical nearly bare faces that support the species of this habitat.

A very small coastal sage scrub community exists at the base of the steep hill near the employee parking area. The area supports a number of species iconic to the native sage scrub community.

Non-Native Annual Grassland

A small non-native annual grassland is located in between coast live oak woodland and eucalyptus/mixed woodlands in the Africa planning area. Plant species present are representative of those found in the understory of the adjacent woodlands, and are dominated by wild oats and ripgut brome, with isolated shrubs. Of all vegetation communities on the Project site, grasslands are the least diverse. Except for the lack of trees, the vegetation of this community reflects the species composition of the bordering oak and mixed woodlands.

Eucalyptus/Mixed Woodland

Eucalyptus/mixed woodland is a community with a broad and diverse composition. Gum trees are most common with both cultivated and naturalizing individuals with other mostly non-native tree species, including various pines (*Pinus* spp.), jacaranda (*Jacaranda mimosifolia*), tree of heaven (*Ailanthus altissima*), and Brazilian and Peruvian pepper trees (*Schinus terebinthifolius* and *Schinus molle*, respectively). The understory of eucalyptus/woodland on-site varied considerably depending upon the canopy coverage and maintenance. Under canopy was often a dense litter of leaves or needles. Non-native grasses or other mostly non-native species populate openings within the woodland. 44 species were observed species, indicating good diversity on-site, however, the majority of these (68

percent) were not native. Some mowing, fire prevention, and other clearing activities were noted within this habitat as well.

Developed Park

Developed Parks refer to the developed portion of the Zoo, including animal exhibit areas, visitor-serving uses, pedestrian pathways, service roads, landscaped areas, storage yards, building area, and service areas. Vegetation within these areas are landscaped and cultivated, and potentially could be included in an expanded definition of mixed woodland as they feature many non-native trees and good canopy coverage. A detailed examination of biological resources in this area was beyond the scope of this analysis. However, incidental observations recorded 34 observed species with only 29 percent being native to California (though not necessarily native to the region). Observed natives include sycamores, which are protected trees under the LAMC.

Urban/Developed

Urban/Developed refers to paved parking or access roadways outside of the Zoo. Parking areas did support landscape plantings of various cultivated native species such as coast live oak and sycamore, but again were beyond the scope of this analysis.

Observed Species

Flora

Appendix E lists all vascular plant species observed during the biological resource survey, rare plant survey, and jurisdictional delineation for the Project. A total of 124 plant taxa were observed. A total of 40 native species were found representing 32 percent of the observed flora, including two sensitive species, Nevin's barberry and Southern California black walnut. As noted above, these native plant species were concentrated in and dominate the approximately 19 acres of native oak woodland and laurel sumac shrubland habitats located on undeveloped hillsides and ridgelines within the proposed California and Africa planning areas. The roughly 81 acres of Developed Park and Eucalyptus/Mixed Woodland habitats are dominated by the roughly 80 non-native plant species, although these areas also support some native plant species such as western sycamore and coast live oaks.

Fauna

A woodrat midden was observed onsite, through the exact species of woodrat could not be discerned.

Appendix E lists all wildlife species detected within the Project site. A total of 18 wildlife species were detected, including 2 invertebrates (both butterflies), 13 birds and 3 mammals (2 detected by sign only). At the time of the reconnaissance-level biological resource survey in late May 2019, black phoebes (*Sayornis nigricans*) were observed to be nesting in the Treetops Terrace within the Asia planning area in developed portions of the Zoo. A Cooper's hawk (*Accipiter cooperii*) was heard calling during the reconnaissance survey. An occupied bat house was also observed in the Treetops Terrace; bats were not observed directly, and species determinations were not made. Relatively fresh guano was observed, indicating occupation. Bats had recently been relocated from the Treetops Terrace using other bat houses, which had been closed and relocated with sleeping bats inside to mixed woodland locations outside of the developed Zoo (Schneider and Maxcy, pers. comm). Coyote scat was also observed in several locations in both developed and undeveloped portions of the Zoo, indicating that medium-sized mammals can access interior portions of the Zoo. Woodrat nests (middens) were observed in the undeveloped laurel sumac shrubland on the east side of the Zoo (Figure 3.3-1) during the field surveys, but determination of species is difficult without trapping or close observation. These middens are potentially those of the San Diego woodrat (*Neotoma lepida intermedia*) (see *Sensitive Wildlife Species* discussion below).

Special-Status Species

Special-status species are those recognized by federal, state, or local agencies as being potentially vulnerable to impacts because of rarity, local or regional reductions in population numbers, isolation/restricted genetic flow, or other factors. Special-status plant species include those listed as threatened or endangered, proposed for listing, or candidates for listing by the USFWS and CDFW; those considered sensitive by the CDFW; those species included in the California Rare Plant Rank (CRPR) inventory, which is maintained by the CNPS; and those species considered sensitive or protected under the LAMC. Special-status wildlife species include those listed as threatened or endangered, proposed for listing, or candidates for listing by the USFWS and CDFW; or those considered sensitive by the CDFW.

While the Zoo provides habitat to several sensitive species, the developed nature of much of the Project site with exhibits, roads, buildings, pathways, parking and non-native trees and landscaping limits the Zoo's utility to a relatively narrow range of sensitive species. As

described in the above section *Observed Species*, the distribution of historical special-status species observations in the Project vicinity was reviewed for preparation of this report. For the purposes of this analysis, those species that are either known to occur or have some potential to occur within the Project site are addressed in this section. 17 sensitive or special status plant and wildlife species are either known to be present or have a moderate to high potential to be present. The list of potentially occurring special-status plant and animal species is provided in Table 3.3-3 below along with an assessment of their potential for occurrence on site.

Sensitive Plant Species

Sensitive plant taxa known to occur or to have formerly occurred within the immediate area are listed in Table 3.3-3. Of the 21 taxa listed, two species - Nevin's barberry and Southern California black walnut – were observed during the reconnaissance of the site and the subsequent focused rare plant survey (Figure 3.3-1). Another, the Plummer's mariposa lily (*Calochortus plummerae)* is sensitive plant species assigned a high potential to occur on site due to habitat suitability and extant populations occurring nearby; three others have a moderate potential to occur, and six have a low potential of occurrence mostly due to lack of modern observations in the region. The remainder are not expected due to a lack of suitable habitat.

Listed Plant Species

There are rare plant taxa with known or high potential to occur on or near the site and are listed under FESA or CESA:

- **Nevin's barberry** (*Berberis nevinii*) is both federally and state listed as Endangered and is a CNPS CRPR 1B.2 species. These plants are located on north-facing slopes adjacent to the north of the Zoo and within the laurel sumac shrubland which would be largely removed or disturbed by Project development. This species was detected during the reconnaissance survey and its distribution on site better determined during the subsequent rare plant survey which indicates its location within areas likely subject to disturbance (Figure 3.3-1).
- The **San Fernando Valley spineflower** (*Chorizanthe parry* var. *fernandina*) is state listed as Endangered and is a CRPR 1B.1 species. These plants could be present; however, it was not detected during reconnaissance or focused rare plant surveys.
- The **Plummer's mariposa lily** (*Calochortus plummerae*) and **Southern California black walnut** are both CRPR 4.2 and are considered to have high potential to occur or are currently present onsite, respectively.
- **Hubby's phacelia** (*Phacelia hubbyi*) and the **San Gabriel Mountains leather oak** (*Quercus durata* var. *gabrielensis*), both CRPR 4.2, have moderate potential to exist onsite.

Table 3.3-3. Potentially Occurring Special-Status Species

Scientific Name	Common Name	Status[1] (FESA/ State/ CRPR)	Habitat	Elev (ft)	Bloom Time	Occurrence or Potential for Occurrence
PLANTS						
Berberis nevinii	Nevin's barberry	FE/CE/1B.1	Sandy or gravelly chaparral, cismontane woodland, coastal scrub, riparian scrub.	225-2705	(Feb) Mar-Jun	**Present** Observed during reconnaissance survey
*Heteromeles arbutifolia**	toyon	-/-/-	Chaparral	45-2295	Jun-Aug	**Present** Observed during reconnaissance survey
*Juglans californica**	Southern California black walnut	-/-/4.2	Alluvial chaparral, cismontane woodland, coastal scrub, riparian woodland.	160-2955	Mar-Jun	**Present** Observed during reconnaissance survey
*Platanus racemosa**	western sycamore	-/-/-	Yellow pine forest, foothill woodland, chaparral, valley grassland, wetland-riparian	6-11310	Feb-May	**Present** Observed during reconnaissance survey
Sambucus nigra spp. *caerulea**	blue elderberry	-/-/-	Yellow pine forest, red fir forest, lodgepole forest, subalpine forest, southern oak woodland, foothill woodland, pinyon-juniper woodland	0-3000	Mar-Jul	**Present** Observed during reconnaissance survey
*Quercus agrifolia**	Coast live oak	-/-/-	Mixed evergreen forest, foothill woodland, southern oak woodland.	50-2300	Feb-Mar	**Present** Observed during reconnaissance survey
Calochortus plummerae	Plummer's mariposa lily	-/-/4.2	Granitic, rocky chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, valley, and foothill grassland.	325-5575	May-Jul	**High** Suitable habitat present; known from immediate region

Table 3.3-3. Potentially Occurring Special-Status Species (Continued)

Scientific Name	Common Name	Status[1] (FESA/ State/ CRPR)	Habitat	Elev (ft)	Bloom Time	Occurrence or Potential for Occurrence
Phacelia hubbyi	Hubby's phacelia	-/-/4.2	Gravelly, rocky, or talus in chaparral, coastal scrub, valley, and foothill grassland.	0-3300	Apr-Jun	**Moderate** Suitable habitat present; known to occur south of Project site; often associated with black walnut
Quercus durata var. gabrielensis	San Gabriel Mtns. leather oak	-/-/4.2	Chaparral, cismontane woodland.	1475-3280	Apr-May	**Moderate** Suitable habitat present; known from recent collections in Griffith Park south of site
Quercus dumosa	Nuttall's scrub oak	-/-/1B.1	Sandy, clay loam in closed-cone coniferous forest, chaparral, coastal scrub.	45-1310	Feb-Mar	**Moderate** Suitable habitat present; known historically in region south of Project site
Calandrinia breweri	Brewer's calandrinia	-/-/4.2	Sandy or loamy, disturbed sites and burns in chaparral, coastal scrub.	33-4026	Mar-Jun	**Low** Suitable habitat present; only historical collections from area.
Calochortus clavatus var. *gracilis*	slender mariposa lily	-/-/1B.2	Chaparral, coastal scrub, valley, and foothill grassland.	1045-3280	Mar-Jun (Nov)	**Low** Suitable habitat present; known in region from mountains 10 km to north
Chorizanthe parryi var. fernandina	San Fernando Valley spineflower	-/CE/1B.1	Coastal scrub (sandy), valley and foothill grassland.	495-4005	Apr-Jun	**Low** Suitable habitat present; historically known in region
Horkelia cuneata var. puberula	mesa horkelia	-/-/1B.1	Sandy or gravelly maritime chaparral, cismontane woodland, coastal scrub.	225-2655	Feb-Jul (Sep)	**Low** Suitable habitat present; known historically in region

Table 3.3-3. Potentially Occurring Special-Status Species (Continued)

Scientific Name	Common Name	Status[1] (FESA/ State/ CRPR)	Habitat	Elev (ft)	Bloom Time	Occurrence or Potential for Occurrence
Piperia cooperi	Cooper's rein orchid	-/-/4.2	Chaparral, cismontane woodland, valley, and foothill grassland.	50-5230	Mar-Jun	**Low** Suitable habitat present; known historically in region
Pseudognaphalium leucocephalum	white cudweed	-/-/2B.2	Sandy, gravelly chaparral, cismontane woodland, coastal scrub, riparian woodland.	0-6890	Aug-Nov	**Low** Suitable habitat present; known historically in region
Atriplex parishii	Parish's brittlescale	-/-/1B.1	Alkaline or saline chenopod scrub, playas, or vernal pools.	30-655	Apr-Oct	**Not Expected** Alkaline conditions not present within the Project site.
California macrophylla	California filaree	-/-/CBR	Open sites, grassland, scrub, vertic clay, occasionally serpentine.	<3940	Mar-May	**Not Expected** Suitable habitat not present within Project site; known in region only historically
Calochortus catalinae	Catalina mariposa	-/-/4.2	Chaparral, cismontane woodland, coastal scrub, valley, and foothill grassland.	45-2295	Mar-Jun	**Not Expected** Clay soils not present within Project site; historically known in region west of Project site
Camissoniopsis lewisii	Lewis's evening-primrose	-/-/3	Sandy or clay coastal bluff scrub, cismontane woodland, coastal dunes, coastal scrub, valley, and foothill grassland.	0-985	Mar-May (Jun)	**Not Expected** Suitable soils not present; historically known in region
Centromadia parryi ssp. australis	southern tarplant	-/-/1B.1	Marshes and swamps (margins), vernally mesic valley and foothill grassland, vernal pools.	0-1575	May-Nov	**Not Expected** Suitable mesic conditions not present within Project site
Convolvulus simulans	small-flowered morning glory	-/-/4.2	Clay, serpentinite seeps in chaparral (openings), coastal	95-2430	Mar-Jul	**Not Expected** Suitable clay soils not

Table 3.3-3. Potentially Occurring Special-Status Species (Continued)

Scientific Name	Common Name	Status[1] (FESA/ State/ CRPR)	Habitat	Elev (ft)	Bloom Time	Occurrence or Potential for Occurrence
			scrub, valley, and foothill grassland.			present; known from area southwest of site
Dudleya multicaulis	many-stemmed dudleya	-/-/1B.2	Often clay in chaparral, coastal scrub, valley, and foothill grassland.	45-2590	Apr-Jul	**Not Expected** Suitable clay soils not present; known from region south of Project site
Lilium humboldtii ssp. *ocellatum*	ocellated Humboldt lily	-/-/4.2	Openings in chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, riparian woodland.	95-5905	Mar-Jul (Aug)	**Not Expected** Known locally in Griffith Park from mesic oak canyons; suitable habitat not present in Project site
Symphyotrichum defoliatum	San Bernardino aster	-/-/1B.2	Near ditches, streams, springs in cismontane woodland, coastal scrub, lower montane coniferous forest, meadows and seeps, marshes and swamps, valley, and foothill grassland (vernally mesic).	5-6695	Jul-Nov	**Not Expected** Suitable mesic habitat not present
ANIMALS						
Invertebrates						
Bombus crotchii	Crotch bumble bee	-/CCE/-	Hot and dry climates with grassland and scrub habitats. Nests underground. Nectar plants include milkweeds, lupines, phacelias, sages, medics and dustymaidens	-	-	**Low** Critically endangered and extirpated throughout most of habitat and former range. Some scrub habitat on site but little foraging habitat available. Historical locations within region and recent observations close by but not within Project site.

Table 3.3-3. Potentially Occurring Special-Status Species (Continued)

Scientific Name	Common Name	Status[1] (FESA/ State/ CRPR)	Habitat	Elev (ft)	Bloom Time	Occurrence or Potential for Occurrence
Reptiles						
Anniella stebbinsi	southern California legless lizard	-/SSC/-	Open habitats with loose or sandy soil for burrowing; typically associated with oak leaf litter; dunes.	-	-	**Moderate** Loose soils and oak leaf litter present in oak woodland portion of the Project site
Birds						
Accipiter cooperii	Cooper's hawk	-/WL/-	Found in a variety of vegetated habitats including urban, suburban, and rural. Requires large trees for nesting.	-	-	**Present** Suitable nesting habitat present; calls heard during site reconnaissance
Vireo bellii pusillus	least Bell's vireo	FE/CE; SSC/-	Found in willow and other low, dense valley foothill riparian habitat. Thickets of willow and other low shrubs afford nesting and roosting cover. Usually found near water, but also inhabits thickets along dry, intermittent streams.	-	-	**Not expected** Although they are known to have recently occurred in the vicinity, suitable riparian habitat is required for occupancy, and this habitat is not present within Project site
Mammals						
Eptesicus fuscus	big brown bat	-/-/-/WWBG	Widespread. Forages above open habitats among scattered trees and in residential areas. Mainly roosts in building and other human-made structures. Some records also show roosting in caves, mines, and trees, rarely.	-	-	**Present** Suitable foraging and roosting habitat present; known from the Project site.

Table 3.3-3. Potentially Occurring Special-Status Species (Continued)

Scientific Name	Common Name	Status[1] (FESA/ State/ CRPR)	Habitat	Elev (ft)	Bloom Time	Occurrence or Potential for Occurrence
Eumops perotis californicus	western mastiff bat	-/SSC/-/WWBG	Roosts in high vertical cliffs, rock quarries, fractured boulder outcrops and occasionally tall buildings	-	-	**Present** Known from the Project site from acoustic surveys.
Lasiurus blossevillii	western red bat	-/-/-/WWBG	Occurs in wooded environments, associating primarily with riparian trees (cottonwoods, sycamores, and oaks). Found along streams and creeks.	-	-	**Present** Little to no roosting habitat present, and little to no foraging habitat present. Known from the Project site from acoustic surveys
Lasiurus cinereus	hoary bat	-/-/-/WWBG	Roosts in broad-leafed and coniferous trees including riparian species, and ornamentals and citrus trees. Requires water.	-	-	**Present** Small patches of potential roosting habitat present. Known from the region and in acoustic surveys of the site. No open water available and little to no foraging habitat present. Historical locations within region.
Myotis californicus	California myotis	-/-/-/WWBG	Generalist- found in a variety of habitats. Most commonly found in riparian zones, oak woodlands, pine forests, and chaparral-covered flats and hillsides.	-	-	**Present** Suitable foraging and roosting habitat present; known from the Project site.
Myotis yumanensis	Yuma myotis	-/SSC/-/WWBG	Forages over water sources including stock tanks and ponds. Roosts in a variety of habitats.	-	-	**Present** Suitable foraging and roosting habitat present; known from the Project site.

Table 3.3-3. Potentially Occurring Special-Status Species (Continued)

Scientific Name	Common Name	Status[1] (FESA/ State/ CRPR)	Habitat	Elev (ft)	Bloom Time	Occurrence or Potential for Occurrence
Parastrellus hesperus	canyon bat (western pipistrelle)	-/-/-/WWBG	Rock crevices, rarely buildings. Also roosts in mines and caves. Prefers rocky canyons and cliffs, as it forages over water in canyons and along cliff faces.	-	-	**Present** No suitable foraging or roosting habitat present Known in the Project site from acoustic surveys
Puma concolor	cougar, mountain lion	-/CCE/-	Forested or brushy areas; habitat generalist	-	-	**Present** Known from adjacent lands and documented rarely on Zoo grounds. Limited woodland and scrub habitat are present. Native forage species limited, with Zoo livestock protected. Access to site limited by wildlife exclusion fencing.
Tadarida brasiliensis	Mexican (Brazilian) free-tailed bat	-/-/-/WWBG	Generalist- found in a variety of habitats including caves, barns, bridges, mine tunnels, crevices, or buildings for roosting.	-	-	**Present** Suitable foraging and roosting habitat present; known in the Project site from acoustic surveys
Antrozous pallidus	pallid bat	-/SSC/- /WWBG	Widespread. Roosts in a variety of habitats but prefers crevices and cave-like conditions.	-	-	**High** Suitable foraging and roosting habitat present; known from the Project site.
Neotoma lepida intermedia	San Diego desert woodrat	-/SSC/-	Occurs in high desert areas, chaparral, sagebrush flats, coastal sage scrub with dense undergrowth, woodlands, pinyon-juniper pine, and are primarily	-	-	**High** Middens observed within Project site. Suitable midden locations present within woodland or shrub habitats in Project site.

Table 3.3-3. Potentially Occurring Special-Status Species (Continued)

Scientific Name	Common Name	Status[1] (FESA/ State/ CRPR)	Habitat	Elev (ft)	Bloom Time	Occurrence or Potential for Occurrence
			associated with rock outcroppings, boulders and cacti.			Observed middens potentially of San Diego subspecies.
Lasiurus xanthinus	western yellow bat	-/SSC/-/WWBG	Palm skirts preferred as roost sites. Observed emerging from hackberry and sycamore. Forages over open water but can be found in dry areas.	-	-	**Low** No foraging habitat present and no water sources available within Project site. Suitable roosting habitat present, but patchy and small. Historical locations within region.

Source: Appendix E

1. **Status:** Federal/State/CNPS California Rare Plant Ranking/Western Working Bat Group Sensitive. **Federal:** FT = Federally Threatened, FE = Federally Endangered. **State:** CE = State Endangered, CT = State Threatened, CCE= State Candidate Endangered, SSC = California Species of Special Concern. WL= CDFW Watch List. **Western Working Bat Group** (WWBG) Sensitive. **California Native Plant Society (CNPS) California Rare Plant Rank (CRPR):** 1B.1 = plants rare, threatened, or endangered in California and elsewhere, seriously threatened in California; 1B.2 = rare, threatened or endangered, moderately threatened in California 2B.1 = plants rare, threatened or endangered in California, but more common elsewhere, seriously threatened in California; 2B.2 = plants rare, threatened or endangered in California, but more common elsewhere, fairly threatened in California; 4.2 = plants of limited distribution, fairly threatened in California.

* Protected or proposed for protection under the City's Tree Protection Ordinance of the LAMC.

In addition, coast live oak, western sycamore, toyon, and elderberry, which are protected or proposed for protection under the City's Tree Protection Ordinance, are present onsite. The 15 other special-status plant taxa shown in Table 3.3-3 were not detected and have a low potential to occur They are also not listed under federal or state endangered species laws but are considered rare and ranked by CNPS; CRPRs are discussed in the footnote to Table 3.3-3. It is required to consider impacts to individuals or their habitat for plant species listed under FESA or CESA and those of rank 1A, 1B, 2A or 2B under CEQA Guidelines §15125 (c) and/or §15380 and recommended for rank 3 and 4 species. However, these species have been considered and are unlikely to occur.

Life history and population descriptions are provided below for the sensitive plant species identified in Table 3.3-3.

A total of 11 Nevin's barberry specimens were observed onsite within the laurel sumac shrubland, where extension vegetation clearance occurred following rare plant surveys.

Nevin's barberry (*Berberis nevinii*): Nevin's barberry is a rounded, erect evergreen shrub in the barberry family growing from 3 to 14 feet high (Munz 1974; USFWS 2009; Williams 2012). Wood and inner bark are yellow. The once-pinnately compound gray-green leaves are arranged alternately along stems or on short branchlets and can be 1 to 5 inches long. The 3 to 5 flat, thick, stiff leaflets have toothed margins with 8 to 10 spine-like teeth per side and a terminal spine-like acute or acuminate tip. The terminal leaflet ranges from 1 to 1.5 inches in length and about half as wide. This shrub blooms from March through May, in loose clusters of 3 to 5 yellow flowers that develop into juicy, yellowish-red rounded berries about a quarter inch in diameter, containing a few small brownish seeds (Munz 1974). It occurs in a variety of habitats, including nearly flat sandy washes, terraces, and canyon floors to gravelly wash margins, steep-sloped drainage banks, and steep rocky ridges, slopes, or mountain summits in chaparral, coastal sage scrub, oak woodland, riparian scrub/woodland, and alluvial scrub vegetation communities(CNPS 2019; USFWS 2009). It is scattered discontinuously in Los Angeles County, the San Bernardino/Riverside County border, and southwestern Riverside County (USFWS 2009; Calflora 2019; CNPS 2019; CDFW 2019). It is known from several scattered locations in Griffith Park (Cooper 2012), where it is assumed to have been introduced, though it occurs in similar circumstances to other known populations and is within its historical range (USFWS 2009; Cooper 2012).

Nevin's barberry is a federally and state-listed Endangered shrub and is a CRPR 1B.1 species (CNPS 2019). Threats to the species include altered fire regimes, fire suppression or prevention activities, road maintenance, and development CNPS 2019; USFWS 2009). Individuals detected during surveys of the site were found near a ridgetop in a laurel sumac shrubland on sandy soils (Figure 3.3-1).

Southern California black walnut (*Juglans californica*): Southern California black walnut is a deciduous tree that produces a small hard nut enclosed by a spheroid, thick leathery husk (Whittemore 2012). Trees can reach 40 feet tall and spreading. The bark is smooth to furrowed with age, gray or gray brown. Leaves are alternate and pinnately compound with 11-15 narrowly elliptical leaflets, falling in the autumn. Flowers are in catkins that appear in March to May. It occurs on north-facing, alluvial slopes in chaparral, woodlands, coastal sage scrub, and in riparian woodlands (CNPS 2019). It is distributed throughout southern California (Calflora 2019; CNPS 2019).

Several occurrences of Southern California black walnut at the Zoo property are shrub-like sprouts developed from stumps that have been cut down for wildfire vegetation management.

Southern California black walnut is not listed under CESA or FESA and is a CRPR 4.2 plant (CNPS 2019). Within its range, it is often common, but is recognized as a highly fragmented, declining community, being threatened by urbanization, grazing, invasion by non-native plants, and possible hybridization with cultivated walnut varieties (CNPS 2019). On site, it is present in oak woodland on the western boundary of the Zoo, mostly appearing as root sprouts around older cut trees.

Parish's brittlescale (*Atriplex parishii*): Parish's brittlescale is a form of saltbush that occurs on alkaline or saline substrates, most commonly found in alkaline flats on the edges of vernally mesic salt pans (CNPS 2019). It is a small-leaved, low, clump-forming annual that grows to about a foot tall, with branches almost horizontal to ascending and appearing gray to white (Zacharias 2012). Leaves are small, at most to about a half-inch long and slightly narrower than long and usually gray to white. The nondescript flowers can appear from April to October depending on rainfall, appearing in a terminal spike with the terminal staminate flowers above the fertile flowers, the latter producing a tiny dark brown to black seed. It occurs in isolated stands from Los Angeles to Baja California, Mexico (Calflora 2019; CNPS 2019; CDFW 2019).

It is a CRPR 1B.2 species, with the primary threats being agricultural and urban development and grazing (CNPS 2019). It may be extirpated in much its historically known range, with most modern collections being from Riverside or San Diego counties (Calflora 2019; CNPS 2019). It is not expected as suitable alkaline conditions are not present.

Brewer's calandrinia (*Calandrinia breweri*): Brewer's calandrinia (or Brewer's redmaids) in the Minner's Lettuce family, and is an annual with thick, hairless fleshy stems that grow prostrate along the ground or are ascending to lengths of nearly a foot, though often less (Munz 1974; Guilliams and Miller, 2012). The fleshy leaves are egg to spoon shaped, alternating along the stem. Flowers appear in February to May in a terminal raceme, each flower branching off the stem on a pedicel up to nearly an inch long, with 2 sepals and 5 bright red or pink petals with 3 to 6 yellow stamens. The fruit is a capsule with 10 to 15 seeds. Distinguishing characters are the capsule, which extends well beyond the enclosing sepals, and the bumpy surface of the seeds under magnification. It is known as fire-follower in disturbed or burned habitats of chaparral, coastal scrub and coastal sage scrub on sandy to loamy soils and is distributed in widely scattered mostly coastal populations from northern California to Baja California, Mexico (CNPS 2019).

It is a CRPR 4.2 species, with threats being fire suppression, road maintenance, and development (CNPS 2019). Though suitable habitat is present on site, it is known in the region only from historical collections and has a low potential to occur on site. It was not detected during focused rare plant surveys of the site.

California, or Round-leaved, filaree (*California macrophylla*): California filaree is a member of the geranium family and is a small hairy annual to biennial, only to about 2 inches tall (Alarcón *et al*. 2012). Leaves arise from a basal whoral, arising on long petioles, and variably (egg, to kidney or heart) shaped with rounded teeth on the edges. Some leaves are cauline, with leaves arranged opposite. Flowers appear in mostly few flowered umbels in March to May. The 5 white petals are longer than sepals. The fruit is a distinctive five-parted elongated beak structure, with the one-seeded parts separating from a central column by coiling upward as the fruit matures and dries. It occurs on crumbly clay soils (occasionally on serpentine in open grassland or scrub habitats and is distributed in foothill regions of California and Baja California (CNPS 2019).

California filaree is not federally or state listed and was considered but rejected for listing by the CNPS Rare Plant Inventory as being too common, especially in northern California (CNPS 2019). It is still tracked by the CNDDB, and small local populations under threat should be treated as a species of local concern (CNPS 2019). In the region, it is only known from a historical collection near Hollywood (Calflora 2019). The prime threats to the species are urban development and agriculture (CNPS 2019). Suitable habitat is not present onsite, and it is not expected to be present. It was not detected during focused rare surveys of the site.

Mariposa lilies (*Calochortus* sp.): Three species of mariposa lily (the genus *Calochortus*) have some potential to occur on site. These are showy perennial herbs that grow

ephemerally from a bulb, flower and set fruit and then die back, often leaving little persistent trace of their presence (Munz 1974; Fiedler 2012). Flowering occurs in March to July (CNPS 2019). A linear basal leaf usually precedes the stem, but often withers by flowering. Stems are hairless and sparsely branching above the base. Stem leaves are few and widely spaced, and often linear in shape. Flowers are terminal, appearing solitary or in branching groups of 2 or 3. Each flower has 3 lance-shaped sepals and 3 showy petals forming a cup, and produces a three-sided, many-seeded capsule. No mariposa lilies of any species were observed during focused rare plant surveys of the site.

Catalina mariposa lily (*C. catalinae*) has white petals often tinged with lilac with a purple or red-brown spot at the base of the petals and oblong nectaries covered with branching hairs (Fiedler 2012). The capsule is narrowly oblong and not strongly angled. It occurs on heavy clay soils in a variety of foothill habitats. It is distributed in coastal and foothill southern California from San Luis Obispo to Orange counties, the Channel Islands, and was recently documented in northernmost San Diego County (Calflora 2019; CNPS 2019). It is not federally listed or state listed and is a CRPR 4.2 species. Threats to the species are largely due to urban development (CNPS 2019). Due to the lack of clay soils on the site (Cooper 2012), it is not expected to occur.

Slender mariposa lily (*C. clavatus* var. *gracilis*) has sparsely hairy yellow petals with a thin red-brown line above the nectaries, which themselves are encircled by club-shaped hairs (Fiedler 2012). It is known only from Ventura and Los Angeles counties, where it occurs in shaded foothill canyons in chaparral, grasslands, or scrub habitat. It is not federally listed or state listed and is a CRPR 1B.2 species (CNPS 2019). Threats to the species are largely due to urban or industrial development and associated foot or vehicle traffic, and invasion of habitat by non-native plants. Suitable habitat exists on site, and it known from mountains to the north in the region. It therefore may have a low probability to occur on site.

Plummer's mariposa lily (*C. plummerae*) has pink petals featuring a wide band of yellow hairs mixed more sparsely with darker red-brown hairs, the basal nectary is hairless (Fiedler 2012). The petals are more broadly spreading than forming a cup. Its distribution is limited mostly to the transverse ranges in Ventura, Los Angeles, Orange, Riverside and San Bernardino counties where it is found in dry, granitic chaparral, scrub, or lower montane weedlands and grasslands. It is not federally or state listed and is a CRPR 4.2 species (CNPS 2019). It was discovered to be more common than previously known and its status downgraded from 1B.2. It is threatened by urban or industrial development and associated foot or vehicle traffic, invasion of habitat by non-native plants, utility construction, recreational activities, and fire suppression (CNPS 2019). It is known from the immediate area of the Zoo (Cooper 2012) and suitable habitat is present, making it highly probable that it could occur on site. Although it was not detected during focused rare plant surveys of the site.

Lewis' evening-primrose (*Camissoniopsis lewisii*): Lewis' evening-primrose is a rare annual in the evening primrose family that grows in very sandy soils such as on coastal

beaches and dunes, or on clay soils in interior woodlands or grasslands (CNPS 2019). It grows from a basal rosette of lance-shaped leaves with spreading, glandular hairs (Wagner 2012). Stems can be simple and erect or low and spreading. Stem leaves are arranged alternately along the stem and are narrowly lance-shaped with minute teeth. The flowers sit on top of the inferior ovary, with 4 sepals and 4 bright yellow petals with 1 or 2 spots at the base. Flowering time is March to June. The fruit is a 4-sided capsule. It is known only from Los Angeles, Orange, and San Diego counties and Baja California, Mexico (Calflora 2019; CNPS 2019).

It is not federally listed or state listed, and is a CRPR 3 species, but more information is required to assess more fully its distribution, rarity, and threats (CNPS 2019). Urban development, erosion and recreational activities are the threats to the species (CNPS 2019). It is known only historically from the region, and suitable habitat and soils are not present, thus it is not expected to occur on the site.

Southern tarplant (*Centromadia parryi* ssp. *australis*): Southern tarplant is a sticky and prickly annual of the sunflower family. Stems may be prostrate to erect, with basal leaves often withering before flowering (Baldwin 2012). The sticky glandular and hairy stem leaves are alternately arranged and vary in shape, with the lower being lobed and toothed and the upper simple and spine tipped. Flowering can occur from late May to early November. Flowering heads are in congested clusters, with each head supported by a short stem rising from a leaf-like spine-tipped bract. The involucre surrounding the flowers is urn-shaped, with the 5 to 75 involucral bracts enclosing the ovary of each ray floret. Ray florets are a bright yellow and terminating in 2 shallow lobes. The disk florets are also yellow but with red to dark purple anthers; each disk floret has a bract attached to the receptacle below it. It ranges from southern Santa Barbara County south to Baja California, Mexico (Calflora 2019; CNPS 2019). It inhabits the margins of marshes and swamps, vernally mesic grasslands, and vernal pools (CNPS 2019).

Southern tarplant is not federally or state listed and is a CRPR 1B.1 species (CNPS 2019). It is known from the region only historically (Calflora 2019; CDFW 2019). Threats to the species include population fragmentation, urban and industrial development, recreational activities, vehicle and foot traffic, grazing, habitat disturbance, and invasion by non-native species (CNPS 2019). No suitably mesic habitat is present on the site, and thus it is not expected to be occur.

San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*): San Fernando Valley spineflower is a small spreading annual herb growing only 1 to 5 inches tall (Munz 1974; Reveal and Rosatti 2012). Leaves of the basal rosette are often spoon-shaped, sometimes narrowly so. The tiny flowers are clustered in dense heads. Each flower is surrounded by a series of spiny bracts tipped by sharp straight awns. Flower lobes are white surrounding a green tube. It was known primarily from Los Angeles County and was at one time thought to be extinct until rediscovered in 1999 from very southeastern Ventura County and in Los Angeles County between Santa Susana and the San Gabriel Mountains in 2000

(Calflora 2019; CNPS 2019; CDFW 2019). There is also a single historical record from Orange County. It prefers sandy coastal or foothill scrub or grassland habitats (CNPS 2019).

San Fernando Valley spineflower is state listed as Endangered but has no federal status. It is a CRPR 1B.1 species and is seriously threatened by development and invasion by non-native species (CNPS 2019). Marginally suitable habitat is present on site, but it is known from the region only from historical records from areas that have been heavily urbanized (Calflora 2019; CNPS 2019; CDFW 2019), and thus has a low probability to occur. It was not detected during focused rare plant surveys of the site.

Small-flowered morning glory (*Convolvulus simulans*): The small-flowered morning glory is a small annual that grows to less than a foot tall (Preston 2012). Multiple, diffusely branched stems rise from a single taproot. The simple, oblanceolate leaves are arranged alternately along the stem. The sepals are fused into a tube with 5 lobes. The pink-to-bluish petals also fused and five lobed, bell-shaped. The fruit is a small spherical capsule with 4 seeds, the supporting stem nodding in fruit. Flowering time is March to July. It inhabits seeps or mesic hillsides on heavy clay or serpentine substrates in grassy openings in chaparral, coastal sage scrub, or grasslands (CNPS 2019). It is distributed from Contra Costa County south to Baja California, Mexico (Calflora 2019; CNPS 2019).

It is not federally listed or state listed and is a CRPR 4.2 species. It is threatened by development (CNPS 2019). It is not expected to occur on site due to a lack of suitable clay soils.

Many-stemmed dudleya (*Dudleya multicaulis*): Many-stemmed dudleya is a succulent perennial herb (McCabe 2012). Basal rosettes of 6 to 15 fleshy finger-like leaves are evergreen, with flowering stems growing from 2 to 15 inches tall. Stem leaves resemble the basal leaves but become progressively smaller up the stem. The inflorescence is a cyme terminating the main stem with lateral flowering branches. Flowers are yellow often flecked with red and appear between April to July. The fruit is a set of 5 spreading follicles. It inhabits rocky slopes in openings in chaparral, coastal sage scrub, or grasslands with heavy clay soils (McCabe 2012; CNPS 2019). It is endemic to southern California ranging from Los Angeles County south to the San Onofre Mountains of San Diego County (Calflora 2019; CNPS 2019; CDFW 2019).

The many-stemmed dudleya is not listed under the FESA or CESA. It is a CRPR 1B.2 species with a moderate level of threat from urban and industrial development, military maneuvers and training, road construction and maintenance, recreation activities, grazing, fire suppression, and invasion by non-native plants (CNPS 2019). It is known from the region only historically (Calflora 2019), but as suitable clay soils are not present on site, it is not expected to occur.

Mesa horkelia (*Horkelia cuneata* var. *puberula*): Mesa horkelia is a perennial resinous herb of the rose family rising from a branched caudex (Ertter 2012). Leaves are mostly basal, standing erect from 4 to 12 inches long, and are pinnately compound with 10 to

24 toothed leaflets. The inflorescence terminates the main stem with flowering branches. Flowers are white, appearing from February to July. It is endemic to California, ranging from Santa Barbara County south to San Diego County and west to San Bernardino and Riverside counties (Calflora 2019; CNPS 2019).

Mesa horkelia is not federally or state listed and is a CRPR 1B.1 species (CNPS 2019). While scattered populations persist, it has been extirpated by urbanization through much of its historical range, and in areas of contact appears to hybridize with other subspecies (CNPS 2019). It is known only historically from the region around the Zoo (Calflora 2019), and though suitable habitat is present, it has a low probability of occurring there. It was not detected during focused rare plant surveys of the site.

Ocellated Humboldt lily (*Lilium humboldtii* ssp. *ocellatum*): The ocellated Humboldt lily is a southern California endemic perennial herb that rises from a bulb-like scaly rhizome (Skinner 2012). Stems rise vertically with 2 to 8 whorls of wavy-margined oblanceolate leaves. Flowers are showy, pendant with 1 to 33 appearing on the plant. Flowers are bell-shaped with the sepals resembling the yellow to light orange red-spotted petals, both sepals and petals being reflexed, with large showy stamens greatly exceeding them. Bloom time is from March to May. The fruit is a capsule. The lily is found in mesic openings in chaparral, shady oak woodlands or lower montane pine forest, and riparian woodlands in southern California from Santa Barbara County south to San Diego (CNPS 2019).

The ocellated Humboldt lily is not listed under CESA or FESA and is a CRPR 4.2 plant. It is threatened by development and horticultural collecting. In the area it is known locally from Griffith Park (Cooper 2012), where it occurs in mesic canyons in oak woodlands. This habitat is not present within the site, so it is not expected to occur.

Hubby's phacelia (*Phacelia hubbyi*): Hubby's phacelia is an annual herb with stiff hairs and sticky glandular hairs that can grow up to 2 feet tall (Walden *et al.* 2012). Stems are ascending to erect. Leaves are arranged alternately along the stem and are deeply lobed and toothed. Flowers appear in April to July in coiled, one-sided inflorescences terminating the stem. Individual flowers have 5 shaggy sepals fused at the base and lavender petals also fused at the base in a bell-shaped structure. The fruit is a spherical capsule with 2 to 4 seeds. It occurs on gravelly to rocky slopes in chaparral, coastal scrub, grasslands, or woodlands (CNPS 2019). It is known from Santa Barbara, Ventura, Los Angeles, and Kern counties (Calflora 20-19; CNPS 2019).

Hubby's phacelia is not listed under FESA or CESA and is a CRPR 4.2 species. It is very similar to caterpillar phacelia (*P. cicutaria*) from which it differs largely by having straight versus curved sepals enclosing the fruit (Walden *et al.* 2012); the latter species is common on the site. Hubby's phacelia is known from Griffith Park south of the Zoo (Cooper 2012), and in the area is often associated with black walnut. A possible single individual was noted in the same hilltop area where Nevin's barberry is found but was in poor condition. Additionally,

caterpillar phacelia was widely observed making a species determination uncertain. Suitable habitat is present onsite and is rated as a moderate probability of occurrence.

Cooper's rein orchid (*Piperia cooperi*): Cooper's rein orchid (or chaparral rein orchid) is a perennial herb that grows from a small tuber (Ackerman and Lauri 2012). Leaves are only basal, though not in a rosette, and are linear to oblanceolate and up to 8 inches long. Flowering stems are cylindrical and can grow to up to almost 2 feet tall, with individual flowers arising from the axils of somewhat spirally arranged bracts. The flowers are often nocturnally fragrant, honey-like. Flowers are small and non-descript, green in color, producing a small capsule with many seeds. It occurs on dry sites in scrub, chaparral, woodlands, and foothill grasslands. It is distributed from Ventura County west along the Transverse Ranges and south to Baja California, Mexico (Calflora 2019; CNPS 2019).

Cooper's rein orchid is not listed under FESA or CESA and is a CRPR 4.2 species. It is threatened by urbanization and horticultural collecting, possibly by road maintenance and herbivory (CNPS 2019). Suitable habitat is present on site, but it is only known historically from the region (Cooper 2012; Calflora 2019), and thus is rated a low potential to occur on site. It was not detected during focused rare plant surveys of the site.

White cudweed (*Pseudognaphalium leucocephalum*): White cudweed (or white rabbit-tobacco) is a biennial or short-lived perennial herb in the sunflower family. There may be one to several densely white hairy stems rising to over 2 feet from the base, with stalked glandular rising through the felt-like long hairs (Nesom 2012). Leaves are usually crowded on short internodes alternately along the stem. These are typically linear-lanceolate in shape, with revolute margins, densely white hairy below but green-gray and densely glandular above. Flowering heads are grouped in rounded or flat-topped clusters. Involucres are bell-shaped with white bracts in 5 to 7 series surrounding the yellow florets. The highly reduced florets are disciform, with outer 66 to 85 being pistillate and the inner 6 to 14 disk florets being bisexual. Bloom time is August to November. It occurs in sandy or gravelly slopes, stream bottoms and arroyos in oak or pine woodlands, riparian woodlands, coastal scrub, or chaparral (CNPS 2019). It ranges from Ventura County south to San Diego and Baja California and west to New Mexico and Sonora, Mexico (Calflora 2019; CNPS 2019).

White cudweed is not federally or state listed and is a CRPR 2B.2 plant. It is threatened by development, hydrological alterations, and recreational activities (CNPS 2019). It is only known from the region historically (Calflora 2019), and though suitable habitat is present on the Zoo, it is rated a low probability to occur. It was not observed during focused rare plant surveys.

Nuttall's scrub oak (*Quercus dumosa*): Nuttall's scrub oak (occasionally referred to as coastal sage scrub oak) is an evergreen shrub growing to about 15 feet tall (Munz 1974; Rosatti and Tucker 2012a). It is distinguished from other scrub oaks in the region by having relatively flat leaves that are shiny green on the upper side and hairy with distinctive 2 to 6 rayed ascending hairs on the underside particularly along the veins. The bark is smooth but

becoming scaly with age, the twigs reddish becoming gray in age. It occurs on sandy or clay loams in coniferous forest, chaparral, or coastal scrub from Santa Barbara County south to Baja California (CNPS 2019; Calflora 2019).

Nuttall's scrub oak has no federal or state listing status and is a CRPR 1B.1 species. It is threatened by development, fire suppression activities, and possibly by hybridization with other oaks (CNPS 2019). California scrub (*Quercus berberidifolia*) occurs on the site but differs in having appressed stellate hairs with 4 to 10 rays on the underside of the leaf. Nuttall's scrub oak is known historically from the region south of the site (Calflora 2019), and suitable habitat is present, thus giving a moderate probability of occurring on site. It was not observed during field studies.

San Gabriel Mountains leather oak (*Quercus durata* var. *gabrielensis*): Leather oak is an evergreen shrub growing to about 15 feet tall. It is distinguished from other scrub oaks in the region by having concave leaves that are a puberulent dull green above and (at least when young) densely short hairy and pale green below (Rosatti and Tucker 2012b). Leaf margins may be rolled under or not. It occurs in chaparral or montane woodlands on the south-facing slopes of the San Gabriel Mountains in Los Angeles County (CNPS 2019).

San Gabriel Mountains leather oak is not federally listed or state listed and is a CRPR 4.2 species. Threats to the species include urbanization and utility construction (CNPS 2019). Suitable habitat is present in the Zoo, and it is known from recent collections in Griffith Park to the south (Cooper 2012) and may have a high probability of occurring on site. Although it was not observed during focused rare plant surveys, moderately suitable habitat exists.

San Bernardino aster (*Symphyotrichum defoliatum*): San Bernardino aster is an endemic perennial herb that rises from short rhizomes (Allen 2012). One to several stems rise from the base and short haired throughout. Basal leaves are often withering by flowering time in late July to November. Stem leaves are gray green, narrowly oblong to lanceolate, and may have smaller leaves clustered in the axils. Flowering heads appear in narrow cluster. The involucre of the heads may somewhat cylindric to spherical, with equal bracts in 3 to 6 series with papery margins. Heads feature both white to lavender ray florets and yellow disc florets, both with whitish to brownish bristles on top of the ovary. It occurs in wetlands (ditches, streams, seeps, springs, marshes, swamps) in a variety of habitats in the Transverse and Peninsular ranges from Santa Barbara County west to southwestern San Bernardino County and south to San Diego County (Calflora 2019; CNPS 2019; CDFW 2019).

San Bernardino aster is not listed under FESA or CESA and is a CRPR 1B.2 species. It is threatened by grazing and invasion by non-native plants and is believed to be hybridizing with other species in the northwestern part of its range (CNPS 2019). Suitable habitat is not present on site, and thus it not expected to occur. It was not observed during focused rare plant surveys.

Sensitive Wildlife Species

These sensitive wildlife observations are described in further detail below, as well as others occurring in the vicinity and the evaluation of their potential to occur on site.

Invertebrates

Crotch bumble bee (*Bombus crotchii*): The Crotch bumble bee is a Candidate for listing as endangered under the CESA. It has a limited distribution in southwestern North America, occurring primarily in California from the Central Valley to the edges of the deserts, and the Pacific coast to southwestern California and Baja California. Crotch bumble bees are not known to occur within the mountainous areas of California, and observations show this species has declined by an estimated 58 percent (Williams et al. 2014 and Hatfield et al. 2018). It has also been documented in southwestern Nevada near the California border. Extensive urbanization and agricultural intensification have extirpated this species from almost all its historic range (Hatfield et al. 2018). Crotch bumble bee inhabits open grassland and scrub habitats in hot and dry climates but has been known to occur in wetter climates. Nectar plants for this species include *Salvia* sp. (sage), *Phacelia* sp., *Lupinus* sp. (lupines), *Medicago* sp. (burclover), and *Chaenactis* sp. (dustymaidens). Nests are located underground, often in abandoned rodent nests or other burrows and holes (Williams et al. 2014). Males are abundant between mid-April and the end of September. Queens are abundant from March through May and workers are usually observed from mid-April through the end of August (U.S. Forest Service 2012). Crotch bumble bees are short-tongued and have a fuzzy body with blackish-brown and yellow stripes, with blackish-brown wings. Native grassland habitat is not available within the Zoo, and coastal sage scrub habitat is extremely limited (0.11 acre). One observation known from the region was recorded as a specimen collection in 1945 near Glendale. However, the citizen science platform iNaturalist (iNaturalist 2020) has recently (April and June 2020) logged two "Research-Grade" observations in the area. One appears to be on the south end of the Wilson and Harding Golf Courses south of the Zoo, and the other along the Los Angeles River in Glendale near North Atwater Park. These observations were documented with photographs that are consistent with a determination of Crotch bumble bee as supported by community curation. Its presence in the area suggests it could occur within the Project site, though the limited amount of coastal sage scrub and a lack of other suitable foraging habitat indicate a low potential.

Reptiles

Southern California legless lizard (*Anniella stebbinsi*): Southern California legless lizard is a California Species of Special Concern (SSC) that ranges from south of the Transverse Ranges into northern Baja California, Mexico. It is found in a broader range of habitats than any other species in the *Aniellidae* family. Often found to be locally abundant, this species can be found in coastal sand dunes, sandy washes, oak woodlands, and alluvial fans. Southern California legless lizards require loose soil for burrowing (sand, loam, or leaf mold), moisture, warmth, and plant cover. This species is found in habitats with sparse

vegetation, such as coastal dunes, chaparral, pine-oak woodland, and stream sides with sycamores, cottonwoods, or oaks (Nafis 2019). Southern California legless lizards have a smooth-scaled and polished appearance. They are a small, slender lizard with no legs, eyelids and have a shovel-shaped snout with a blunt tail. Coloration on top is olive-brown and moderate yellow below with thin black lines the length of the body that separate the olive-brown and yellow dorsum and ventral sides (Stebbins 2003). The southern California legless lizard is a relatively recently separated species from the California legless lizard (*Anniella pulchra*) (Papenfuss and Parham 2013). The coast live oak woodland habitat within the Zoo is characterized by friable soils and abundant leaf litter. There are multiple historic records of the species within one to two miles of the Zoo boundary, one of which is from as recently as 2011 within oak woodland habitat. Given that this species has been documented in the vicinity and suitable habitat is present within the oak woodlands, there is a moderate potential for this species to occur on site.

Birds

Least Bell's vireo (*Vireo bellii pusillus*): Least Bell's vireo is one of four subspecies of the Bell's vireo species, and the only one federally listed as endangered. It is also state listed endangered and an SSC. They are small birds about 4.5 to 5 inches in length, and mostly gray above and pale below. Least Bell's vireos have a faint white eye ring and very distinctive musically chatty call. Some males have as many as fifteen songs they sing. This species feeds on insects and spiders, foraging among dense shrubs and trees along rivers and streams. Least Bell's vireo is restricted to riparian woodland and is most frequent in areas that combine an understory of dense young willows or mule fat with a canopy of tall willows (USFWS 2017). Historically, least Bell's vireo was a common summer visitor to riparian habitat throughout much of California. Currently, this subspecies is found only in riparian woodlands in southern California, with most breeding pairs in San Diego, Santa Barbara, and Riverside counties-with some in Los Angeles and Ventura Counties. Least Bell's vireo arrives in breeding grounds in late March and early April and returns to its wintering ground in September. Least Bell's vireos build their nests in dense shrubbery 3 to 4 feet above the ground (Salata 1984), they require young successional riparian habitat or older habitat with a dense understory. Riparian plant succession is an important factor maintaining vireo habitat. Nests are also often placed along internal or external edges of riparian thickets (USFWS 1986). Adults usually lay between 3 and 5 eggs, and while the female does most of the incubating over 14 days, males will also incubate. Fledglings leave the nest approximately 10 to 12 days after hatching (USFWS 1986). Least Bell's vireo has occurred historically within the Los Angeles River corridor within one mile of the Project site. However, these observations are from nearly 100 years ago and the species is likely extirpated from this portion of the Los Angeles River. The species was most recently documented within the Project vicinity (i.e., within 5 miles) near the Taylor Yard in 2013. Although a more recent sighting is confirmed in the vicinity, this species requires the presence of suitable riparian habitat to occupy a site. No riparian habitat

exists at all within the Project site and, therefore, least Bell's vireos are not expected to be present.

Other Nesting Birds

The Project site provides suitable nesting habitat for a variety of avian species across the habitat types present. Nesting birds are protected by the Migratory Bird Treaty Act and similar provisions of the California Fish and Game Code. Mature trees throughout the Project site provide nesting opportunities for passerines and raptors such as red-tailed hawk (*Buteo jamaicensis*) and Cooper's hawk which were observed and/or heard on site during the site reconnaissance. Shrub, scrub, and grassland habitats are likely to be utilized by nesting passerine and non-passerine land bird species such as California towhee (*Pipilo crissalis*) and mourning doves (*Zenaida macroura*). Structures within the developed portions of the zoo also provide nesting opportunities for species such as house finches (*Carpodacus mexicanus*) and swallows, among others. Black phoebes were observed nesting on the Tree Tops Pavilion structure during the site reconnaissance conducted in May 2019. There is potential for raptors and other early nesting species such as hummingbirds to initiate nests as early as January. However, in general, the peak nesting season is February – August.

Mammals

San Diego woodrat (*Neotoma lepida intermedia*): San Diego woodrat is an SSC. This subspecies of desert woodrat occurs in coastal southern California south of San Luis Obispo to northern Baja California (Hall 1981). The primary threat to this species is urbanization and habitat loss and degradation. Like other woodrats, it constructs middens, or nests, usually comprised of small twigs, cactus pads and other plant material. Middens are often constructed under patches of prickly pear or cholla (*Opuntia* spp.), or in rock outcrops, dense shrubbery or under low trees. Although the middens are often easily detectable, trapping is usually necessary to distinguish between the middens of other woodrat species and those of the desert woodrat. Woodrat middens were found in the laurel sumac shrubland of the Project during the field surveys, but a species determination based on these is not readily made. The composition and grouping of midden sites are suggestive that the site is not occupied by San Diego woodrat but is not diagnostic by itself. The Project site is within the species range of San Diego woodrat and either the dusky-footed woodrat (*N. fuscipes*) or big-eared woodrat (*N. macrotis*) depending on taxonomic interpretations of the distribution of these two species. The presence of woodrat middens indicates that suitable woodrat habitat is present in the scrub communities of the Project site. Thus, the potential for occurrence of the San Diego woodrat is high.

Cougar (*Puma concolor*): Cougar is a Candidate species for listing as Threatened under the CESA in southern California, where subpopulations ranging from Santa Cruz south to Mexico are threatened by increased habitat fragmentation, habitat loss, and human contacts. It has been recognized as a specially protected mammal statewide under the California Wildlife Protection Act since 1990. It is found in forested or brushy areas throughout the state

but is a habitat generalist. Though the species is an opportunistic hunter, the distribution generally follows that of their principal prey species, the mule deer, and thus they are found in various habitats associated with foothills and mountains, but generally not valleys and deserts. Principal threats to the species are continued urban growth and development that result in habitat loss and fragmentation, isolation of breeding subpopulations and inbreeding due to loss of habitat linkages and increased adverse human contacts due to human encroachment. Cougar have been documented within the Santa Monica Mountains and within Griffith Park, and the radio-tracked male P-22 has been rarely documented within the Zoo grounds, most famously being potentially associated with the depredation of a koala in 2016. The Zoo is fenced with wildlife exclusion fencing, which is specifically intended to limit access by predators. The fencing may limit but does not completely eliminate potential access by cougar. Woodland and scrub habitats that might serve as home range are present but limited in extent. Native forage species are limited within the Project area, and Zoo livestock are protected.

Bats: California bats and bats in general are threatened by habitat loss or alteration, especially since a wide variety of habitats are often needed for different behaviors (roosting, foraging, drinking, hibernating, *etc*.). After analysis of available resources within and around the Project site, a literature review, and discussions with Zoo staff and other knowledgeable persons, 8 bat species have either been documented within the Project site or Griffith Park and 2 more may have potential to occur (Table 3.3-3). Remington and Cooper (2009, 2014) in a 2008 study in Griffith Park determined 7 species to be present within the Park, and 6 of these were present in near the old Griffith Park Zoo grounds (a.k.a., Old Zoo or former location of the Zoo) south of the modern Zoo. All 7 species found by Remington and Cooper plus the western mastiff bat (*Eumops perotis californicus*) were documented within the Zoo during acoustic surveys conducted between 2012 and 2015 by the U.S. Forest Service (Miguel Ordeñana, pers. comm., 2019). Of the 10 bat species known or potentially occurring at the Zoo, 4 are California SSC and all are considered sensitive by the Western Working Bat Group (WWBG) (Table 3.3-3).

Bats are frequent visitors of the Zoo and often roost in some structures within the Zoo such as Tree Tops Terrace. Bat boxes are relocated from these areas to mixed woodland to entice bats to roost in more natural areas.

Many bats species roost in groups and use mature trees, palm trees, snags, crevices, and man-made structures for roosting, either for winter roosting (hibernacula) or for forming summer

nursery colonies. Since some bats will roost in man-made structures such as the undersides of bridges and roofs/buildings, they are particularly vulnerable to roost disturbance or destruction by humans (Currie 2000). Protecting established roost sites and already-placed bat boxes is of importance to the conservation of bats, and management of these sites is receiving increasing attention from wildlife agencies (i.e., CDFW). Previous studies at the Zoo made no effort to identify roosting sites, but roosting bats of undetermined species identity have been recently relocated from the Tree Tops Terrace (Beth Schneider and Mike Maxcy, pers. comm., 2019). Table 3.3-4 describes roost and forage habitat requirements for bat species known to or potentially occurring at the Zoo. There is a high potential for roost sites within the Zoo for most bat species known to occur there, particularly for those that are known to utilize structures (e.g., pallid bats [*Antrozous pallidus*], big brown bats [*Eptesicus fuscus*], Yuma & California myotis [*Myotis californicus, M. yumanensis*], and Mexican free-tailed bats [*Tadarida brasiliensis*]). Exceptions to this are the western red bat (*Lasiurus blossevillii*), which prefers roost sites in deciduous riparian woodlands (particularly sycamore woodlands in southern California) and typically forages in adjacent open areas; the hoary bat (*L. cinereus*), which prefers riparian or open woodlands; the western yellow bat (*L. xanthinus*) which utilizes almost exclusively palm trees for roosting; and the canyon bat (*Parastrellus hesperus*), which within Griffith Park roosts typically in rock crevices. Suitable roosting habitats for the latter species are limited within the confines of the Zoo but may be present in nearby areas. The consistent detection and utilization of habitats within the Zoo by multiple species implies that roosts are likely to be within the Zoo grounds (Miguel Ordeñana, pers. comm., 2019).

The pallid bat occurs primarily at low elevations but has been found as high as 1950 meters in southern California. Pallid bats are typically found inhabiting a variety of habitats including sparsely vegetated grasslands, to attics with shutters or crevices, to arid regions with rocky outcroppings. Chosen roost sites usually have water available nearby, but not always. They will roost in a variety of cavity and crevice-like situations, including rock and sandstone, under bark, and in rodent burrows or dried mud crevices on the ground. Pallid bats utilize three different types of settings for each roost: day roosts are warm horizontal openings; hibernation roosts are in buildings, caves, or rock cracks; and night roosts are in open areas with foliage nearby (Tremor et. al. 2017). The pallid bat was reported from the Zoo in 2009, but upon investigation proved to be the big brown bat. Pallid bats have not been documented within the Project site, but both suitable roosting and foraging habitat is present (Remington and Cooper 2014), and thus it has a high potential to occur.

Table 3.3-4. Bat Roost and Forage Habitat

Taxon	Roost Habitat	Forage Habitat/Food	Roost Potential Onsite
Vespertilionidae - Mouse-eared bats			
Antrozous pallidus pallid bat	cliffs, crevices, abandoned buildings, bird boxes, bridges; may form small nursery colonies	open areas; ground foraging, flightless arthropods	High
Eptesicus fuscus big brown bat	urban-adapted; buildings, caves, under loose bark and in small cavities of trees; forms nursery colonies	beetles, flies	High
Myotis californicus California myotis	under loose bark, tree crevices, rock crevices, buildings, bridges, caves	oak woodlands, pinyon-juniper, desert scrub; flying insects	High
Myotis yumanensis Yuma myotis	urban-adapted; caves, old buildings; colonial	wooded canyon bottoms, predominantly over water; flying insects, moths, beetles, midges	High
Lasiurus cinereus hoary bat	tree trunks, woodland, and riparian; changes roost location day to day	moths, beetles	Moderate
Lasiurus blossevillii western red bat	deciduous trees, esp. cottonwood, sycamore riparian vegetation; changes roost location day to day; solitary	woodland edges, streetlights; moths, terrestrial insects	Low
Lasiurus xanthinus western yellow bat	almost exclusively in skirts of palm trees	open areas, often over or near water; beetles	Low
Parastrellus hesperus canyon bat (western pipistrelle)	cliffs, rock features, caves; small colonies	moths, beetles, dipterans	Low
Molossidae - Free-tailed bats			
Eumops perotis californicus western mastiff bat	crevices, rock slabs, cliffs, caves, buildings; small colonies	strong-flying insects: dragonflies, moths, beetles, *etc.*	High
Tadarida brasiliensis Mexican free-tailed bat	urban-adapted; caves, buildings, bridges; large nursery colonies	small moths; opportunistic	High

Sources: Bolster 1998; Jameson and Peeters 2004; Remington and Cooper 2009, 2014.

Big brown bats are widely distributed through North America and usually occur in forested areas. Commonly found in crevice or cave-like conditions, and often in man-made structures. Diurnal natural roosts include rock and sandstone crevices and cavities, dead pine snags, palm frond skirts, cliff swallow nests and hollows in oaks and sycamores. Man-made roosts include barns, houses, sheds, buildings, warehouses, bridges, barracks/bunkers, porches, mines, wooden signs, and storm sewers. They also make use of artificial bat houses. Big brown bats are considered an arboreal species and are most commonly associated with wooded habitats (Tremor et. al. 2017). This species is known to occur within the Project site.

Western mastiff bats prefer to roost in high vertical cliffs, rock quarries, fractured boulder outcrops and occasionally tall buildings. Rarely found in palm trees, and these are considered temporary roosts. Always found roosting in high places as it requires 3m to fall before taking flight. Vegetation associated with roosting areas include riparian zones, oak woodlands, montane pine forests and coastal and desert scrub. It had been thought to have been extirpated from the Los Angeles Basin, before it was documented at the Zoo (Miguel Ordeñana, pers. comm., 2019) Potential roosting habitat exists within the Project site.

The western red bat occurs in wooded environments, associating primarily with riparian trees (cottonwoods, sycamores, and oaks) but can also be found in non-native vegetation including chinaberry, mulberry, eucalyptus, bougainvillea, and African hemp. Western red bats also occur in orchard trees (i.e., fig, pear, almond), and planting of such trees has allowed this species to be recorded in places previously unoccupied. It typically forages along river and stream courses but can be found in urban parks and neighborhoods (Tremor et. al. 2017). This species has been documented as utilizing habitats within the Zoo, and some potentially suitable foraging and roosting habitat is available.

The hoary bat is usually found roosting in broad-leafed and coniferous trees including riparian species, and ornamentals and citrus trees. This species requires a shelter of foliage and is not characteristic of dense forests, but rather patches adjacent to openings. Open water is important for this species as it is often captured in research in such locations (Tremor et. al. 2017). This species has been documented in acoustic studies at the Zoo, though there are relatively few broad-leafed or coniferous trees with generous openings within the Project site and no open water providing forage space.

The western yellow bat roosts primarily in skirts of both native and non-native fan palms and is known to “frequent” ornamental palm trees in the region (Remington and Cooper 2014) and other exotic trees in suburban- landscaped settings (Tremor et. al. 2017). It is strongly associated with native groves of California fan palms where there is spring-fed open water, but also known to roost in cottonwood and yuccas. This species has low potential to occur within the Project site and has not been documented at the Zoo or Griffith Park. Although historical observations have been made approximately 2 miles from the Project site, few palm trees are available, and there is also no open water within the Project site.

California myotis appears to be a generalist- and is found in a variety of habitats. Most commonly found in riparian zones, oak woodlands, pine forests, and chaparral-covered flats and hillsides. Roosts in crevice-like areas in rocks and the bark of trees, and occasionally rodent burrows buildings, mines, and bridges. Sometimes uses artificial structures for day roosts and bat boxes (Tremor et. al. 2017). This species is known to occur within the Project site.

The Yuma myotis is highly colonial and usually roosts in groups of hundreds to 1000 individuals. It occurs in diverse vegetation and habitat types but is typically closely associated with rivers, creeks, ponds, and reservoirs where it predominantly likes to feed (Tremor et. al. 2017). It is urban adapted and can utilize structures, and bridges for roosting. This species is known to occur within the Project site.

This species is a desert-dwelling species that rarely roosts in human-made structures, preferring to roost in open and densely vegetated areas using rock crevices in boulders, small cliff faces and the underside of rocky slabs. They live in dry shrublands and arid canyons usually near water. They do not use the same roost repeatedly, but rather roost in the same general area, with separate day and night roosts. Rarely found in mines or caves (Tremor et. al. 2017). Canyon bats have been documented in acoustic surveys at the Zoo, though suitable roosting habitat seems very limited within the immediate area.

Mexican free-tailed bats appear to be generalists for both roosting and foraging habitats. Crevice- and cavity-dwelling, this species makes use of a multitude of locations including cavities, rock crevices, caves, barns, culverts, bridges, and buildings. Typically, they are found in joints and seams under bridges and in cave-like features of buildings, dams, and barns. It does not appear to prefer a vegetation community for foraging and can be found in a wide variety of habitats including open meadows, grasslands, ponds, wetlands, oak woodlands, coniferous forests, reservoirs, agricultural areas and areas with artificial lighting (Tremor et. al. 2017). This species is known to occur within the Project site.

Wildlife Movement Corridors and Habitat Fragmentation

Wildlife corridors include both local movement routes and regional corridors and linkages. Local movement routes often connect resources on a localized level, often on a daily or nightly basis, such as water sources, foraging areas, and den/cover sites. Regional movement corridors or linkages connect larger patches of open space and are important to wildlife for seasonal movements, and for the long-term genetic flow between subpopulations. For large mammals, regional corridors are often required to provide a network of large-scale foraging or hunting areas. Corridors can be continuous habitat features, or “stepping stones” such as rest areas along a bird migration route. Corridors often follow linear topographical, water, or vegetation features.

The Zoo is located on the northeast side of Griffith Park, which provides a mosaic of wild native vegetation and habitat, along with maintained park trails on the west and south sides of the Zoo. More developed areas (e.g., golf course) lie to the east and south. Griffith Park

maintains some connectivity to the Los Angeles River and across I-5, located on the east side of the Zoo, and SR-134, located to the north. It also has some limited connectivity through urbanized corridors to the western Santa Monica Mountains. Plans for Los Angeles River restoration also include goals to improve connectivity between the river and surrounding habitats such as those within Griffith Park.

Despite perimeter fencing existing around the Zoo, wildlife from Griffith Park frequently enters and escapes the Zoo. The famed cougar P-22 (pictured) is even suspected of entering the Zoo, predating a koala, and escaping in a single night. Photo Source: Greater Los Angeles Zoo Association 2016.

The Zoo is bordered by perimeter wildlife exclusion fencing intended to limit wildlife entry into the Zoo. Zoo personnel inspect this fencing and perform maintenance (e.g., tree trimming) to limit wildlife entry, particularly predators. While this fencing inhibits the movement of larger mammals (e.g., deer, cougars), smaller to medium terrestrial wildlife such as squirrels, mice, gophers, woodrats, and weasels are likely to be able to move through the fence between habitats within Griffith Park and the natural habitats of the Zoo (e.g., coast live oak woodlands, chaparral) to utilize these Zoo habitats for wildlife movement, cover and foraging. Fenced exhibits, structures, and other facilities within the developed part of the Zoo may also restrict movement of terrestrial species, though urban-adapted wildlife (e.g., coyotes) are present and apparently may be able to move through the Zoo. For example, coyotes are known to frequent the Zoo, waiting after-hours opportunities to forage. Further, although not a typical occurrence, it is suspected that the cougar P-22 gained access over the Zoo fence to predate a koala (Darryl Pon, pers. comm.). Avian and other tree-dwelling species can also utilize the trees for local or regional migration and roosting, nesting, or foraging since Zoo tree canopies are generally unrestricted by fencing or netting.

Existing habitats within the Zoo are fragmented by buildings, fencing, and facilities and provides low to moderate value as continuation of surrounding local wildlife corridors within Griffith Park. The native oak woodlands and chaparral habitat on the upper slopes and ridgelines of the Zoo, for example, are separated from open lands in Griffith Park by fencing. However, while not wholly intact or pristine, these habitat areas are of relatively higher value due to their proximity to adjacent open lands.

Both the coast live woodlands and laurel sumac can be considered high value biological resources as they provide habitat for roosting, nesting, and forage, and are occupied by species of conservation concern described above. These communities also provide linkages to

species that are not excluded by the perimeter fencing of the Zoo. The eucalyptus/mixed woodlands also provide value in this sense, but as they consist largely of non-native species, their biological value is considered moderate. The non-native grassland community is low in diversity, and its small size limits its utility for forage and nesting habitat, giving it a biological value of low. The isolated fragment of California sagebrush coastal sage scrub provides some additional diversity to the site, but its isolation and small size suggest a low biological value.

Jurisdictional Features

A 16-inch concrete outfall pipe, part of the Zoo's stormwater system, carries runoff from the canyons and hillsides north of the Zoo and within the Zoo interior to the Zoo's water treatment facility immediately east of the parking lot (Refer to Figure 5 in Appendix E). The pipe is covered with grass and filled with soil and plant litter, which does not and is not anticipated to support regular or significant drainage flows (Appendix E, Photo 1). The pipe does not support hydrophytic vegetation or contain hydric soil or exhibit wetland hydrology indicators. No other indications of potentially jurisdictional waters, such as presence of ordinary high-water mark (OHWM), defined bed and bank, or riparian vegetation were observed on the Project site, therefore no jurisdictional or potentially jurisdictional waters occur within the Project site.

The 16-inch concrete pipe that carries runoff from the hillsides north of the Zoo does not support wetland conditions.

3.3.2 Impact Assessment Methodology

Significance Thresholds

The following significance criteria are based on Appendix G of the CEQA Guidelines and City of Los Angeles CEQA Thresholds Guide. Impacts are considered significant if the proposed Project would result in any of the following:

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 state or federally protected wetlands (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.

Non-applicable threshold(s):

- Threshold (b) (*Loss of riparian or sensitive natural community*): No riparian habitat or other sensitive communities are noted on the site, and no other sensitive species associated with a unique, special, or sensitive habitat were identified or considered to have potential to exist onsite. While the Los Angeles River is located approximately 900 feet from the Project site, this portion of the river is concrete-lined and provides no riparian habitat or other sensitive communities.
- Threshold (c) (*Effects on wetlands*): There are no waters of the U.S. or State of California or associated wetlands onsite. Implementation of the Project would have no impact on state or federally protected wetlands (Appendix E).
- Threshold (f) (*Conflict with Habitat Conservation Plan/Natural Community Conservation Plan*): There are no existing adopted habitat conservation plans, natural community conservation plan, or other approved local, regional, or state habitat conservation plan which apply to the Zoo.

Methodology

The biological resources described in this section are based primarily upon review of existing literature and several site reconnaissance surveys conducted by Wood Environment & Infrastructure Solutions, Inc. (Wood) in 2019. The following documents address biological resources in Griffith Park and were reviewed as part of the existing conditions characterization:

- Griffith Park Wildlife Management Plan (Cooper Ecological Monitoring, Inc. 2009)
- Griffith Park Wildlife Connectivity Study (Cooper Ecological Monitoring, Inc. and USGS 2012)
- A Preliminary Large Mammal and Herptile Survey for Griffith Park, Los Angeles, California (Matthewson, P., Spehar, S., and Cooper Ecological Monitoring, Inc. 2007)
- Rare Plants of Griffith Park, Los Angeles (Cooper, D. S. 2010)
- Griffith Park Reptiles and Amphibians (Cooper Ecological Monitoring, Inc. 2010)

- Bat Survey of Griffith Park (Remington, S. and Cooper Ecological Monitoring, Inc. 2009)
- Rare Plant Survey and Assessment for Forest Lawn Memorial Park (City of Los Angeles and Forest Lawn Memorial-Park Association 2010)
- Wildlife of Old Zoo, Griffith Park (Friends of Griffith Park 2014)

The results of the literature review and site reconnaissance, as well as technical analysis of the Project's impacts on biological resources, is provided in the *Biological Resources Technical Report* contained in Appendix E of this Environmental Impact Report (EIR). Assessment of biological resources were determined through review of existing maps, literature, regulations, databases, and other biological studies conducted in the area. In addition, as part of the *Biological Resources Technical Report*, baseline conditions were assessed through a reconnaissance-level survey, including a jurisdictional delineation investigation into potential waters of the United States of the developed and undeveloped portions of the Zoo, with special focus on presently undeveloped areas. The site survey was conducted on May 31, 2019 by Wood biologists. Subsequently, Wood biologists conducted an additional focused rare plant survey on June 27 and June 28, 2019. The rare plant survey consisted of walking spaced transects through the undeveloped "focus areas" of the Zoo. Survey methods followed standard professional practices. The technical methodology, field data, and GPS mapping of resources surveyed are provided in the *Biological Resources Technical Report* provided in Appendix E.

Wood also conducted a tree inventory and urban forestry resources assessment of the Zoo and proposed Project, the results of which are provided in the *Urban Forestry Resources Report* (Appendix I) and analyzed in Section 3.6, *Urban Forestry Resources.* Relevant discussion of locally protected trees and shrubs as they relate to biological resources is pulled forward and/or referenced in this section of the EIR.

3.3.3 Environmental Impacts Analysis

Project construction would potentially result in the removal and direct disturbance of more than 19 acres of native vegetation communities and hundreds of trees throughout the developed and undeveloped areas of the Zoo. Due to the programmatic nature of the Vision Plan and lack of specific construction or grading details, the exact acreage and precise extent of native habitats to be removed or number and species of trees proposed for removal is unknown. However, based upon review of proposed improvements in each phase and discussions with Zoo staff and Vision Plan designers, it appears likely that that the majority of onsite native vegetation would either be directly removed or substantially disturbed, along with hundreds or potentially thousands of primarily non-native ornamental trees over a 20-year period.

The Zoo has indicated the intent to remove large numbers of eucalyptus (gum) trees under the Project, as eucalyptus trees are an invasive non-native species, pose a safety risk to Zoo

residents, employees, and visitors from falling branches, impose toxic or detrimental effects on surrounding plants, and contribute to increased fire hazards. Native oak and southern California black walnut trees are protected species under the LAMC and potentially support special-status native wildlife species. Even with these regulations, it appears the Project would require removal, relocation, or replacement of large numbers of native trees and non-native trees. While the Vision Plan proposes major new landscaping and tree planting, along with planting of iconic California species to reflect the theme of the exhibits and improvements, precise details of the ratio and species of replacement habitats and trees to those removed are not available. Therefore, this analysis employs a conservative approach in assuming potential for substantial net loss of native habitats and associated effects on special-status species.

BIO-1:	Would the Project result in the loss of individuals, or the reduction of existing habitat, of a state or federal listed endangered, threatened, rare, protected, or candidate species, or a Species of Special Concern or federally listed critical habitat?

Project development would impact known or potentially suitable habitat for several special-status plant and wildlife species, through direct removal, construction of new exhibits and facilities, or vegetation management for fire protection, particularly in the undeveloped areas of the proposed California and Africa planning areas. Disturbance, alteration, or removal of these habitats would result in the loss or damage (take) of sensitive wildlife and plant species that may reside, forage, or rest within the Project site. Removal of hundreds or potentially thousands of non-native trees throughout developed areas of the Zoo could impact special-status native wildlife species, particularly bats and potentially avian species that use these trees for roosting, nesting, or foraging. These more mobile avian or bat species could be forced abandon habitats that are disturbed or removed during Project construction. Such species may accidentally be harmed during construction or forced move into adjacent areas in the vicinity (e.g., Griffith Park), increasing competition for available resources in those areas. This could result in indirect impacts to and the loss of additional special-status wildlife species outside of the Project site, including sensitive species that may not be able to survive with increased competition, and diminished habitat value.

Native Vegetation Communities

Impacts to onsite native vegetation communities and associated special-status species would be primarily related to development within the proposed California and Africa planning areas. Conceptual designs for the California planning areas depict new development within mapped native habitats, including the laurel sumac shrubland, coast live oak woodlands, and adjacent eucalyptus/mixed woodlands, which support some special-status species. Although plans are conceptual, both communities would likely be eliminated or substantially altered by this plan to incorporate new visitor centers, access pathways, roads utilities and exhibits. Conceptual plans also appear to depict removal or alteration of the small coast live oak woodland and

California sage coastal sage scrub habitats within the planned California exhibit, with potential for impacts to special-status species.

Special-Status Plants

The undeveloped areas of the Zoo support small populations of special-status plant species. The small population of federal and state listed endangered Nevin's barberry present on the undeveloped hillsides supporting the laurel sumac shrubland within the California planning area would likely be eliminated by development of exhibits, landscaping, and access pathways. Two small Southern California black walnut trees in the mixed eucalyptus woodland adjacent to existing facilities within the California planning area could also be impacted by proposed development. Additionally, approximately 22 Southern California black walnut trees in the Africa planning area would also be potentially removed or impacted by planned development. These trees are considered by the CNPS as plants of limited distribution, fairly threatened in California, and thus are considered sensitive. As discussed under Impact BIO-2 below, trees of this species above a certain size class are also protected under LAMC statutes. In addition, although not observed during field surveys, the Plummer's mariposa lily, a plant identified by the CNPS as of limited distribution, fairly threatened in California, has a high probability of occurring and could be removed through development within the California and Africa planning areas. Other special-status plant species such as the Hubby's phacelia and San Gabriel Mountains leather oak have a moderate or low probability of occurring onsite and could also be impacted depending on the ultimate design of each Project phase and the timing of construction. Proposed development of the California and Africa planning areas under the Vision Plan has the potential to directly displace or result in the loss of these special-status species and their existing habitat.

During operation, the Zoo would continue to maintain landscaping and vegetation onsite, including cultivating new plants installed though Project implementation and preserving existing resources wherever feasible. Maintenance would include trimming, limbing, weeding, and debris clearance similar to current practices. As described in Section 3.17, *Wildfire*, vegetation management to minimize fuels would continue to pose a potential adverse impact to sensitive species and habitats. For example, field observations of these areas indicate that past vegetation management activities included cutting back Southern California black walnut trees that now present as stump sprouts. Vegetation within portions of the undeveloped hillsides are currently managed through clearing, mowing, or trimming by the Zoo and Los Angeles Fire Department (LAFD) as fuel breaks between the Zoo and surrounding Griffith Park. The installation and maintenance of new or expanded fuel breaks would require mowing, substantial trimming, or complete removal of almost all vegetation within up to a 100-foot buffer area around the Zoo perimeter. See Section 3.17, *Wildfire* for complete analysis of this wildfire impact.

Implementation of **MM BIO-1** through **MM BIO-4**, would reduce Project impacts to special-status plant species (see Section 3.3.4, *Mitigation Measures*). These measures would require

protection or restoration of native plant communities and special-status species to the maximum extent feasible through pre-construction surveys, protective barrier fencing, capture, relocation, and replanting protocols. Further, with implementation of **MM BIO-2** and **MM WF-1**, adverse impacts to biological resources as a result of installation and maintenance of vegetation clearance from fuel breaks would be reduced through maximum avoidance of native vegetation and appropriate restoration offsite (see Section 3.17, *Wildfire* for analysis of wildfire impacts). Implementation of these measures would ensure impacts associated with loss of sensitive species and habitats are *less than significant with mitigation*.

BIO-2: Would the proposed Project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Project development would lead to removal of a substantial amount of both native and non-native vegetation for the construction of buildings, animal enclosures, and other Zoo facilities, which would reduce the ability for potential wildlife movement within the Zoo. Loss of large native and non-native trees and more than 19 acres of moderate to relatively high-quality native habitats would reduce roosting and foraging movement areas for migrating birds, roosting bats, and other resident wildlife. Construction noise and lighting has potential to disrupt and discourage wildlife on the lands in the immediate vicinity of the Project site. While planned new landscaping and tree replacement may reduce impacts, ongoing construction over 20 years would potentially interfere with resident and migratory feeding, resting, or reproductive activities.

Although surrounded by natural and undeveloped land, existing development and fencing on site prevents substantial regional wildlife movement. Consequently, the Zoo does not support regional wildlife corridors.

Project development also has potential to impede, block, or disrupt local wildlife movement within the Zoo and adjacent natural habitats in Griffith Park and the Los Angeles River. Undeveloped coast live oak woodland, laurel sumac shrubland, coastal sage scrub, and eucalyptus/mixed woodlands support resident wildlife that could be disrupted or displaced by both construction and long-term habitat loss as new facilities replace existing native habitats. The loss of coast live woodlands and laurel sumac, both high value biological resources that provide habitat for roosting, nesting, and foraging, and are occupied by sensitive plant and animal species, would be of concern. This could affect wildlife

access to local resources on a daily or nightly basis, such as water sources, foraging areas, and den/cover sites, including the movement of small mammals, birds, reptiles, and bats between habitats within the Zoo. Although the Zoo is bordered by perimeter wildlife exclusion fencing which inhibits the movement of larger mammals (e.g., deer, cougars), common species such as coyotes, squirrels, raccoons, and skunks would continue to frequent these habitats, as well as known special-status species such as the San Diego desert woodrat, western mastiff bat, and Cooper's hawk. Potential unusual use by predators such as cougar P-22 would likely remain similar to existing conditions, as such predators may still on rare occasions gain entrance to the Zoo. Overall, the loss of up to 19 acres of native vegetation would incrementally reduce native habitats that support wildlife use and movement within the northeast side of Griffith Park.

Regional wildlife movement is unlikely to be substantially affected by Project development. Although Griffith Park maintains some connectivity to the Los Angeles River and limited connectivity through urbanized mountain corridors to the western Santa Monica Mountains, due to its location and surrounding fencing, Project development is unlikely to affect such regional movement of wildlife. Although loss of native habitats could incrementally reduce Griffith Park's utility to support wildlife, the Project site does not appear to support such regional movement corridors or linkages that connect to larger patches of open pace. Thus, Project development is unlikely to substantially to reduce ongoing or seasonal regional movements that are important for the long-term genetic flow between subpopulations.

Implementation of **MM BIO-1**, **MM BIO-2**, **MM BIO-4**, and **MM BIO-5** would reduce Project impacts to special-status bird species. These measures would require the implementation of construction best management practices (BMPs) and a Worker Environmental Awareness Program (WEAP) to reduce construction-related impacts to the maximum extent feasible. These measures would delineate vegetation communities and area of disturbance associated with proposed development plans by Project phase and preserve or replace affected vegetation communities and sensitive species at appropriate ratios. Implementation of **MM UF-1**, requiring preservation, relocation, or replacement of native tree species onsite or at an appropriate offsite location within Griffith Park, and **MM UF-2**, requiring the Zoo implement a tree and urban canopy restoration plan, would also serve to reduce impacts associated with the loss of roosting habitat by ensuring suitable roosting habitat is retained onsite or created or improved offsite through planting of native trees. Impacts would be *less than significant with mitigation*.

BIO-3: Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Project development would require removal of protected trees and shrubs as part of land clearance needed for construction of new exhibits and facilities, or vegetation management for fire protection. Protected trees are expected to be removed in all phases of Project development, but impacts would be concentrated within the undeveloped areas of the

proposed California and Africa planning areas, but would also include the Zoo entry, parking lots, and along the proposed route for realignment of Western Heritage Way. Disturbance, alteration, or removal of trees within these areas and habitats would result in the loss or damage of locally protected plant species. Conceptual designs for the California and Africa planning areas depict new development or redevelopment of current facilities within native habitats, including the laurel sumac shrubland, coast live oak woodlands and adjacent eucalyptus/mixed woodlands, which are known to support some native tree and shrub species that are locally designated for protection under the LAMC. Although plans are conceptual, both the coast live oak woodland and laurel sumac shrubland communities would likely be eliminated or substantially altered by the Project to incorporate new visitor centers, access pathways, roads, utilities, and exhibits.

Impacted locally designated plant species could include two small Southern California black walnut trees in the mixed eucalyptus woodland adjacent to existing facilities within the California planning area. In addition, 7 coast live oak trees and 4 toyon and 15 elderberries could be impacted (refer to Table 3.6-2, Section 3.6, *Urban Forestry Resources*). Within the Africa planning area, up to 113 coast live oak trees, along with 15 toyon shrubs, and 21 elderberry trees would also be potentially removed or impacted by planned development (refer to Table 3.6-3, Section 3.6, *Urban Forestry Resources*). These trees and shrubs are protected and regulated under the existing City Tree Preservation Ordinance and Protected Tree Code Amendment. In addition, within the Africa planning area, approximately 22 Southern California black walnut trees would also be potentially removed or impacted by planned development. While the species is protected under LAMC statutes, due to past clearing, most of the specimens within this area fall below regulated size limits and seem to be root or stump sprouts from substantially older trees that were cut, likely for fire protection purposes. Nevertheless, these specimens may be considered protected under LAMC statutes.

Several small coast live oak and larger western sycamores, planted as landscape trees within Zoo parking lots, Zoo entry, and along Western Heritage Way, may be impacted by parking lot and Western Heritage Way realignment and design, and Zoo entry redevelopment. These trees have not been counted or mapped, but many appear to be of a size to be protected under the LAMC. In addition, realignment of Western Heritage Way would also result in the potential loss of trees along its alignment behind the Magnet School and Zoo storage areas. Trees within this area consist largely of eucalyptus, though some small specimen oaks and sycamores may be present and could be affected my proposed improvements.

Implementation of **MM UF-1**, requiring preservation, relocation, or replacement of protected native tree and shrub species onsite or at an appropriate offsite location within Griffith Park, and **MM UF-2**, requiring the Zoo implement a tree and urban canopy restoration plan, would also serve to reduce impacts associated with the loss of protected native trees and shrubs. Implementation of these measures would ensure impacts to native trees and shrubs would *less than significant with mitigation.*

3.3.4 Mitigation Measures

MM UF-1 and **MM UF-2** shall apply.

MM WF-1 shall apply.

MM BIO-1 Biological Resources Mitigation and Monitoring Program

The Zoo shall prepare and implement a Biological Resources Mitigation and Monitoring Plan (BRMMP) to mitigate loss of native vegetation communities, habitat, and special-status species from each Project phase. The BRMMP shall be prepared after completion of 30 percent design plans for each phase and shall specify timing and implementation of required biological resource restoration, enhancement, or creation measures. The BRMMP shall be prepared by a City-approved biologist as part of planning, engineering, and site design for each Project phase under the direction of and approval by the City Bureau of Engineering and Zoo planning staff. The BRMMP shall be prepared in consultation with appropriate City departments and resource agencies such as the Los Angeles Fire Department, Recreation and Parks Department, and the CDFW. The BRMMP shall be updated prior to final designs and development plans for each phase. The Zoo shall be responsible for ensuring all BRMMP requirements are reflected in Project design/architectural, engineering, and grading plans. All plans for each Project phase shall be reviewed by the City to ensure compliance with the BRMMP.

The BRMMP shall require measures to avoid and mitigate impacts to biological resources onsite, including, but not limited to, the following:

1. At 30 percent design plan stage for each Project phase, biological resource surveys shall be completed for areas of potential effect in that phase by a City-approved biologist, subject to the following requirements:

    a) The surveys shall refine the disturbance footprint of impacted habitats plus a buffer if recommended by the City-approved biologist.

    b) The survey shall delineate native vegetation communities such as coast live oak woodland, laurel sumac shrubland, and coastal sage scrub, including maps of the extent and type.

    c) The survey shall identify all special-status plant and animal species present or potentially present within the subject phase of Project development.

    d) A summary of the results of the pre-construction survey shall be submitted to the City immediately upon completion of the survey. A survey report describing and delineating the extent and quality of native vegetation communities and the presence or potential presence of special-status plant or animal species shall be submitted to the City for review and approval prior to completion of 60 percent design plans for the subject Project phase; if no native vegetation communities or

special-status species are present or potentially present, the survey report shall describe such findings based evidence from the surveys.

e) The survey report shall map and describe the location and extent of native vegetation communities and observed special-status plant or animal species that would be impacted within the areas of potential effect for each Project phase, and require the following avoidance, minimization, and mitigation measures:

   i) To the maximum extent feasible, onsite native vegetation communities and special-status plant species shall be protected and preserved in place, and design plans shall be amended to avoid disturbance or loss of these biological resources. The City-approved biologist shall work with Project designers during final design for each phase, as required, to incorporate existing native vegetation and special-status plant species, such a Nevin's barberry, and mature native trees, such as coast live oaks, into the Zoo landscaping and facilities (e.g., exhibits, visitor-serving spaces, service areas) in a manner that would ensure the livelihood and biological value of the natural community and/or individual plant. Construction techniques for Project development to avoid and protect special-status species shall be identified as part of a required construction mitigation plan (see **MM BIO-2**).

   ii) If avoidance or preservation in place cannot be achieved while meeting Project Objectives, the area of disturbed native vegetation communities and the total lost special-status plant species shall be mitigated onsite at a ratio of 2:1, as feasible given space limitation within the Zoo. To the extent feasible, native vegetation communities and special-status plant species shall be relocated or reestablished within disturbed, altered, and/or lost areas of coast live oak woodland, laurel sumac shrubland, and coastal sage scrub within the Project site. The BRMMP shall provide a description of the location and boundaries of the mitigation site and description of existing site conditions. The mitigation area shall be incorporated into the final development plans for each phase of Project development.

   iii) If native vegetation communities and/or special-status plant species cannot be protected and/or restored onsite, the Zoo and City shall work with RAP to identify an appropriate site(s) for restoration within Griffith Park to serve as a mitigation site. Offsite restoration of affected native vegetation communities and special-status plant species shall occur at a minimum ratio of 3:1. The BRMMP shall provide a description of the location and boundaries of the offsite mitigation site.

   iv) If onsite or offsite restoration is required, the BRMMP shall specify restoration plans and techniques, as recommended by a City-approved biologist, including, but not limited to:

(1) Identification of a suitable habitat compensation area of comparable size to be preserved and managed for lost habitat or species

(2) Site preparation

(3) Seed collection and/or plant salvage, designation, or establishment of offsite plant nursery facilities.

(4) Planting, hydroseeding, replanting or seeding activities.

(5) Success criteria

(6) Maintenance and monitoring program, for the short-term plant establishment period (i.e., 1-3 years), and over the long term (i.e., 5 years)

(7) Reporting Requirements

v) If onsite or offsite restoration is required, a binding long-term agreement with the Zoo to implement and maintain protected and restored habitats/communities shall be implemented with the City. The BRMMP shall identify typical performance and success criteria deemed acceptable by the City based on measurable goals and objectives. Minimum criteria for restored habitats shall be at least 70 percent survival of container plants and 70 percent relative vegetative cover by vegetation type. BRMMP mitigation elements that do not meet performance or final success criteria within 5 years shall be completed through an extension of the BRMMP for an additional 2 years or at the discretion of the City with the goal of completing all mitigation requirements. Monitoring of the mitigation and maintenance areas shall occur for the period established in the BRMMP, or until success criteria are met. If success criteria cannot be met through the BRMMP, the City shall specify appropriate commensurate measures (e.g., additional onsite or offsite restoration).

vi) If special-status animal species are present or potentially present based on the survey, including bat, woodrats, or legless lizard species, and migratory or nesting birds, the BRMMP shall include avoidance and minimization measures to avoid or relocate as part of a construction mitigation plan (see **MM BIO-2**) and management plans for migratory and nesting birds (see **MM BIO-4**) and bat colonies (**MM BIO-5**).

MM BIO-2 Construction Mitigation Plan for Biological Resources

The Zoo shall prepare and implement a Construction Mitigation Plan (CMP) that identifies avoidance, reduction, and mitigation measures for construction-related impacts to biological resources, including special-status species. The CMP shall be prepared by a City-approved and qualified biologist prior to initiation of construction activities for Phase 1 of the Project and updated prior to construction activities for each subsequent phase. The CMP shall be

approved by the City Bureau of Engineering and Zoo planning staff. The Zoo shall be responsible for ensuring all CMP requirements are included in construction plans and implemented as part of construction. All construction activities shall be monitored by a City-approved biologist to ensure compliance with the CMP. The Zoo would coordinate with CDFW Region 5 prior to the start of any construction activities.

The CMP shall require:

1. Per **MM BIO-1**, the CMP shall incorporate and address data from biological resource surveys for each Project phase to avoid and protect special-status plant and animal species to the maximum extent feasible, as follows:

    a) Within six months prior to the start of construction of each Project phase, biological resource surveys shall be completed for areas affected in that phase by City-approved biologist, consistent with **MM BIO-1**.

    b) If the phase-specific survey identifies presence or potential presence of special-status species, within 14 days of the start of construction (including mobilization and staging), pre-construction clearance surveys shall be completed by a City-approved biologist to either confirm or update the BRMMP related to the location and extent of special-status species. A report of the pre-construction survey shall be submitted to the City Bureau of Engineering for review and approval prior to the start of construction.

2. Based on the BRMMP and the results of the pre-construction surveys, the CMP shall require measures to avoid or mitigate impacts to special-status species present or potentially present within the Project phase; if no sensitive species are present or potentially present, the CMP shall identify findings from the surveys. If required based on the BRMMP's determination of biological resource sensitivity within each phase, the CMP shall include avoidance and minimization measures, including biological monitoring during construction, if needed. CMP avoidance and minimization measures shall be subject to review and approval by a City-approved biologist, including, but not limited to, the following:

    a) If present, special-status animal species, such as woodrat, legless lizard, and bat species (see also **MM BIO-5**), shall be relocated from the Project site either through direct capture or through passive exclusion prior to construction activities. With cooperation and authorization from CDFW, trapping may be employed to identify woodrat species that are inhabiting the site. If determined appropriate, woodrat middens should also be relocated by qualified biologists outside of construction areas.

    b) If present, special-status plant species, such as Nevin's barberry, shall be avoided to the extent feasible through use of high visibility exclusion fencing and signage to protect vegetation and root systems from disturbance or compaction, consistent

with the BRMMP. Lost special-status plant species shall be replaced consistent with the BRMMP.

3. The CMP shall include BMPs to avoid or minimize impacts to biological resources during construction, including, but not limited to, the following:

   a) Construction equipment and vehicles shall be stored within existing disturbed or developed areas within the Zoo to the maximum extent feasible to avoid impacts to natural areas. All construction vehicle maintenance shall be performed in a designated offsite vehicle storage and maintenance area approved by the City. All construction access roads and staging areas shall be located to avoid known/mapped native vegetation and special-status species.

   b) All construction materials (e.g., fuels, chemicals, building materials) shall be stored at designated construction staging areas, which shall be located outside of designated sensitive areas in the BRMMP and CMP. Should spills occur, materials and/or contaminants shall be cleaned immediately and recycled or disposed of to the satisfaction of the RWQCB.

   c) All trash and construction debris shall be properly disposed at the end of each day. Dumpsters shall be covered either with locking lids or with plastic sheeting at the end of each workday and during storm events. All sheeting shall be carefully secured to withstand weather conditions.

   d) Construction-related erosion shall be minimized to retain sediment within the area of potential effect, including installation of silt fencing, straw waddles, or other acceptable construction erosion control devices. Such measures shall be installed along the perimeter of disturbed areas.

   e) Concrete truck and tool washout shall occur in a designated construction staging areas or other offsite location such that no runoff would flow to natural areas within the Zoo or to the Zoo's stormwater collection system.

   f) All open trenches shall be constructed with appropriate exit ramps to allow species that incidentally fall into a trench to escape. All open trenches shall be inspected at the beginning of each workday to ensure that no wildlife species are present. Any wildlife species found during inspections shall be gently encouraged to leave the Project site by a qualified biologist or otherwise trained and City-approved personnel. Trenches shall remain open for the shortest period necessary to complete required work.

   g) Construction shall be limited to daylight hours (7:00 AM to 7:00 PM or sunset, whichever is sooner).

MM BIO-3 Worker Environmental Awareness Program

The Zoo shall retain a qualified, City-approved biologist to prepare a Worker Environmental Awareness Program (WEAP) that shall be implemented during all phases of construction. WEAP training shall be provided to all personnel working on the site by a qualified, City-approved biologist. The training should review the construction-related requirements of the BRMMP and the CMP, including all special-status species that occur or have potential to occur. Training should explain all mitigation and protection measures, responsibilities of each worker, and a reporting framework. The WEAP shall be prepared and approved by the City Bureau of Engineering and Zoo planning staff prior to construction activities of Phase 1.

MM BIO-4 Migratory and Nesting Bird Management

Removal of trees and other vegetation shall be conducted outside of the breeding season (generally January 15 to August 31 for raptors, March 1 to August 31 for other bird species) to the extent feasible. If Project construction activities must be conducted during these period, pre-construction nesting bird surveys by a City-approved biologist shall take place within one week prior to ground disturbance and tree removal or trimming associated with each Project phase. If no active nests or nesting activity is found within or immediately adjacent to the phase work area, construction activities may proceed. If active nests are located during these surveys, the following measures shall be implemented:

1. A summary of the results of the pre-construction survey shall be submitted to the City immediately upon completion of the survey. Consistent with **MM BIO-1** and **MM BIO-2**, the qualified biologist shall prepare a final report of the pre-construction survey to be submitted to the City Bureau of Engineering for review and approval prior to the start of construction. The report shall detail appropriate fencing or flagging of the buffer zone and make recommendations on additional monitoring requirements. A map of the area of potential effect and nest and roost locations shall be included with the report. If any special-status species are observed during pre-construction surveys, the Project biologist shall coordinate with appropriate regulatory agencies to determine appropriate procedures for handling or avoidance of the specimen.
2. If the pre-construction surveys indicate presence of nesting or roosting birds, the construction activity shall be evaluated, and avoidance methods implemented as necessary at the discretion of the qualified biologist. Methods would vary based on bird species, site conditions, and type of work to be conducted, but could consist of limited or reduced construction access; reduced vehicle speeds; and/or noise attenuation.
3. At the discretion of the qualified biologist, construction activities within 300 feet of an active nest of passerine birds shall be restricted until chicks have fledged, unless the nest belongs to a raptor, in which case a 500-foot activity restriction buffer shall be observed to avoid noise, light, and direct disturbance (see Section 3.12, *Noise and*

Vibration). The Project biologist conducting the survey shall have the authority to reduce or increase the recommended buffer depending upon site conditions and the species involved.

4. A report of findings and recommendations for bird protection shall be submitted to the City prior to vegetation removal.

MM BIO-5 Bat Colony Management

Removal of trees and older structures should be conducted outside of the maternity roost season (typically March 1 to August 31). Prior to removal of any trees over 20 inches diameter-at-breast-height (DBH) or demolition/relocation of existing onsite structures, a pre-construction acoustic and day/night roost survey shall be conducted by a qualified biologist to determine if any tree or structure proposed for removal, trimming, demolition, or relocation harbors sensitive bat species or maternal bat colonies. If present, maternal bat colonies shall not be disturbed and grading and construction activities shall avoid the bat breeding season to the extent feasible. If disturbance of structures must occur during the bat breeding season, buildings and trees must be inspected and deemed clear of bat colonies/roosts within 7 days of demolition and an appropriately trained and approved biologist must conduct a daily site-clearance during demolition. If bats are roosting in a structure or tree in the Project site during the daytime but are not part of an active maternity colony, then exclusion measures shall be utilized and must include one-way valves that allow bats to leave but are designed so that the bats may not re-enter the structure. For each occupied roost removed, one bat box shall be installed in similar habitat as determined by the Project biologist and shall have similar cavities or crevices to those which are removed, including access, ventilation, dimensions, height above ground, and thermal conditions. If a bat colony would be eliminated from the Project site, appropriate alternate bat habitat shall be installed within the Project site. To the extent practicable, alternate bat house installation shall occur near onsite drainages.

3.3.5 Impacts Summary

With implementation of mitigation measures identified above, biological resources affected by Project implementation would be appropriately mitigated through avoidance, relocation, or restoration of lost or adversely affected biological resources within the Zoo. **MM BIO-1** through **MM BIO-3** would work together to refine the precise location and range of resources that may be adversely affected by Project construction and select appropriate programs to mitigate loss or damage, including protection and restoration measures and construction controls. **MM WF-1** would mitigate operational impacts of vegetation management onsite and within wildfire fuel breaks. **MM BIO-5** would protect bat colonies that are known to exist within the Zoo. **MM BIO-4** and **MM UF-1** include mitigation for native vegetation communities as well as tree and shrub species protected under the City's Tree Preservation Ordinance, and City policies, through a tiered approach, first prioritizing preservation in

place and ultimately restoration of affected resources at an appropriate offsite location if all else is infeasible. Preservation of vegetation communities and individual protected trees or shrubs or the restoration of affected resources elsewhere onsite may require amendments to the Vision Plan to incorporate these resources into the design in a manner that assures their survival and biological value. This would reduce the total amount or area of development within the Zoo and reduce associated construction activities. Alternatively, if preservation in place or restoration onsite is not feasible given space constraints within the Zoo, offsite restoration within Griffith Park would be required within known degraded areas throughout the park. Offsite restoration would require coordination with RAP to identify an appropriate site(s) for restoration and has the potential to result in restoration of areas of Griffith Park that have become susceptible to non-native or invasive species and possibly even result in the enhancement of existing degraded habitat. Thus, compared to preservation in place or restoration within the Zoo property, offsite restoration within Griffith Park may have a slight beneficial effect on the health or quality of regional biological resources. In addition, since the Project would involve phased development over 20 years, the loss and subsequent regrowth of landscaping would regenerate biological resources over time and would ensure a potentially richer and more valuable urban forest at the Zoo. Therefore, significant unavoidable adverse impacts to biological resources would not occur and, with mitigation, impacts to biological resources would be *less than significant*.

3.3.6 Potential Effects on Zoo Animals

Zoo animals are protected under the AWA and are exempt from FESA and CESA. Therefore, under CEQA and City thresholds, resident Zoo animals are not considered biological resources. However, for information disclosure and planning purposes, this report describes the potential Project effects on sensitive Zoo resident animals.

The Zoo is home to at least 37 Critically Endangered and Endangered species from across the world. These species, though endangered, are captive residents of the Zoo and are not considered equal in terms of protection under the FESA, CESA, or any other animal protection or conservation regulations applicable to their more natural or wild members of their species (refer to *Regulatory Setting* in Section 3.3.1). Given the unique status of these captive specimens, resident animals of the Zoo are not considered biological resources under the City or CEQA regulations and thresholds. However, two exceptions to this exists for the Critically Endangered California condors (*Gymnogyps californianus*) and Endangered southern mountain yellow-legged frog (*Rana muscosa*).

The Zoo is an active participant in the California Condor Recovery Program and the Southern Mountain Yellow-Legged Frog Recovery Program. Under these programs, the Zoo engages in the breeding, monitoring, and rehabilitation of these species onsite, with condors housed in either the Condor West facility located near the Gottlieb Animal Health Center or the Condor East facility located in the proposed California planning area. The Zoo's mountain yellow-

legged frogs are housed at in a facility near the South American exhibit within the Asia planning area.

Over the course of the 20 years of Project implementation, the Project would increase Zoo exhibit space by transforming underutilized and underdeveloped areas of the Zoo and maximize the animal habitat area within each exhibit. These construction activities have potential to affect Zoo animals through generation of excessive noise or vibration, some animals of which may be particularly sensitive to, such as the Asian elephant. Construction is likely to occur near or within animal exhibits. For instance, the Project would involve the expansion of the existing Elephants of Asia exhibit, while construction of the Condor Canyon may involve extensive grading, hillside blasting, and construction work as close as 150 feet from the Condor East facility.

Though many of the species present at the Zoo do not fall under the category of sensitive biological resources, the Zoo is dedicated to the health and wellbeing of all its animals – endangered or not. Zookeepers and animal caretakers are trained in the monitoring of the Zoo's animals and implement measures appropriate for each individual species to ensure their safety and wellbeing in accordance with the AWA and the American Zoological Association, which governs the care, handling, and transport of zoo animals. As the Zoo has done in the past during construction of prior improvements, measures to protect these animals may include their temporary relocation away from construction activities, closure of exhibits, or even the transfer of animals to other zoos.

Implementation of the Vision Plan would nearly double the size of the Elephants of Asia to provide 6.8 acres of usable space for the elephants. Proposed improvements would also improve the ability for the Zoo to handle and care for the animals.

Similarly, under the Project, the Zoo would react appropriately for each individual animal to construction or operational activities that may have may detriment animal health or wellbeing. For example, during construction of the California planning area and grading of Condor Canyon near the Condor East facility, condor conservation staff are likely to relocation condors to temporary close the Condor East facility, relocate condors to the Condor West facility or other conservation facility, and/or temporarily reduce the number of condors handled under the program during construction. With continued management of each species of animal exhibited or rehabilitated at the Zoo and required compliance with the AWA, there would be no adverse effects on Zoo animals from implementation of the Vision Plan.

In addition, the Vision Plan would advance conservation and animal care efforts by developing additional specialized facilities that support endangered species propagation and preservation. Also, most proposed improvements are intended to increase space dedicated solely to the animals by over 200 percent. One example of this the proposed expansion of the Elephants of Asia exhibit, which will nearly double the area of usable space for the animals, while other existing exhibits would be revitalized to create safer, healthier exhibits for the animals. Thus, the Project is likely to directly result in improved wellbeing of Zoo animals or improve the ability for the Zoo to manage and care for its exhibit and conservation animals.

3.4 CULTURAL AND TRIBAL CULTURAL RESOURCES

The Project site does not have known existing archaeological or historical resources. Decades of development and use within the Project site and vicinity has disturbed and filled native soils and redeveloped original buildings from the 1966 Zoo design, substantially reducing the potential for intact cultural resources on site. However, given the Project site setting in an area with known prehistoric occupation and use, there is a low potential for unknown buried archaeological resources to be discovered during Project construction. Based on input received through tribal consultation, there is a potential for tribal cultural resources to be discovered during Project construction as well. With mitigation to monitor construction activities and respond to incidental discovery, the proposed Project would not cause significant impacts to cultural or tribal cultural resources.

This section describes known or anticipated cultural and tribal cultural resources within or near the Project site, assesses the potential impacts to these resources that could result from implementation of the Los Angeles Zoo (Zoo) Vision Plan (Vision Plan), and identifies mitigation measures. Cultural resources are defined as historic-period buildings, structures, districts, and objects, and archeological sites dating from either the prehistoric or historic period. Tribal cultural resources are defined as sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a tribe that are listed, or determined to be eligible for listing, in the national or state register of historical resources, listed in a local register of historic resources, or determined by a local agency. Paleontological resources are addressed in Section 3.7, *Geology and Soils*.

3.4.1 Environmental Setting

Regulatory Setting

Federal Regulations

National Register of Historic Places (NRHP)

The National Register of Historic Places (NRHP) was established by the National Historic Preservation Act of 1966 (NHPA) as "an authoritative guide to be used by federal, state, and local governments, private groups and citizens to identify the Nation's historic resources and to indicate what properties should be considered for protection from destruction or impairment" (Code of Federal Regulations 36 Section 60.2). The NRHP recognizes both historic-period and prehistoric archaeological properties that are significant at the national, state, and local levels.

To be eligible for listing in the NRHP, a resource must be significant in American history, architecture, archaeology, engineering, or culture. Districts, site, buildings, structures, and

objects of potential significance must meet one or more of the following four established criteria (U.S. Department of the Interior 1995):

a. Are associated with events that have made a significant contribution to the broad patterns of our history.

b. Are associated with the lives of persons significant in our past.

c. Embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.

d. Have yielded, or may be likely to yield, information important in prehistory or history.

In addition to meeting the criteria of significance, a property must have integrity. Integrity is defined as "the ability of a property to convey its significance" (U.S. Department of the Interior 1995). The National Register recognizes seven factors that define integrity: location, design, setting, materials, workmanship, feeling, and association. These qualities are defined as follows:

- Location is the place where the historic property was constructed or the place where the historic event took place.
- Design is the combination of elements that create the form, plan, space, structure, and style of a property.
- Setting is the physical environment of a historic property.
- Materials are the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property.
- Workmanship is the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory.
- Feeling is a property's expression of the aesthetic or historic sense of a particular period of time.
- Association is the direct link between an important historic event or person and a historic property.

State Regulations

California Environmental Quality Act

The California Environmental Quality Act (CEQA) is the principal statute governing environmental review of projects occurring in the state. CEQA requires lead agencies to

determine if a project would have a significant effect on the environment, including significant effects on historical or archaeological resources.

Under CEQA Section 21084.1, 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. CEQA Guidelines (Title 14 CCR Section 15064.4) recognize that an historical resource includes: (1) a resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the CRHR; (2) a resource included in a local register of historical resources, as defined in the California Public Resources Code (PRC) Section 5020.1(k) or identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g); and (3) any object, building structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic agricultural, educational, social, political, military, or cultural annals of California by the lead agency, provided the lead agency's determination is supported by substantial evidence in light of the whole record. The fact that a resource does not meet the three criteria outlined above does not preclude the lead agency from determining that the resource may be an historical resource as defined in PRC Section 5020.1(j) or 5024.1.

If a lead agency determines that an archaeological site is an historical resource, the provisions of CEQA Section 21084.1 and CEQA Guidelines Section 15064.4 apply. If a project may cause a substantial adverse change (defined as physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired) in the significance of an historical resource, the lead agency must identify potentially feasible measures to mitigate these effects (CEQA Guidelines Sections 15064.4[b][1], 15064.4[b][4]).

If an archaeological site does not meet the historical resource criteria contained in the CEQA Guidelines, the site may be treated in accordance with the provisions of Section 21083, which is a unique archaeological resource. As defined in CEQA Section 21083.2 a "unique" archaeological resource is an archaeological artifact, object, or site, for which it can be clearly demonstrated that without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- Contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information.
- Has a special and particular quality such as being the oldest of its type or the best available example of its type.
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.

If an archaeological site meets the criteria for a unique archaeological resource as defined in Section 21083.2, then the site is to be treated in accordance with provisions which state that

if the lead agency determines that a project would have a significant effect on unique archaeological resources the lead agency may require reasonable efforts be made to permit any or all of these resources to be preserved in place (Section 21083.1[a]). If preservation in place is not feasible, mitigation measures shall be required.

CEQA Guidelines note that if an archaeological resource is neither a unique archaeological resource nor an historical resource, the effects of the project on those resources shall not be considered a significant effect on the environment (CEQA Guidelines Section 15064.4[c][4]).

California Register of Historical Resources (CRHR)

Under PRC Section 5024.19(a), the California Register of Historical Resources (CRHR) was created in 1992 and implemented in 1998 as "an authoritative guide in California to be used by State and local agencies, private groups, and citizens to identify the State's historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse change." Certain properties, including California properties formally determined eligible for, or listed in, the NRHP, are automatically included in the CRHR. Other properties recognized as California Points of Historical Interest, identified as significant in historical resources surveys, or designated as local landmarks may be nominated for inclusion in the CRHR. A resource maybe listed in the CRHR if the State Historical Resources Commission determines that it meets one or more of the following criteria, which are modeled on NRHP criteria:

- It is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
- It is associated with the lives of persons important in our past.
- It embodies the distinctive characteristics of a type, period, region, or method of construction; represents the work of an important creative individual; or possesses high artistic values.
- It has yielded, or may be likely to yield, information important in history or prehistory.

In addition, under California PRC 5024.1, Title 14 California Code of Regulations (CCR), Section 4852(c), a cultural resource must retain integrity to be considered eligible for the CRHR. Specifically, it must retain sufficient character or appearance to be recognizable as a historical resource and convey reasons of significance.

California Historical Landmarks (CHLs)

California Historical Landmarks (CHLs) are buildings, structures, sites, or places that have anthropological, cultural, military, political, architectural, economic, scientific/technical, religious, experimental, or other value and that have been determined to have statewide historical significance by meeting at least one of the criteria listed below. The resources also must be approved for designation; be recommended by the State Historical Resources Commission; and be officially designated by the Director of California State Parks.

To be eligible for designation as a landmark, a resource must meet at least one of the following criteria:

1. It is the first, last, only, or most significant of its type in the state or within a large geographic region.
2. It is associated with an individual or group having a profound influence on the history of California.
3. It is a prototype of, or an outstanding example of, a period, style, architectural movement or construction or is one of the more notable works or the best surviving work in a region of a pioneer architect, designer, or master builder.

California Points of Historical Interest (PHIs)

California Points of Historical Interest (PHIs) are sites, buildings, features, or events that are of local (city or county) significance and have anthropological, cultural, military, political, architectural, economic, scientific/technical, religious, experimental, or other value. The PHI designation is most often used in localities that do not have a locally enacted cultural heritage or preservation ordinance.

To be eligible for designation as a PHI, a resource must meet at least one of the following criteria:

- It is the first, last, only, or most significant of its type within the local geographic region.
- It is associated with an individual or group having a profound influence on the history of the local area.
- It is a prototype of, or an outstanding example of, a period, style, architectural movement or construction or is one of the more notable works or the best surviving work in a region of a pioneer architect, designer, or master builder.

California Health and Safety Code

In the event human remains are encountered, California Health and Safety Code Section 7050.5 requires that the coroner be contacted to determine the nature of the remains. In the event the remains are determined to be Native American in origin, the Coroner is required to contact the Native American Heritage Commission (NAHC) within 24 hours.

California Public Resources Code

PRC Section 5097.98 provides procedures in the event human remains of Native American origin are discovered during project implementation. PRC Section 5097.98 requires that no further disturbances occur in the immediate vicinity of the discovery, that the discovery is adequately protected according to generally accepted cultural and archaeological standards, and that further activities consider the possibility of multiple burials. PRC Section 5097.8 further requires the NAHC, upon notification by a coroner, designate and notify a Most Likely

Descendant (MLD) regarding the discovery of Native American human remains. Once the MLD has been granted access to the site by the landowner and inspected the discovery, the MLD then has 48 hours to provide recommendations to the landowner for the treatment of the human remains and any associated grave goods.

Assembly Bill 52 (AB52)

Assembly Bill 52 (AB52) specifies 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. AB52 requires that a lead agency consult with any California Native American tribe that requests consultation and is traditionally and culturally affiliated with the geographic area of a project.

Senate Bill 18 (SB18)

Passed in 2004, Senate Bill 18 (SB18) requires cities and counties to consult with Native American tribes to help protect traditional tribal cultural places as part of a general plan adoption or amendment. Unlike AB52, SB18 is not an amendment to, or otherwise associated with, CEQA. Instead, SB18 requires that, prior to the adoption or amendment of a city or county's general plan, the city or county must conduct consultations with California Native American tribes for the purpose of preserving specified places, features, and objects that are located within the city or county's jurisdiction. Under SB18, cities and counties must notify the appropriate Native American tribe(s) of intended adoption or amendments to general plans and offer the opportunity for the tribe(s) to consult regarding traditional tribal cultural places within the proposed plan area. A Native American tribe is defined as "a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the Native American Heritage Commission" (Governor's Office of Planning and Research 2005:6). Traditional tribal cultural places are defined in PRC Sections 5097.9 and 5097.993 to include sanctified cemeteries, places of worship, religious or ceremonial sites, or sacred shrines, or any historic, cultural, or sacred site that is listed on or eligible for the CRHR including any historic or prehistoric ruins, burial grounds, or archaeological site (Governor's Office of Planning and Research 2005:4).

Local Regulations

City of Los Angeles General Plan

The City of Los Angeles General Plan Conservation Element, adopted in 2001, states as its objectives to "protect the city's archaeological and paleontological resources for historical, cultural, research and/or educational purposes" by continuing "to identify and protect significant archaeological and paleontological resources known to exist or that are identified during land development, demolition, or property modification activities."

In addition, the City protects historic and cultural sites and/or resources potentially effected by proposed land development, demolition, or property modification activities. The City's environmental guidelines require archeological monitoring of excavations or other subsurface activities associated with a development project in which all or a portion is deemed to be of archaeological significance. Discovery of archaeological materials may temporarily halt the project until the site has been assessed, potential impacts evaluated, and, if deemed appropriate, the resources protected, documented and/or removed (City of Los Angeles 2001).

City Cultural Resource Designations

In additional to the NRHP and the CRHR, three additional types of historic designations may apply at a local level:

1. Historic-Cultural Monument
2. Designation by the Community Redevelopment Agency as being of cultural or historical significance within a designated redevelopment area
3. Classification by the City Council as a Historic Perseveration Overlay Zone

The City of Los Angeles Cultural Heritage Ordinance states that a Historic-Cultural Monument (HCM) designation is reserved for those resources that have a special aesthetic, architectural, or engineering interest or value of a historic nature (City of Los Angeles, Department of City Planning 2009). An historical or cultural monument is any site, building, or structure of particular historical or cultural significance to the City of Los Angeles, such as historic structures or sites:

- in which the broad cultural, political, economic, or social history of the nation, state, or community is reflected or exemplified; or
- which are identified with historic personages or with important events in the mains currents of national, state, or local history; or
- which embody the distinguishing characteristics of an architectural-type specimen, inherently valuable for a study of a period, style, or method of construction; or
- which are notable works of a master builder, designer, or architect whose individual genius influenced his or her age.

Griffith Park is City of Los Angeles HCM #942, CHC No: CHC-2008-2724-HCM, CF No: 08-3086, adopted on January 27, 2009. While the Project site is located within Griffith Park, the Zoo is excluded from this designation and, therefore, does not contribute to the cultural resource value of Griffith Park.

Los Angeles Historic-Cultural Monuments

The City of Los Angeles Cultural Heritage Ordinance, enacted in 1962 and amended in 2018, allows for the designation of buildings and sites as individual local landmarks in the City of Los Angeles, known as Historic-Cultural Monuments (HCMs).

Section 22.171.7 of Article 1, Chapter 9, Division 22 of the City of Los Angeles Administrative Code defines a Historic-Cultural Monument as "any site (including significant trees or other plant life located on the site), building or structure of particular historic or cultural significance to the City of Los Angeles." A proposed Monument may be designated by the City Council upon the recommendation of the Cultural Heritage Commission if it meets at least one of the following criteria:

1. Is identified with important events of national, state, or local history, or exemplifies significant contributions to the broad cultural, economic, or social history of the nation, state, city, or community;
2. Is associated with the lives of historic personages important to national, state, city, or local history; or
3. Embodies the distinctive characteristics of a style, type, period, or method of construction; or represents a notable work of a master designer, builder, or architect whose individual genius influenced his or her age.

Designation as a Historic-Cultural Monument is "reserved for those resources that have a special aesthetic, architectural, or engineering interest or value of a historic nature." For integrity purposes, a resource eligible for local designation should retain enough of its historic character or appearance to convey the reason(s) for its significance.

Historic Districts

Standard preservation practice evaluates collections of buildings, structures or other features from similar time periods and historic contexts as historic districts. The National Park Service defines a historic district as "a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development." A historic district derives its significance as a single unified entity.

According to the National Park Service, "a district can comprise both features that lack individual distinction and individually distinctive features that serve as focal points. It may even be considered eligible if all of the components lack individual distinction, provided that the grouping achieves significance as a whole within its historic context. In either case, the majority of the components that add to the district's historic character, even if they are individually undistinguished, must possess integrity, as must the district as a whole." Examples of districts include business districts, college campuses, large estates, farms, industrial complexes, residential areas, and rural villages.

Resources that have been found to contribute to the historic identity of a district are referred to as district contributors. Properties located within the district boundaries that do not contribute to its significance are identified as non-contributors.

Existing Conditions

Regional Setting

Prehistoric Setting

The first occupants of southern California arrived as early as 12,000 BP during the Early Man or Paleocoastal period (10,000-6,000 BC/ 11,950-7,950 BP). The first evidence of human occupation in the Los Angeles area dates to approximately 9,000 BP. Evidence of maritime adaptation including the use of shellfish, fish, and marine mammals has been found at coastal archaeological sites. During the Milling Stone or Early Period (6,000 – 3,000 BC / 7,950 – 4,950 BP), permanent settlements were primarily located on the coast and in the vicinity of estuaries, lagoons, lakes, streams, and marshes where a variety of food resources including seeds, fish, shellfish, small mammals, and birds were exploited. Larger archaeological sites with a greater diversity of artifacts appear at the end of the Milling Stone Period but they seem to have been occupied seasonally. Aspects of the Milling Stone Period persisted into the Intermediate Period (3,000 BC – AD 500 / 4,950 – 1,450 BP), but the Intermediate period witnessed extensive population growth in Southern California and sedentary lifestyle in established camps. Evidence suggests these camps were located on the margins of rivers, marshes, and swamps within the Los Angeles River drainage. Major settlements continued to be occupied seasonally. Burials continued to be common in this period and cremations were not. During the Late Prehistoric or Late Period (AD 500 – 1542 / 1,450 – 408 BP), fully-developed villages with complex layouts and burial grounds exhibiting a variety of mortuary practices appear. This period also marks more formal placement and differentiation of burials than seen previously.

Gabrieleño/Tongva villages were abundant in the San Fernando Valley, the Glendale Narrows area north of downtown Los Angeles, and in areas where the Los Angeles River empties into the Pacific Ocean. Photo: Mary Leighton Thomson circa 1900. 'Wiyot's Children,' Gabrielino Indian of Village of Sa-anga, Playa del Rey, CA

The Project area falls within the traditional ethnographic territory of the Takic-speaking Gabrieleño/Tongva who established residential communities of 50 to 150 people throughout a territory that included the Los Angeles Basin south to parts of Orange County and north to Topanga Canyon, and the southern Channel Islands (Santa Catalina, San Clemente, and San Nicolas) (Gumprecht 1999). The villages closest to the proposed Project site were Kaweenga, located about 3.5 miles to the west at Universal Studios Hollywood theme park, and

Haahamonga, most likely located about 3 miles to the northeast, between Griffith Park and the Verdugo Hills (McCawley 1996). Mococahuenga (Fern Dell), about 2 miles southwest of the proposed Project site in Griffith Park, was reportedly once a meeting ground and/or village for the Gabrieleño/Tongva (Cohen 1985). The Gabrieleño/Tongva population prior to Spanish contact has been estimated at approximately 5,000 (Kroeber 1925). For additional details about the Project's prehistorical setting, please see Appendix F.

Tribal Cultural Resources & AB 52 Consultation

The National Park Service (NPS) defines a cultural landscape as a "geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person, or exhibiting other cultural or aesthetic values" (Birnbaum 1994). There are four types of cultural landscape that are not mutually exclusive:

- historic sites (a landscape significant for its association with a historic event, activity, or person),
- historic designed landscapes (a landscape that was consciously designed or laid out by a landscape architect, master gardener architect, engineer, or horticulturist according to design principles, or an amateur gardener working in a recognized style or tradition such as parks, campuses, or estates),
- historic vernacular landscapes (a landscape that evolved through use by the people whose activities or occupancy shaped it such as rural historic districts or agricultural landscapes), and
- ethnographic landscapes (a landscape containing a variety of natural and cultural resources that associated people define as heritage resources such as contemporary settlements, sacred religious sites, and massive geological structures).

When a lead agency chooses to treat a resource as a tribal cultural resource, that determination will be supported with substantial evidence. Evidence that may support such a finding could include, among other evidence, elder testimony, oral history, tribal government archival information , testimony of a qualified archaeologist certified by the relevant tribe, testimony of an expert certified by the Tribal Government, official tribal government declarations or resolutions, formal statements from a certified Tribal Historic Preservation Officer, and historical notes (OPR 2017).

A cultural landscape that meets these criteria is a tribal cultural resource, to the extent that the landscape is geographically defined in terms of the size and scope of the landscape. Historical resources, unique archaeological resources, or non-unique archaeological resources may also be tribal cultural resources if they meet these criteria (ESA PCR 2017).

For this Project, a Native American Heritage Commission (NAHC) AB 52 Consultation Tribal Contact List and Sacred Lands File Search was requested on December 4, 2018, and

conducted on December 19, 2018 (Katy Sanchez, NAHC Associate Environmental Planner). The NAHC identified six Native American contacts:

- Andrew Salas, Chairperson, Gabrieleño Band of Mission Indians-Kizh Nation
- Anthony Morales, Chairperson, Gabrieleño/Tongva San Gabriel Band of Mission Indians
- Sandonne Goad, Chairperson, Gabrieleño/Tongva Nation
- Robert F. Dorame, Chairman, Gabrieleño/Tongva Indians of California Tribal Council
- Linda Candelaria, Chairperson, Gabrieleño/Tongva Tribe
- Charles Alvarez, Councilmember, Gabrieleño/Tongva Tribe

Letters indicating that a formal decision to undertake the proposed Project had been made and identifying the opportunity to consult pursuant to Publics Resources Code § 21089.3.1 were sent to these Native American contacts on or around January 10, 2019 (Appendix F). One response, from the Gabrieleño Band of Mission Indians-Kizh Nation, was received. The response, dated January 17, 2019, indicated that the Gabrieleño Band of Mission Indians-Kizh Nation desired to consult with the City on the proposed Project (Appendix F).

A conference call to discuss the proposed Project and Tribal Cultural Resources was held on February 5, 2019 (Appendix B). Participants included:

- Andrew Salas, Gabrieleño Band of Mission Indians-Kizh Nation, Chairman
- Matthew Teutimez, Gabrieleño Band of Mission Indians-Kizh Nation, Environmental Director
- Amanda Amaral, City of Los Angeles, Bureau of Engineering
- Darryl Pon, Los Angeles Zoo, Planning and Development Director
- Julia Pujo, Wood, Deputy Project Manager
- Ken Victorino, Wood, Senior Archaeologist

Mr. Salas indicated that the proposed Project site had significant cultural value. Mr. Salas indicated the area is considered a cultural landscape because:

- the Gabrieleño/Tongva have occupied the Los Angeles Basin for thousands of years;
- the village of Cahuenga is located west of Griffith Park;
- the rancheria of Maugna is located in the vicinity of Griffith Park; and
- sacred natural springs utilized for medicinal purposes are located in the general region.

The cultural landscape defined by Mr. Salas would be an ethnographic landscape as defined by the NPS.

The Gabrieleño Band of Mission Indians-Kizh Nation submitted a series of historical maps and "mitigation language approved by our Tribal Government for use with this project" via email on February 7, 2019 (Appendix B). The mitigation measures recommended by the Gabrieleño Band of Mission Indians-Kizh Nation included:

- retain a Native American monitor/consultant,
- unanticipated discovery of tribal cultural and archaeological resources,
- discovery of unique archaeological resources,
- unanticipated discovery of human remains and associated funerary objects,
- resources assessment and continuation of work protocol,
- Kizh-Gabrieleño procedures for burials and funerary remains,
- treatment measures, and
- professional standards.

The Gabrieleño Band of Mission Indians-Kizh Nation consider that "human remains" represent more than human bones. Gabrieleño Band of Mission Indians-Kizh Nation traditions included, but were not limited to, the burial of funerary objects with the deceased and the ceremonial burning of human remains. Associated funerary objects are objects that, as part of the death rite or ceremony of a culture, are reasonably believed to have been placed with the individual human remains either at the time of death or later; other items made exclusively for burial purposes or to contain human remains can also be considered an associated funerary object.

Historical Setting

The Project site now occupied by the Zoo was historically part of Rancho Los Feliz established in 1795 after Spanish Corporal, José Vicente Feliz, was gifted the property from the Spanish crown. This property stretched from the Cahuenga Pass on the west, to the Los Angeles River on the east and north, and well into the flatlands on the south, encompassing the present-day community of Los Feliz and what is now Griffith Park. As Rancho Los Feliz, the land was used to graze cattle. Following the Mexican-American War and the secession of California to the United States, a claim for Rancho Los Feliz was filed with the Public Land Commission in 1852. In 1871, the grant was finally patented to Maria Ygnacia Verdugo de Feliz.

A 1927 aerial view looking northeast at the National Guard hangars at Griffith Park Airport, aka Aerodrome, which occupied an area that overlaps with the northern parking lot of the Zoo. Photo: airfields-freeman.com

Property ownership was transferred to Colonel Griffith Jenkins Griffith in 1882. Griffith used his acquired land to support pigs, cows, horses, and sheep. He also grew corn and hunted for jack rabbits and wildcats on the property. During the 1880s, Griffith opened a short-lived ostrich farm on the site where the Griffith Park merry-go-round would eventually be located. Griffith Park was created in 1896, when Colonel Griffith J. Griffith donated 3,015 acres of his land which included portions of the former Rancho Los Feliz, to the City of Los Angeles. However, the flatlands to the east between the hillsides and the Los Angeles River were outside the original park boundaries. These flatlands were part of a 351-acre plot of land known as Griffith Reservation, which was still owned by Colonel Griffith and remained undeveloped until 1911 when Griffith's son Van, created an airfield on the site; the airfield was abandoned in 1916. In 1921, Van Griffith transferred ownership of the remaining flatlands to the City, which expanded Griffith Park. Under the City's ownership, the airfield was leased for use by the 115th Observation Squadron, 40th Division Air Service of the California National Guard. The airfield reopened as the Griffith Park Airfield on January 25th, 1925 and was permanently closed in 1941. Today, there is no known physical evidence of aviation in Griffith Park on the site.

In 1957, the Golden State (I-5) Freeway was completed through the flatlands along the park's eastern edge. This was followed in the early 1960s with the construction of the Ventura (SR-134) Freeway along the northern edge of the park. Together, these two projects completely cut Griffith Park off from the river. It was also in 1957 that Los Angeles voters overwhelming passed a bond measure to fund a new zoo.

In 1994, a City Department of Recreation and Parks (RAP) Primary Record and District Record found Griffith Park as a significant resource under National Register Criteria. This same form assigned Griffith Park a California Historical Resource Status Code of 2S2 ("Individual property determined eligible for the National Register) with a period of significance defined as 1896-1944. Griffith Park is listed in the California Historical Resources Inventory (HRI) with a status code of S2S. In 2009, Griffith Park was locally designated as Los Angeles Historic-Cultural Monument No. 942 with 1896-1957 defined as the period of significance. For additional details about the Project's historical setting, please see Appendix G.

History of Regional Zoos

The City's first zoo was the city-owned Eastlake Zoo, opened at 1885 in East Los Angeles Park (later renamed Lincoln Park) and closed in 1912. Also, in 1912, the Griffith Park Zoo was established in Griffith Park. Situated less than two miles south of the Zoo's current location, the Griffith Park Zoo was created on the site of the former Griffith & Sketchley Ostrich Farm. The zoo started small, with just a few pens and cages and an assortment of animals, including all fifteen the animals transferred from the Eastlake Zoo. The Griffith Park Zoo would remain open until August 1966 when its animals could be transferred to the new facility. Today, extant remnants of the "Old Zoo"—including faux-stone caves and metal cages—make for a popular picnicking spot within the park.

Concrete statues decorating Zoopark were abandoned before being rediscovered and installed at the Los Angeles Zoo in 2009. Photo Source: Los Angeles Herald Examiner Photograph Collection, LAPL.

In 1915, the Selig Zoo, later named Zoopark, opened at 3800 N. Mission Road in East Los Angeles Park and replaced the Eastlake Zoo in the City. Following financial difficulty, Zoopark closed in 1940. However, concrete animal sculptures decorating the main entrance of Zoopark remained until the 1960's until they were removed and placed in storage. In 2000, they were rediscovered and ten were eventually restored. In 2009, seven of these sculptures were installed at the Los Angeles Zoo. In 1957, the same year the I-5 was completed through the flatlands along the park's eastern edge, Los Angeles voters overwhelming passed a bond measure to fund a new zoo. The northeastern end of Griffith Park was selected and approved as the location for Los Angeles' new zoo in 1962. For additional details about the Project's historical setting, please see Appendix G.

Project Site and Vicinity

Archaeological Setting

Topography of the Project site is undulating with approximately 150 feet of elevation change. Many areas of the Zoo comprise steep slopes over 20 percent, particularly in the California and Africa planning areas. Interior portions of the Zoo are relatively flat resulting from the natural topography and previous development involving heavy ground disturbance and imported fill to level out the Zoo site for development. The Zoo's interior was constructed from artificial, uncompacted fill, including exhibit topography and visitor walkways. Visitor walkways within the Zoo have been cut between 6 feet and approximately 15 feet below the

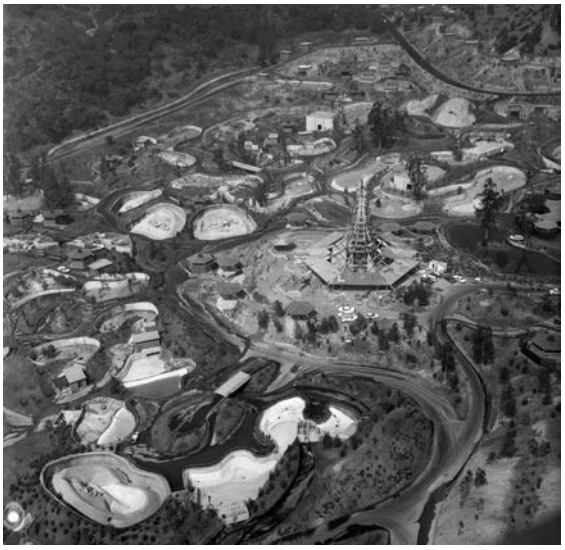
original and constructed topographic surfaces. Subsurface utilities including electrical lines, sewer laterals, and water pipes have also been excavated and installed throughout the Zoo.

Both the Zoo Entry planning area and Nature Play planning area span across relatively level topography and have been fully developed. Likewise, the Asia and Rainforest planning areas have previously been developed and experienced extensive ground disturbances. The proposed California and Africa planning areas in the northeastern and southwestern portions of the Zoo, respectively, are undeveloped and generally consist of steep slopes greater than 20 percent.

Previous investigations concluded that steep slopes exceeding 20 percent within the Zoo have a low potential for the presence of prehistoric occupation. Granite bedrock below the ground surface exists in California and Africa planning areas and neither area contains bedrock outcrops that may have been used as temporary shelters. More level areas with greater potential have been substantially disturbed by grading and development over the last century.

Historic Setting

In 1962, a new site for a City zoo was selected in Griffith Park. That same year, the RAP Commission hired the architectural firm Charles Luckman Associates to develop a preliminary zoo master plan. Construction began in 1964 and the Los Angeles Zoo opened on November 28th, 1966. Upon opening, it was widely acknowledged that it was not the world-class zoo that had been promised to voters when they first approved the funding in 1957. For example, the original design did not include an efficient circulation system with accessibility for visitors of all ages and abilities and did not create an immersive visitor experience (refer to Section 2.3.2, *Project Objectives*). The Zoo's Theme Building, modernly referred to as the Treetop Terrace, was of greatest architectural value. Treetops Terrace featured two hexagonal spires standing at 105 feet in height, constructed of 160,000 board feet of lumber and 496 windows, all supported by 12 massive, laminated beams, and painted gold. Treetops Terrace was the only building designed by Luckman that made a strong architectural statement. Sited on a small rise, Treetops Terrace was the centerpiece of Luckman's plan with its twin hexagonal spires visible throughout the Zoo. The main entrance was also of notable architectural value. Luckman's main entrance was Modern in its style, consisting of a reflecting pool with lily pads and an outcropping of



The Los Angeles Zoo under construction prior to its opening in 1966. Photo Source: Los Angeles Times Collection, UCLA.

boulders; wide, low entrance steps; a canted white stucco wall with "Los Angeles Zoo" in simple, affixed metal lettering; and a series of flag poles.

At the time of opening, the Zoo spanned 110 acres. Luckman intentionally left room for future expansions, predicting that the Zoo would one day occupy nearly twice as many acres. As currently developed, the Zoo occupies 133 acres and contains structures dating as early as 1966 and as recent as 2015. Redevelopments began as early as the 1970s when the Zoo upgraded several exhibits and added new ones. In the early to mid-1980s, the Zoo constructed the Australia House and the China Pavilion and demolished the Children's Zoo and replaced it with a new exhibit displaying the animals of the American Southwest. Modifications accelerated in the 1990s and 2000s. The Zoo's 1992 master plan, as updated in 1998, led to an impressive series of improvements over the succeeding 17 years, which resulted in comprehensive redesign and redevelopment of the Zoo. Even the architecturally notable main entrance underwent several redesigns. For example, the original 1966 entrance featured reflecting pools with lily pads under a concrete Los Angeles Zoo sign with large multicolor flags. This entrance was demolished and replaced sometime between 1985 and 1987 with a yellow arc entrance. The current Zoo entrance was constructed in 2005. These "recently-completed projects" (1998 and later) include Chimpanzees of the Mahale Mountains (1998); Red Ape Rainforest (2000); Francois' Langur (previously Golden Monkey) exhibit (2008); Winnick Family Children's Zoo (2001); Gottlieb Animal Health and Conservation Center (2002); Entry Plaza (2005); Sea Life Cliffs (2005); Children's Discovery Center (2005); California Condor Rescue Zone (2005); Campo Gorilla Reserve (2007); Elephants of Asia (2010); parking lot (2010); Tom Mankiewicz Conservation Carousel (2011); L.A.I.R. (2012); Angela Collier World of Birds Theater (2013); Rainforest of the Americas (2014); and the Jaguar Exhibit (2015). See Table 3.4-1.

During such redevelopment periods, major changes were made to the original Zoo facility, including alterations to circulation plans, regrading, and the loss of original buildings or structures. Approximately one third of visitor-serving areas (e.g. exhibits, circulation paths, support services) have been completely redeveloped since 1998. As such, the current setting of the Zoo consists of a mixture of animal exhibits, visitor-related amenities, and service facilities dating from the mid-1960s to the present, creating an inconsistent visual and historical character.

Table 3.4-1. Existing Features within the Zoo

Feature	Description	Date
Administration Building	One-story building containing administrative offices for the Los Angeles Zoo and GLAZA.	1966* (expanded c. 1975; GLAZA addition c. 1990)
Angela Collier World of Birds Theater	Two-story theater venue presenting a showcase of avian behavior.	2013
Australia House (Ahmanson Koala House)	One of the first nocturnal exhibits with a reverse light cycle (dark during the day) so visitors could view the creatures during their active time.	1981 (renovated in 1995)
Botanical Gardens	Gardens and groves throughout the Zoo site with more than 7,000 individual plants representing over 800 different species; the Zoo also serves as a repository for exotic or rare plants, one of 62 Plant Rescue Centers in the nation. The City Council changed the Zoo's name to include Botanical Gardens in 2003; however, the Zoo is not an accredited member of the American Alliance of Museums and therefore is not an accredited botanical garden.	1966*
California Condor Rescue Zone	Educational interactive play space for children located in the Children's Discovery Center near the Entry Plaza.	2005
Campo Gorilla Reserve	Open-air environment with trees, brush, flowers, grassy areas, climbing rocks, waterfalls, and a shady retreat for two groups of western lowland gorillas.	2007
Children's Discovery Center	Two-story facility adjacent to the Entry Plaza; includes classrooms, an auditorium, and education and volunteer offices.	2005
Chimpanzees of the Mahale Mountains	Exhibit with boulders, palms trees, an artificial termite mound, waterfall, and a tall rock ledge, which is home to one of the largest troops of chimpanzees in the United States.	1998
Circulation Plan	Interior circulation system of internal pathways and roadways used by both visitors and Zoo staff, accommodating pedestrians, trams, and service vehicles.	1966* (with modifications from 2002 to 2016)
Commissary Building	The hay barn and grain storage are part of the original service building complex (including the Hospital and Maintenance buildings) designed by Charles Luckman Associates. The main Commissary was rebuilt as part of the Gottlieb Animal Health and Conservation Center.	1966* (main Commissary rebuilt in 2002)
Elephants of Asia	Sprawling open-air exhibit including the Wasserman Family Thai Pavilion and four separate and connected yards which provide habitat space for four Asian elephants.	2010
Entry Plaza	Complex including the main gate, ticketing and guest relations, restaurants, retails shops, and the monumental Zoo marquee	2005

Table 3.4-1. Existing Features within the Zoo (Continued)

Feature	Description	Date
Francois' Langur exhibit	Animal exhibit built for Francois' Langur, previously referred to as the Golden Monkey exhibit. The exhibit features an elevated patron viewing platform and artificial trees for the langurs.	2008
Gottlieb Animal Health and Conservation Center	Building complex, including animal medical treatment rooms, clinical laboratories, and an animal commissary.	2002 (renamed in 2006)
Hexagonal buildings/ structures	Hexagonal-roofed buildings and structures which are repeated throughout the Zoo site and accommodate a variety of uses (information, vending, refreshments, restrooms, mechanical equipment, picnic tables, open shade structure).	1966*
Hospital Building	Part of the original service building complex (including the Commissary and Maintenance buildings) designed by Charles Luckman Associates. This building was repurposed for holding reptiles and condors and animal care.	1966*
Jaguar Exhibit	This exhibit was constructed as an addition to Rainforest of the Americas.	2015
L.A.I.R.	Two large buildings containing 49 exhibits of over 60 different species of amphibians, invertebrates, and reptiles from around the world.	2012
Maintenance Building	Part of the original service building complex (including the Hospital and Commissary buildings) designed by Charles Luckman Associates.	1966*
Parking Lot	Main parking area just east of the Zoo campus—composed of a north lot and south lot divided by Crystal Springs Drive Western Heritage Way—containing 2,345 spaces for Zoo visitors and staff.	1966* (renovated 2010)
Pit-and-Moat Exhibits	Amoeba-shaped pit with an animal display area surrounded by an open moat; used for larger animals.	1966*
Rainforest of the Americas	Immersive exhibit with a variety of tropical habitats—from forest treetops to the rivers— for a diverse mix of rainforest-dwelling species.	2014
Red Ape Rainforest	Orangutan exhibit with a large climbing platform and a behind-the-scenes living complex with an open-air group room and six heated night rooms.	2000 (renovated in 2015)
Roundhouse Exhibits	Central hexagonal space with a wood-slat roof surrounded by a circular cage of chain-link fencing, typically containing 2-3 exhibits plus support spaces; used for smaller animals.	1966*
Selig Zoo Sculptures	Four concrete lion sculptures that were restored and installed in 2009; remnants of the 1915 Selig Zoo which originally displayed fifteen elephant and lion sculptures by Italian sculptor Carlo Romanelli at its main entrance. The remaining sculptures are currently in storage. Several of the sculptures were not fully restored and one sculpture was never found.	1915 (installed in current Zoo 2009)

Table 3.4-1. Existing Features within the Zoo (Continued)

Feature	Description	Date
Sea Life Cliffs	Aquatic habitat with a replicated rocky cove, beach area, and saltwater pools with above- and below-water views of harbor seals and sea lions.	2005
Tom Mankiewicz Conservation Carousel	Carousel featuring 66 hand-carved and hand-painted wooden animals, many of which represent endangered species; named for the Hollywood screenwriter and former GLAZA chairman.	2011
Treetops Terrace	The Zoo's theme building designed by Charles Luckman Associates; its twin spires originally served as a beacon and wayfinding feature visible throughout the Zoo. Its spires have since been removed, and its roof canopy cut back on the east side to accommodate the adjacent carousel.	1966*
Winnick Family Children's Zoo	Features a petting zoo stocked with domesticated animals, as well as an outdoor amphitheater and indoor interactive learning center.	2001
World Aviary	70,000-square-foot aviary opened with the original Zoo in 1966; it is one of the largest and most immersive aviaries in the world, incorporating multiple waterfalls, pools, and other water features to showcase various species of birds from around the world.	1966*

Notes: This list is not comprehensive but is intended to provide a sense of the range and diversity of the Zoo's existing features.

* These features date from the original 1966 plan, designed by Charles Luckman Associates.

Historic Resource Assessment

In 1994, Griffith Park was recorded as "significant under National Register Criterion A". A period of significance for the park was defined as 1896-1944. Griffith Park as a whole was assigned a California Historical Resource Status Code of 2S2 ("Individual property determined eligible for the National Register by the Keeper; listed in the California Register"). The Los Angeles Zoo is identified as a non-contributing feature of Griffith Park, having opened in 1966. A specific rationale for this evaluation is not provided. However, presumably the Los Angeles Zoo was not considered a contributing feature because it falls outside the period of significance for Griffith Park. While Griffith Park is a City historic resource, the Los Angeles Zoo is listed with a status code of 6Y ("Determined ineligible for National Register by consensus through the Section 106 process; not evaluated for California Register or local listing"). Similarly, when Griffith Park was locally designated as Los Angeles Historic-Cultural Monument with a period of significance for Griffith Park as 1896-1957, the Los Angeles Zoo was identified as "later-era" feature dating from 1966. The accompanying Historic Resources Map lists the Los Angeles Zoo as one of several "non-contributing or altered components."

Pursuant to this analysis, a historic assessment was conducted to evaluate the buildings, structures, and other features of the Zoo for potential historic listing or designation at the federal, state, or local levels (Appendix G). The Zoo was determined ineligible for listing or

designation at the federal, state, or local levels as a historic district. The historic resource assessment also considered individual resources for historic merit. Based upon an understanding of the Zoo's original design and development by Charles Luckman Associates from 1964 to 1966, the only extant Zoo feature that could rise to the level of significance on its own and therefore be eligible for historic listing or designation as an individual resource is the Theme Building, now known as Treetops Terrace. However, the structure has since substantially alerted such that it no longer reflects its original appearance and is not considered eligible for designation as a historical resource as defined by CEQA. Therefore, the Zoo is not a historic resource either individually or as a district, nor does it contribute to the historic resource value of Griffith Park. For additional details about the Zoo's historic resource value, please see Appendix G.

3.4.2 Impact Assessment Methodology

Significance Thresholds

According to Appendix G of the CEQA Guidelines, a project would have a significant impact related to cultural resources if it would:

a. Cause a substantial adverse change in the significance of a historical resource pursuant Section 15064.5?
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?
c. Disturb any human remains, including those interred outside of formal cemeteries?

Further, a project would have a significant impact to tribal cultural resources if it would cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

a. Listed or eligible for listing in the CRHR, or in a local register of historical resources as defined in PRC section 5020.1(k)?
b. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1. In applying the criteria set forth in subdivision (c) of PRC Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?

In addition, the 2006 *L.A. CEQA Thresholds Guide* goes further to state that a project would normally have a significant impact upon archaeological resources if it could disturb, damage, or degrade an archaeological resource or its setting that is found to be important under the criteria of CEQA because it:

- Is associated with an event or person of recognized importance in California or American prehistory or of recognized scientific importance in prehistory;
- Can provide information which both of demonstrable public interest is and useful in addressing scientifically consequential and reasonable archaeological research questions;
- Has a special or particular quality, such as the oldest, best, largest, or last surviving example of its kind;
- Is at least 100 years old and possesses substantial stratigraphic integrity; or
- Involves important research questions that historical research has shown can be answered only with archaeological methods.

Methodology

The impact analysis for archaeological and tribal cultural resources is based upon the *Draft Cultural & Tribal Cultural Resources Report* prepared by Wood in 2019 (Appendix F). This report included review of past literature and studies of the Zoo property or surrounding areas, a cultural records search conducted at the South Central Coast Information Center for the California Historical Resources Information System (CHRIS), and consultation with tribal representatives in accordance with AB52. In addition, Wood archaeological staff conducted an intensive, pedestrian ground surface survey of Project planning areas where near-term improvements are proposed on July 30th, 2019. AB 52 consultation was conducted by the City, as summarized above and in Appendix F. The results of the *Draft Cultural & Tribal Cultural Resources Report* serve as the basis for the EIR analysis of cultural and tribal cultural resources.

The impact analysis for historical resources is based upon the *Draft Historical Resources Technical Report*, prepared by Historic Resources Group in 2019 (Appendix G). This report includes research and review of historical maps, plans, aerials, building permits, and literature pertaining to the Zoo. In addition, qualified Historic Resources Group staff conducted field inspections on July 30th, 2019 and August 27th, 2019 to examine and document the existing conditions of the Project site. The results of the *Draft Historical Resources Technical Report* serve as the basis for the EIR analysis of historic resources.

3.4.3 Environmental Impacts Analysis

CUL-1:	Would the project Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?

The Project would involve phased redevelopment of the majority of the Zoo, which would demolish existing structures, reconfigure internal circulation patterns, remove vegetation, and construct modern buildings, exhibits, and animal enclosures. Over time, older structures would be replaced with improved buildings, signage, and infrastructure. During near-term

phases, the proposed Project would involve demolition of some structures dating from the 1960's, including the World Aviary exhibit. Few of the original 1966 buildings remain intact and unaltered on the site; examples include the maintenance, hospital, and commissary buildings in the Zoo's service area. Most redevelopment would involve the demolition of structures dating from 1990s to the 2000s, constructed as implementation of the Zoo's 1992 and 1998 master plans. Treetops Terrace, the most architecturally significant structure from the Zoo's original construction, is highly altered, missing its iconic gold-painted spires.

The Zoo is listed the NRHP or the CRHR, either as a district or as individual resources within the Zoo. The Zoo is also not locally designated as a historic resource. Although Griffith Park is listed on the CRHR and has been identified as a designated Los Angeles Historical-Cultural monument, the Zoo was determined to be a non-contributing component. Further, the Los Angeles Zoo was opened in 1966, past the significance period defined in Griffith Park's original DPR Primary Record and District Record (1896-1944) and the significance period defined in Griffith Park's Los Angeles Historic-Cultural Monument application (1896-1957), indicating the Zoo does not represent the same historical merit as Griffith Park.

To assess potential impacts to historic resources within the Zoo, a new historical resources assessment was conducted to re-evaluate the Zoo for potential historic significance (Appendix G). The analysis considered both potential individually eligible resources and the cumulative value of the Zoo as a historic district. The analysis concluded the Zoo is not eligible for historic listing or designation at federal, state, or local levels. Additionally, no buildings, structures, or other features of the Zoo were found individually eligible for historic listing or designation.

The Zoo is not the city's first zoo, nor was it even the first zoo in Griffith Park. Rather, it is the third zoo to be owned and operated by the City, and the fourth zoo to operate in the city. The Zoo also does not appear to have been the site of a specific event marking an important moment in Los Angeles history, nor did it make a significant contribution to the development of the City or the surrounding region. Thus, this property is not known to have had a significant association with an important event or trend in local, state, or national history.

The Project site does not appear to have any particular association with an individual that rose to prominence in their profession or group or made significant contributions to their respective field during the period when they were associated with the property. Originally completed in 1966, the Zoo was designed and master planned by noted Los Angeles architectural firm Charles Luckman Associates. Charles Luckman had a successful and prolific career both in partnership with William Pereira, as well as head of his own practice, and may be considered a master architect, but his contributions are common throughout the Los Angeles area. As an institutional property developed by a public agency, the Zoo is not associated with specific residents, occupants, tenants, or developers. Thus, this property is not known to have had a significant association with an important person in local, state, or national history. Further, the Zoo has been incrementally transformed by a succession of improvement projects—including substantial new construction and alteration and removal of

original features—such that it no longer retains its original appearance. As currently developed, the Zoo is a collection of disparate features which do not represent any particular design or period. Specifically, it no longer represents mid-20th century zoological design or the original vision of noted architectural firm Charles Luckman Associates.

Because of ongoing expansion of its animal and plant collections, the Zoo's physical campus began experiencing alterations and modifications almost from the start. As early as the 1970s, the Zoo upgraded several exhibits and added a few new ones. Such modifications to the Zoo's physical campus accelerated into the 1990s and 2000s. Improvement projects involved alterations to the original circulation plan; regrading; tree removal or other landscaping changes; and/or the loss of original exhibits, buildings, or structures. Focusing only on those projects which are situated in the visitor-serving or "front-of-house" areas of the Zoo,[1] these recently-completed projects have resulted in the wholesale redevelopment of some 19.8 acres of the 55 acres of the Zoo campus devoted to visitor-serving uses, or approximately 36 percent. That is, approximately one-third of the Zoo campus experienced by visitors has been completely remade since 1998. This does not include earlier redevelopment projects such as the replacement of the original Children's Zoo in the 1980s.

For the Zoo campus to be historically meaningful, it would need to retain a preponderance of original features such that the visitor experience today would be substantially similar to the visitor experience of 1966. However, the original visitor experience as designed by Luckman effectively no longer exists. While many 1966 buildings and structures remain—notably the roundhouse exhibits and the hexagonal buildings and structures—they are often interrupted by later infill development that wholly deviates from Luckman's original design intent. The Zoo has been transformed not only by new construction, but also by the alteration and removal of original features. In particular, the Zoo no longer retains the two strongest architectural statements made by Luckman in his original design: the main entrance and the Theme Building/Treetops Terrace. The original entrance with the reflection pools and international flags was demolished c. 1987 and replaced with an entrance with yellow and green arcs and red Los Angeles Zoo letters across the central arc. This main entrance was demolished in 2005 and replaced with the existing Entry Plaza, including a contemporary-looking entrance gate and marquee. Treetops Terrace originally featured twin 105-foot hexagonal spires that served as a beacon and wayfinding feature visible throughout the Zoo. However, around 2000, its twin spires were removed, effectively negating this function. In 2011, the building's roof canopy was cut back on the east side to accommodate the adjacent carousel.

As a whole, the Zoo does not possess historical significance under CEQA or the City's thresholds. The Zoo was not the first zoo to be constructed in Los Angeles, nor was it of exceptional size or quality upon its original opening. It is not associated with an event or

[1] This calculation excludes the Gottlieb Animal Health and Conservation Center, California Condor Rescue Zone, and parking lot improvements.

person of recognized importance in California or American prehistory or of recognized scientific importance in prehistory. It is not a source of answers for historical research. It is less than 100 years old and has undergone significant redevelopment renovations or expansions for every decade since its opening in 1966. As currently developed, the Zoo no longer represents the original 1966 setting as designed by Charles Luckman Associates, nor is it a wholly updated facility from a later period. Rather, it is an amalgamation of animal exhibits, visitor amenities and other features which do not represent any particular design or plan, approach to zoological design, or period of development.

As such, due to previous renovations and expansions facilities within the Project site, potentially historic structures no longer retain historical integrity or overarching uniform character, indicating there are no individually eligible structures or a potential historic district associated with the Zoo. The Project site does not contain any historical resources as defined by CEQA, and therefore there is no potential for impacts to historical resources as a result of the proposed Project. Therefore, Project impacts to historic resources would be *less than significant*.

CUL-2: Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

Under the proposed Project, redevelopment involving grading, excavation, and earth moving activities would occur on the Zoo's previously developed interior and undeveloped hillsides. Excavation depths would potential range from surficial grading to approximately 30 feet below ground surface (bgs) for building foundations and structural footings. These excavations would be associated with the three proposed Visitor Centers in the California, Africa, and Asia planning areas, as well as the proposed aerial tram system traversing the Zoo from the Orientation Plaza to the Africa Visitor Center. While most of the developed areas of the Zoo overly artificial fill that was previously graded and disturbed during original Zoo construction in 1966, there is a potential for disturbance of native soils at depth below the artificial fill or on undeveloped hillsides in the California and Africa planning areas.

No previously recorded archaeological sites occur on the Project site (Appendix G). A ground surface survey was conducted to assess the presence or absence of cultural resources on site. No archaeological resources or unique geographical features were recorded in the assessment. Further, the potential for prehistoric resources is low in areas formerly developed as part of the original Zoo construction and on slopes over 20 percent.

Implementation of the proposed Project would involve the subsurface excavation of previously undisturbed hillsides of Africa and California Planning areas. These areas comprise steep slopes exceeding 20 percent, making them unlikely to have been used for prehistoric occupation or activity. Additionally, a ground surface survey conducted in these planning areas indicated no resources on site. The interior areas of the Project site are relatively level and more likely to have been used by prehistoric persons. However, these areas have been substantially disturbed by previous grading and development involving the

removal of native surface soils. Existing visitor walkways and exhibit topography were constructed from artificial, uncompacted fill. Walkways were cut between 6 feet and approximately 15 feet below the original and constructed topographic surfaces. Subsurface utilities including electrical lines, sewer laterals, and water pipes have also been excavated and installed throughout the Zoo. Consequently, these interior developed areas of the Zoo and highly unlikely to contain any intact, previously undisturbed cultural resources. Therefore, the potential for proposed Project improvements to impact unknown cultural resources is very low, but not impossible.

To address the potential for incidental discovery of prehistoric cultural resources during phased construction of the Project, **MM CUL-1** would be implemented prior to ground disturbance for each Project phase to ensure that, in the unlikely event isolated unknown prehistoric and historic-period archaeological resources are encountered during construction activities, appropriate action would be taken to prevent adverse impacts. In the unlikely event that previously unidentified archaeological resources are discovered during Project construction, through implementation of **MM CUL-2** any inadvertently discovered resources would be protected and curated, so that impacts are mitigated. Therefore, Project impacts to potential prehistoric resources would be *less than significant with mitigation*.

CUL-3: Would the project disturb any human remains, including those interred outsides of formal cemeteries?

As described in CUL-2 above, the majority of the Project site has previously been developed/disturbed during construction of the Zoo, and undeveloped hillsides are unlikely to have supported prehistoric activity or occupation. Therefore, the possibility of discovering human remains during Project construction is very low. If, however, in the unlikely event that previously unidentified human remains are discovered, further disturbances and construction activities shall stop in any area or nearby area suspected to overlie remains in accordance with State Health and Safety Code Section 7050.5, and the Los Angeles County Coroner would be contacted in accordance with Title 14, CCR, Section 15064.5(e). Pursuant to PRC Section 5097.98, if the coroner determines that the human remains are of Native American origin, the NAHC would be notified. Arrangements for the human remains would be made, and further provisions of PRC Section 5097.98 are to be followed as applicable. Further, implementation of **MM CUL-3** would ensure the protection and curation of any inadvertently discovered. Impacts would *less than significant with mitigation*.

CUL-4: Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is listed or eligible for listing in the CRHR, or in a local register of historical resources as defined in PRC Section 5020.1(k), or that is a resource determined by the lead agency, in its discretion and

supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1?

As described in CUL-1 and CUL-2, there are no known cultural resources that are eligible for listing in the CRHR or in a local register within the Project site or that may be adversely affected by the Project. However, through consultation with Native American tribal representatives, there is potential for impacts to tribal cultural resources, including buried resources and cultural landscapes. Given the Project setting where the Gabrieleño/Tongva have occupied the Los Angeles Basin for thousands of years, this analysis considers the proximity of the site to the village of *Cahuenga* located west of Griffith Park, the rancheria of *Maugna* located in the vicinity of Griffith Park; a sacred natural springs utilized for medicinal purposes located in the general region, and the ethnographic landscape. No tribal cultural resources are specifically identified on site.

Due to previous ground disturbance and development within the interior of the Project site, there is little potential for the discovery of unknown buried tribal cultural resources during construction activities within the developed portions of the Project site. Nonetheless, the proposed Project would involve substantial ground disturbance in currently undeveloped areas within the Zoo that are proposed for development (i.e., Africa and California planning areas). Although these areas are considered unlikely to have supported prehistoric activity due to their steep slopes, the potential exists for the proposed Project to result in the discovery, alteration, removal, or destruction of tribal cultural resources, including objects, sites, or features with value to a California Native American tribe. With implementation of **MM CUL-4** through **MM CUL-7**, requiring the monitoring of all construction activities by an appropriate Native American representative and the management of resources in the unlikely event that such resources are uncovered, impacts would be *less than significant with mitigation*.

3.4.4 Mitigation Measures

MM CUL 1 Pre-Construction Workshop

Prior to any ground disturbance activities during construction of each Project phase, a City-qualified archaeologist and shall conduct a cultural resources workshop for all construction personnel. The City-qualified archaeologist must meet the Secretary of Interior standards for archaeology and have a minimum of 10 years of experience as a Principal Investigator working with Native American archaeological sites in southern California. The qualified archaeologist will ensure that all other personnel are appropriately trained and qualified. The workshop will inform all construction personnel of the types of cultural material that may be encountered, and of the proper procedures to be followed in the event of an unexpected discovery of cultural material or human remains. Appropriate documentation will be completed to demonstrate attendance.

MM CUL 2 Unexpected Discovery of Cultural Material

In the event unexpected cultural resource material - such as flaked or ground stone, historic debris, building foundations, or non-human bone - is discovered during Project-related ground disturbances, construction personnel will stop all work within 50 feet of the discovery until a City-qualified archaeologist can evaluate the discovery for significance. Construction personnel will contact the City and Zoo staff immediately. Activities that may adversely impact the discovery will not resume without written authorization from the City that construction may proceed. The nature, extent, and significance of the discovery will be evaluated by a City-qualified archaeologist, and a Native American representative if the discovered resource is prehistoric. If the discovery is determined to be a significant cultural resource under CEQA, avoidance is the primary method of mitigation. If avoidance is not feasible, the City-qualified archaeologist will prepare a treatment plan consistent with CEQA Guidelines Section 15064.5(f) that addresses implementation of data recovery mitigation excavations. Treatment measures typically include development of avoidance strategies, capping with fill material, or mitigation of impacts through data recovery programs such as excavation or detailed documentation and public interpretation. A report of findings shall be prepared, and recovered materials curated, if needed, in an approved facility.

MM CUL-3 Unexpected Discovery of Human Remains

In the event human remains are encountered during Project-related ground disturbances, construction personnel will stop all work in the vicinity of the discovery and immediately contact the Los Angeles County Coroner in accordance with Public Resources Code Section 5097.98 and Health and Safety Code Section 7050.5. The City and Zoo staff will also be contacted. If the County Coroner determines the remains are prehistoric, the Coroner will contact the Native American Heritage Commission and the Native American Heritage Commission shall designate a Most Likely Descendant.

MM CUL-4 Native American Monitoring

A Native American representative approved by the Gabrieleño Band of Mission Indians-Kizh Nation Tribal Government and the NAHC will monitor ground disturbing construction activities. Ground disturbing construction activities are defined by the Gabrieleño Band of Mission Indians-Kizh Nation as activities that include, but are not limited to, pavement removal, pot-holing or augering, grubbing, tree removal, boring, grading, excavation, drilling, and trenching. The Native American representative will complete daily monitoring logs that will provide the location of construction activities, and a description of the soil and any cultural materials identified. Native American monitoring will be terminated when all ground disturbing construction activities are complete or when the Native American representative determines that the proposed Project site has a low potential for impacting Tribal Cultural Resources during each phase of Project implementation. Native American monitoring during

ground disturbing construction activities will be conducted consistent with current professional standards.

MM CUL-5 Unanticipated Discovery of Tribal Cultural and Archaeological Resources

Pursuant to MM CUL-2, upon discovery of any archaeological resources, construction activities will cease in the immediate vicinity of the discovery until the discovery can be assessed. All archaeological resources identified during Project construction activities will be evaluated by the Native American representative approved by the Gabrieleño Band of Mission Indians-Kizh Nation. If the resources are Native American in origin, the Gabrieleño Band of Mission Indians-Kizh Nation will coordinate with the City and the Zoo regarding treatment and curation of the resources including reburial or preservation for educational purposes. Per AR-2, if the discovery is a significant resource, avoidance measures or appropriate mitigation will be implemented.

MM CUL-6 Preservation of Unique Archeological Resources

If unique archaeological resources are discovered, preservation in place (i.e., avoidance) will be the preferred manner of treatment consistent with Public Resources Code Section 21083.2(b). If preservation in place is not feasible, treatment may include implementation of archaeological data recovery excavations to remove the resources and subsequent laboratory processing and analysis. Historic archaeological material that is not Native American in origin will be curated at a public, non-profit institution with a research interest in the materials, such as the Natural History Museum of Los Angeles County or the Fowler Museum, if such an institution agrees to accept the material. If no institution accepts the archaeological material, it will be offered to a local school or historical society for educational purposes.

MM CUL-7 Unanticipated Discovery of Human Remains and Associated Funerary Objects

PRC Section 5097.98(d)(1) defines Native American human remains as an inhumation or cremation in any state of decomposition or skeletal completeness. Consistent with MM CUL-3, in the event human skeletal material is discovered, excavation will be stopped, and the discovery will be immediately reported to the Los Angeles County Coroner consistent with Health and Safety Code 7050.5. If the County Coroner recognizes the human remains to be Native American or has reason to believe the remains are Native American, the County Coroner will contact the NAHC within 24 hours. Public Resources Code 5097.98 will be followed.

In the event human skeletal material is discovered, the following will occur:

- The Native American representative monitor will immediately redirect construction activity a minimum of 150 feet from the discovery and place an exclusion zone around the discovery. The Native American representative will contact the construction manager who will then contact the Los Angeles County Coroner. The Native American representative will also contact the Gabrieleño Band of Mission Indians-Kizh Nation,

a City-qualified archaeologist, the City, and the Zoo. Construction activity will continue to be redirected while the County Coroner determines whether the human skeletal material is Native American. The discovery will be kept confidential and secure to prevent further disturbance. If the human skeletal material is determined to be Native American, the County Coroner will notify the NAHC. The NAHC will then appoint a Most Likely Descendant.

- Funerary objects/associated grave goods will be treated in the same manner as bone fragments.
- If discovered human remains cannot be fully documented and recorded on the same day, the remains will be covered with muslin cloth. A steel plate will be placed over the discovery to protect the remains. If a steel plate is not available, a 24-hour guard will be present onsite outside of regular construction hours.
- Redirecting construction activities to protect the human remains in place will be recommended if feasible. If construction activities cannot be redirected, the burials may be removed. Cremations will be removed in bulk or by any means necessary to ensure complete recovery of all material. The Gabrieleño Band of Mission Indians-Kizh Nation will work closely with the City-qualified archaeologist to ensure that any excavation to remove human remains is conducted carefully, ethically, and respectfully.
- If the discovery of human remains includes four or more burials, the location will be considered a cemetery and a separate treatment plan will be prepared.
- If data recovery excavations are approved by the Gabrieleño Band of Mission Indians-Kizh Nation, documentation will include detailed descriptive notes and sketches at a minimum. Additional documentation will be approved by the Gabrieleño Band of Mission Indians-Kizh Nation
- All feasible care will be taken to avoid any unnecessary disturbance, physical modification, or separation of human remains and associated funerary objects.
- Scientific study of the human remains, including the use of invasive diagnostic procedures/techniques, will not be conducted.
- Each discovery of human remains or associated funerary objects will be stored in opaque cloth bags. All human remains, funerary objects, sacred objects, and objects of cultural patrimony will be removed to a secure container on-site if possible. These items will be retained and reburied within six months of discovery.
- Prior to the resumption of ground disturbing construction activities, the Zoo will designate a location within the proposed Project site for the respectful reburial of the human remains and/or funerary objects. The reburial/repatriation site will be a location agreed upon between the Gabrieleño Band of Mission Indians-Kizh Nation and the Zoo to be protected in perpetuity.
- There will be no publicity regarding a discovery of human remains.

- A final report will be submitted to the Gabrieleño Band of Mission Indians-Kizh Nation and the NAHC.

3.4.5 Impacts Summary

With implementation of the above identified mitigation measures, impacts to cultural and historical resources would be less than significant. There would be no unavoidable adverse impacts on cultural, historical, or tribal resources associated with implementation of the proposed Project.

3.5 ENERGY

Environmental impacts may arise from direct and indirect consumption of energy resources during construction and operation of land use development projects. A significant energy impact would occur if the Project would directly or indirectly consume electricity, natural gas, or transportation fuels in a wasteful, excessive, or inefficient manner. The Project would offset increased energy demands with development of onsite solar energy generation facilities atop proposed buildings. The Project would not result in the generation of substantial new demand for energy supplies and would result in negligible increases in demand compared to regional and statewide demands. With implementation of applicable mitigation, the proposed Project would be consistency with state, regional, and local regulations adopted to reduce energy demands or preventing the wasteful or inefficient use of energy resources.

This section analyzes the direct and indirect energy resource consumption associated with implementation (i.e., construction and operation) of the proposed Los Angeles Zoo (Zoo) Vision Plan (Project), and encourages measures to avoid or reduce any inefficient, wasteful, or unnecessary consumption of energy. The information has been prepared in accordance with Public Resources Code (PRC) section 21100(b)(3), California Environmental Quality Act (CEQA) Guidelines Section 15126.2(b), and CEQA Guidelines Appendix F.

3.5.1 Topical Background

The analysis of direct and indirect energy resource consumption considers electricity use, natural gas use, and transportation fuels during construction and future operations.

Electricity

The production of electricity requires the consumption or conversion of other natural resources, whether it be water (hydroelectric power), wind, oil, gas, coal, or solar energy. The delivery of electricity as a utility involves several system components for distribution and use. Electricity is distributed through a network of transmission and distribution lines referred to as a power grid. Energy capacity, or electrical power, is generally measured in watts (W), while energy use is measured in watt-hours (Wh), which is the integral electricity consumption over a period of one hour. On a utility scale, the capacity of electricity generation and amount of consumption is generally described in megawatts (MW) and megawatt-hours (MWh), respectively. The Los Angeles Department of Water and Power (LADWP) provides electrical power to the Project site, and is discussed in greater detail in 3.5.2, *Environmental Setting*.

Natural Gas

Natural gas is a combustible mixture of simple hydrocarbon compounds (primarily methane) that is a fossil energy source formed deep beneath the earth's surface. Surveys are performed

to identify potential productive natural gas deposits, and wells are drilled either vertically or horizontally to extract the gas from its origin. Natural gas consumed in California is obtained from its naturally occurring subterranean reservoirs and delivered through high-pressure transmission pipelines. Natural gas provides almost one-third of the total energy requirements in California and is generally measured in units of standard cubic feet or British thermal units (BTU). The Southern California Gas Company (SoCalGas) is the natural gas provider for the City, and is discussed in greater detail in 3.5.2, *Environmental Setting*.

Transportation Fuels

The spark-ignited internal combustion engines of on-road motor vehicles and off-road equipment use fossil fuel energy for propulsion. Gasoline and diesel fuel are formulations of fossil fuels refined for use in various applications. Gasoline is the primary fuel source for most passenger automobiles, and diesel fuel is the primary fuel source for most off-road equipment and medium and heavy-duty trucks. The assessment of energy resources includes a quantitative evaluation of the transportation fuels that would be consumed during construction and operation of the proposed Project.

Other aspects of the proposed Project's environmental impacts related to energy resources are assessed in sections of this Environmental Impact Report (EIR) as follows: energy consumption and associated air pollutant emissions are addressed in Section 3.2, *Air Quality* and 3.8, *Greenhouse Gas Emissions,* vehicle trips associated with Zoo operations are addressed in 3.15, *Transportation,* and the provision of energy by utility services is addressed in 3.16, *Utilities and Service Systems*.

3.5.2 Environmental Setting

Regulatory Setting

Federal, state, and local laws and regulations have been enacted that address energy consumption and efficiency from various end uses.

Federal Regulations

At the federal level, the U.S. Environmental Protection Agency (EPA), the U.S. Department of Energy, and the U.S. Department of Transportation are the three agencies with the most direct influence over national energy policies, especially transportation energy consumption. Generally, federal agencies establish and enforce fuel economy standards for automobiles and light trucks, fund energy-related research and development projects, and fund transportation infrastructure projects to manage transportation energy resource demand.

Federal Energy Policy and Conservation Act

In 1975, Congress enacted the Federal Energy Policy and Conservation Act, which established the first fuel economy standards for on-road motor vehicles in the United States (U.S.). Pursuant to the Act, the National Highway Traffic Safety Administration (NHTSA) is

responsible for establishing additional vehicle standards. In 2012, new fuel economy standards for passenger cars and light trucks were approved for model years 2017 through 2021 (77 Federal Register 62624–63200). Fuel economy is determined based on each manufacturer's average fuel economy for the fleet of vehicles available for sale in the U.S.

Energy Policy Act of 1992

The Energy Policy Act of 1992 was passed to reduce U.S. dependence on foreign petroleum and improve air quality. The Energy Policy Act includes several provisions intended to build an inventory of alternative fuel vehicles in large, centrally fueled fleets in metropolitan areas. The Energy Policy Act requires certain Federal, state, and local government and private fleets to purchase a percentage of light duty alternative fuel vehicles each year. Financial incentives were also included in the Energy Policy Act, such as federal tax deductions for businesses and individuals to cover the incremental cost of alternative fuel vehicles. States are also required by the Energy Policy Act to consider a variety of incentive programs to help promote the expansion of alternative fuel vehicle fleets.

Energy Policy Act of 2005

The Energy Policy Act of 2005 includes provisions for renewed and expanded tax credits for electricity generated by qualified energy sources (i.e., landfill gas), provides bond financing, tax incentives, grants, and loan guarantees for clean renewable energy and rural community electrification, and establishes a Federal purchase requirement for renewable energy called the Renewable Fuels Standard (RFS).

Energy Independence and Security Act of 2007

On December 19, 2007, the Energy Independence and Security Act of 2007 (EISA) was signed into law. This federal legislation requires ever-increasing levels of renewable fuels (the RFS) to replace petroleum. The EPA is responsible for developing and implementing regulations to ensure that transportation fuel sold in the U.S. contains a minimum volume of renewable fuel. The RFS program regulations were developed in collaboration with refiners, renewable fuel producers, and many other stakeholders.

The RFS program was created under the Energy Policy Act of 2005 and established the first renewable fuel volume mandate in the U.S. As required under the Act, the original RFS program required 7.5 billion gallons of renewable fuel to be blended into gasoline by 2012. Under the EISA, the RFS program was expanded in several key ways that lay the foundation for achieving significant reductions in greenhouse gas (GHG) emissions from the use of renewable fuels, reducing imported petroleum, and encouraging the development and expansion of the renewable fuels sector in the U.S.

The EISA includes several key provisions that will increase energy efficiency and the availability of renewable energy, which will reduce GHG emissions as a result. The EISA facilitates the reduction of GHG emissions by requiring the following:

- Increasing the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard that requires fuel producers to use at least 36 billion gallons of biofuel in 2022;
- Prescribing or revising standards affecting regional efficiency for heating and cooling products, procedures for new or amended standards, energy conservation, energy efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances;
- Achieving approximately 25 percent greater efficiency for light bulbs by phasing out old incandescent light bulbs between 2012 and 2014; requiring approximately 200 percent greater efficiency for light bulbs, or similar energy savings, by 2020; and,
- While superseded by the 2019 EPA and NHTSA actions described above in Section 3.3, *Air Quality*, the Act included, a) establishing a minimum average fuel economy of 35 miles per gallon (mpg) for the combined fleet of cars and light trucks by 2020, and b) directing the NHTSA to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for trucks.

Additional provisions of EISA address energy savings in government and public institutions, promote research for alternative energy, additional research in carbon capture, international energy programs, and the creation of green jobs.

Light-Duty Vehicle Greenhouse Gas and Corporate Average Fuel Economy Standards

On May 19, 2009, President Obama announced a national policy for fuel efficiency and emissions standards in the U.S. auto industry. The adopted federal standard applied to passenger cars and light-duty trucks for model years 2012 through 2016. The rule surpassed the prior Corporate Average Fuel Economy standards and required an average fuel economy standard of 35.5 mpg and 250 grams of CO_2 per mile by model year 2016, based on EPA calculation methods. These standards were formally adopted on April 1, 2010. In August 2012, standards were adopted for model year 2017 through 2025 passenger cars and light-duty trucks. By 2020, new vehicles are projected to achieve 41.7 mpg—if GHG reductions are achieved exclusively through fuel economy improvements—and 213 grams of CO2 per mile (Phase 2 standards). By 2025, new vehicles are projected to achieve 54.5 mpg and 163 grams of CO_2 per mile, a reduction of approximately 50 percent relative to 2010.

On September 27, 2019, the EPA and the NHTSA published the "Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program" (84 Federal Register 51310 [September 27, 2019]). The Part One Rule revokes California's authority to set its own GHG emissions standards and set zero-emission vehicle (ZEV) mandates in California. Both the GHG emission standards and the ZEV sales standards reduce GHG emissions and fossil fuel energy consumption; as a result of the loss of ZEV sales requirements, there may be fewer ZEVs sold and thus additional gasoline-fueled vehicles sold in future years. California expects Part Two of these regulations to be adopted in 2020, and it is anticipated that the federal

government may adopt revised GHG emission standards and fuel efficiency standards. In November 2019, California and 23 other states, environmental groups, and the cities of Los Angeles and New York, filed a petition with the U.S. Court of Appeals for the District of Columbia Circuit, for the EPA to reconsider the published rule. The Court has not yet ruled on the lawsuit.

Heavy-Duty Vehicle Program

The Heavy-Duty Vehicle Program was adopted on August 9, 2011 to establish the first fuel efficiency requirements for medium- and heavy-duty vehicles beginning with the model year 2014.

State Regulations

California has adopted statewide legislation to address issues related to various aspects of energy consumption and efficiency. Several regulatory entities administer energy policy throughout the state. The California Public Utilities Commission (CPUC) is a state agency created by a constitutional amendment to regulate privately owned utilities providing the telecommunications, electric, natural gas, water, railroad, rail transit, and passenger transportation services. The CPUC is responsible for assuring that California utility customers have safe, reliable utility services at reasonable rates, while protecting utility customers from fraud. The CPUC regulates the planning and approval for the physical construction of electric generation, transmission, or distribution facilities and local distribution pipelines of natural gas. The California Energy Commission (CEC) is the primary energy policy and planning agency in California. Created by the State Legislature in 1974, the CEC has five major responsibilities: forecasting future energy needs and maintaining a historical energy database; licensing thermal power plants 50 MW or larger; promoting energy efficiency through appliance and building standards; developing energy technologies and supporting renewable energy; and planning for and directing statewide response to energy emergencies.

Warren-Alquist Act

The California Legislature passed the Warren-Alquist Act in 1974. The Warren-Alquist Act created the CEC. The legislation directed the CEC to formulate and adopt the nation's first energy conservation standards for both buildings constructed and appliances sold in California; removed the responsibility of electricity demand forecasting from the utilities, which had a financial interest in high-demand projections, and transferred it to a more impartial CEC; and directed CEC to embark on an ambitious research and development program, with a particular focus on fostering what were characterized as non-conventional energy sources.

Renewable Energy Standard/Renewable Portfolios Standard

Senate Bill 1078 and Senate Bill 107

Senate Bill (SB) 1078 (2002) and SB 107 (2006) created the Renewable Energy Standard, which required electric utility companies to increase procurements from eligible renewable energy resources by at least 1 percent of their retail sales annually until reaching 20 percent by 2010. SB 2X 1 (2011) requires a Renewables Portfolio Standard, functionally the same thing as the Renewable Energy Standard, of 33 percent by 2020. In 2013, the statewide average for the three largest electrical suppliers (Pacific Gas and Electric, Southern California Edison, and San Diego Gas & Electric) was 22.7 percent. As noted below, SB 350 increased the renewable requirement to 50 percent for 2030.

Senate Bill 350

The Clean Energy and Pollution Reduction Act of 2015, SB 350 (Chapter 547, Statutes of 2015) was approved by Governor Edmund G. Brown, Jr. on October 7, 2015. SB 350 does the following: (1) increases the standards of California's Renewables Portfolio Standard (RPS) program by requiring that the amount of electricity generated and sold to retail customers per year from eligible renewable energy resources be increased to 50 percent by December 31, 2030; (2) requires the State Energy Resources Conservation and Development Commission to establish annual targets for statewide energy efficiency savings and demand reduction that will achieve a cumulative doubling of statewide energy efficiency savings in electricity and natural gas final end uses of retail customers by January 1, 2030; (3) provides for the evolution of the Independent System Operator into a regional organization; and (4) requires the state to reimburse local agencies and school districts for certain costs mandated by the state through procedures established by statutory provisions. Among other objectives, the legislature intends to double the energy efficiency savings in electricity and natural gas final end uses of retail customers through energy efficiency and conservation (SB 350, Clean Energy and Pollution Reduction Act 2015).

California Building Standards Code

Title 24 Standards

The CEC first adopted Energy Efficiency Standards for Residential and Nonresidential Buildings (California Code of Regulations, Title 24, Part 6) in 1978 in response to a legislative mandate to reduce energy consumption in the state. Although not originally intended to reduce GHG emissions, increased energy efficiency and reduced consumption of electricity, natural gas, and other fuels would result in fewer GHG emissions from residential and nonresidential buildings subject to the standard. The standards are updated periodically (typically every three years) to allow for the consideration and inclusion of new energy efficiency technologies and methods. The Energy Efficiency Standards for Residential and Nonresidential Buildings focuses on several key areas to improve the energy efficiency of renovations and addition to existing buildings as well as newly constructed buildings and

renovations and additions to existing buildings. The major efficiency improvements to the residential Standards involve improvements for attics, walls, water heating, and lighting, whereas the major efficiency improvements to the nonresidential Standards include alignment with the American Society of Heating, Refrigerating and Air-Conditioning Engineers 90.1-2013 national standards. Furthermore, the standards require that enforcement agencies determine compliance with the California Code of Regulations, Title 24, Part 6 before issuing building permits for any construction.

California Green Building Standards Code

Part 11 of the Title 24 Building Energy Efficiency Standards is referred to as the California Green Building Standards (CALGreen) Code. The purpose of the CALGreen Code is to "improve public health, safety and general welfare by enhancing the design and construction of buildings through the use of building concepts having a reduced negative impact or positive environmental impact and encouraging sustainable construction practices in the following categories: (1) Planning and design; (2) Energy efficiency; (3) Water efficiency and conservation; (4) Material conservation and resource efficiency; and (5) Environmental air quality." The CALGreen Code is not intended to substitute for or be identified as meeting the certification requirements of any green building program that is not established and adopted by the California Building Standards Commission. The CALGreen Code establishes mandatory measures for new residential and non-residential buildings. Such mandatory measures include energy efficiency, water conservation, material conservation, planning and design and overall environmental quality.

Renewable Energy

The state has adopted regulations to increase the proportion of electricity from renewable sources. In November 2008, Governor Schwarzenegger signed Executive Order S-14-08, which expands the state's Renewables Portfolio Standard to 33 percent renewable power by 2020. On April 12, 2011, Governor Jerry Brown signed SB X1-2 to increase California's Renewables Portfolio Standard to 33 percent by 2020. SB 350 (Chapter 547, Statues of 2015) further increased the Renewables Portfolio Standard to 50 percent by 2030. The legislation also included interim targets of 40 percent by 2024 and 45 percent by 2027. On September 10, 2018, Governor Jerry Brown signed SB 100, which further increased California's Renewables Portfolio Standard to achieve 50 percent renewable resources by December 31, 2026, and a 60 percent target by December 31, 2030, while requiring retail sellers and local publicly owned electric utilities to procure eligible renewable electricity for 44 percent of retail sales by December 31, 2024, 52 percent by December 31, 2027, and 60 percent by December 31, 2030, and that the California Air Resources Board (CARB) should plan for 100 percent eligible renewable energy resources and zero-carbon resources by December 31, 2045.

State of California 2015 Integrated Energy Policy Report

On April 29, 2015, Governor Edmund G. Brown Jr. signed Executive Order B-30-15, establishing a new statewide goal to reduce GHG emissions 40 percent below 1990 levels by 2030. Senate Bill 1389 (Bowen, Chapter 568, Statutes of 2002) requires CEC to prepare a biennial integrated energy policy report that assesses major energy trends and issues facing the state's electricity, natural gas, and transportation fuel sectors and provides policy recommendations to conserve resources; protect the environment; ensure reliable, secure, and diverse energy supplies; enhance the state's economy; and protect public health and safety. The 2015 Integrated Energy Policy Report, adopted by CEC in February 2016, provides the results of the CEC's assessments of a variety of energy issues facing California (CEC 2016).

State CEQA Guidelines

CEQA Guidelines Appendix F provides a goal of conserving energy in the state of California. Under CEQA (PRC Section 21100(b)(3)), EIRs must include a discussion of the potential significant energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy. The appendix indicates the following methods to achieve this goal: (1) decreasing overall per capita energy consumption, (2) decreasing reliance on natural gas and oil, and (3) increasing reliance on renewable energy sources. In addition to building code compliance, other relevant considerations may include, among others, the project size, location, orientation, equipment use and any renewable energy features that are incorporated into the project (CEQA Guidelines Section 15126.2(b)).

Regional and Local Regulations

Southern California Association of Governments (SCAG)

SCAG is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial counties. SCAG addresses regional issues related to transportation, the economy, community development, and the environment. SCAG develops plans pertaining to transportation, growth management, hazardous waste management, housing, and air quality. SCAG prepares the Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) that supports the land use and transportation components of the Air Quality Management Plans, which provide some GHG-reduction co-benefits. The 2016–2040 RTP/SCS integrates land use and transportation strategies to achieve required emission reductions per SB 375 of 8 percent by 2020 and 13 percent by 2035 relative to the base year of 2005 (SCAG 2016). The RTP/SCS was adopted on April 7, 2016. The SCS set forth a development pattern for the region, which, when integrated with the transportation network and other transportation measures and policies, aims to reduce GHG emissions from automobiles and light trucks consistent with CARB targets for SCAG. SCAG is currently developing the 2020-2045 RTP/SCS.

City of Los Angeles GreenLA Climate Action Plan

The City has issued guidance promoting sustainable development to reduce GHG emissions Citywide in the form of a Climate Action Plan. The objective of GreenLA is to reduce GHG emissions 35 percent below 1990 levels by 2030 (City 2007). GreenLA identifies goals and actions designed to make the City a leader in confronting global climate change. The measures would reduce emissions directly from municipal facilities and operations and create a framework to address citywide GHG emissions. GreenLA lists various focus areas in which to implement GHG reduction strategies. Focus areas include energy, water, transportation, land use, waste, port, airport, and ensuring that changes to the local climate are incorporated into planning and building decisions.

The City published an implementation document titled ClimateLA (City 2008). ClimateLA presents the existing GHG inventory for the City, describes enforceable GHG reduction requirements, provides mechanisms to monitor and evaluate progress, and includes mechanisms that allow the plan to be revised in order to meet targets. By 2030, the plan aims to reduce GHG emissions by 35 percent from 1990 levels, which were estimated to be approximately 54.1 million metric tons.

Therefore, the City will need to lower annual GHG emissions to approximately 35.1 million metric tons per year by 2030. To achieve these reductions the City has developed strategies that focus on energy, water use, transportation, land use, waste, open space and greening, and economic factors. To reduce emissions from energy usage, ClimateLA proposes the following goals: increase the amount of renewable energy provided by LADWP; present a comprehensive set of green building policies to guide and support private sector development; reduce energy consumed by City facilities and utilize solar heating where applicable; and help citizens to use less energy. Regarding waste, ClimateLA sets the goal of reducing or recycling 70 percent of trash by 2015. Regarding open space and greening, ClimateLA includes the following goals: create 35 new parks; revitalize the Los Angeles River to create open space opportunities; plant one million trees throughout the City; identify opportunities to "daylight" streams; identify promising locations for stormwater infiltration to recharge groundwater aquifers; and collaborate with schools to create more parks in neighborhoods.

City of Los Angeles Sustainable City pLAn (pLAn)

In addition to GreenLA, Mayor Eric Garcetti released Los Angeles's first-ever pLAn on April 8, 2015 (City 2015). The pLAn is a roadmap to achieving short-term results and sets a path to strengthen and transform the City in future decades. Recognizing the risks posed by climate change, Mayor Garcetti set time-bound outcomes on climate action, most notably to reduce GHG emissions by 45 percent by 2025, 60 percent by 2035, and 80 percent by 2050, all against a 1990 baseline. Los Angeles' emissions are 20 percent below the 1990 baseline as of 2013, putting Los Angeles nearly halfway to the 2025 pLAn reduction target of 45 percent. In

addition, the 20 percent reduction exceeds the 15 percent statewide goal listed in the First Update to the AB 32 Scoping Plan.

City of Los Angeles Green Building Program

The purpose of the City's Green Building Program is to reduce the use of natural resources, create healthier living environments and minimize the negative impacts of development on local, regional, and global ecosystems. The program consists of a Standard of Sustainability and Standard of Sustainable Excellence. The Standard of Sustainability establishes a requirement for non-residential projects at or above 50,000 square feet (sf) of floor area to meet the intent of the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) Certified level. The Standard also applies to existing buildings that meet the minimum thresholds described above when redevelopment construction costs exceed a valuation of 50 percent of the existing building's replacement cost.

The voluntary Standard of Sustainable Excellence establishes an incentive program for projects that register with the LEED program, contract with a certified LEED professional, and can demonstrate how the project will achieve LEED certification at a Silver or higher level. These projects are eligible for priority processing services within the Department of City Planning and expedited services within the Bureau of Engineering. The Department of Building and Safety provides priority plan check processing and Priority Service Planning is offered by LADWP.

Los Angles Green Building Code

The City adopted the Green Building Code to reduce the City's carbon footprint. The Green Building Code is applicable to new buildings and alterations with building valuations over $200,000 (residential and non-residential). The Green Building Code is based on the 2010 California Green Building Standards Code Title 24, Part 11, commonly known as CALGreen, that was developed and mandated by the state to attain consistency among the various jurisdictions within the state; reduce the building's energy and water use; and reduce waste (see discussion of CALGreen, above).

Existing Buildings Energy and Water Efficiency (EBEWE) Program (LAMC Section 91.9701 et seq, Ordinance Nos. 184674, 185198, and 185586)

Effective in 2017, the EBEWE Program added Division 97 to Article I, Chapter IX and amended Division 4 of Article 8, Chapter IX, and makes public the annual energy and water consumption of all buildings over 20,000 sf in the City. Beginning in 2017, privately owned buildings that are 20,000 sf or more and buildings owned by the City that are 7,500 or more are required to be benchmarked, and owners must disclose annual energy and water consumption. Privately owned buildings that are 100,000 sf or more must begin benchmarking reporting by December 1, 2017, and smaller buildings must begin reporting over the following two years. This Ordinance is designed to facilitate the comparison of

buildings' energy and water consumption, and reduce building operating costs, leading to reduced GHG emissions.

2017 LADWP Power Strategic Long-Term Resource Plan (SLTRP)

The SLTRP is a 20-year roadmap that guides the LADWP power system in its efforts to supply reliable electricity in an environmentally responsible and cost-effective manner (LADWP 2017). One of the main focuses of the SLTRP is to reduce GHG emissions, while maintaining cost competitive rates and reliable electric service. The SLTRP examines multiple strategies to reduce GHG emissions, including early coal replacement, accelerated RPS, energy efficiency, local solar, energy storage, and transportation electrification.

As LADWP starts the process to investigate, study, and determine the investments needed for a 100 percent clean energy portfolio, the 2017 SLTRP provides a path towards this goal with a combination of GHG reduction strategies, including early coal replacement two years ahead of schedule by 2025, accelerating RPS to 50 percent by 2025, 55 percent by 2030, and 65 percent by 2036, doubling of energy efficiency from 2017 through 2027, repowering coastal in-basin generating units with new, highly efficient potential clean energy projects by 2029 to provide grid reliability and critical ramping capability, accelerating electric transportation to absorb GHG emissions from the transportation sector, and investing in the Power System Reliability Program to maintain a robust and reliable Power System.

LA's Green New Deal (Sustainable City pLAn 2019)

In April 2019, Mayor Eric Garcetti released L.A.'s Green New Deal (Sustainable City pLAn 2019). Rather than an adopted plan, the Green New Deal is a mayoral initiative that consists of a program of actions designed to create sustainability-based performance targets through 2050 that advance economic, environmental, and equity objectives. L.A.'s Green New Deal (Sustainable City pLAn 2019) is the first four-year update to the City's first Sustainable City pLAn that was released in 2015. It augments, expands, and elaborates in even more detail L.A.'s vision for a sustainable future and it addresses climate change with accelerated targets and new aggressive goals.

While not a plan adopted solely to reduce GHG emissions, within L.A.'s Green New Deal (Sustainable City pLAn 2019), climate mitigation is one of eight explicit benefits that help define its strategies and goals. These include reducing GHG emissions through near-term outcomes:

- Reduce potable water use per capita by 22.5 percent by 2025; 25 percent by 2035; and maintain or reduce 2035 per capita water use through 2050.
- Reduce building energy use per sf for all building types 22 percent by 2025; 34 percent by 2035; and 44 percent by 2050 (from a baseline of 68 million BTU/sf in 2015).
- All new buildings will be net zero carbon by 2030 and 100 percent of buildings will be net zero carbon by 2050.

- Increase cumulative new housing unit construction to 150,000 by 2025; and 275,000 units by 2035.
- Ensure 57 percent of new housing units are built within 1,500 feet of transit by 2025; and 75 percent by 2035.
- Increase the percentage of all trips made by walking, biking, micro-mobility/matched rides, or transit to at least 35 percent by 2025, 50 percent by 2035, and maintain at least 50 percent by 2050.
- Reduce vehicle miles traveled (VMT) per capita by at least 13 percent by 2025; 39 percent by 2035; and 45 percent by 2050.
- Increase the percentage of electric and zero emission vehicles in the city to 25 percent by 2025; 80 percent by 2035; and 100 percent by 2050.
- Increase landfill diversion rate to 90 percent by 2025; 95 percent by 2035 and 100 percent by 2050.
- Reduce municipal solid waste generation per capita by at least 15 percent by 2030, including phasing out single-use plastics by 2028 (from a baseline of 17.85 lbs. of waste generated per capita per day in 2011).
- Eliminate organic waste going to landfill by 2028.
- Reduce urban/rural temperature differential by at least 1.7 degrees by 2025; and 3 degrees by 2035.
- Ensure proportion of Angelenos living within 0.5 miles of a park or open space is at least 65 percent by 2025; 75 percent by 2035; and 100 percent by 2050.

Existing Energy Conditions

Electricity

Electricity, natural gas, and renewable energy production, consumption, research, and conservation within the state are managed by the CEC. In 2018, Californians consumed 284,436,261,624 kWh (284,436 gigawatt hours [GWh]) of electricity, while future annual electricity consumption is projected to increase to approximately 328,215 GWh by 2027 (CEC 2018b; U.S. Census Bureau 2019). In the County of Los Angeles, 68,486,187,103 kWh (68,486 GWh) were consumed in 2018 (CEC 2019a; City of Santa Monica 2018).

Of the entire power mix for California in 2018, 35 percent was generated by natural gas-fired power plants, 3 percent was generated by coal-fired power plants, 11 percent came from large hydroelectric dams, <0.1 percent was generated by oil and other petroleum or waste heat, and 9 percent came from nuclear power plants. The remaining 31 percent of electricity production in California was supplied by renewable sources including biomass, geothermal, small hydro,

solar, and wind power. An additional 11 percent of California's total power mix, was provided from imported power sources (see Table 3.5-1; CEC 2019b).

LADWP provides electrical service throughout the City, including the Project site, serving approximately four million people within a service area of approximately 465 square miles. LADWP generates power from a variety of energy sources, such as wind, solar, and geothermal sources. According to LADWP's 2017 Power Strategic Long-Term Resource Plan, the department has a net dependable generation capacity greater than 7,880 MW and experienced a net record instantaneous peak demand of 6,500 MW in 2017. Approximately 30 percent of LADWP's 2017 electricity purchases were from renewable sources (see Table 3.5-1), which is similar to the statewide proportion. By 2030, LADWP forecasts its energy supply sourcing to be approximately 26 percent natural gas, 60 percent renewable, nine percent nuclear, and five percent large hydroelectric infrastructure. In 2019, LADWP committed with the City to achieve carbon neutrality by 2050, and updated its RPS targets to 50 percent by 2025, 55 percent by 2030, and 65 percent by 2036. As the power supply becomes more dependent upon renewable energy, overall grid efficiency will increase and associated GHG emissions will be reduced.

Table 3.5-1. LADWP Power Content Label

Energy Resources	2018 Power Mix	2018 Green Power for Green L.A. Power Mix	2018 California Power Mix
Eligible Renewable	32%	100%	31%
-- Biomass & Biowaste	*0%*	*0%*	*2%*
-- Geothermal	*7%*	*0%*	*5%*
-- Eligible Hydroelectric	*2%*	*0%*	*2%*
-- Solar	*13%*	*0%*	*11%*
-- Wind	*11%*	*100%*	*11%*
Coal	18%	0%	3%
Large Hydroelectric	3%	0%	11%
Natural Gas	30%	0%	35%
Nuclear	10%	0%	9%
Other	0%	0%	<1%
Unspecified*	6%	0%	11%
Total	100%	100%	100%

*"Unspecified" means electricity from transactions that are not traceable to specific generation sources.
Source: LADWP 2019.

Electricity is consumed by various components of Zoo facilities. Existing conditions at the Zoo require annual electricity use of approximately 8,000 MWh, and the conveyance of water (approximately 107,508,000 gallons) and treatment of wastewater (approximately 69,191,000 gallons) indirectly requires an additional 1,453 MWh associated with conveyance and distribution.

Natural Gas

Natural gas is provided to the City and Project site by SoCalGas, which is the principal distributor of natural gas in Southern California, serving residential, commercial, and industrial markets. SoCalGas services approximately 21.6 million customers in more than 500 communities encompassing approximately 20,000 square miles throughout Central and Southern California. SoCalGas receives gas supplies from several sedimentary basins in the western U.S. and Canada, including supply basins located in New Mexico (San Juan Basin), West Texas (Permian Basin), the Rocky Mountains, and Western Canada as well as local California supplies. The traditional, southwestern U.S. sources of natural gas will continue to supply most of SoCalGas demand. Gas supply available to SoCalGas from California averaged 334.6 billion BTU per day in 2017.

Natural gas use associated with Zoo facilities was estimated based on the square footage of building structures and the operations of those building structures (refer to Section 2.0, *Project Description*). The total building area served by the natural gas system under existing conditions at the Zoo is approximately 231,914 sf, which accounts for administration and service areas, retail, visitor center, food and beverage, the Children's Discovery Center and the Gottlieb Animal Health and Conservation Center. Natural gas use at the Project site is predominantly used for water and space heating, as well as the food preparation areas. Existing annual natural gas use at the Zoo is approximately 2,783 million BTU (MBTU) based on estimates calculated for the existing Zoo in the California Emissions Estimator Model (CalEEMod Version 2016.3.2; see Appendix D).

Transportation Fuels

According to the CEC, transportation fuels account for nearly 40 percent of statewide total energy demand and approximately 39 percent of the state's GHG emissions (CEC 2018). In 2018, California consumed 15.5 billion gallons of gasoline and 3.7 billion gallons of diesel fuel. Petroleum-based fuels currently account for more than 90 percent of California's transportation fuel use. To address the magnitude of transportation fuel consumption, California has implemented several polices, rules, and regulations to improve vehicle efficiency, increase the development and use of alternative fuels, reduce air pollutants and GHG emissions from the transportation sector, and reduce on-road VMT. The California initiatives have begun to gradually reduce statewide dependence on fossil fuels, and the CEC predicts that demand for gasoline will continue to decline as the expansion of public transit infrastructure and use of alternative fuels becomes more prevalent.

The CEC maintains a statewide database of annual transportation fuel retail sales in accordance with the Petroleum Industry Information Reporting Act (PIIRA) called the *California Retail Fuel Outlet Annual Reporting (CEC-A15)* system. Annual gasoline and diesel fuel sales are available by county within the database for years 2010 through 2018. According to the CEC-A15 data, retail transportation fuels sales in Los Angeles County in 2018 were approximately 3,638 million gallons of gasoline and approximately 253 million gallons

of diesel fuel (CEC 2019). More transportation fuels were purchased in Los Angeles County than any other county in the state, accounting for approximately 24 percent of statewide gasoline sales and 14 percent of statewide diesel sales. Retail transportation fuels are provided by approximately 2,078 service stations throughout the County.

Transportation fuel use was analyzed on an annual basis for the proposed Project. As described in 3.15, *Transportation*, existing employee and visitor trips generate approximately 22,189,284 annual VMT. Based on the regional fleet averages obtained from the CARB EMissions FACtor (EMFAC) mobile source emissions inventory, existing VMT associated with Zoo operations consume approximately 866,266 gallons of gasoline and 8,954 gallons of diesel fuel annually.

3.5.3 Impact Assessment Methodology

Significance Thresholds

According to Appendix G of the CEQA Guidelines, the Project would have a potentially significant effect related to energy if it would:

a. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.
b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

Methodology

The methodology used in the analysis of proposed Project energy consumption was consistent with the analysis presented in Section 3.2, *Air Quality* and Section 3.8, *Greenhouse Gas Emissions*. As discussed in Section 2.0, *Project* Description, Project activities have been separated into near-term improvements occurring within the first 10 years of implementation (2020–2030) and long-term improvements that would occur during the latter 10 years of the Vision Plan (2030–2040). The near-term improvements are separated into three phases and summarized in Table 2-22, and the long-term improvements are separated into four phases and summarized in Table 2-23. The assessment for construction activities characterized the transportation fuel use that would be required during the three near-term phases, and conservatively doubled the consumption to account for the long-term improvements. The operational assessment characterized annual electricity, natural gas, and transportation fuels consumption that would be required by improvements completed by the interim near-term development year of 2030, as well as the ultimate completion year of 2040.

To satisfy CEQA requirements of analyzing proposed Project impacts relative to existing conditions, a baseline analysis year of 2019 was utilized for the energy consumption analysis. This approach represents a conservative characterization of proposed Project energy consumption, as it does not account for mandated improvements in fuel efficiency and alternative fuel technologies ratified by CARB, nor does it account for improvements to Title

24 energy efficiency standards beyond those incorporated into CalEEMod (2013 standards). As a general consideration, the CARB anticipates that the regional fleet average fuel efficiency will improve by approximately 28 percent between 2019 and 2030 and approximately 36 percent between 2019 and 2040 based on fleet turnover, the introduction of more fuel-efficient vehicles, and the expansion of availability of alternative fuel vehicles. Additionally, all new and renovated buildings under the Project would be constructed in accordance with 2019 Title 24 energy efficiency standards and LEED Silver green building practices, which would reduce operational energy associated with end uses regulated under Title 24 by up to 37 percent relative to those analyzed in CalEEMod, as discussed in 3.8, *Greenhouse Gas Emissions*. Under the City and LADWP commitments in the 2017 SLTRP, the proportion of LADWP power supplied by renewable sources is required to increase from approximately 30 percent in 2017 to 50 percent in 2025. Therefore, by 2030 Vision Plan operations, regional average nonrenewable energy consumption by LADWP to supply electricity would decrease by approximately 28 percent relative to existing conditions. Increasing the proportion of energy supplied by renewable sources would decrease the per-gallon energy expenditure to supply, treat, and distribute water, creating cascading effects of improving LADWP systemwide efficiency. The operational energy analysis does not account for these improvements and presents a conservative existing plus proposed Project analysis.

Construction

Construction of the proposed Project is not anticipated to require significant electricity or natural gas consumption. On a limited and incidental basis, electricity may be used for small equipment, such as lighting, electronic devices, and other minor construction activities necessitating electrical power; however, it is speculative to quantify these minor sources, and equipment may already be in use under existing conditions throughout the Project site. Construction of the proposed Project would expend energy resources through the spark-ignited internal combustion engines of off-road equipment and on-road motor vehicles consuming transportation fuels. CARB has compiled inventories and forecasted projections of diesel and gasoline fuel use by off-road equipment and on-road motor vehicles.

Off-Road Construction Equipment

Using the CARB OFFROAD 2011 model database and a CARB fuel density value of 7.07 pounds per gallon (lbs/gal), the average diesel fuel consumption factor for off-road equipment used in proposed Project construction is estimated to be approximately 0.052 gallons per horsepower-hour (gal/hp-hr). Consumption of diesel fuel associated with off-road equipment was estimated based on the equipment inventories used in CalEEMod for each of the near-term improvement phases of the proposed Project, described in Table 3.2-6. CalEEMod contains default horsepower ratings and load factors based on equipment surveys that were incorporated into the diesel fuel consumption analysis. Refer to Appendix D for detailed emissions modeling input parameters and CalEEMod output files.

On-Road Vehicle Travel

Construction of the proposed Project would require on-road vehicle trips for crew members, vendor deliveries, and cut and fill material hauling. Consumption of diesel fuel and gasoline associated with on-road vehicle trips described in Table 3.2-6 was estimated using the CARB EMFAC mobile source emissions inventory data—which contains data related to air pollutant emissions and fuel consumption from on-road motor vehicles in California—that is programmed into CalEEMod and emissions factors for GHG emissions inventories prepared by the EPA for fuel carbon intensity. The EPA estimates that combustion of one gallon of diesel fuel will generate approximately 10.21 kilograms of carbon dioxide (10.21 kg CO_2), and combustion of one gallon of gasoline will generate approximately 8.78 kg CO_2. CalEEMod output for vehicle trip CO_2 emissions was used to estimate construction-related transportation fuel consumption in conjunction with the EPA emission inventory factors.

Operation

Similar to the analyses presented for GHG emissions, annual operational energy consumption was analyzed for the proposed Project following completion of near-term improvements in 2030 and full Vision Plan buildout in 2040. Energy resource consumption considered electricity, natural gas, and transportation fuel use associated with proposed Project operations.

Electricity and Natural Gas

Annual electricity consumption between 2011–2016 was provided by Zoo facility administrators and averaged approximately 7,800 MWh. Existing conditions in 2019 were conservatively estimated at 8,000 MWh annually, with an additional 1,453 MWh indirectly attributed to LADWP water system operations providing the existing facility water demand presented in Table 3.16-12. Future electricity use associated with improvements and expansion of Zoo facilities was estimated using extrapolation based on new building structure and lighted areas and assumed to proportional to water use increases throughout the Project site. Future projected water demand in 2040 provided by Zoo facility administrators was used to estimate corresponding indirect electricity consumption, and approximately 75 percent of additional consumption was assumed to occur by 2030. Natural gas consumption was estimated using a CalEEMod natural gas consumption factor of 12 kBTU per square foot of building area per year (kBTU/sf/year) from facilities described in Section 2.0, *Project Description*.

Transportation Fuels

Operation of Zoo facilities generates vehicle trips from employees and visitors. The CARB EMFAC mobile source emissions database contains air pollutant emissions and fuel consumption data for the statewide on-road vehicle fleet. Fuel consumption rates in gallons per mile were derived from the EMFAC database for the non-truck vehicle fleet, which accounts for passenger vehicles, light duty trucks, motorcycles, and other vehicles that would

characterize the employee and visitor vehicle travel. The fuel consumption factors are derived based on the regional vehicle fleet and aggregate average fuel efficiency. To satisfy CEQA requirements, the operational transportation fuel consumption analysis utilized factors for the 2019 Existing Conditions baseline year that do not account for anticipated future improvements in fuel efficiency. Based on the regional mobile source emissions inventory, the average fuel consumption factors for the operational vehicle trips are approximately 0.039 gallons of gasoline per VMT and 0.0004 gallons of diesel fuel per VMT. Annual VMT data produced by the *Los Angeles Zoo Vision Plan Transportation Assessment*, included as Appendix N of this EIR, were used for the operational transportation fuels calculations. Annual VMT under Existing Conditions and in 2030 and 2040 were multiplied by the fuel consumption factors to estimate annual transportation fuel use.

Energy-Saving Features

The Project would incorporate numerous features that contribute to energy efficiency. Proposed features described in Section 2.0, *Project Description* include, but are not limited to, LEED Silver design standards for new structures, infrastructure, utilities, and landscaping, installation of photovoltaic solar panels providing up to 50 percent of Zoo electricity demand, and provision of electric vehicle (EV) charging stations. The proposed Project also includes a stormwater capture and treatment system that would reduce annual water demand by approximately 35 million gallons, decreasing associated electricity required to supply and distribute water. Additionally, **MM T-2** outlined in Section 3.15, *Transportation* (see also Appendix N) would reduce VMT and associated transportation fuels demand associated with proposed Project operations. These features are addressed qualitatively.

3.5.4 Environmental Impacts Analysis

EN-1:	Would the proposed Project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Energy resource expenditures for the Vision Plan improvements are analyzed for direct, one-time consumption of diesel and gasoline fuels during construction activities, and annual operational energy requirements following the completion of near-term improvements in 2030 and the entirety of the Vision Plan redevelopment in 2040.

Construction

As discussed in detail in Section 2.0, *Project Description*, construction of the proposed Project facilities would be separated into near-term improvements to be completed by 2030 (Phase 1 through Phase 3) and long-term improvements (Phase 4 through Phase 7) to be developed between 2030 and 2040. A greater degree of detail regarding the schedule of improvements and required construction inventories is available for Phase 1 through Phase 3. Given the scope of work to be completed in each Phase—and acknowledging that construction

equipment and vehicle fuel efficiency will improve on average in future years as more stringent emissions standards and newer fleets are introduced—it is anticipated that annual transportation fuel consumption would be higher during the near-term improvements than during the latter 10 years of the Project. CalEEMod was used to prepare the equipment and vehicle inventories for activities comprising Phase 1, Phase 2, and Phase 3 construction described in Table 3.2-6. For equipment, a fuel consumption factor of 0.052 gal/hp-hr was applied to estimate diesel fuel required to power construction equipment throughout the duration of Vision Plan improvements. On-road motor vehicle emissions (i.e., crew vehicles, vendor deliveries, and cut and fill material haul trucks) were estimated based on the CalEEMod output CO_2 emissions and the carbon intensity of diesel fuel (10.21 kg CO_2/gal) and gasoline (8.78 kg CO_2/gal), as described above in Section 3.5.3, *Impact Assessment Methodology*.

As a conservative approach without detailed construction activity information for the 2030–2040 years, it was assumed that transportation fuels consumption during long-term improvements would be equal in magnitude to consumption during the near-term improvements. Table 3.5-2 presents the transportation fuels consumption that would be generated by construction of Phase 1 through Phase 3 during near-term improvements.

Table 3.5-2. Vision Plan Energy Consumption – Construction

Phase	Start Year	End Year	Off-Road Equipment Fuel (Gal Diesel)	On-Road Truck Fuel (Gal Diesel)	On-Road Non-Truck Fuel (Gal Gasoline)
Phase 1	2020	2025	266,275	180,763	56,984
Phase 2	2025	2027	161,108	74,427	26,860
Phase 3	2027	2030	190,647	95,803	31,388
Project Construction Energy Analysis					
Near-Term Improvements Total (Gallons)			618,030	350,933	155,233
Annual Average Consumption			***61,803***	***35,093***	***15,523***
Vision Plan Construction Total (Gallons)			1,230,060	701,886	310,466

As shown in Table 3.5-2, the one-time expenditure of transportation fuels required for construction of the proposed Project would average approximately 96,896 gallons of diesel fuel (61,803 gallons attributed to off-road equipment use and 35,093 attributed to on-road diesel trucks) and 15,523 gallons of gasoline annually. Annual average construction diesel fuel consumption would constitute approximately 0.04 percent of annual Los Angeles County use in 2018 (253 million gallons), and proposed Project gasoline consumption would be equivalent to approximately 0.0004 percent of Los Angeles County demand in 2018 (3,638 million gallons). The incremental increase in annual diesel and gasoline consumption is not considered to be an undue burden on transportation fuel supply. Construction of the

proposed Project would utilize fuel-efficient equipment consistent with state and federal regulations, such as fuel efficiency regulations in accordance with the CARB Pavley Phase II standards, the anti-idling regulation in accordance with Section 2485 in Title 13 of the California Code of Regulations, and fuel requirements in accordance with Section 93115 in Title 17 of the California Code of regulations, and would comply with state measures to reduce the inefficient, wasteful, and unnecessary consumption of energy. Therefore, expenditures of energy resources during construction of the proposed Project would result in a *less than significant impact.*

Operation

Near-Term Project Phases (2030)

As discussed further in Section 3.15, *Transportation,* the Project would expand Zoo capacity and accommodate more attendance over the next 20 years. Under existing conditions, Zoo operations generate between approximately 1,489 to 2,328 daily vehicle trips, depending on the day of the week, which results in approximately 22,189,284 annual VMT. In 2030, implementation of near-term Vision Plan improvements would increase daily vehicle trips to between 2,465 and 3,803, and annual VMT would be approximately 36,278,268, representing an increase of 14,088,984 VMT. Building structure and ancillary facility area served by natural gas lines is expected to increase from 231,914 sf under existing conditions to 436,064 sf under the proposed Project in 2030. Annual natural gas demand would increase to approximately 5,233 MBTU per year, and electricity use under the 2030 proposed Project would be approximately 10,091 MWh/year for general facilities and lighting and an additional 1,918 MWh/year for water resources, for a total of approximately 12,008 MWh/year.

Table 3.5-3 presents the annual operational energy consumption associated with the Project near-term improvements, as well as an estimate of energy consumption under existing conditions, the annual transportation fuel demand during construction activities, and the net change in annual energy use applying 2019 consumption and fuel efficiency factors.

Table 3.5-3. Proposed Near-term Operational Energy Demand: Existing plus Project

Scenario	Electricity (MWh/year)	Natural Gas (MBTU/yr)	Gasoline (Gal/year)	Diesel Fuel (Gal/year)
Operational Consumption				
Vision Plan 2030	12,008	5,233	1,416,296	14,639
Existing Conditions	9,453	2,783	866,265	8,954
Construction Consumption				
Annual Average	-	-	15,523	96,896
Regional Analysis				
Net Annual Change	2,555	2,500	565,554	102,581

Implementation of the near-term improvements would generate a maximum potential annual increase in energy consumption of approximately 2,555 MWh of electricity, 2,500

MBTU of natural gas, 565,554 gallons of gasoline, and 102,581 gallons of diesel fuel after accounting for annual average ongoing construction transportation fuels use. To reiterate, these values represent conservative estimates of annual average energy consumption, and likely overestimate the proposed Project's energy demands that would materialize in 2030. The increase in electricity and natural gas use would not place an undue burden on LADWP or SoCalGas resources, respectively, and would represent a nominal increase above existing demands. The proposed Project gasoline consumption would increase Los Angeles County consumption by approximately 0.016 percent relative to the 2018 baseline, and diesel fuel consumption would increase County consumption by approximately 0.04 percent.

All new and redevelopment activities would be subject to the provisions of the LA Green Building Code, LEED Silver design standards and best management practices, and LA's Green New Deal pertaining to energy efficiency for non-residential buildings. Furthermore, all new structures with rooftop area greater than 250 sf will be considered for the feasibility of solar panel installations. As details on the phasing of solar installation are not available, the associated reductions in energy consumption have not been accounted for in the energy assessment. Ultimately, it is anticipated that the Project would reduce facility electricity demand by up to 50 percent through the incorporation of photovoltaic solar panels producing on-site renewable energy. Overall, the Project in 2030 would not result in a wasteful, inefficient, or excessive expenditure of energy resources and this impact would be *less than significant.*

Long-Term Project Phases (2040)

In 2040, implementation of long-term Vision Plan improvements would increase daily vehicle trips to between 2,673 and 4,095, and annual VMT would be approximately 39,084,812, representing an annual increase of 16,895,528 VMT. Based on the average fuel consumption factors, the operational vehicle trips are approximately 0.039 gallons of gasoline per VMT and 0.0004 gallons of diesel fuel per VMT. Building structure and ancillary facility area served by natural gas lines is expected to increase from 231,914 sf under existing conditions to 441,314 sf under the proposed Project in 2040. Annual natural gas demand would increase to approximately 5,296 MBTU per year, and electricity use under the 2040 proposed Project would be approximately 10,786 MWh/year for general facilities and lighting and an additional 2,073 MWh/year for water resources, for a total of approximately 12,860 MWh/year. Installation of the stormwater capture and treatment system is anticipated to reduce potable water demand by approximately 35 MMgal (24 percent) annually, which is feasible to quantify in the analysis of energy demand reductions.

Table 3.5-4 presents the annual operational energy consumption associated with the Project long-term improvements, as well as an estimate of energy consumption under existing conditions, and the net change in annual energy use applying 2019 consumption and fuel efficiency factors.

Table 3.5-4. Proposed Long-term Operational Energy Demand: Existing plus Project

Scenario	Electricity (MWh/year)	Natural Gas (MBTU/yr)	Gasoline (Gal/year)	Diesel Fuel (Gal/year)
Operational Consumption				
Vision Plan 2040	12,860	5,296	1,525,863	15,771
Existing Conditions	9,453	2,783	866,265	8,954
Regional Analysis				
Net Annual Change	3,407	2,513	659,598	6,817

The Project in 2040 would generate a maximum potential annual increase in energy consumption of approximately 3,407 MWh of electricity, 2,513 MBTU of natural gas, 659,598 gallons of gasoline, and 6,817 gallons of diesel fuel. To reiterate, these values represent conservative estimates of annual average energy consumption, and likely overestimate the proposed Project's energy demands that would materialize in 2040. As an example, the stormwater capture and treatment system would reduce electricity associated with water conveyance by approximately 24 percent. The increase in electricity and natural gas use presented in Table 3.5-4 would not place an undue burden on LADWP or SoCalGas resources, respectively, and would represent a nominal increase above existing demands. The proposed Project gasoline consumption would increase Los Angeles County consumption by approximately 0.018 percent relative to the 2018 baseline, and diesel fuel consumption would increase County consumption by approximately 0.003 percent.

All new and redevelopment activities would be subject to the provisions of the LA Green Building Code, LEED Silver design standards and best management practices, and LA's Green New Deal (Sustainable City pLAn 2019) pertaining to energy efficiency for non-residential buildings. Furthermore, all new structures with rooftop area greater than 250 sf would be considered for the feasibility of solar panel installations. As details on the phasing of solar installation are not available, the associated reductions in energy consumption have not been accounted for in the energy assessment. Ultimately, the Project would reduce facility electricity demand by up to 50 percent through the incorporation of photovoltaic solar panels producing on-site renewable energy. Overall, the Project in 2040 would not result in a wasteful, inefficient, or excessive expenditure of energy resources and this impact would be *less than significant*.

EN-2: Would the proposed Project Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

The Project may cause a significant environmental impact if it would conflict with applicable statewide or regional plans, policies, or regulations adopted to expand renewable energy resource infrastructure or achieve energy efficiency targets. As described in the regulatory framework, a robust set of regulations are in place pertaining to renewable energy and energy efficiency, as well as transportation fuel consumption. For the proposed Project—which is a 20-year master plan improvements project for regional attraction—this analysis considers the

proposed Project's consistency with the following renewable energy and energy efficiency initiatives:

- Statewide regulations requiring the expansion of the RPS to 60 percent by the end of 2030 as mandated by SB 100, updating the SB 350 target of 50 percent renewable energy supply by 2030;
- California Title 24 Standards and California Green Building Code;
- The 2017 LADWP and City SLTRP, which accelerates RPS to 50 percent by 2025, 55 percent by 2030, and 65 percent by 2036, and doubling of energy efficiency from 2017 through 2027; and,
- LA's Green New Deal (Sustainable City pLAn 2019).

The Project and associated energy use are evaluated in the context of outlined strategies and objectives that are critical components of achieving the mandated reduction targets in each of the regulations, plans, and policies above.

Project Energy-Saving Design Features

The Project would enhance and revitalize Zoo facilities over a 20-year timespan. The proposed Vision Plan improvements would include numerous best management practices (BMPs), design features, and other elements that would diminish energy resource demand relative to the unmitigated operational emissions presented in Tables 3.2-14 through 3.2-17. Staged utility and infrastructure improvements would be implemented over the 20-year project horizon to replace and upgrade aging systems, serve anticipated growth in visitation through approximately 2040, substantially improve water and energy conservation, and reduce maintenance costs and resource demands. Such improvements are anticipated to include major upgrades to stormwater conveyance, onsite storage, and recycling through onsite treatment and retention of stormwater runoff, which would allow onsite reuse onsite or permit release of treated water to the Los Angeles River. Major electrical energy initiatives would include generation of substantial electrical energy onsite, installation of photovoltaic solar panels, increased efficiency through use of LEED construction, and visitor space environmental climate controls. The Project includes improvements to water delivery systems, wastewater collection, and new restrooms. The proposed Project is characterized by the following features that would reduce energy consumption:

Energy

Project design features that would reduce facility energy consumption are listed below.

Building Energy

Throughout all phases of the Project, new structures, infrastructures, utilities, and landscaping would meet the LEED Silver standards of design or better, including all Visitor Centers, to ensure energy- and resource-efficient structures. All renovated and new structures

will be outfitted with reduced-flow plumbing fixtures and energy efficient appliances (i.e., restaurant facilities) and comply with all provisions of the Los Angeles Green Building Code.

Alternative Energy

In addition to the LADWP's independent solar installation project[1] (separate from the proposed Project; refer to Section 3.18, *Cumulative Impacts*), the Vision Plan would include installation of up to 70,000 sf (1.6 acres) of solar panels on several buildings and structures throughout the Zoo campus. The Zoo's entire photovoltaic system would cover approximately 232,000 sf of rooftops and produce up to 50 percent of the Zoo's total energy use, or a substantial portion of the increases in power demand. The proposed Project solar installations would reduce electricity consumption by up to 50 percent.

Lighting

Intersection improvements at I-5 and Western Heritage Way would install a signalized intersection with LED traffic lights. Parking lot improvements would install high-efficiency outdoor lighting throughout Zoo parking facilities. All new lighting within building structures will be ensured to meet LEED Silver or equivalent standards.

Water

Water Supply

The proposed Project would implement a stormwater treatment system with capacity up to capture and reuse 35 million gallons of stormwater annually, reducing potable water demand and associated energy to supply water by approximately 24 percent. The stormwater capture cisterns would be installed with an end goal of capturing 80 percent of onsite stormwater for treatment and reuse onsite or release to the Los Angeles River.

Water Use

The Zoo currently uses approximately 11.5 million gallons of recycled water annually for parking lot irrigation. The recycled water consumption with the Project would increase to approximately 25.9 million gallons in 2040. Expanding recycled water use minimizes electricity to provide water to the proposed Project.

Transportation

Proposed Project design features that would reduce transportation source fuel consumption in accordance with SB 375 are listed below.

[1] LADWP is currently pursuing plans to install approximately 163,000 sf of solar panels at the Zoo, including 149,000 sf of solar panels on carports in the Zoo's north parking lot and 14,000 sf of solar panels on rooftops within the Zoo entry. This separate project would be completed prior to commencement of the proposed Project.

Pedestrian Improvements and Active Transportation

Under the proposed Project, Western Heritage Way/Crystal Springs Drive would be realigned to the southern perimeter of the parking lots for efficiency and safety, creating a unified guest parking lot, and reducing pedestrian street crossings. This would more strongly link existing parking spaces and the North Hollywood High School Zoo Magnet Center to the main Zoo campus, eliminating the need for Zoo visitors to cross this busy street.

The Zoo would encourage bicycle and pedestrian travel from neighboring communities by coordinating with Los Angeles Department of Transportation (LADOT) to ensure that new bicycle and pedestrian linkages are well-signed and safe, providing convenient bicycle parking adjacent to the Zoo entrance, providing a bike share station at the Zoo, and providing measurable incentives to visitors and employees to walk or bike to the Zoo.

Site Enhancement and Traffic Calming

The proposed Project would consolidate service and functional areas of the Zoo to one location, and the Zoo would have the space to include enlarged service and food storage areas for more efficient bulk purchasing, thereby reducing annual vendor deliveries and internal circulation congestion.

Transit Access Improvements

The proposed realignment of Western Heritage Way/Crystal Springs Drive would also allow the Zoo's southbound bus stop to be moved to Western Heritage Way between the Zoo and Autry Museum of the American West, improving the efficiency of public transportation access to these attractions.

Parking Policy

The expansion of the EV and ZEV infrastructure is a critical component to incentivizing alternative fuel vehicle use. The Zoo administration and facilities buildings would have EV charging stations. A minimum of two stations shall be provided for each designated parking area of Zoo vehicles.

Construction

Construction activities will comply with the provisions of the CARB Airborne Toxic Control Measure to limit idling of diesel-fueled commercial motor vehicles to not more than five minutes at any location, including when queuing within 100 feet of sensitive receptors. Reducing idling and ensuring that equipment and vehicles are regularly inspected and maintained to manufacturer specifications would reduce energy use from those sources. Additionally, construction of the proposed Project will use LEED Silver construction techniques outlined in the Sustainable City pLAn to meet the 80 percent construction and demolition waste recycling requirements. Additionally, the installation of electronic communications lines to automatically control exhibit utilities and environmental conditions would further reduce potential future demand.

Project Consistency with Statewide, Regional, and Local Energy Initiatives

Table 3.5-5 provides a topical overview of the statewide consistency analysis, organized by the applicable plan source category or strategy.

Table 3.5-5. Vision Plan Consistency with Statewide Energy Initiatives

Objective or Strategy	Relationship to Project
SB 350 increases the Renewable Portfolio Standard for California's renewable electricity procurement requirement from 33 percent in 2020 to 50 percent by 2030. SB 100 accelerated the 2030 target to 60 percent renewable energy by the end of the year.	Consistent. The proposed Project would not interfere with statewide initiatives to increase renewable energy production from public utilities and would implement up to 70,000 sf of solar panels for on-site renewable energy generation to reduce LADWP demand. Additionally, LADWP is separately outfitting the Zoo with approximately 163,000 sf of solar panels which would be completed prior to the commencement of the Vision Plan (see Section 3.18, *Cumulative Impacts*).
SB 350 mandates that state achieve cumulative doubling in energy efficiency savings in electricity and natural gas end uses by 2030.	Consistent. The proposed Project would remove outdated building structures and facilities that would be replaced by buildings meeting LEED Silver or equivalent energy efficiency. All end uses within Zoo facilities would at a minimum comply with the most recent applicable Title 24 energy efficiency standards, currently 2019. The Vision Plan would not interfere with SB 350 goals to double energy efficiency savings by 2030.
Implement Mobile Source Strategy requiring at least 4.2 million zero-emission and plug-in hybrid vehicles by 2030.	Consistent. The proposed Project would not interfere with zero-emission and plug-in hybrid vehicle production or sales. The Vision Plan would include EV charging stations at all new facility buildings to encourage the use of electric vehicles, which would expand the EV infrastructure.
Implement California Sustainable Freight Action Plan to improve freight system efficiency; increase near-zero emission fleet.	Consistent. The Project would not conflict with the California Sustainable Freight Action Plan; Vision plan improvements would enhance the circulation network and consolidate commercial deliveries to one central location, increasing operational efficiency.

Table 3.5-6 presents the consistency analysis for the proposed Project in the context of regional plans and policies to reduce energy consumption. The evaluation focuses on consistency with elements of the SCAG RTP/SCS, which was derived to comply with SB 375 and determined to contain sufficient targets to meet statewide emissions reduction goals associated with regional transportation planning. These goals are also correlated to improving energy efficiency and reducing the consumption of transportation fuels.

Table 3.5-6. Vision Plan Consistency with Regional Energy Initiatives

Objective or Strategy	Relationship to Project
SB 375 and SCAG 2016–2040 RTP/SCS	
Focus new growth around transit, develop livable corridors, and provide more options for short trips.	Consistent. The proposed Project would not introduce a new land use development outside of a high-quality transit area, nor would it impede the development of livable corridors throughout the local communities. Vision Plan improvements would be limited to Griffith Park and the immediate surrounding roadway circulation network. The Project would provide additional bicycle parking to encourage local trips and would enhance pedestrian access and safety to the Zoo from the parking lots and surrounding uses (i.e., Zoo Magnet School, Autry Museum of the American West).
Preserve and improve our current system, manage congestion, and promote safety and security and active transportation.	Consistent. The Project would not cause any deterioration to the existing roadway system. Reconfiguration of the parking lot and Western Heritage Way would improve internal circulation and site accessibility, as well as pedestrian safety and active transportation accommodations through bicycle parking.
Implement Transportation Demand Management	Consistent. As discussed in Section 3.15, *Transportation*, with implementation of **MM T-2**, the Zoo would implement a comprehensive Transportation Demand Management (TDM) Program to provide trip reduction strategies for Zoo visitors and employees. The TDM Program will include establishment of a measurable and replicable approach to developing a transit mode share baseline and establishment of protocols for regular and longitudinal mode share monitoring. The Zoo will monitor mode share to and amend, maintain, or grow mode transit and non-motorized mode share, develop appropriate transit and bike-oriented incentives to reach mode-share goals, promote transit and alternative mode transportation to the Zoo, develop effective marketing tools to advertise transit availability and incentives. Ultimately, through a series of incentive programs, employee VMT may be reduced by up to 10 percent. With implementation of **MM T-2**, visitor VMT would also be reduced below projected conditions.
Implement variable parking pricing to discourage single-occupancy vehicle trips.	Consistent. As discussed in Section 3.15, *Transportation*, with implementation of **MM T-2**, a comprehensive TDM Program to provide trip reduction strategies for Zoo visitors and employees, which may include a Paid Parking Program as one strategy to discourage personal vehicle trips to the Zoo to meet the goal of reducing the Zoo's projected visitor-based VMT.
Expand electric vehicle infrastructure to reduce reliance on fossil fuels.	Consistent. The proposed Project would provide EV charging infrastructure and parking accommodations within visitor and employee parking lots, consistent with City required ratios at the time of construction.
Achieve 19 percent reduction in per-capita GHG emissions from passenger vehicles throughout the SCAG region by 2035.	Consistent. The Project would not change land use patterns or introduce a new source of vehicle trips to the SCAG region. Per-capita VMT for visitors and employees would remain unchanged or decrease marginally relative to existing conditions due to incentive programs. The SCAG staff determined that the 2020 RTP/SCS would be consistent with the SB 375 reduction goals. The proposed Project would not conflict with regional objectives to reduce per-capita GHG emissions from passenger vehicles.

Table 3.5-6. Vision Plan Consistency with Regional Energy Initiatives (Continued)

Objective or Strategy	Relationship to Project
Actively encourage and create incentives for energy efficiency, where possible.	Consistent. The Vision Plan proposes use of LEED Silver construction techniques, up to 70,000 square feet of solar photovoltaic panels, and electronic communications lines to automatically control exhibits utilities and environmental conditions to reduce power demand. The Project would also guide redevelopment of outdated Zoo facilities that do not currently meeting existing energy and building codes (e.g., California's Green Building Standard Code).

Table 3.5-7 presents the consistency analysis for the proposed Project in the context of local City regulations.

Table 3.5-7. Vision Plan Consistency with City Energy Programs and Policies

Objective or Strategy	Relationship to Project
City of Los Angeles General Plan	
Air Quality Element	
Policy 5.1.2. Effect a reduction in energy consumption and shift to non-polluting sources of energy in its buildings and operations.	Consistent. The Vision Plan proposes use of LEED Silver construction techniques, up to 70,000 square feet of solar photovoltaic panels with the goal of providing up to 50 percent of the Zoo's energy demand, and electronic communications lines to automatically control exhibits utilities and environmental conditions to reduce power demand. The Project would also guide redevelopment of outdated Zoo facilities that do not currently meeting existing energy and building codes (e.g., California's Green Building Standard Code).
Policy 5.1.4. Reduce energy consumption and associated air emissions by encouraging waste reduction and recycling.	Consistent. The City currently recycles and would continue to recycle applicable waste under operation of the Vision Plan. The Zoo would also continue "Zoo Doo" operations associated with the Griffith Park Composting Facility to recycle animal bedding (i.e., hay) and waste. The Zoo would continue to be a source for food waste diversion, working with World Harvest to use appropriate and quality food waste for animal feed, thereby preventing landfill disposal.
Conservation Element	
Section 13 Policy 1. Continue striving to meet the city's water, power, and other needs while at the same time striving to be a good steward of natural resources and minimizing impacts on the environment.	Consistent. As discussed above and in Section 3.6, *Urban Forestry Resources*, Section 3.8, *Recreation*, Section 3.10, *Hydrology and Water Quality*, Section 3.13, *Public Services*, Section 3.15, *Transportation*, and Section 3.16, *Utilities*, proposed utilities would be resource-efficient, including onsite solar energy collectors and stormwater treatment facilities, to ensure that resources and services provided by the City would be sufficient to address growth in demand while minimizing potential impacts on the environment. For example, the Project would provide up to 70,000 square feet of solar photovoltaic panels to generate solar energy and reduce the Zoo's energy consumption, while required mitigation measures **MM T-2** identified in Section 3.15, *Transportation* would increase opportunities for alternative transportation to reduce VMT and fuel energy demands.

Table 3.5-7. Vision Plan Consistency with City Energy Programs and Policies (Continued)

Objective or Strategy	Relationship to Project
Section 19 Policy 1. Continue to encourage energy conservation and petroleum product reuse.	Consistent. The Vision Plan would guide redevelopment of outdated Zoo facilities that do not currently meeting existing energy and building codes. Project implementation would ensure all new development at the Zoo complies with all applicable state and local building codes. Additional improvements across all phases include the installation of electronic communications lines to automatically control exhibit utilities and environmental conditions, further reducing future utility demand.
Hollywood Community Plan	
Other Public Facilities	
Policy 2. That new equipment for public facilities be energy efficient.	Consistent. The Vision Plan proposes use of LEED Silver construction techniques, solar photovoltaic panels, and electronic communications lines to automatically control exhibits utilities and environmental conditions to reduce power demand.
Griffith Park Vision Plan	
Sustainable Design Principles. Sustainable design principles should be applied throughout the Park to all aspects of additions and restoration, repairs, and maintenance, including building orientation, design and materials, and site design issues such as planting and native plant restoration, habitat enhancement, storm water management and watershed connections to the Los Angeles River (Page 52).	Consistent. The Vision Plan proposes use of LEED Silver construction techniques, up to 70,000 square feet of solar photovoltaic panels, and electronic communications lines to automatically control exhibits utilities and environmental conditions to reduce power demand. The Project would also guide redevelopment of outdated Zoo facilities that do not currently meeting existing energy and building codes (e.g., California's Green Building Standard Code). The Project would install a comprehensive subterranean stormwater collection and treatment system, including five underground cisterns, that would allow for capture and reuse of runoff in Zoo landscaping. The Project would continue to treat all runoff through existing water treatment facilities prior to discharge to the Los Angeles River. Refer to Section 3.10, *Hydrology and Water Quality*.
Sustainable Design Principles. Consistent with sustainable design principles and the Urban Wilderness Identity, materials used should be low-maintenance, durable, and vandal-resistant. Whenever possible, previously used and recycled materials should be used. Improvements should comply with the energy efficiency requirements found in Title 24 of the California Code of Regulations (Page 52).	Consistent. The Vision Plan proposes use of LEED Silver construction techniques, up to 70,000 square feet of solar photovoltaic panels, and electronic communications lines to automatically control exhibits utilities and environmental conditions to reduce power demand. The Project would also guide redevelopment of outdated Zoo facilities that do not currently meeting existing energy and building codes (e.g., California's Green Building Standard Code). The Project would balance soils onsite to the extent feasible to minimize import of new materials during excavation.

Table 3.5-7. Vision Plan Consistency with City Energy Programs and Policies (Continued)

Objective or Strategy	Relationship to Project
Sustainable City pLAn and Green New Deal (2015 & 2019)	
Reduce potable water use per capita by 22.5 percent by 2025; 25 percent by 2035; and maintain or reduce 2035 per capita water use through 2050.	Consistent. The Project would incorporate a stormwater capture and treatment system to reduce potable water use and associated energy demand by approximately 24 percent. Additional water conservation strategies would include plumbing connections and fixtures and appliances to comply with the provisions of the Los Angeles Green Building Code related to water flow controls. The proposed Project would be consistent with per-capita water potable water reductions.
All new buildings will be net zero carbon by 2030 and 100 percent of buildings will be net zero carbon by 2050.	Consistent. All new buildings constructed in the long-term improvements of the Vision Plan shall comply with the net-zero carbon standards promulgated by the LA Green New Deal.
Increase the percentage of electric and zero emission vehicles in the city to 25 percent by 2025; 80 percent by 2035; and 100 percent by 2050.	Consistent. The Project would not interfere with the desired expansion of the electric and zero emission vehicle fleet throughout the City. The Vision Plan would provide EV charging infrastructure to encourage the use of such vehicles.
Make key upgrades to transmission and distribution systems, substations, and other equipment to enable renewable energy integration into the electricity grid.	Consistent. The proposed Project would provide up to 70,000 square feet of solar photovoltaic panels to generate solar energy and reduce the Zoo's energy consumption by up to 50 percent.
2017 City and LADWP SLTRP	
Increase RPS to 50 percent by 2025, 55 percent by 2030, and 65 percent by 2036, and double energy efficiency from 2017 through 2027.	Consistent. The Project would include up to 70,000 sf of solar panels, providing up to 50 percent of the Zoo's energy. The proposed Project would not interfere with the 2017 SLTRP RPS targets and would provide renewable energy infrastructure to reduce demand on the LADWP system.
Increase local solar energy capacity to 900 MW by 2025 and 1,500 MW by 2035.	Consistent. The Project would include up to 70,000 sf of solar panels providing local solar energy.
Increase local energy storage to 404 MW by 2025 to integrate renewable sources.	Consistent. The Project would not impede local energy storage and would generate energy from installation of 70,000 sf of solar panels onsite.

The proposed Project would not interfere with any statewide, regional, or local initiatives to expand renewable energy supply or improve energy efficiency. The proposed Project would be consistent with the stringent provisions of the LA Green Building Code and LEED Silver design standards and best management practices and would contribute to the expansion of renewable energy infrastructure by installing 70,000 sf of rooftop solar panels. Additionally, the proposed Project would enhance transportation sustainability by providing a more efficient internal circulation network for patrons, employees, and vendors, providing high efficacy outdoor lighting throughout the Zoo property and in the parking lots and parking structure, and improving pedestrian and bicyclist safety and public transit accessibility along

Western Heritage Way by roadway reconfigurations and signalizing the intersection of Zoo Drive and Western Heritage Way. However, implementation of the proposed Project has potential to conflict with regional plans and policies governing transportation energy initiatives due to the substantial increase in annual Zoo visitation and VMT generated by new Zoo visitors and employees. **MM T-2** would ensure consistency with these plans and policies by requiring the Zoo implement a TDM Program to reduce single occupancy vehicle trips to the Zoo, thereby reducing demand for transportation fuels. Therefore, with implementation of these measures, the proposed Project would not conflict with any applicable plan, policy, or regulation adopted for the purpose of expanding renewable energy or improving energy efficiency and impacts would be l*ess than significant with mitigation.*

3.5.5 Mitigation Measures

MM T-2 would apply.

3.5.6 Impacts Summary

The proposed Project would not generate substantial new demand for electricity or natural gas supplies or result in the wasteful or inefficient use of these resources. With implementation of **MM T-2** a, the proposed Project would be consistent with statewide, regional, and local policies, objectives, and strategies governing the consumption of energy supplies, particularly transportation fuels. As such, impacts to consumption and conservation of energy resources would be *less than significant*. Therefore, significant unavoidable adverse impacts would not occur.

3.6 URBAN FORESTRY RESOURCES

The Project site supports thousands of trees contributing to the urban forest of the City and Griffith Park. Within the Zoo, there are at least 167 individual trees and 85 individual shrubs which are protected or proposed for protection under local ordinance. The proposed Project has potential to result in removal or disturbance of mature trees and the established urban canopy. Extensive replanting of trees and shrubs as part of future landscaping would to restore urban tree canopy within the Zoo over time. In addition, mitigation requiring the preservation, relocation, or replacement of protected trees and shrubs at a 4:1 ratio would reduce adverse effects of the proposed Project. With implementation of mitigation measures MM UF-1 and MM UF-2, impacts to urban forestry resources would be less than significant.

This section describes existing urban forest resources at the Los Angeles Zoo (Zoo) and analyzes the potential for impacts related to the loss or disturbance of important or protected trees and urban forest resources that could result from implementation of the proposed Zoo Vision Plan (Project) in the City of Los Angeles (City). There are no forestry resources at the Zoo or in the vicinity, per the California Environmental Quality Act (CEQA). However, there are urban forest resources. Urban forestry resources are defined as individual trees or tree canopies that provide physical, social, economic, or aesthetic value to the surrounding urban community ecosystem. Per City regulations, the following species are considered urban forest resources, as further described herein: [1]

- Oak trees, including valley oak (*Quercus lobate*) and California live oak (*Quercus agrifolia*), or any other tree of the oak genus indigenous to California but excluding the scrub oak (*Quercus dumosa*)
- Southern California black walnut (*Juglans californica* var. *californica*)
- Western sycamore (*Platanus racemose*)
- California bay (Umbellularia californica).
- Mexican elderberry (*Sambucus mexicana*)
- Toyon (Heteromeles arbutifolia).

Southern California black walnut sprouts surround an approximately 15-inch diameter stump on the undeveloped hillside in the Africa planning area. Past vegetation clearance involved cutting down potentially significant trees.

[1] Mexican elderberry and toyon are native shrubs that support the urban forest in a manner similar to trees. As such, these additional species are referred to as "potential protected shrubs" and considered urban forest resources.

In addition, individual specimen trees are considered "important trees" and considered urban forest resources in this analysis when their location, size, stature, health, uniqueness, desirability, and shade cover provide significant urban forest value either visually or as a source of carbon sequestration. The definition of important trees applies to both native or ornamental landscaped trees within the Zoo that provide urban forestry values such as Moreton Bay fig (*Ficus macrophylla*) but excludes trees which are considered nuisance or less-valued within the Zoo, such as eucalyptus and palm trees.

3.6.1 Environmental Setting

Regulatory Setting

No federal regulations apply to the Zoo's urban forestry resources.

State Regulations

California Native Plant Society

The California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants is a widely recognized database that directly guides rare plant protection, conservation planning, and land acquisition and management in California. CNPS published the first edition of its Inventory of Rare and Endangered Plants in 1974 and published its last print edition (V. 6) in 2001. In 2001, the Inventory switched to being online (V. 7) and is currently in its 8th edition. This Inventory focuses on plants that are native to and rare in California. A very small number of plants that are still somewhat common in California are included because they are in decline and face further immediate threats. The CNPS ranking system includes the following plant ranks and threat ranks:

Plant Ranks

- California Rare Plant Rank 1A: Plants presumed extirpated in California and either rare or extinct elsewhere
- California Rare Plant Rank 1B: Plants rare, threatened, or endangered in California and elsewhere
- California Rare Plant Rank 2A: Plants presumed extirpated in California but common elsewhere
- California Rare Plant Rank 2B: Plants rare, threatened, or endangered in California but more common elsewhere
- California Rare Plant Rank 3: Review List: Plants about which more information is needed
- California Rare Plant Rank 4: Watch List: Plants of limited distribution

Threat Ranks

- 0.1-Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)

- 0.2-Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
- 0.3-Not very threatened in California (less than 20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

The Southern California black walnut is designated on the CNPS Inventory of Rare and Endangered Plants with a rating of 4.2.

Local Regulations

City of Los Angeles Tree Preservation Ordinance

City Ordinance No. 177404 constitutes the City's Tree Preservation Ordinance, which aims to secure the preservation and sustain the health of native Southern California tree species recognized for their ecological and cultural value. This ordinance regulates the protection, removal, and replacement of trees deemed to be protected by the City, which include the following four native Southern California tree species measuring four inches or more in cumulative diameter at four and one-half feet above the ground level at the base of the tree:

- Oak trees, including valley oak (*Quercus lobate*) and California live oak (*Quercus agrifolia*), or any other tree of the oak genus indigenous to California but excluding the scrub oak (*Quercus dumosa*)
- Southern California black walnut (*Juglans californica* var. *californica*)
- Western sycamore (*Platanus racemose*)
- California bay (Umbellularia californica)

All trees meeting the criteria above are protected trees and removal or relocation would require a permit from the Board of Public Works and replacement of each tree removed by a ratio of at least 2:1. A protected tree report is required to be submitted to the Board of Public Works to apply for a tree removal permit and must contain the required information listed in the City's Standard Tree Removal Application Checklist.

In January of 2017, a Protected Tree Code Amendment was proposed to the City to amend the existing Tree Preservation Ordinance and expand the definition of "Protected Tree" to include the Mexican elderberry (*Sambucus mexicana*) and toyon (*Heteromeles arbutifolia*) shrubs. Under the proposed amendment, the defined term "Protected Tree" would be changed to "Protected Tree or Shrub" to accommodate addition of these two shrubs. Further, the proposed amendment would increase the current replacement requirement from a ratio of 2:1 to 4:1.

City of Los Angeles Policies for the Installation and Preservation of Landscaping and Trees on Public Property

This policy was established in 1971 to establish measures for providing the maximum quantities of trees and other vegetation on public property to provide functional, ecological, aesthetic, and sociological benefits. All proposed improvement projects shall be planned to

provide the optimum tree cover and landscaping required for conformance to these general objectives. This applies to all improvement projects undertaken by the City, or by other public agencies or the private sector within the City. The policy requires all improvement projects to include a maximum number of trees and other vegetation, identifies who will be financially responsible for the improvements, and establishes who will prepare plans for the work and maintain the trees and vegetation. The policy identifies how removal of public trees and vegetation should be approached, including the investigation of alternatives to salvage trees before approval of removing existing trees.

Other Local Regulations

In addition to the above City regulations, the following policies, while not applicable to the Zoo, were used in this report to guide development of thresholds, impacts, and mitigations for the Zoo's urban forestry resources.

City of Los Angeles Department of Recreation and Parks Tree Preservation Policy

The Zoo is located within Griffith Park, which is managed by the City of Los Angeles Department of Recreation and Parks (RAP). While RAP does not manage the Zoo, the existing RAP Tree Preservation Policy may be applicable as a guiding document regarding management of the Zoo's urban forest. The RAP Tree Preservation Policy is a regulatory tool that provides additional protections to urban forest trees within parks beyond the protections regulated by the City's Tree Preservation Ordinance outlined in Ordinance No. 177404. In addition to the trees protected by the City's Tree Preservation Ordinance, RAP's Tree Preservation Policy regulates protection of trees in four categories: Trees Protected by LA City Ordinances, Heritage, Special Habitat Value, and Common Park trees. The definitions for Heritage, Special Habitat Value, and Common Park trees are as follows:

- **Heritage** trees are individual trees of any size or species that are specifically designated as heritage because of their historical, commemorative, or horticultural significance. Heritage trees are protected trees. The list of Heritage trees can be obtained from RAP Griffith Maintenance/Forestry Division. Before a Heritage tree is pruned, damaged, relocated, or removed, recommendations from RAP staff arborists must be obtained. The Forestry Arborist makes a recommendation to the General Manager for removal. The General Manager or designee must make the final approval before the tree can be removed.
- **Special Habitat Value** trees are protected trees and include big leaf maple (*Acer macrophyllum*), boxelder (*Acer negundo*), toyon (*Heteromeles arbutifolia*), Southern California black walnut, Northern California black walnut (*Juglans hindsii*), California sycamore (*Platanus racemosa*), hollyleaf cherry (*Prunus ilicifolia*), Catalina cherry (*Prunus lyonii*), Fremont cottonwood (*Populus fremontii*), black cottonwood (*Populus trichocarpa*), sandbar willow (*Salix exigua*), red willow (*Salix laevigata*), Pacific willow (*Salix lasiandra*), arroyo willow (*Salix lasiolepis*), and California bay (*Umbellularia californica*). Before a Special Habitat Value tree is pruned, damaged,

relocated, or removed, recommendations from RAP staff arborists must be obtained. The Forestry Arborist makes a recommendation to the General Manager for removal. The General Manager or designee must make the final approval before the tree can be removed.

- **Common Park** trees provide aesthetic, sentimental, economical, and/or environmental value. Every tree in City parks is recognized as a valuable asset and must be protected. The Forestry Arborist may recommend removal.

Similar to the City's Tree Preservation Ordinance, RAP's Tree Preservation Policy requires the Board of Public Works provide recommendations and a permit before any alterations to trees protected by City ordinances are made that may cause them to be damaged, relocated, or removed. For large scale tree removal projects on RAP-managed lands, the Griffith Maintenance/Forestry Division must follow established Notification Protocol when informing the public, local government officials, organizations, and department representatives. Removal of trees under RAP's Tree Preservation Policy requires mitigation, including replacement in accordance with the ordinance ratios. Coordination with and authorization from RAP's Urban Forestry Division is required. While these regulatory requirements and permits would not directly apply to the Zoo, they are used in this report to provide guidance on development of thresholds.

City of Los Angeles Department of Recreation and Parks Urban Forest Program

The Zoo is located within Griffith Park, which is managed by RAP. While RAP does not manage the Zoo, the existing Urban Forest Program may be applicable as a guiding document regarding management of the Zoo's urban forest. RAP recognizes and implements regulatory procedures for trees specified in the Tree Preservation Policy with the intention of promoting the health and sustainability of the City's urban forest. The guidelines known as the Urban Forest Program have been developed and approved as a policy of RAP. The Urban Forest Program provides an accompanying Tree Care Manual which establishes specific technical regulation, standards, and specifications necessary to implement the RAP Tree Preservation Policy. The manual provides general tree care and maintenance guidelines as well as policy regarding tree protection, preservation, and removal during construction. RAP also includes a reforestation program to guide the planting of trees at local parks during the coming decade. The Los Angeles City Landscape Policy guides tree replacement. While this Program would not directly apply to the Zoo, its tenets are used in this report to provide guidance on development of thresholds.

Existing Setting

Urban forests are composed of both planted and naturally generated trees within urban areas. An urban forest comprises trees along streets, in parks, on residential property, and in other land uses within the urban environment. Urban forests also relate to various ecosystem components and benefits that accompany trees, such as soils, understory vegetation, and habitat values for local and migrant species, as well as to native species that may be protected

or sensitive (City of Los Angeles 2019). Benefits of a healthy urban forest include provision of shade and heat reduction, increased attractiveness of outdoor activities with associated benefits to human health and well-being, air quality, water resources, and improved rainwater capture. The City has identified its urban forest as a valuable resource providing environmental and economic services essential to the support of healthy and vibrant communities (Dudek 2018).

Existing tree cover and canopies within the City provide valuable urban forestry resources. Trees in urban settings are often isolated or in small groups and have localized ecological and aesthetic value, but continuous tree canopies are particularly valuable and provide greater visual relief, shade, and heat reduction than individual trees. Benefits provided by tree canopies across urban settings include heightened aesthetic character and visual relief, and habitat for urban and migratory species. Tree canopies also help negate urban heating by providing shady cover and blocking heat from being absorbed and retained by concrete or asphalt, thereby reducing temperatures and energy consumption in developed urban areas. The presence of trees in a metropolitan area also contributes to cleaner air, water, and improved rainwater capture and support atmospheric carbon sequestration. Urban forests can also contribute to less observable benefits such as improved public and mental health. Economic benefits attributed to urban forestry include supporting thousands of jobs resulting in billions in income and increasing revenue in business districts since shoppers will spend 9 percent to 12 percent more for goods and services in business districts having high quality tree canopy (Dudek 2018). Trees provide these same benefits for the Zoo, including visual quality and an environment conducive to attracting visitors of all ages.

The City and Project area do not contain forest land as defined in Public Resources Code (PRC) Section 12220(g), timberland as defined by PRC Section 4526), or land zoned for Timberland Production as defined by Government Code Section 51104(g) which are protected under California Environmental Quality Act (CEQA) guidelines. Existing tree cover and canopies in the Zoo provide valuable urban forestry resources, which the City has identified as valuable resources providing environmental and economic services essential to the support of healthy and vibrant communities. As such, this analysis applies to urban forestry resources, as defined below.

Regional Setting

The Los Angeles area is a largely urbanized region with an uneven distribution of tree canopy between different neighborhoods and regions. Tree City USA, a national recognition program sponsored by the Arbor Day Foundation in partnership with the U.S. Forest Service and National Association of State Foresters, recognizes the City and the bordering cities of Glendale and Burbank as holding Tree City USA status, achieved through forming of a tree board or department, implementing a tree care ordinance, establishing a community forestry program with an annual budget of at least $2 per capita, and participating in the celebration of Arbor Day (Tree People 2019).

Griffith Park provides hundreds of acres of open space and tree canopy within the largely urbanized metropolis of Los Angeles.

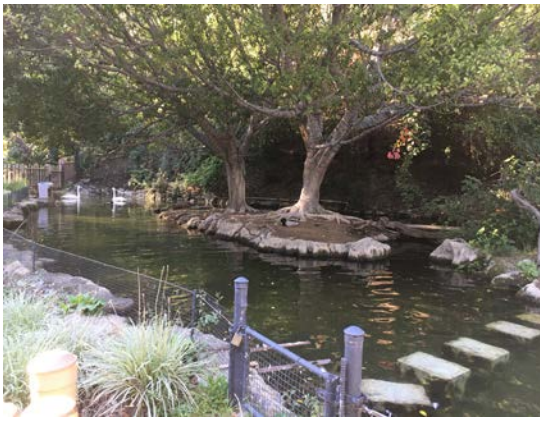
Approximately 18 percent of Los Angeles County land and 25 percent of the City's land is covered by tree canopy, defined as the area of branches, stems, and leaves that cover the ground when viewed from above using aerial satellite imagery (Tree People 2019). However, as noted above, the existing tree canopy is not evenly distributed. Tree canopy cover tends to be higher in older neighborhoods or those with large lots or in areas near mountains and open spaces compared to more highly urban areas closer to downtown Los Angeles. Tree canopy cover within the City can range from as low as 7 percent to as high as 37 percent among council districts (McPherson et al. 2008). The majority of the City's tree canopy occurs over five census block groups where less than 1 percent of the City's population resides. These five census block groups – one in Pacific Palisades, one in Los Feliz, two in Brentwood, and one in Shadow Hills – contain 18 percent of the City's total tree canopy and are characterized as either higher-income districts typically with larger lots and/or near mountain areas.

Griffith Park, located on the east of the Santa Monica Mountain range and spanning over 4,210 acres, is one of the largest municipal parks with urban wilderness in the United States, supporting an extensive, relatively undisturbed island of natural vegetation in an urbanized, metropolitan area. An assessment found that the tree canopy cover of the Griffith Park area and surrounding vicinity provide the second-most significant tree canopy cover in the City (McPherson et al. 2011). Runyon Canyon Park lies to the west, separated from Griffith Park by Highway 101 (Hwy 101), and provides 160 acres of parkland. Both parks are managed by RAP. Further west, Topanga State Park (managed by California State Parks) covers 11,500 acres. Together, these three parks provide an extensive and contiguous tree canopy and act as important natural resources to the Los Angeles area. Other land uses surrounding Griffith Park include residential neighborhoods, opens space, heavy manufacturing areas, and freeways with limited tree cover as industrial and commercial land uses tend to have the lowest tree canopy cover (Tree People 2019).

Project Site and Vicinity

The Project area encompasses the entire existing Zoo, located at 5333 Zoo Drive, Los Angeles, CA 90027. The 142-acre Project area is roughly bound by the Golden State Freeway or Interstate 5 (I-5) to the east and the Ventura Freeway or California State Route 134 (SR-134) to the north. Trees within the Zoo property contribute to the overall tree canopy and urban forest of the City and Griffith Park. The undeveloped areas of the Zoo support native and non-

native plant communities that are typical to the interior mountain ranges of Southern California, including oak woodlands and pine and eucalyptus groves. Developed areas within the Zoo's interior tend to be more heavily forested and often support ornamental trees and vegetation often consistent with the geographic region of the featured exhibits.



The Zoo provides a dense canopy of native and non-native, ornamental species as part of both landscaping and natural areas. Significant trees include unique trees of stature within the Zoo's established landscaping.

The Zoo currently has a distinct urban forest with a much more expansive and diverse tree canopy than many places within the City with only few exceptions such as the wilderness areas of Griffith Park. The Zoo's urban forest is interrupted primarily by visitor-serving uses (i.e., plazas and walkways), larger developed spaces, or structures like the Elephants of Asia exhibit, Treetops, Zoo Entry, and Gottlieb Animal Health and Conservation Center. Major contributors to the Zoo's urban forest consist of both large, singular trees and clusters of certain species that create contiguous tree canopy and provide shade or support a rich, landscaped understory. Like the Zoo's ornamental landscaping, the Botanical Gardens are arranged based on indigenous locations and matched to regions within the Zoo, such as Africa, South America, and North America.

Based upon reconnaissance-level surveys performed of the Zoo in May and September 2019, overall tree canopy within developed areas of the Zoo is dominated by non-native eucalyptus, palm, pine, and ornamental species, with a wide range of co-dominant species such as Moreton Bay fig, coral, and acacia species. Tree canopy and general species composition within each subregion or exhibit area of the Zoo is briefly described below and predominant species observed are listed in Table 3.6-1. There are no designated heritage, historic, landmark, or other special-status trees located within the Zoo.

Table 3.6-1. Example of Typical Zoo Tree Species

Planning Area	Predominant Species
Zoo Entry	California live oak (*Quercus agrifolia*)
	Sycamore (*Platanus* spp.)
	Willow (*Salix* spp.)
	Queen palm (*Syagrus romanzoffiana*)
California	Eucalyptus (*Eucalyptus* spp.)
	Pine (*Pinus* spp.*)*
	California live oak (*Quercus agrifolia*)
Asia	Eucalyptus (*Eucalyptus* spp.)
	Pine (*Pinus* spp.*)*
	Moreton Bay fig (*Ficus macrophylla*)
Rainforest	Eucalyptus (*Eucalyptus* spp.)
	Pine (*Pinus* spp.*)*
Nature Play Park	Queen palm (*Syagrus romanzoffiana*)
	Eucalyptus (*Eucalyptus* spp.)
	Moreton Bay fig (*Ficus macrophylla*)
	Coral (*Erythrina* spp.)
Africa	California live oak (*Quercus agrifolia*)
	Southern California black walnut (*Juglans californica* var. *californica*)
	Eucalyptus (*Eucalyptus* spp.)
World Aviary	Pine (*Pinus* spp.*)*
	Eucalyptus (*Eucalyptus* spp.)
Bird Show/Animal Program	Queen palm (*Syagrus romanzoffiana*)
	Eucalyptus (*Eucalyptus* spp.)
Islands	Queen palm (*Syagrus romanzoffiana*)
	Eucalyptus (*Eucalyptus* spp.)
	Maple (*Acer* spp.)
Parking Area	California live oak (*Quercus agrifolia*)
	Sycamore (*Platanus* spp.)

Source: Appendix I.

Generally, developed areas of the Zoo consist primarily of non-native tree species while undeveloped areas support a mix of native and non-native tree species. This complex mix of native and non-native tree species within the Zoo constitute an urban tree canopy and contribute to the City's urban forest. Developed areas of the Zoo are primarily located along valley bottoms and lower slopes of adjacent hillsides, while native habitats are primarily located along the upper ridgelines surrounding developed areas. Developed areas consist of approximately 117 acres that support primarily non-native tree canopy. As discussed below, tree canopy varies within developed areas of the Zoo from areas with very limited canopy

within portions of the Zoo parking lots to densely wooded areas with extensive tree cover in parts of the Asia and World Aviary planning areas.

The main parking lot of the Zoo provides California native trees such as California live oak and western sycamore

The Zoo's parking lots represent the largest contiguous extent of paved area and associated heat island within the Zoo and cover approximately 30 acres. The central parking lot areas near the Zoo entry were recently upgraded with completion of a major stormwater capture program, which included installation of planters and rainwater capture and infiltration areas and tree planting. Dominant tree species within the parking lots include California native trees such as California live oak and western sycamore. Although these trees are less than 10 years old, unevenly distributed forest canopy is becoming established and beginning to provide shade to this extensive paved area. Mature trees along the Zoo's perimeter with Western Heritage Way is particularly notable. In contrast, the Zoo's northern parking lot supports very limited tree canopy and is largely open, creating a heat island. Similarly, the majority of the Zoo's perimeter with Zoo Drive supports limited tree cover. An exception is the northwestern corner and boundary of this parking lot, which supports healthy, dense urban forest canopy dominated by eucalyptus with scattered pines and other generally non-native tree species.

The existing Zoo entry is relatively open with limited forest canopy along existing walkways; however, neighboring hillsides support substantial numbers of trees, particularly pine and eucalyptus species. The Zoo entry itself supports more than 20 maturing queen palm trees and scattered western sycamores along area sidewalks. The pedestrian ramp which provides a greater level of handicap access is landscaped with a variety of California native species and drought-tolerant grasses, with tree plantings consisting of western sycamore, California live oak, and willows. Due to the relatively young age of these specimens, they do not qualify as protected or important trees. The Zoo entry within the interior Zoo is also landscaped with a variety of palm trees.

Diverse tree plantings and landscaping within the northwest area of the Asia planning area contribute to a large urban tree canopy providing shade relief for both visitors and exhibit animals within this area of the Zoo.

The existing Asia planning area is located within the central area of the Zoo and consists largely of developed visitor serving and exhibit spaces. The Elephants of Asia exhibit and Treetops Terrace make up much of the planning area. Most of landscaped areas and tree cover exist within the northwest portion of the planning area which consist of a diverse mix of ornamental and non-native species creating a tree canopy which provides shade cover for both pedestrian walkways and exhibit spaces. Within the area of the Elephants of Asia exhibit, predominant tree species include taller queen palms and eucalyptus which do not support a contiguous canopy, while other features within the Asia planning area are more diverse and support richer and more contiguous canopy areas.

The Rainforest, World Aviary, Bird Show and Animal Programs, and Islands planning area collectively comprise approximately 12 acres of existing visitor-serving, exhibit, and landscaped area within the Zoo. Each of these planning areas support a diverse mix of trees and some contiguous tree canopy and are predominately planted with ornamental species, though many eucalyptus trees contribute to the overall canopies.

There are approximately 32 acres of undeveloped area within the Zoo that support native tree cover, with the bulk of this area separated into two distinct areas. For the purposes of the Project, these two undeveloped areas are referred to by their associated planning area and are hereafter referred to as the California and Africa planning areas. Native trees in these areas are particularly valuable due to their density and close proximity to one another, creating a full urban canopy that does not occur when trees are spaced apart.

California Planning Area

The California planning area is located primarily on the southwest slopes and ridges of the Zoo. The existing California planning area, and some portions of the World Aviary and Nature Play Park planning areas, consists of undeveloped hillside areas and steeper slopes and includes the Winnick Family Children's Zoo. Trees exist primarily along the base of the hillside areas within the World Aviary and Rainforest exhibits and include several large eucalyptus and pine specimens. A denser tree canopy exists within the hillside area north of the Winnick Family Children's Zoo and consists of large eucalyptus trees. Coupled with regular irrigation of the area, this area of canopy supports a dense understory of peanut trees (*Sterculia quadrifida*) and herbaceous species. However, for an undeveloped hillside, the California planning area has a relatively lower percentage of tree cover, as much of the hillside

area is dominated by native shrubland. Within the developed portions of the California planning area, primarily the Winnick Family Children's Zoo, tree species consist of palm, sycamore, pine, and Brazilian pepper (*Schinus terebinthifolia*).

Table 3.6-2. Significant Trees within or Adjacent to California Planning Area

Species	Count
Tree Species	
Aleppo pine (*Pinus halepensis*)	9
California live oak (*Quercus agrifolia*)	7
Canary Island pine (*Pinus canariensis*)	6
Eucalyptus (*Eucalyptus spp.*)	1
Torrey pine (*Pinus torreyana*)	1
Shrub Species	
Toyon (*Heteromeles arbutifolia*)	15
Mexican elderberry (*Sambucus Mexicana*)	4

Source: Appendix I.

The California planning area contains 16.1 acres of undeveloped area that contains a mixture of native and non-native trees, including primarily pines (left) and eucalyptus (right) species.

Of the approximately 30 acres that constitute the California planning area, approximately 16.1 acres are undeveloped, with approximately 3 acres of contiguous canopy within this area. The lack of tree cover within the higher elevation hillside is likely a result of annual vegetation clearance conducted by the Zoo and RAP to manage wildfire risk within this area. Though sparsely distributed, nearly a half dozen immature California live oak and scrub oak (*Quercus arbutifolia*) specimens are present along the western-facing slope and atop the ridgeline. These specimens do not qualify as protected trees; however, many pines and a few eucalyptus specimens within this area are considered to be important trees due to their contribution to a contiguous tree canopy, their health, and their stature. As summarized in Table 3.6-4, most

of the specimens within the California planning area are noted as being in good to fair condition.

Africa Planning Area

The undeveloped hillsides of the Africa planning area support a dense canopy of mature trees, many of which are native southern Californian species protected under Los Angeles Municipal Code.

The Africa planning area is in the southwestern portion of the Zoo and consists of approximately 23 acres of developed visitor-serving and exhibit spaces and 7 acres undeveloped hillsides. Developed features within this area include the Chimpanzees of the Mahale Mountains, Red Ape Rainforest, Campo Gorilla Area, and North America exhibits. The Africa planning area provides perhaps the most contiguous tree canopy within the Zoo, as much of the area is substantially landscaped with a diverse mix of large tree species, including both native and non-native tree species considered valuable for their contributions to the Zoo's tree canopy and the City's urban forest. Predominant tree species within these developed areas include, but are not limited to, palms, eucalyptus, acacia, and Moreton Bay fig. Several important tree specimens and species exist within these developed areas and most notably include the large Moreton Bay fig specimens located near the Chimpanzees of the Mahale Mountains exhibit.

Table 3.6-3. Significant Trees within or Adjacent to the Africa Planning Area

Species	Count
Tree Species	
California live oak (*Quercus agrifolia)*	113
Southern California black walnut (*Juglans californica var. californica)*	22
Eucalyptus (*Eucalyptus* spp.)	5
Aleppo pine (*Pinus halepensis)*	3
Shrub Species	
Toyon (*Heteromeles arbutifolia)*	45
Mexican elderberry (*Sambucus Mexicana)*	21

Source: Appendix I.

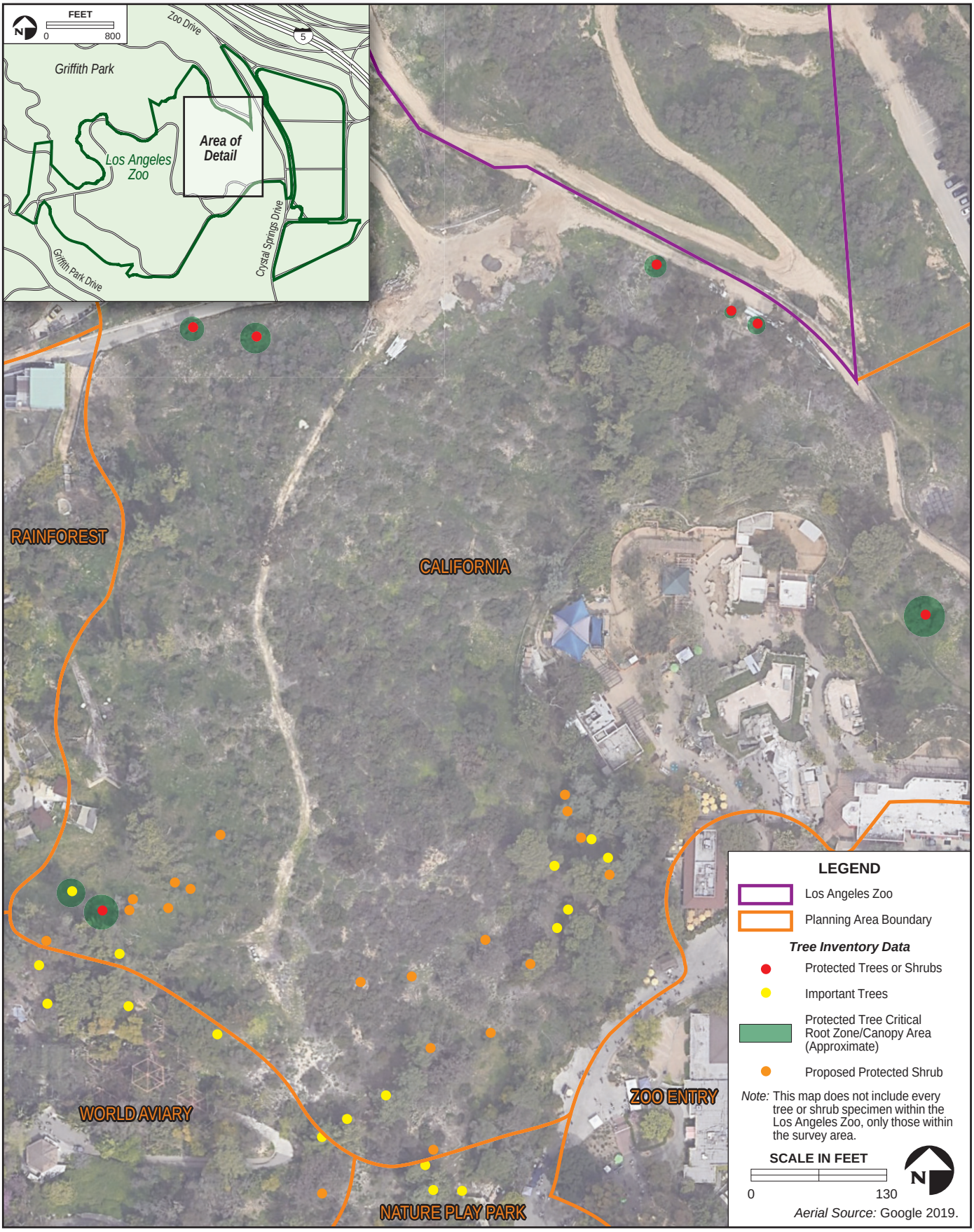
The Africa planning area supports Coast Live Oak Woodland and Eucalyptus/ Mixed Woodland habitat consisting of California live oak, scrub oak, and a small number of non-native eucalyptus and pine trees. The area also supports a healthy mix of native shrubs, including toyon (*Heteromeles arbutifolia*) and Mexican elderberry (*Sambucus mexicana*).

Approximately 22 Southern California black walnut (*Juglans californica* var. *californica*) trees are present within the Africa planning area; however, each Southern California black walnut specimen encountered consisted of stump sprouts. Though not protected, a number of pine and eucalyptus specimens within the area are considered to qualify as important trees of the Zoo due to their size, stature, and contribution to the overall tree canopy. As summarized in Table 3.6-4, the majority of specimens observed in the Africa planning area appear to be in good to fair condition.

Table 3.6-4. Condition of Protected or Important Trees Surveyed

Planning Area	Tree Species[1]	Average Size (DBH)[2]	Average Height (feet)	Tree Condition		
				Good	Fair	Poor
Africa	California live oak *Quercus agrifolia*	18	25	46	38	29
	Aleppo pine *Pinus halepensis*	27	56	1	-	2
	Eucalyptus *Eucalyptus spp.*	30	75	4	2	-
California	California live oak *Quercus agrifolia*	13	19	4	2	1
	Aleppo pine *Pinus halepensis*	24	72	6	3	-
	Canary Island pine *Pinus canariensis*	22	79	6	-	-
	Eucalyptus *Eucalyptus spp.*	21	75	-	1	-
	Torrey pine *Pinus torreyana*	14	45	1	-	-

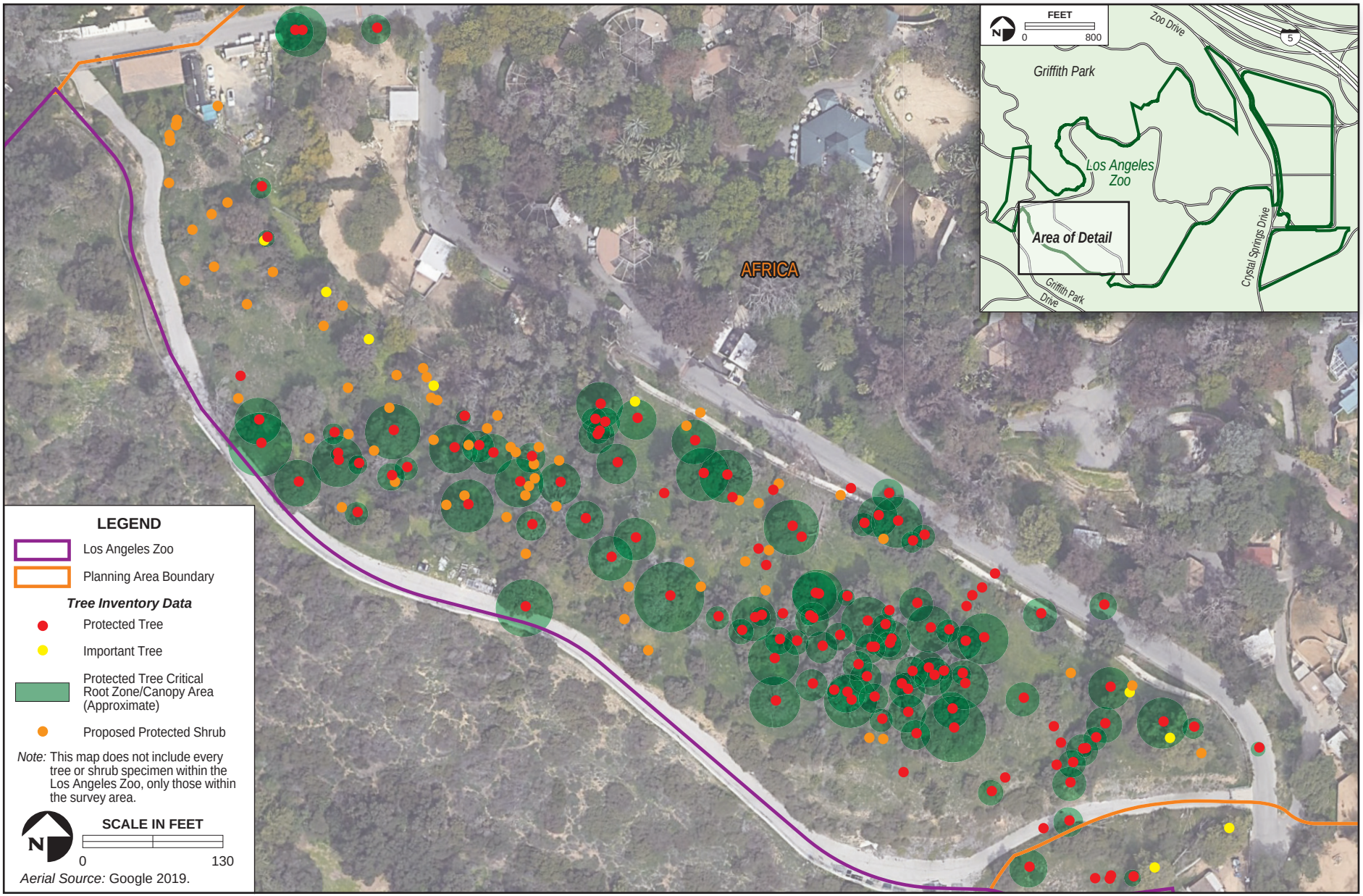
[1]The condition of Southern California black walnut, toyon, and Mexican elderberry specimens was not recorded.
[2]DBH is a measurement of tree size as measured in cumulative diameter of the main truck of the tree at a height of four and one-half (4.5) feet above the ground level at the base of the tree.
Source: Appendix I.



wood.

Los Angeles Zoo
Existing Significant Trees in the California Planning Area

FIGURE 3.6-1



wood.

Los Angeles Zoo
Existing Significant Trees in the Africa Planning Area

FIGURE 3.6-2

3.6.2 Impact Assessment Methodology

Significance Thresholds

The CEQA Guidelines do not establish thresholds for significance of impacts to urban forestry resources, or non-timber forest resources. Instead, these significance thresholds were developed based on existing City policies for tree protection. Based on these policies, the City has determined that the Project would have a significant effect on urban forestry resources if it would:

a. Conflict with the provisions of an adopted local tree preservation policy or ordinance;

b. Result in the loss or substantial alteration to the Los Angeles urban forest.

As discussed above, urban forest resources consist of individual trees or the greater tree canopy which provide physical, social, economic, and/or aesthetic value to the surrounding urban community ecosystem and include protected and important trees. In addition, though not protected under any existing City policies or ordinances, identified important trees are evaluated in the same context as protected trees due to their unique individual value within the Zoo.

Methodology

Impacts to urban forestry resources were determined through literature review of existing local regulations in comparison to proposed development under the Vision Plan. Sources consulted during this review include City Municipal Code, RAP Urban Forest Program and associated policies and procedures, the City's General Plan, and the First Step Urban Forest Management Plan prepared for the City (Dudek 2018).

As part of the *Urban Forestry Resources Report*, baseline conditions were assessed through reconnaissance-level surveys of the Project area supplemented by intensive, pedestrian arboreal surveys of undeveloped land within the California and Africa planning areas due to the larger quantity of native trees and shrubs located within undeveloped hillside areas. The arborist survey was conducted at the California and Africa planning area over three field days during the weeks of September 9 and 16, 2019. The arborist survey was led by Bill Spiewak of Bill Spiewak & Associates, a registered consulting arborist and "tree expert" as defined by the City's Standard Tree Removal Application Checklist. Mr. Spiewak was assisted in the field by Wood Environment & Infrastructure Solutions, Inc. staff analysts. The arborist survey methods followed standard professional practices. The technical methodology, field data, and ratings of the trees surveyed are provided in the *Urban Forestry Resources Report* provided in Appendix I.

3.6.3 Environmental Impacts Analysis

Implementation of the proposed Vision Plan and the construction of site improvements would result in the removal and direct disturbance of numerous trees throughout the

developed and undeveloped areas of the Zoo. Due to the programmatic nature of the Vision Plan and lack of specific construction or grading details, the exact number, location, and species of trees proposed for removal is unknown. However, based upon review of Vision Plan improvements and discussions with Zoo staff and Vision Plan designers, it appears likely that that many of the hundreds or potentially thousands of primarily non-native ornamental trees within the Zoo would be removed over a 20-year period, along with potentially dozens of native trees. The Zoo has also indicated the intent to remove large numbers of eucalyptus trees over the course of Vision Plan implementation, as eucalyptus trees are an invasive non-native species; pose a safety risk to Zoo residents, employees, and visitors from falling branches; and contribute to fire hazards. Both non-native and native trees contribute to the City's urban forest resources or provide direct benefits of an urban forest canopy such as providing shade for visitors and animals, and habitat within animal enclosures. While the Vision Plan proposes major new landscaping and tree planting, along with a shift toward expanded planting of California native species, precise details of the ratio and species of replacement trees to those removed are not available. Therefore, this analysis employs a conservative approach in assuming potential for substantial net loss of trees and urban forest canopy.

UF-1: Would the project conflict with the provision of an adopted local tree preservation policy or ordinance?

Impacts to existing urban forest resources would occur through direct removal, trimming, limbing, or root cuts to make way for new development in each phase of Project implementation. Indirect impacts associated with ground disturbance and changes to light and water availability may also affect existing healthy trees, resulting in poor condition and potentially removal as health declines. The Vision Plan does not provide a level of detail to allow precise location of the trees that may be affected. However, given the lush contiguous canopy provided by hundreds of native and non-native trees within the Zoo, it is reasonable that substantial loss and damage to existing trees would occur through phased development of the Project. As Project implementation would occur incrementally over seven phases and 20 years, impacts to trees would also occur incrementally and overlap with replanting/landscaping and regrowth. For example, development in the Zoo Entry and California planning areas would impact trees in the near-term (e.g., 5 to 10 years) but would be regrowing and reestablishing the vegetation and tree canopy while later phases, such as the Administration Building, are under construction.

Urban forest resources within developed areas of the Zoo comprise both native and non-native, ornamental species of varying ages and statures. Protected trees and shrubs, such as California live oaks, western sycamores, and toyons, may be removed or damaged during construction. Important trees, such as mature Moreton bay figs and acacias, may also be removed or damaged to accommodate proposed Project improvements. Loss of these significant trees would be a potentially significant impact to urban forestry resources. In

contrast, common ornamental species, such as queen palms, that are not of stature may also be removed, but are not significant trees and would not be a significant impact individually; however, because these trees contribute to the Zoo's urban forest canopy, their loss would be potentially significant as well (see UF-2 below).

Urban forest resources in undeveloped areas of the Zoo comprise substantial numbers of native species, as well as non-native species (i.e., eucalyptus and pines). Based on the results of the tree survey, a total of 142 native trees and 85 native shrubs protected under the City's existing Tree Preservation Ordinance and proposed Protected Tree Code Amendment would be subject to damage or removal during construction of the California and Africa improvements.

Within undeveloped hillsides of the California planning area, the Project would involve extensive excavation, grading, and potentially blasting to construct Condor Canyon. These development activities have the potential to require the removal of up to seven California live oaks, 15 toyon and four Mexican elderberries, which are all subject to protection under existing and proposed City ordinances. Within the Africa planning area, proposed Vision Plan development within undeveloped hillsides would involve grading and vegetation clearance for the installation of exhibits for iconic Africa native species and construction of a new service road atop the hillside. Although precise details are lacking, this development has the potential to result in damage to or removal of up to 113 California live oak, 45 toyon, 22 Southern California black walnut, and 21 Mexican elderberries. Development of the California and Africa planning areas would occur from 2020-2025 and 2027-2030 in Phases 1 and 3 of Vision Plan implementation, respectively.

Additional trees considered important within developed areas of the Zoo are also likely be subject to damage or removal during construction. These may include many dozens of Moreton Bay figs, coral, acacia, sycamore, scrub oak, and maple trees located throughout the Zoo in nearly all proposed development areas. Thus, implementation of the Vision Plan has the potential to damage or remove hundreds of trees and shrubs protected under existing and proposed City ordinances or warranted individual protection.

With the implementation of **MM UF-1**, impacts to protected and important trees and shrubs would be addressed consistent with applicable City tree protection policies, requiring replacement of removed protected and important trees at a 4:1 ratio as indicated by the City's proposed Tree Preservation Ordinance amendment, notification of large-scale tree removal, acquisition of a necessary tree removal permit(s), and application of City tree removal procedures. Since significant trees impacted during Project implementation would be protected, relocated, or replaced, impacts would be *less than significant with mitigation.*

UF-2: Would the project result in the loss or alteration to the Los Angeles urban forest?

Although construction would result in damage to or removal of large numbers of trees and damage to the City and Zoo urban forest canopy, the Vision Plan would include installation

of substantial new landscaping, including major tree planting. Additionally, under the Vision Plan, Zoo botanical collections and gardens would be protected and enhanced. For example, vegetation proposed for the California exhibit would focus on native trees and plant species endemic to the state, as well as iconic California introduced vegetation such as a proposed vineyard and fruit orchard. A mix of landscaping and vegetation proposed for the Africa exhibit would include tree species characteristic of each of the proposed eco-regions. The Vision Plan proposes planting of large trees in the forest ecoregion, including a mix of species native to Africa as well as some ornamentals that would be suitable for Southern California's climate. Similarly, the Asia exhibit would include a mix of ornamentals and plants native to Thailand, China, Cambodia, and other Asian countries. The Islands exhibit would feature plants native to Australia, such as the Victorian box tree. Similar to the existing Rainforest of the Americas exhibit, the Rainforest exhibit would be comprised of colorful and tropical plants that would support animals of the rainforest. Though removal of substantial numbers of trees during construction would reduce tree cover over the near-term horizon (e.g., 10 years), following completion of construction activities, tree cover and the urban canopy would likely be restored as part of a major landscaping and tree planting program, which would replace or improve the City's urban forest over the life of the Project. However, at this time, no detailed landscaping plan has been prepared that would demonstrate a recovery or enhancement of the Zoo's urban forest under the Vision Plan. Thus, implementation of the Vision Plan has potential to result in the significant loss or alteration of the Los Angeles urban forest.

With implementation of **MM UF-2**, requiring preparation of a detailed landscape plan as part of each proposed phase, the Project area would be landscaped, irrigated, and maintained with a diverse mix of tree species that would individually and cumulatively provide significant urban forest value. Implementation of this measure would ensure recovery or even enhancement of the Zoo's, and the City's, urban forest such that a net loss of urban forestry resources would not occur. Impacts would be *less than significant with mitigation.*

3.6.4 Mitigation Measures

MM UF-1 Protected Tree Plan

To offset impacts to protected and important trees and shrubs resulting from Vision Plan implementation, the Zoo shall prepare and implement a Protected Tree Plan. The Protected Tree Plan shall identify measures for the protection, relocation, and/or replacement of protected and important significant trees and shrubs. The Protected Tree Plan shall outline and require that Project activities affecting protected trees and shrubs proceed as follows:

1. Preservation of Trees and Shrubs: Protected and important trees and shrubs shall be preserved in place to the maximum extent feasible. To ensure protection of native protected trees and shrubs, as part of final design of the California and Africa area exhibits, all protected trees and shrubs shall be mapped and incorporated into the

exhibit to the maximum extent feasible. The Zoo shall hire a City-approved Tree Expert meeting the requirements of the City's Tree Protection Ordinance to evaluate the health and structure of protected and important trees and shrubs and make recommendations for avoidance of healthy specimens to the maximum extent feasible. The tree expert shall work with project designers during the final design of each phase to incorporate such trees into the exhibits in a manner that would ensure protection of the tree or shrub from damage by exhibit animals or exhibit maintenance activities. Each protected or important tree and shrub to be retained shall have a designated Protection Zone identifying the area sufficiently large enough to protect it and its roots from significant damage during construction. The designated Protection Zone of each specimen shall be protected with 5- to 6-foot-high chain link fences. Fences shall be mounted on 2-inch galvanized iron posts, driven into the ground to a depth of at least two feet and at no more than 10-foot centers, or similarly durable material. Tree and shrub fences shall be erected before demolition, grading, or construction begins and remain until final inspection of the project. Construction and demolition activities around protected trees shall follow all industry standards. Erosion control measures, tree pruning, soil compaction preventive measures, and a tree maintenance schedule shall be implemented and verified by the Bureau of Engineering and a City-authorized tree expert. Following construction, each tree or shrub preserved shall be monitored for a minimum of 5 years to ensure their long-term survivability.

2. Relocation of Trees and Shrubs: Where protected and important trees cannot be avoided and preserved in place, individuals shall be transplanted elsewhere onsite to the extent feasible. If relocation onsite is not feasible, individuals shall be transplanted to an appropriate offsite location elsewhere within Griffith Park, pursuant to the approval of the City Bureau of Engineering and RAP. The City-approved Tree Expert shall identify the necessary measure to be taken to ensure the maximum survivability of the relocated specimens, including relocation method, placement, irrigation method, and maintenance. Relocated individuals shall be monitored for their success for a period of 5 years. The Tree Protection Plan shall identify performance standards for determining whether relocated specimens are healthy and growing normally and shall outline procedures for periodic monitoring and implementation of corrective measures in the event the health of relocated trees declines.

3. Replacement of Trees and Shrubs: Where the preservation or relocation of protected and important trees and shrubs is not feasible, or where the health of preserved or relocated specimens becomes compromised, as part of the final design of each exhibit or feature, the Zoo shall prepare and implement a replacement planting program. Replacement of protected and important trees and shrubs should follow guidelines described in the City's Tree Protection Ordinance adopted at the time, including requirements for relocated or removed trees or shrubs to be replaced by other species protected by the ordinance at a 4:1 ratio (number of individuals restored to number of

individuals impacted). The replacement planting program shall be prepared by a City-approved Tree Expert meeting the requirements of the City's Tree Protection Ordinance. The replacement planting program shall specify the location for replacement, tree or shrub size, planting specifications, and shall include a monitoring program to ensure that the replacement planting program is successful. To the extent feasible, protected, and important trees or shrubs removed within the California or Africa exhibits shall be replaced within each exhibit. Where this is not feasible, the Tree Protection Plan shall outline provisions and standards for replacement in areas outside of each exhibit. At a minimum, the monitoring program shall require monitoring of replacement individuals for a period of 5 years and shall include performance standards for determining whether replacement specimens are healthy and growing normally and procedures for periodic monitoring and implementation of corrective measures in the event that the health of replacement trees declines.

Replacement of removed trees and shrubs should occur within the Zoo to the extent feasible. If replacement within the Zoo is not feasible, the Zoo should coordinate with RAP for replacement trees and shrubs to be planted on adjacent areas of Griffith Park, provided such locations can support the tree's or shrub's survival. Each replacement tree shall be at least 15-gallon, or larger, measuring one inch or more in diameter one foot above the base, and be not less than seven feet in height measured from the base. The size and number of replacement trees shall approximate the value of the tree to be removed. If use of similar sized replacement trees and shrubs is not possible, smaller sized replacements may be planted. In that event, a greater number of replacement trees or shrubs may be required.

MM UF-2 Restoration Plan

To offset impacts to urban forestry resources and ensure landscaping under the Vision Plan is planned to provide urban forest value, the Zoo shall retain a qualified landscape architect to prepare a landscaping plan. The Zoo landscape plan shall be subject to review and approval by City Bureau of Engineering and shall include the following:

1. Maximize protection of existing protected and important trees and shrubs consistent with the Zoo's Tree Protection Plan identified in **MM UF-1**.
2. Specify a plant palette and landscape plan that ensures establishment of tree canopy that is cohesive with and supports continuity with the surrounding canopy. The plant palette shall emphasize tree species which are considered to provide a healthy mix of visual and biological value and which offer greater shade cover and carbon sequestration.
3. Plantings shall include tree specimens and shrubs capable of reaching or exceeding the heights of the adjacent proposed structures and plantings.
4. Landscaping shall occur immediately following completion of construction of a proposed area of improvement. Planting shall prioritize the use of larger containers

and more mature specimens to expedite recovery of the urban forest and minimize duration of heat island effects following construction.

3.6.5 Impacts Summary

With implementation of **MM UF-1** and **MM UF-2**, urban forest resources lost or damaged during Project implementation would be preserved in place, relocated, or replaced at a 4:1 ratio. Since the Project would involve phased development over 20 years, the loss and subsequent regrowth of landscaping would regenerate the urban forest resources over time and landscape requirements outlined above would ensure a potentially richer and more valuable urban forest at the Zoo. Therefore, significant unavoidable adverse impacts to urban forestry resource would not occur and, with mitigation, impacts to urban forestry resources would be less than significant.

However, depending upon the preferred or selected approach to mitigation of impacts to protected or important trees and shrubs, residual effects may vary. **MM UF-1** includes mitigation for trees and shrubs protected under the City's Tree Preservation Ordinance through a tiered approach, first prioritizing preservation in place and ultimately restoration of affected resources at an appropriate offsite location if all else is infeasible. Preservation of individual protected trees or shrubs or the restoration of affected resources elsewhere onsite may require substantial redesign of the Vision Plan to incorporate these resources into the design in a manner that assures their survival and biological value. This has potential to reduce the total amount or area of development within the Zoo and reduce associated construction activities. Consequently, such redesign also has the potential to inhibit or reduce the ability for the Zoo to achieve the goals of the Vision Plan, particularly achieving the targeted increase in annual visitation. Alternatively, if preservation in place or restoration onsite is not feasible, offsite restoration within Griffith Park would be required. Offsite restoration would require close coordination with RAP to identify an appropriate site(s) for restoration, but has the potential to result in restoration of areas of Griffith Park which have become susceptible to non-native or invasive species and possibly even result in the enhancement of habitat or the native tree canopy. Thus, compared to preservation in place or restoration within the Zoo property, offsite restoration within Griffith Park may have a slight beneficial effect on the health or quality of regional urban forest resources.

3.7 GEOLOGY AND SOILS

Geologic and soil-related concerns in Southern California are related to potential seismic hazards such as ground shaking, low to moderate liquefaction, landslides, expansive soils, and soil stability. The Los Angeles Zoo has older buildings that do not meet current building standards. In this case, these buildings may present a hazard to public safety during an earthquake. The Project would involve redevelopment of older buildings with new buildings that would meet the most current and stringent building safety requirements including Title 24, Part 2 of the California Building Code and the Los Angeles Building Code, thus reducing the level of risk within the Zoo compared to existing conditions. Further, phased development of the Project would require preparation of a site-specific Geotechnical Report in accordance with City of Los Angeles requirements and implement any necessary measures to reduce geologic/soil hazards. Additionally, Project construction would involve soil excavation and grading that would necessitate development standards and best management practices to ensure soil stability.

This section describes existing geologic and soil conditions and analyzes the potential for impacts related to geologic hazards that could result from implementation of the proposed Los Angeles Zoo (Zoo) Vision Plan (Project) in the City of Los Angeles (City). Potential issues of concern related to geology and soils include fault rupture, ground shaking, liquefaction, dynamic dry settlement, expansive soils, and landform/landslide. Additionally, this section describes and evaluates potential impacts to paleontological resources and unique geological features underlying the Project site that may be adversely affected during Project construction.

3.7.1 Environmental Setting

Regulatory Setting

Federal Regulations

Federal Soil Conservation Law (16 U.S. Code [USC] 590a-590q)

By Congressional policy, this law provides permanently for the control and prevention of soil erosion by preventative measures, including but not limited to engineering operations, methods of cultivation, growing of vegetation, and changes in land use.

Clean Water Act Section 402 (National Pollutant Discharge Elimination System [NPDES] Program)

This act mandates that certain types of construction activity comply with the requirements of the U.S. EPA's NPDES program. Under State Water Resources Control Board (SWRCB) enforcement, the Los Angeles Regional Water Quality Control Board (RWQCB) implements the NPDES program in the City. The program requires a General Construction Activities

Permit, including implementation of established Best Management Practices (BMPs) for management of storm water, erosion control, and/or siltation.

International Building Code (IBC)

The IBC, most recently updated in 2018, is published by the International Code Council (ICC) and forms the basis for building codes in the United States, including the California Building Code (established as Title 24 of the California Code of Regulations). The IBC has been adopted by the California Legislature with amendments to address the specific building conditions and structural requirements for California, as well as provide guidance on foundation design and structural engineering for different soil types.

State Regulations

Alquist-Priolo Earthquake Fault Zoning Act (1972)

The purpose of the Alquist-Priolo Act is to regulate types of development near active faults to mitigate the hazard of surface rupture. Under this Act, the State Geologist is required to delineate earthquake fault zones, or Alquist-Priolo Fault Zones along known active faults in California and requires that geologic studies be conducted to locate and assess any active fault traces in and around known active fault areas prior to development of buildings for human occupancy. The Alquist-Priolo Act only addresses the hazard of surface fault rupture and is not directed toward other earthquake hazards. Local cities and counties must regulate certain development projects within the Earthquake Fault Zones, generally by issuing building permits only after geologic investigations demonstrate that development sites are not threatened by future surface displacement. A buffer prohibiting the construction of structures for human occupancy may be established. Typically, structures for human occupancy are not allowed within 50 feet of the trace of an active fault. Projects subject to these regulations include all land divisions and most buildings intended for human occupancy.

California Building Code (CBC) (2019)

The State of California provides minimum standards for building design through the CBC, which is based on the IBC, but has been modified to account for California's unique geologic conditions, including the State's heightened seismicity risk. The CBC (Title 24 of the California Code of Regulations) is updated triennially, and the most recent 2019 code became fully effective on July 1, 2019. The CBC applies statewide and is selectively adopted by local jurisdictions based on local conditions. The City through the Los Angeles Municipal Code (LAMC) Chapter IX Article 1, Building Code, has adopted the CBC, 2016 Edition, which adopts by reference the IBC, 2015 Edition, as part of its building regulations.

Section 1803.5.3 of the CBC states that in areas likely to have expansive soil, the building official shall require soil tests to determine where such soils do exist. Soils meeting all four of the following provisions shall be considered expansive, except that tests to show compliance with Items 1, 2, and 3 shall not be required if the test prescribed in Item 4 is conducted:

1. Plasticity index (PI) of 15 or greater, determined in accordance with ASTM D 4318.
2. More than 10 percent of the soil particles pass a No. 200 sieve (75 micrometers), determined in accordance with ASTM D 422.
3. More than 10 percent of the soil particles are less than 5 micrometers in size, determined in accordance with ASTM D 422.
4. Expansion index greater than 20, determined in accordance with ASTM D 4829.

Seismic Hazards Mapping Act

To address the effects of strong ground shaking, liquefaction, landslides, and other ground failures due to seismic events, the State of California passed the Seismic Hazards Mapping Act of 1990. Under the Seismic Hazards Mapping Act, the State Geologist is required to delineate "seismic hazard zones." Cities and counties must regulate certain development projects within these zones until the geologic and soil conditions of the Downtown District are investigated and appropriate mitigation measures, if any, are incorporated into development plans. The City is mapped as part of the Beverly Hills Quadrangle Seismic Hazard Zone Map.

The State Mining and Geology Board provides additional regulations and policies to assist municipalities in preparing the Safety Element of their General Plan and encourage land use management policies and regulations to reduce and mitigate those hazards to protect public health and safety. Under Public Resources Code (PRC) Section 2697, cities and counties shall require, prior to the approval of a project located in a seismic hazard zone, a geotechnical report defining and delineating any seismic hazard. Each city or county shall submit one copy of each geotechnical report, including mitigation measures, to the State Geologist within 30 days of its approval.

Public Resources Code (PRC) Sections 5097.5 and 30244

Other state requirements for paleontological resources are included in PRC Section 5097.5 and PRC Section 30244. Section 5097.5 states that "a person shall not knowingly and willfully excavate upon, or remove, destroy, injure, or deface, any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, rock art, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over the lands." Section 5097.5 also states that "a violation of this section is a misdemeanor, punishable by a fine not exceeding ten thousand dollars ($10,000), or by imprisonment in a county jail not to exceed one year, or by both that fine and imprisonment." This section defines public lands as "lands owned by, or under the jurisdiction of, the state, or any city, county, district, authority, or public corporation, or any agency thereof."

Section 30244 states that "where development would adversely impact archaeological or paleontological resources as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required."

Society for Vertebrate Paleontology (SVP) Guidelines

The SVP has established standard guidelines that outline professional qualifications, protocols, and practices for paleontological resources assessments and surveys, monitoring and mitigation, data and fossil recovery, sampling procedures, specimen preparation, identification, analysis, and curation (SVP 2010). Most practicing professional vertebrate paleontologists adhere closely to the assessment, mitigation, and monitoring requirements as specifically provided in the SVP Guidelines. Most state regulatory agencies with paleontological resource-specific Laws, Ordinances, Regulations, and Standards (LORS) accept and use the professional standards set forth by the SVP.

Local Regulations

Los Angeles General Plan Safety Element

The City's General Plan Safety Element (Safety Element), which was adopted in 1996, addresses public safety risks due to natural disasters, including seismic events and geologic conditions; and sets forth guidance for emergency response during such disasters. The Safety Element also provides generalized maps of designated areas within the City that are considered susceptible to earthquake-induced hazards such as fault rupture and liquefaction.

Regarding assessment of seismic hazards, the Safety Element acknowledges that PRC Section 2699 requires that a safety element consider available seismic hazard maps prepared by the State Geologist pursuant to the Alquist-Priolo Earthquake Fault Zoning Act to assess seismic hazards. The PRC also requires that the State Geologist map active faults throughout the state. The Safety Element states that those maps which are applicable to the City are incorporated into Exhibit A of the Safety Element. The Safety Element also states that local jurisdictions are required by the Seismic Hazards Mapping Act to require additional studies and appropriate mitigation measures for development projects in the areas identified as potential hazard areas by the state seismic hazard maps. In addition, the Safety Element states that as maps are released for the City, they will be utilized by the Los Angeles Department of Building and Safety (LADBS) to help identify areas where additional soils and geology studies are needed for evaluation of hazards and imposition of appropriate mitigation measures prior to the issuance of building permits.

The Safety Element acknowledges that it was based on available official maps at the time, and that exhibits in the Safety Element would be revised following receipt of reliable new information. The State of California released the current official and final Earthquake Zones of Required Investigation Map for the Burbank Quadrangle on March 25, 1999. This map is the State of California's official earthquake fault zone map for the portion of the City that

includes the Project site. It is the most current and accurate map available to delineate the boundaries of earthquake fault zones and seismic hazard zones within this portion of the City.

City of Los Angeles Building Code

Earthwork activities, including grading, are governed by the Los Angeles Building Code, which is contained in LAMC Chapter IX, Article 1. Specifically,

- Section 91.7006.2 requires the submittal of soils and geological reports to LADBS for review and approval for all grading work in excess of 5,000 cubic yards (cy) of cut and fill;
- Section 91.7006.7 includes requirements regarding import and export of earth material;
- Section 91.7010 includes regulations pertaining to excavations;
- Section 91.7011 includes requirements for fill materials;
- Section 91.7014 includes general construction requirements, as well as requirements regarding flood and mudflow protection; and
- Section 91.7016 includes regulations for areas that are subject to slides and unstable soils.

In addition, Section 91.1803 includes specific requirements addressing seismic design, grading, foundation design, geologic investigations and reports, soil and rock testing, and groundwater. The Los Angeles Building Code incorporates by reference the CBC, with City amendments for additional requirements. LADBS is responsible for implementing the provisions of the Los Angeles Building Code.

Existing Conditions

Regional Geologic Setting

The Project site is in the northwestern portion of the Los Angeles Basin. The Los Angeles Basin is geologically divided into four structural blocks, which are generally bounded by prominent fault systems: the Northwestern Block, the Southwestern Block, the Central Block, and the Northeastern Block (Norris and Webb 1990). The Project site is located in the Northwestern Block, which is bounded on the south side by the Santa Monica and Raymond Hill faults, which is also the southern boundary of the east-west trending Transverse Ranges physiographic province (Norris and Webb 1990; Harden 1998).

Regional potential for faulting and seismicity in Southern California is largely affected by the San Andreas Fault Zone, which trends northwest/southeast from Baja California to the Oregon Coast. The San Andreas Fault Zone traverses the Antelope Valley area of California approximately 30 miles east of the City. The San Andreas Fault Zone separates two major tectonic plates comprising the earth's crust. West of the San Andreas Fault Zone lies the Pacific Plate, which moves in a northwesterly direction relative to the North American Plate. North of the Transverse Ranges Geologic Province, this fault trends more in an east-west

direction, known as "the Big Bend," and causes the fault's right-lateral strike-slip movement to produce north-south compression between the two plates. North-south compression in the San Andreas Fault Zone has been estimated from 5 to 20 millimeters (mm) per year. This oppositional movement of the two plates is a cause of fault ruptures (earthquakes) in western California.

Additionally, faults in the vicinity of the Project site that can produce strong ground motion include the Hollywood, Verdugo, Raymond, Sierra Madre, Elysian Park Blind Thrust, Puente Hills Blind Thrust, Santa Monica, and Newport-Inglewood (see Appendix J). The Santa Monica and Hollywood fault zones are part of a much longer system of oblique left-lateral/reverse faults that form the more than 150-mile-long southern boundary of the Transverse Ranges.

Seismic Hazards

Faults, Seismicity, and Earthquakes

Southern California is seismically active due to numerous faults which traverse the region. Faults are characterized by the California Geological Survey (CGS) as active, potentially active, or inactive, according to the last seismic activity of the fault. Active faults are faults that show evidence of surface displacement within the past 11,700 years (i.e., Holocene time). Potentially active faults are those that show evidence of fault rupture within the Quaternary geology time system between 11,700 and 2.6 million years ago (i.e., Pleistocene Age) (CGS 2010). Inactive faults are those without recognized activity within the past 2.6 million years. Buried thrust faults are faults without a surface expression but are a significant source of seismic activity. They are typically defined based on the analysis of seismic wave recordings of hundreds of small and large earthquakes in the Southern California area. Due to the buried nature of these blind thrust faults, their existence is usually not known until they produce an earthquake such as the Northridge Earthquake in 1994 which was produced by the Northridge blind thrust fault (also known as the Pico thrust fault).

The Project site is not located within a State of California Earthquake Fault Zone (formerly known as Alquist-Priolo Special Studies Zone). However, the site is in a seismically active area, as is the majority of southern California, and the potential for strong ground motion in the project area is considered significant during the design life of the proposed project. The numerous faults in southern California include 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. The approximate locations of major faults in the site vicinity and their geographic relationship to the site are shown on Figure 3.7-1.

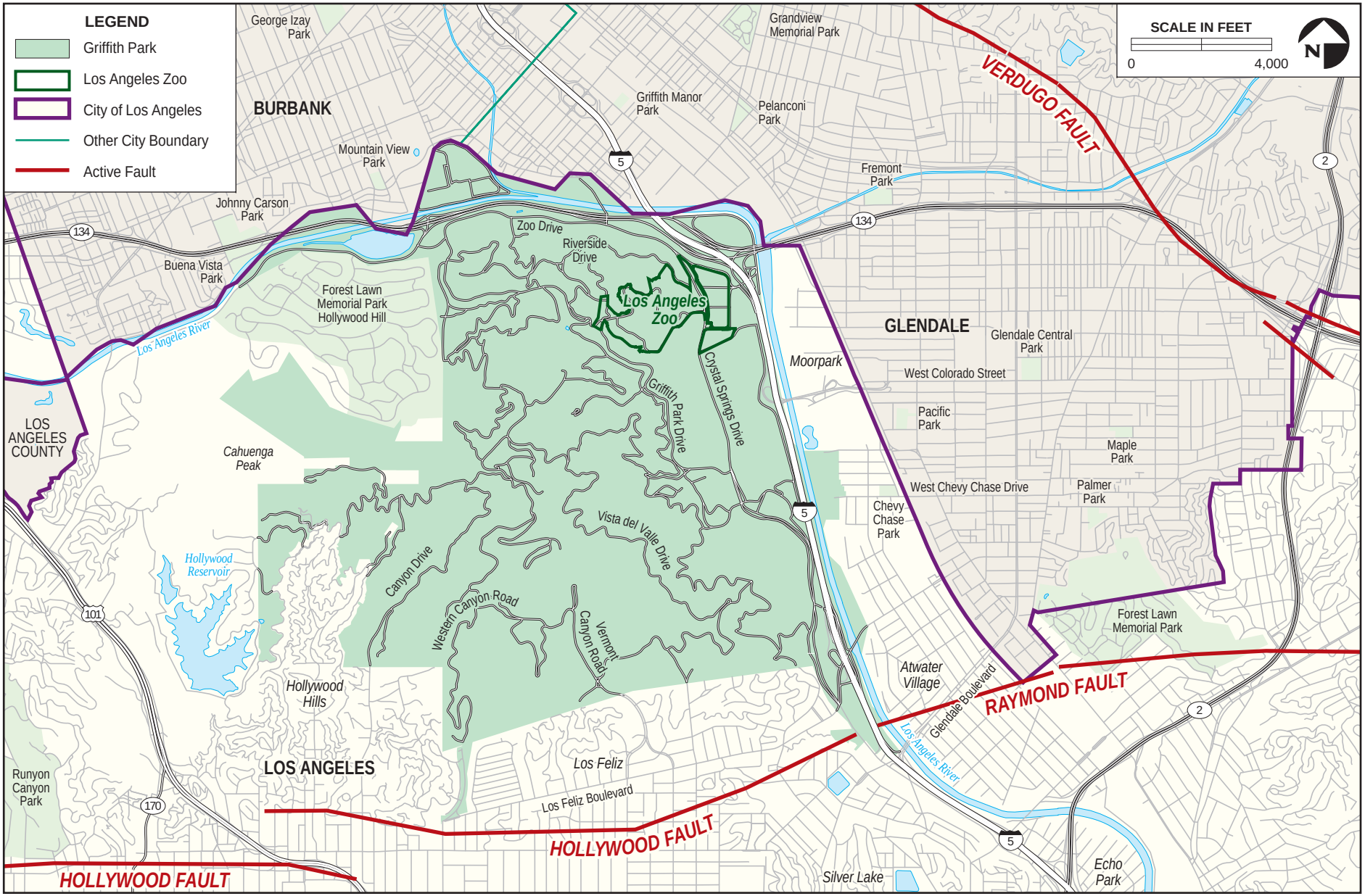
In addition to the mapped faults shown in Figure 3.7-1, the Elysian Park blind thrust fault is located approximately 7.6 miles from the site and the Puente Hills blind thrust fault is located approximately 8.5 miles east of the site (United States Geological Survey [USGS], 2008). Blind thrust faults are low-angle faults at depth that do not break the surface and are, therefore, not shown. Although blind thrust faults do not have a surface trace, they can be capable of generating damaging earthquakes and are included in Table 3.7-1, which lists selected principal known active faults within approximately 50 kilometers of the site that may affect the project and the maximum moment magnitude (Mmax) as published by the USGS (2008). The approximate fault-to-site distances were calculated using the USGS web-based program (2008).

Table 3.7-1. Active Faults within 30 Miles of the Project Site

Fault	Distance (miles)	Maximum Moment Magnitude
Hollywood	2.0	6.7
Verdugo	2.3	6.9
Raymond	3.2	6.8
Sierra Madre	5.9	7.3
Elysian Park Blind Thrust	7.6	6.7
Puente Hills Blind Thrust	8.5	7.0
Santa Monica	8.5	6.6
Newport-Inglewood	9.4	7.5
San Gabriel	11.6	7.3
Northridge	10.5	6.9
San Andreas (1857 Rupture)	29.4	8.2

Source: USGS 2008. See Appendix J.

The Benedict Canyon fault is mapped along the north side of the mountains and has been projected to extend beneath the parking lot on the eastern side of the project area. The Hollister fault is mapped crossing the lower hillside areas and is projected to extend as a buried fault strand beneath the center of the Zoo. Neither the Benedict Canyon or Hollister faults are considered active and are not considered constraints to the Project.



wood.

Active Faults in the Vicinity of the Project Site

FIGURE 3.7-1

Fault Rupture

Fault rupture is the displacement and cracking of the ground surface along a fault trace. Fault ruptures are visible instances of horizontal or vertical displacement, or a combination of the two, typically confined to a narrow zone along the fault. Fault rupture is more likely to occur in conjunction with active fault segments where earthquakes are large, or where the location of the movement (earthquake hypocenter) is shallow.

The numerous faults in southern California include active, potentially active, and inactive faults. The criteria for these major groups are based on criteria developed by the CGS for the Alquist-Priolo Earthquake Fault Zone Program. An active fault is one that has had surface displacement within Holocene time (about the last 11,000 years). A potentially active fault has demonstrated surface displacement during Quaternary time (approximately the last 1.6 million years) but has had no known Holocene movement. Faults that have not moved in the last 1.6 million years are considered inactive.

The primary purpose of the Alquist-Priolo Earthquake Fault Zoning Program is to identify sites that have a potential for surface rupture due to active faults that are near the site. In such cases, a building setback zone is established to mitigate the potential for surface rupture. No major active faults are known to traverse the Project site. Accordingly, there are no Alquist-Priolo Earthquake Zones at the Project site. The nearest Alquist-Priolo Earthquake Zone to the Project site is the Hollywood fault, located approximately two miles south of the site (Table 3.7-1; Figure 3.7-1) (Appendix J). Thus, the potential for fault rupture appears to be moderate.

Tsunami Risk

Tsunamis are long wavelength, seismic, sea waves (long compared to ocean depth) generated by the sudden movements of the ocean floor during submarine earthquakes, landslides, or volcanic activity. Seiches are waves generated in large, enclosed bodies of water. Based on the elevation and location of Project the site away from large waterbodies, the risk for damage at the Project site due to tsunamis or seiches low.

Liquefaction

Liquefaction is a form of earthquake-induced ground failure that occurs primarily in relatively shallow, loose, granular, and water-saturated soils. Liquefaction occurs when ground shaking transforms granular material from a solid state to a liquefied state due to earthquakes, which can induce an increase in pore water pressures in the soils when subjected to strong earthquake-induced ground shaking. Unconsolidated silts, sands, and silty sands located below the water table are most susceptible to liquefaction. Liquefaction is known generally to occur in saturated or near-saturated cohesionless soils at depths shallower than 50 feet below the ground surface. 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. Structures that are most

vulnerable to liquefaction include buildings with shallow foundations, railways, buried structures, pipelines, retaining walls, utility poles, and towers.

Based on groundwater monitoring wells in the Project vicinity, the depth to groundwater in the vicinity of the site is estimated between 20 and 50 feet below the existing ground surface. The State of California Seismic Hazards Zones Map for the Los Angeles Quadrangle (1998), included in the Earthquake Zones of Required Investigation Map for the Burbank Quadrangle, has mapped the alluvium beneath the artificial fill in the lower elevations of Project site as being potentially susceptible to liquefaction during a strong earthquake event (Figure 3.7-2). Based on the nature of the underlying materials and the reported groundwater levels, the potential for dynamic settlement due to liquefaction is considered moderate in the lower lying areas of the Project site, including the main parking lot and center of the Zoo. The potential for liquefaction in the higher elevations of the site underlain by quartz diorite and sedimentary formational materials is low. Based on the site topography, the potential for lateral spread to occur at the Project site due to liquefaction is very low.

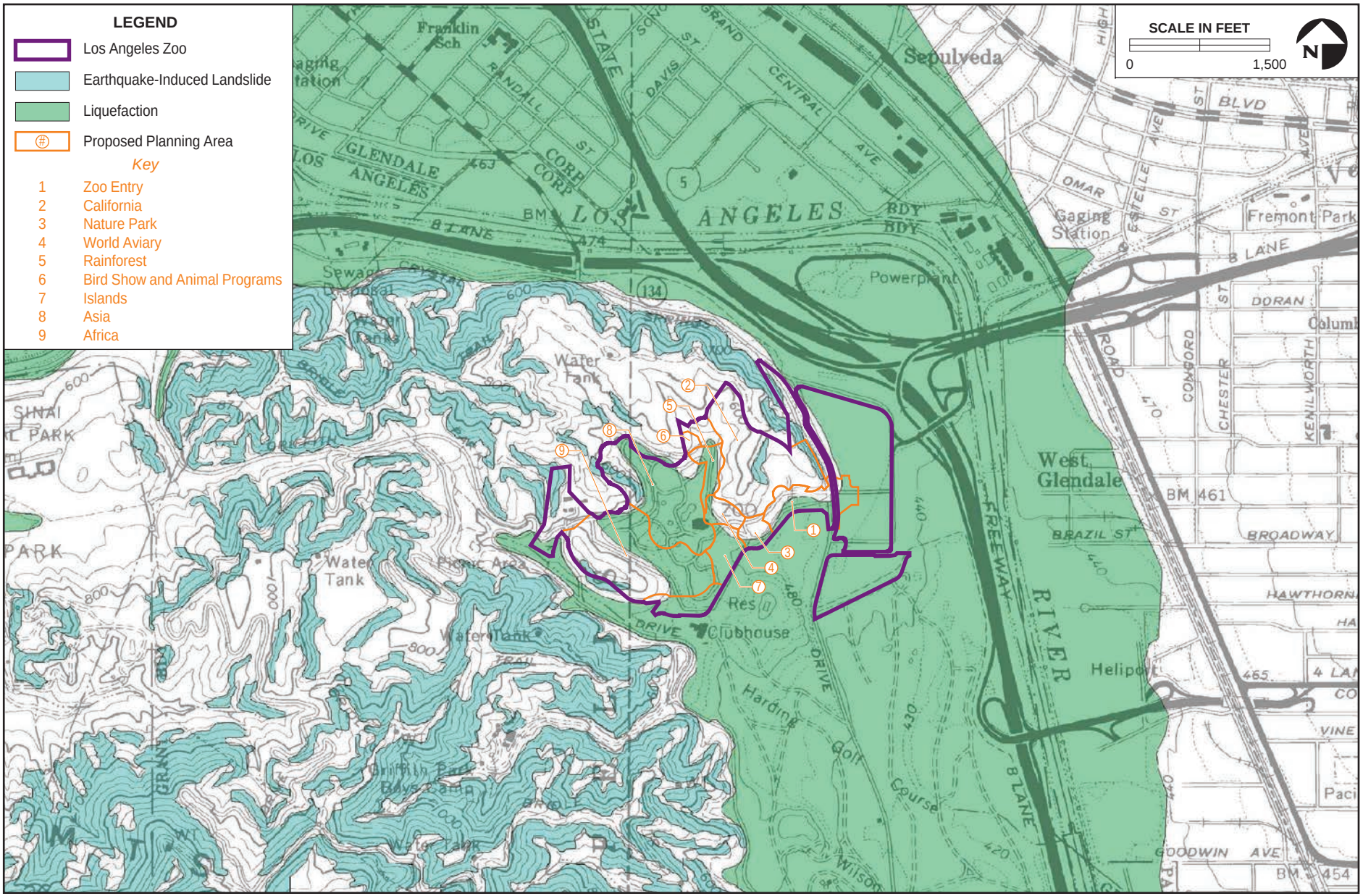
Dynamic Compaction

Relatively dry soils (e.g., soils above the groundwater table) with low density or softer consistency tend to undergo dynamic compaction during a seismic event. Earthquake shaking often induces significant cyclic shear strain in a soil mass, which responds to the vibration by undergoing volumetric changes. Volumetric changes in dry soils take place primarily through changes in the void ratio (usually contraction in loose or normally consolidated, soft soils and dilation in dense or over-consolidated, stiff soils) and secondarily through particle reorientation. Such volumetric changes are generally non-recoverable. Based on the nature of the underlying soil materials, the potential for dynamic compaction of dry soils is low to moderate.

Landslides

The stability of slopes and potential for landslides are affected by several factors, including gravity, rock and soil type, hydrologic conditions, and vegetation. Events that can cause a slope to fail include sudden movements, such as a seismic event, modification of the slope by natural or human activities, undercutting caused by erosion, and changes in hydrologic characteristics, including heavy rains that can saturate the soil.

There are no mapped landslides on site or in the vicinity, and the site is not mapped as having the potential for seismically induced landslides. In addition, review of stereoscopic aerial photographs does not indicate the presence of landslides on site or on the nearby hillside areas. Based on this information and the location of the site, large scale landslides are not considered to be a potential hazard at the site. However, offsite steep slopes along the western and northern portions of the Project site in the Asia, Africa, and California planning areas expose weathered quartz diorite materials and, in some areas, may be subject to small- to moderate-sized rock fall-type surficial slope failures.



3.7-11

wood.

Seismic Hazards in the Vicinity of the Project Site

FIGURE 3.7-2

Groundwater

The Project site overlies a portion of the San Fernando Valley Groundwater Basin (SFVGB). The SFVGB is the largest of the four basins in the upper Los Angeles River watershed, consisting of 112,000 acres and comprising 91.2 percent of the total basin area of this watershed. It is bounded on the east and northeast by the San Rafael Hills, Verdugo Mountains, and San Gabriel Mountains; on the north by the San Gabriel Mountains and the eroded south limb of the Little Tujunga Syncline which separates it from the Sylmar Basin; on the northwest and west by the Santa Susana Mountains and Simi Hills; and on the south by the Santa Monica Mountains. The delinteated SFVGB boundary extends into the lower/flatter areas of the Zoo's property. The portion of Zoo property overlapping the SFVGB is mostly developed and mostly consists of impervious surface cover, with a general groundwater gradient trending to the east, slightly southeast. Hillsides within the Zoo drain toward the lower/flatter areas of the Zoo. Based on groundwater monitoring wells in the Project vicinity, the depth to groundwater in the vicinity of the site is estimated between 20 and 50 feet below the existing ground surface of the lower elevation areas of the Project site (e.g., the central portion of the Zoo) (Appendix J).

Site Soil Setting

Regional geologic mapping data indicates that the lower elevations of the site, including the parking lot and the central portion of the Zoo, are underlain by younger alluvium consisting of moderately to poorly consolidated clay, sand, and gravel (Dibblee T.W. 1991) (Figure 3.7-2). The hills located on the northern and northwestern portions of the Zoo are composed of igneous quartz diorite bedrock. The quartz diorite is moderately to intensely weathered and composed of plagioclase feldspar, quartz, biotite, and hornblende. The hills along the southern edge of the site and south of the Zoo are composed of sedimentary sandstone and shale of the Topanga Formation.

The alluvium is overlain in the central portion of the Zoo by fill soils placed during the original construction of the Zoo in the mid-1960s and during later projects. Based on review of previous reports for individual projects within the Zoo, the fill soils range in thickness from less than 3 feet in the jaguar exhibit area (URS 2013), to 5 to 20 feet thick in the Gorilla Enclosure area (Kleinfelder 2000; 2004), and from 10 to deeper than 30 feet in the pachyderm enclosure area and in other areas of the central Zoo (City of Los Angeles, Geotechnical Engineering Group 2007; 2011; URS 2000). The fill is described as medium dense to dense silty sand and sand and, although generally described as well compacted, some areas of loose and uncompacted fill are reported from these reports.

Soil Hazards

Erosion Susceptibility

Erosion of exposed soils and rocks occurs naturally due to physical weathering from water and wind action. The potential for erosion increases with steeper slopes, hydrologic events,

and exposed soils. Based on the use of the site and condition of the existing exposed soils, the susceptibility of soils to erosion is considered low to moderate.

Expansive Soils

Expansive soils are soils that can undergo a significant increase in volume with an increase in water content and a significant decrease in volume with a decrease in water content. Changes in the water content of an expansive soil can result in severe distress to structures constructed upon the soil. Expansive soils tend to swell with seasonal increases in soil moisture in the winter months and shrink as soils become drier in the summer months. Repeated shrinking and swelling of the soil can lead to stress and damage of structures, foundations, fill slopes, retaining walls, and other associated facilities.

Section 1803.2 of the 1994 Uniform Building Code (UBC) directs expansive soil tendency be categorized by Expansion Index (EI). The UBC mandates that "special [foundation] design consideration" be employed if the Expansion Index is 20, or greater, as recorded in UBC Table 18-1-B. Based on review of geotechnical previous reports for projects within the Zoo, the soils onsite are generally low to very low in expansion.

Subsidence

Subsidence is the downward shift of the ground surface and is most frequently caused by subsurface withdrawal of water (i.e., groundwater drawdown), oil, or natural gas earth extraction (e.g., subsurface mining), faulting, or seasonal changes in soil moisture content. Compaction of soils in some aquifer systems can accompany excessive groundwater pumping and is the largest cause of subsidence. This can result in a permanent reduction in the total storage capacity of the aquifer system in addition to the subsidence evident in the ground surface.

No evidence or records of historic wells at the Project site was encountered during site investigations and record searches. As a result, there appears to be little or no potential for ground subsidence due to withdrawal of fluids or gases at the Project site.

Differential Settlement

Differential settlement is the process whereby soils settle non-uniformly, potentially resulting in stress and damage to utility pipelines, building foundations, or other overlying structures. While strong ground-shaking often greatly exacerbates soil conditions already prone to differential settlement, such movement can also occur in the absence of seismically induced ground failure. Differential settlement occurs due to improper grading and soil compaction, or discontinuity of underlying fill and naturally occurring soils. Differential settlement results in distress and displacement for overlying structures. Elongated structures, such as pipelines or railways, are especially susceptible to damage as a result of differential settlement.

While risk for differential settlement is low in the vicinity of the Zoo, individual projects may encounter increased expansion potential related to soil compaction levels based on site-

specific soil conditions and testing results. In particular, the Zoo may be susceptible to differential settlement where uncompacted fills exist below a development site.

Methane Zones

The Los Angeles Methane Zone Map is a publication by the Los Angeles Department of Building and Safety (LADBS). This map identifies areas of hazardous subsurface methane gas within City limits. Hazardous gas zones are usually a result of naturally surfacing tar and crude oil, or shallow soil contamination by old oil drilling wells. Additionally, landfill sites are known to produce methane soil gas. The Los Angeles Methane Zone Map categorizes two types of zones; methane buffer zones and methane zones, based on proximity to a methane soil gas source. The Zoo is not located within a City Methane Zone or Methane Buffer Zone.

Paleontological Resources

Paleontological resources are the evidence of once-living organisms as preserved in the rock record. They include both the fossilized remains of ancient plants and animals and the traces thereof (e.g., trackways, imprints, burrows, etc.). In general, fossils are older than recorded human history or greater than 5,000 years old and are typically preserved in sedimentary rocks. Although rare, fossils can also be preserved in volcanic rocks and low-grade metamorphic rocks under certain conditions (Appendix J).

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The geologic setting is key to understanding the potential for important paleontological resources to be located at the Project site. As stated above, the hills located on the northern and northwestern portions of the Zoo are composed of quartz diorite bedrock (qd) emplaced during the Late Mesozoic (Cretaceous Period). The low-lying, level portions of the Zoo are blanketed by alluvial material (Qa) deposited during the Quaternary either as alluvial fan deposits from the surrounding more elevated terrain or as fluvial deposits of gravels and sands from the Los Angeles River that currently flows in a concrete channel immediately to the east of the project site. The hills along the southern edge of the site and south of the Zoo are composed of marine sandstone and shale of the Upper Topanga Formation (Ttucg) deposited during the Middle Miocene.

Table 3.7-2. Geologic Units and Paleontological Sensitivity with Project Area

Geologic Unit Symbol	Geologic Unit Name	Age	Paleontological Sensitivity	Location (Phase Area)
Qa	Alluvium	Quaternary	Low (At or Near Surface) Moderate (At Depth)	1, 2, 3, 4, 5, 7
Ttucg	Upper Topanga Formation – Cahuenga Conglomerate Member	Middle Miocene	Moderate	3
qd	quartz diorite	Late Mesozoic (Cretaceous)	Low	1, 2, 3, 4

Source: Dibblee, T.W. and H.E. Ehrenspeck 1991; See Appendix J.

Paleontological resources are found within the geologic deposits or bedrock that underlie the soil layer. A record search was conducted at the Los Angeles County Natural History Museum (LACM) to identify any paleontological localities within or near the Project site and to determine if paleontological resources have been recovered from geologic formation similar to those present, and likely to be impacted, at the Project site. LACM records include four paleontological localities within five miles of the Zoo. Of these four localities, two were recovered from older Quaternary alluvium deposits and two from the middle Miocene Upper Topanga Formation:

- The first Quaternary locality, LACM 6970, was discovered during excavations for the Metrorail Redline Universal City subway tunnel approximately 4.5 miles west of the Zoo at 60 to 80 feet below ground surface. This locality produced fossil specimens of camel (*Camelops hesternus*), bison (*Bison antiquus*), and ground sloth (*Glossotherium harlani*).
- The second Quaternary locality, LACM 342, was originally discovered circa 1940 at a depth of 14 feet below grade. This locality produced fossil specimens of turkey (*Parapavo californicus*) and mammoth (*Mammuthus sp.*).
- The first Miocene locality, LACM 6969, was discovered during excavations for the Metrorail Universal City subway station 4.3 miles west of the Zoo. Fossils specimens recovered from this locality include a diverse array of marine fish fossils, including grunion (*Antherinidae*), herring (*Etringus, Ganolytes,* and *Sardinella*), codlets (*Bregmacerotidae*), croakers (*Sciaenidae*), mackerel (*Scombridae*), and boarfish (*Caproidae*).
- The second Miocene locality, LACM 1084, was discovered near the intersection of Bonnie Hill Drive and Ione Place 4 miles west southwest of the Zoo. Fossil specimens recovered from this locality include material from Paleoparadoxia sp., an odd heavy-bodied, short-legged, marine mammal whose remains are rare in southern California.

3.7.2 Impact Assessment Methodology

Significance Thresholds

According to Appendix G of the CEQA Guidelines and the City of Los Angeles CEQA Thresholds Guide, a project would have a significant impact related to geology and soils if it would:

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

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

   ii. Strong seismic ground shaking,

   iii. Seismic-related ground failure, including liquefaction,

   iv. Landslides,

b. Result in substantial soil erosion or the loss of topsoil;

c. Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project and potentially result in an onsite or offsite 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 direct or indirect 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 wastewater.

Additionally, the Appendix G of the CEQA Guidelines and the *2006 L.A. CEQA Thresholds Guide* state that a project would have a significant impact related to paleontological resources if it would:

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

Non-applicable threshold(s):

- Threshold (e) (Soil capability of supporting wastewater disposal systems): The proposed Vision Plan does not propose the construction or use of a septic tank or alternative wastewater disposal system. All sewage generated onsite would be conveyed to the City's North Outfall Sewer from a system of sewer lines beneath the Zoo (see Section 3.16, Utilities). Therefore, the proposed Project would not result in a significant impact due to soils incapable of adequately supporting the use of septic

tanks or alternative wastewater disposal systems, and this issue will not be analyzed further in this EIR.

Methodology

Geology and Soils

The proposed Project is primarily evaluated for geological risk including but not limited to seismicity, soil stability, and paleontology resources based on the site-specific geotechnical engineering investigation conducted for the Project site in 2019. Sources of regional and local information include, but are not limited to, the State of California's Earthquake Zones of Required Investigation for the Burbank Quadrangle; the Safety Element of the City of Los Angeles General Plan; the City of Los Angeles GIS Application; and the California Department of Conservation.

To evaluate potential hazards relative to geology and soils, a *Draft Geotechnical Report* (2019) was prepared by Ninyo & Moore for the Project. The *Draft Geotechnical Report* included field exploration (i.e., geologic reconnaissance of the site and surrounding areas) and review of background information, including readily available geotechnical reports, geologic maps, fault maps, landslide maps, flood inundation maps, and aerial photographs to determine the characteristics of the subsurface conditions at the Project site. The Geotechnical Report is contained in Appendix J.

Paleontological Resources

Paleontological resources cannot be replaced once they are destroyed. Therefore, paleontological resources are considered non-renewable scientific resources and are protected under CEQA. Specifically, in Section VII(f) of Appendix G of the CEQA Guidelines, the "Environmental Checklist Form," the question is posed: "Will the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?" In order to determine the uniqueness of a given paleontological resource, it must first be identified or recovered (i.e., salvaged). Therefore, mitigation of adverse impacts to paleontological resources is mandated by CEQA.

PRC Section 5097.5 affirms that no person shall willingly or knowingly excavate, remove, or otherwise destroy a vertebrate paleontological site or paleontological feature without the express permission of the overseeing public land agency. Under PRC Section 30244, any development that would adversely impact paleontological resources shall require reasonable mitigation. These regulations apply to projects located on land owned by or under the jurisdiction of the state or any city, county, district, or other public agency.

To assess potential impacts of the Project on paleontological resources, the SVP (2010) guidelines were used for the assessment of potential for paleontological resources to occur within the Project site. According to CEQA, the threshold of significance for impacts to paleontological resources is reached when a project would disturb or destroy scientifically

important fossil remains, as defined by the SVP. Significant paleontological resources are defined as "identifiable" vertebrate fossils, uncommon invertebrate, plant, and trace fossils that provide taphonomic (i.e., the study of what happens to an organism after its death and until its discovery as a fossil), taxonomic, phylogenetic, paleoecologic, stratigraphic, or biochronological data. These data are important because they are used to examine evolutionary relationships, provide insight on the development of and interaction between biological communities, establish time scales for geologic studies, and for many other scientific purposes(Scott and Springer 2003; SVP 2010). A literature review was conducted on museum collections records maintained by the UCMP, USGS published geologic mapping of the Burbank Quadrangle, and the *Draft Geotechnical Report* completed for the Project (Appendix J).

3.7.3 Environmental Impact Analysis

GEO-1: Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earth fault or strong seismic ground shaking?

The Zoo is located within the seismically active region of Southern California. Based on the most recently available studies and past fault mapping, no known faults traverse the Project site. Therefore, it is not mapped within an Alquist-Priolo Fault Zone. The closest fault is the Hollywood Fault, located 2 miles south of the Project site (see Figure 3.7-1).

As with all land in the region, the Project site would potentially be exposed to moderate to strong seismic ground shaking in the event of an earthquake on a nearby fault (e.g., Hollywood Fault, Verdugo Fault, Raymond Fault). A strong earthquake could result in substantial damage to older existing structures and infrastructure, including damage to foundations, shifting of frame structures, and breaking of underground pipes, windows and utilities if required building design measures are not implemented. This type of damage would put visitors and employees in danger from ground shaking and structural damage/collapse. At a given time, there would potentially be between 5,000 and 10,000 people within the Zoo that may be affected during a seismic event under the Project.

However, all new structures constructed at the Zoo would be required to adhere to the most current building standards of the LAMC and Los Angeles Building Code, which adopts CBC standards by reference with local amendments. Adherence to the LAMC and Los Angeles Building Code requirements would ensure the maximum practicable protection available for all structures. Specifically, Section 1613 of the 2016 CBC (Earthquake Loads) requires the seismic-resistant design for the project buildings to factor in a design earthquake that would create average peak ground accelerations of at least 1.0 g. Project design is required to include the application of Los Angeles Building Code seismic standards as the minimum seismic-resistant criteria. Adherence to the seismic design and construction parameters of the Los

Angeles Building Code would ensure the maximum protection feasible of structures and occupants during an earthquake.

In addition, the City is required to prepare and submit a site-specific geotechnical report for review and approval by the LADBS prior to the issuance of a grading or a building permit. Geotechnical reports would be prepared in accordance with the requirements of the County's Manual for Preparation of Geotechnical Reports, which requires projects to evaluate site-specific geologic hazards, including ground shaking hazards. Projects are required to assess the site-specific peak ground acceleration associated with a 10 percent probability of exceedance in 50 years and are required to incorporate seismic design factors to mitigate for such risk. The LADBS requires the approval of a geotechnical report that specifically addresses site and building design at the time of final building plan check. The geotechnical report would be required to identify design requirements for structures and foundations to maintain structural integrity during an earthquake to the maximum extent feasible. All recommendations and design features in the geotechnical report are required to be incorporated into a Project component's building design.

Further, the Zoo currently includes older buildings that do not meet current Los Angeles Building Code and CBC building standards. Many of these buildings may present a hazard to public safety during an earthquake. Redevelopment of existing outdated facilities under the proposed Vision Plan would facilitate the construction of new buildings that meet the most current and stringent seismic requirements, thus reducing the level of risk within each planning area and at the Zoo as a whole, compared to existing conditions. Therefore, compliance with the LABC, CBC, and adherence to the design recommendations detailed in site-specific geotechnical studies would reduce impacts related to seismic ground shaking to *less than significant*.

GEO-2: Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?

In the event of an earthquake on a nearby fault, seismic ground shaking has the potential to cause seismic-related ground failure such as liquefaction, differential settlement, or subsidence. If inadequately constructed without proper engineering design, buildings can experience damage from strong ground shaking during seismic events.

The potential for liquefaction hazards is greatest in areas with shallow, loose, granular, and water-saturated soils where depth to groundwater is 40 feet or less. The geologic hazards, including liquefaction hazards, posed at any given development site within the Project site are dependent upon the type of foundation, the structural design of the building, and the as-graded compaction and stability of the soil on which a structure was built.

Seismic settlement would develop if liquefaction or subsidence of the underlying saturated subsurface soils were to occur during a seismic event. As previously discussed, while the risk

for differential settlement is low to moderate at the Project site, individual projects may encounter increased expansion potential related to soil compaction levels based on site-specific soil conditions and testing results. In particular, the Zoo may be susceptible to differential settlement where uncertified fills exist below a development site.

The Zoo currently includes older buildings that do not meet current Los Angeles Building Code and CBC building standards. Many of these buildings may present a hazard to public safety during an earthquake. Redevelopment of existing outdated facilities under the proposed Vision Plan would involve the construction of new multi-story buildings (e.g., the California and Africa Visitor Centers), some with subterranean structures (e.g., Treetops Visitor Center kitchen). As discussed in GEO-1, all new structures constructed in the Zoo would be required to adhere to the most current building standards of the LAMC and Los Angeles Building Code, which adopts CBC standards by reference with local amendments). Adherence to the LAMC and Los Angeles Building Code requirements would ensure the maximum practicable protection available for all structures constructed within the Project site. Specifically, Section 1613 of the 2016 CBC (Earthquake Loads) requires the seismic-resistant design for buildings to factor in a design earthquake that would create average peak ground accelerations of at least 1.0 g. Project design is required to include the application of Los Angeles Building Code seismic standards as the minimum seismic-resistant criteria. Adherence to the seismic design and construction parameters of the Los Angeles Building Code would ensure the maximum protection feasible of the Zoo animal residents, employees, and visitors. Compliance with the CBC includes procedures to ensure the protection of structures and occupants from seismic hazards during an earthquake.

In addition, the Zoo is required to prepare and submit a site-specific geotechnical report for review and approval by the LADBS prior to the issuance of a grading or a building permit. Geotechnical reports would be prepared in accordance with the requirements of the County's Manual for Preparation of Geotechnical Reports and are required to evaluate site-specific geological hazards, including potential ground failure from liquefaction, and identify seismic design factors to mitigate for such risk. The LADBS requires the approval of a geotechnical report that specifically addresses site and building design at the time of final building plan check. The geotechnical report would be required to identify design requirements for structures and foundations to maintain structural integrity during an earthquake to the maximum extent feasible. All recommendations and design features in the geotechnical report are required to be incorporated into a Project component's building design.

Redevelopment of existing outdated facilities under the proposed Vision Plan would facilitate the construction of new buildings that meet the most current and stringent seismic requirements, thus reducing the level of risk on in each planning area and within the Zoo as a whole, compared to existing conditions. Therefore, compliance with the Los Angeles Building Code, CBC, and adherence to the design recommendations detailed in site-specific geotechnical studies would address potential impacts related to seismic-related ground failure, including liquefaction. With **MM GEO-1** to ensure geotechnical investigations are

completed for each phase of Project development and that engineering techniques and technologies are integrated into final Zoo development plans, impacts related to ground failure would be *less than significant with mitigation*.

GEO-3: Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?

According to the Earthquake Zones of Required Investigation Map for the Burbank Quadrangle, the areas of landslide concern within the Project site include the Zoo Entry and undeveloped hillside proposed for the California planning area. The northwestern portion of the Zoo underlying the existing Papiano Play Park is also designated as an earthquake-induced liquefaction zone. The 2019 geotechnical investigation prepared for the Project concluded that the Project site is not located in an area considered susceptible to large-scale landslides (Appendix J). However, some slopes along the western and northern portions of the site were observed to expose weathered and fractured bedrock and may be subject to small to moderate sized rock falls.

Under the proposed Project, improvements within the California and Africa planning areas would be developed on sites within and adjacent to these exposed rock slopes. Several Project components would involve excavation and building construction techniques that would produce vibrations (such as jackhammering, drilling, blasting, and pile installation). The following Project components would involve excavation activities:

- Condor Canyon in the California planning area could include excavation up to 60 feet below ground surface.
- Aerial tram footings and/or foundations could extend up to 30 feet below the existing ground surfaces, cover approximately 100 square feet (sf) to 200 sf, and may require deep foundations (pile driving or pier drilling). The aerial tram alignment could result in this type and scale of ground disturbance at the Zoo Entry, California, World Aviary, Asia, and Africa planning areas.
- The California Visitor Center, Treetops Visitor Center, and Africa Visitor Center may include foundations extending 20 feet to 30 feet bgs. Treetops Visitor Center would include a subterranean level to support a restaurant and service facilities. Given existing topography, the California Visitor Center may result in hillside cuts with footings that may need deep foundations (pile driving or pier drilling).
- Five underground stormwater cisterns proposed for the Zoo Entry, Asia, Rainforest, and Africa would require excavation up to 20 feet bgs. Installation of stormwater pipes and infrastructure at depths of approximately 4 feet to 10 feet below ground surfaces could occur throughout these planning areas, and the overflow line would disturb soils beneath the existing southern surface parking lot to connect to the Zoo's existing wastewater treatment plant.
- Proposed transportation improvements in Phase 1 would include improvements to Zoo Drive and Western Heritage Way, which may result in excavation of up to

approximately 30 feet bgs to lower the road grade and install a bridge/overpass. The proposed 2,000-space parking structure in the northern surface parking lot is envisioned to have all above ground levels; however, in case a subterranean garage is contemplated, this review assumes the garage may require excavation up to 30 feet bgs.

Per **MM GEO-1**, these slopes would be observed, mapped, and further evaluated for Project components proposed adjacent to exposed rock slopes or if cuts slopes are planned in bedrock areas (e.g., California planning area). Therefore, impacts related to landslide risks would be *less than significant with mitigation*.

GEO-4: Would the project result in substantial soil erosion or the loss of topsoil?

Project construction presents the potential for erosion, particularly within the existing undeveloped areas of the Zoo. Construction of the California planning area, particularly Condor Canyon, as well as the Africa planning area hillsides, and Treetops Visitor Center subterranean kitchen would involve excavation activities that would disturb and loosen soils. The proposed aerial tram construction would also require excavation for installation of the pole foundations. In cases where construction activities would expose, excavate, or stockpile soils, erosion could occur during rain events. Approximately 22 acres of undeveloped areas with native topsoils would be developed under the Project, including 20 acres of topsoils in undeveloped areas in the California and Africa planning areas that would be graded and developed with pavement, structures, and landscaping.

The federal Clean Water Act requires that a NPDES storm water permit be obtained for all construction activities 1 acre or larger. In the State of California, the SWRCB administers the NPDES permit process. Acquisition of an NPDES permit is dependent on the preparation of a Storm Water Pollution Prevention Plan that contains specific actions, termed BMPs, to control the discharge of pollutants, including sediment, into the local surface water drainages.

All Project components would also be required to comply with the Stormwater and Urban Runoff Pollution Control Ordinance (Chapter VI Article 4.4 of the LAMC) to address soil erosion, including topsoil mobilization and loss, and urban runoff. Under this ordinance, construction projects in the City must follow additional specific BMPs. These BMPs must be put into practice at the time of demolition of an existing structure, or at the start of new construction, and must remain in place until a certificate of occupancy has been issued. With adherence to existing state and local regulations that address soil erosion, impacts potentially resulting from erosion or loss of topsoil would be *less than significant*.

GEO-5: Would the project be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project and potentially result in an onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse?

During construction phases, excavation for California's Condor Canyon, Treetop Terrace's subterranean kitchen, the Africa hillside, and the aerial tram foundations may loosen exposed

soils or slopes. Exposed soil can cause instability within the excavation site or compromised stability for adjacent properties. As such, adequate sloping or shoring of soils would be necessary to provide structural support for neighboring buildings to prevent soil collapse during excavation. Shoring involves providing supports to hold the soil back, thereby providing sufficient support to maintain soil strength.

All excavation activities in the Project site would be required to adhere to mandatory regulations set forth by the California Occupational Safety and Hazard Administration (CalOSHA) to ensure the safety of construction workers during excavation. These regulations include all requirements of Section 1541 (General Requirements) of Title 8 of the California Code of Regulations. Excavation activities would also be required to adhere with all provisions of the Los Angeles Building Code and CBC, including Section 3304 of Chapter 33 of the CBC, which includes requirements for safeguards at work sites to ensure stable excavations and cut or fill slopes. Excavation and shoring requirements are enforced through the City's plan check process, which requires that project applicants prepare and submit excavation and shoring plans to the LADBS prior to the issuance of a building permit.

In addition, the City is required to prepare and submit a site-specific geotechnical report for review and approval by the LADBS prior to the issuance of a grading or a building permit. Geotechnical reports would be prepared in accordance with the County's Manual for Preparation of Geotechnical Reports, which requires projects to evaluate site-specific geotechnical hazards and soil stability including soil creep, surficial stability, hydrocollapse/heave, compacted soils/fill, and shoring/excavation. The LADBS requires the approval of a geotechnical report that specifically addresses site and building design at the time of final building plan check. With **MM GEO-1**, these required geotechnical investigations would be completed for each phase of Project development and engineering techniques and technologies are integrated into final Zoo development plans. The geotechnical report would be required to identify building design requirements to ensure soil stability to the maximum extent feasible. All recommendations and design features in the geotechnical report are required to be incorporated into a Project component's building design.

Further, the Zoo currently includes older buildings that do not meet current Los Angeles Building Code and CBC building standards. Many of these buildings may present a hazard to public safety during an earthquake. Redevelopment of outdated facilities under the proposed Vision Plan would facilitate the construction of new buildings that meet the most current and stringent building safety requirements, thus reducing the level of risk on a site and within the Zoo as a whole, compared to existing conditions. Therefore, compliance with the SM Los Angeles Building Code BC, CBC, and adherence to the design recommendations detailed in site-specific geotechnical studies would address potential impacts related to unstable soils.

Based on groundwater monitoring wells in the Project vicinity, the depth to groundwater in the vicinity of the site is estimated between 20 and 50 feet below the existing ground surface

of the lower elevation areas of the Project site (e.g., the central portion of the Zoo). Redevelopment of outdated facilities under the proposed Vision Plan could involve the construction of subterranean structures up to 30 feet bgs. Groundwater dewatering may be necessary for the construction of subterranean structures in areas with a high groundwater table such as construction of the Treetops Terrace subterranean kitchen, where the 2019 geotechnical investigation indicated depth to groundwater ranging from 20 to 50 feet below grade. Additionally, in cases where the there is a high or perched groundwater table where the floor of subterranean structure encounters the groundwater table, ongoing groundwater dewatering may be necessary to prevent the percolation or inflow of groundwater into excavation pits and future basement levels. If the dewatering of groundwater is necessary, a dewatering permit from the RWQCB would be obtained (see Section 3.10, *Hydrology and Water Quality*).

As previously discussed, the City is required to prepare and submit a site-specific geotechnical report for review and approval by the LADBS prior to the issuance of a grading or a building permit. Geotechnical reports would be prepared in accordance with the requirements of the County's Manual for Preparation of Geotechnical Reports and are required to evaluate site-specific geological hazards, including groundwater hazards. The LADBS requires the approval of a geotechnical report that specifically addresses site and building design at the time of final building plan check. The geotechnical report would be required to identify known historic groundwater levels onsite and identify measures to address groundwater impacts such as dewatering during construction as needed to protect against water contact and to minimize the seeping of water into the subterranean structure. All recommendations and design features in the geotechnical report are required to be incorporated into a Project component's building design. Therefore, with **MM GEO-1** to ensure geotechnical investigations are completed for each phase of Project development and that engineering techniques and technologies are integrated into final Zoo development plans, geologic risks associated with unstable geology would be minimized and impacts would be *less than significant with mitigation*.

GEO-6: Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

The mapped surface geology of the Zoo includes three geological units as described above quartz diorite (qd), Quaternary alluvium (Qa), and Topanga Formation (Ttucg). Of these three units, two are sedimentary units, Qa, and Ttucg, with Moderate to High potential to contain significant paleontological resources. While the surficial components of the Quaternary-aged alluvial deposits may be generally too young or disturbed by previous surface disturbance to contain significant paleontological resources, fossil resources including a partial mammoth skeleton have been recovered during deeper excavations, greater than 10 feet bgs, of these units within five miles of the Zoo. Topanga Formation sediments located in the southwest portion of the Zoo, specifically within the Africa planning

area as the potential to contain significant paleontological resources at whatever depth it is encountered, including the surface.

Under the proposed Project, phased development would involve excavation and building construction techniques that would potentially impact paleontological resources depending upon their location and depth of excavation. The following Project components would involve excavation activities:

- Condor Canyon in the California planning area could include excavation up to 60 feet bgs in areas mapped as Qa and qd
- Aerial tram footings and/or foundations could extend up to 30 feet below the existing ground surfaces, cover approximately 100 square feet (sf) to 200 sf, and may require deep foundations (pile driving or pier drilling). The aerial tram alignment could result in this type and scale of ground disturbance at the Zoo Entry, California, World Aviary, Asia, and Africa planning areas in areas mapped as Qa and qd.
- The California Visitor Center, Treetops Visitor Center, and Africa Visitor Center may include foundations and/or hillside cuts extending 20 feet to 30 feet bgs all within areas mapped as Qa. Treetops Visitor Center would include a subterranean level to support a restaurant and service facilities.
- Five underground stormwater cisterns proposed for the Zoo Entry, Asia, Rainforest, and Africa would require excavation up to 20 feet bgs. Installation of stormwater pipes and infrastructure at depths of approximately 4 feet to 10 feet below ground surfaces could occur throughout these planning areas, and the overflow line would disturb soils beneath the existing southern surface parking lot to connect to the Zoo's existing wastewater treatment plant.
- Proposed transportation improvements in Phase 1 would include improvements to Zoo Drive and Western Heritage Way, which may result in excavation of up to approximately 30 feet bgs in areas mapped a Qa. Additionally, the proposed 2,000-space parking structure, in an area mapped as Qa, is envisioned to have all above ground levels; however, in case a subterranean garage is contemplated, this review assumes the garage may require excavation up to 30 feet bgs to account for potential subterranean levels.

Adverse environmental impacts on paleontological resources would potentially result from ground disturbing activities that would impact any part of the Upper Topanga Formation or Quaternary-aged alluvial deposits at 10 feet or greater bgs. These impacts would result from the potential destruction of fossil specimens by construction equipment or activities necessary to implement the Vision Plan These adverse impacts would be considered significant if not mitigated through the implementation of recommended measures below. Mitigation measures would generally include monitoring of ground disturbing activities for discovery of fossil specimens as well as subsequent collection, preparation, and permanent deposition in a designated repository of fossil specimens. These actions would preserve paleontological resources that would otherwise be permanently lost.

Operation of the Zoo, following completion, of ground disturbing activities associated with all phases of the Vision Plan would not require additional ground disturbing activities that would impact any previously undisturbed geological units and; therefore, would not result in the permanent loss of, or loss of access to, any paleontological resource of significance. Therefore, no operational impact on paleontological resources would occur.

Per **MM GEO-2** and **MM GEO-3**, implementation of combined paleontological resource mitigation plan with as-needed monitoring and worker training would reduce potentially significant impacts to paleontological resources through the recovery, preparation, deposition, and maintenance of fossil specimens uncovered during ground disturbing activities in an appropriate museum repository. Thus, impacts would be *less than significant with mitigation*.

3.7.4 Mitigation Measures

MM GEO-1 Site-Specific Geotechnical Evaluation

Prior to the design and construction of proposed improvements at in each phase of the Project, a detailed geotechnical evaluation, including subsurface exploration and laboratory testing, shall be performed, consistent with LADBS standards and approvals. The geotechnical evaluation shall 1) further evaluate the specific subsurface conditions, including liquefaction and landslide potential, at each development site, 2) provide site-specific data regarding potential geologic and geotechnical constraints, and 3) provide information pertaining to the engineering characteristics of earth materials with regard to the proposed Project. Recommendations for earthwork, excavations, foundations, shoring, pavements, and other pertinent geotechnical design considerations shall be formulated from the detailed geotechnical evaluation. In the California planning area, the proposed hillside cut, excavation, and reinforcement required for Condor Canyon and its potential bridges shall be evaluated and designed with appropriate shoring mechanisms to avoid landslide and soil instability during construction and operation. The recommendations of the geotechnical report shall be incorporated into the final design and construction of the Project components. The geotechnical reports shall analyze for the following hazards:

- If the site-specific geotechnical evaluation finds that slope instability is an issue in certain phases of development such as California and Africa planning area improvements, engineering techniques and technologies as retaining walls or graded soil buttresses, shall be employed during construction and/or operation.
- If the site-specific geotechnical evaluation finds that liquefaction is an issue in certain phases of development such as development of Zoo Entry, Nature Play Park, or Asia planning area improvements or the proposed parking structure, engineering techniques and technologies such as removal and recompaction, densification of existing soils, or deepened foundations shall be employed during construction and operation.

- If the site-specific geotechnical evaluation finds that expansive soils are an issue in certain phases of development such as development of Zoo Entry, Nature Play Park, or Asia planning area improvements, engineering techniques and technologies such as removal and replacement with low expansive materials or special reinforced design of foundations and slabs shall be employed during construction and operation.
- If the site-specific geotechnical evaluation finds that dynamic compaction of dry soils is an issue in certain phases of development, engineering techniques and technologies such as removal and recompaction, densification of existing soils, or deepened foundations may be employed during construction and operation.

The Zoo shall prepare each geotechnical evaluation for each improvement in Phases 1 – 7 to inform final design and engineering of improvements. Each geotechnical investigation shall be reviewed and approved by LADBS and the City Bureau of Engineering prior to groundbreaking of each phase. LADBS and the City of Bureau of Engineering shall review and approve all geotechnical investigations and review final Zoo development and engineering plans to ensure geotechnical recommendations are accurately incorporated prior to Project-related construction.

MM GEO-2 Site-specific Paleontological Mitigation Plan

A qualified paleontologist approved by the City of Los Angeles and the Los Angeles County Natural History Museum Vertebrate Paleontology Department shall be retained prior to earth-moving activities associated with construction of any individual Project phase. Prior to these earth-moving activities, the paleontologist shall determine if a site-specific mitigation plan is required for each phase based on the underlying geology and the proposed depths of excavation proposed by development and engineering plans for each phase. If a site-specific mitigation plan is required, the plan shall specify the level and types of mitigation efforts as set forth below, based on the types and depths of any ground disturbing activities and associated, impacted geological unit.

Where a site-specific mitigation plan is required, earth-moving activities shall be monitored by the paleontologist or a monitor. Monitoring is only required in those areas of the individual development phase where these activities would disturb previously undisturbed geological units and dependent upon the units present. Monitoring shall be conducted on a full-time basis in areas underlain by the Upper Topanga Formation, and at depths greater than 10 feet bgs in areas underlain by Quaternary alluvium. Monitoring shall consist of:

- Visually inspecting debris piles and freshly exposed cuts for larger fossil remains
- Periodic dry screening sediment, rock, and debris for smaller fossil remains
- Recovery of all vertebrate fossil specimens, a representative sample of invertebrate or plant fossils, or any fossiliferous rock sample that may be easily recovered

- Diversion of ground disturbing activities away from large or unusually productive fossil localities for the time that is required to recover the resource by the paleontologist or monitor(s)
- Notification of the paleontologist or monitor (if not on-site) by the construction crew of any unanticipated discoveries of fossil resources. Ground disturbing activities will be temporarily diverted while the paleontologist or monitor assess the resource and determine if recovery is warranted or if ground-disturbing activities may resume in the area.
- Collection of rock or sediment samples of the Upper Topanga Formation or Quaternary alluvium for each construction site for processing for small fossils. The total weight of all processed samples from either rock unit shall not exceed 1,000 pounds (2,000 pounds total). The results of processing initial 250-pound test samples shall be used by the paleontologist in determining how much of the remaining total samples shall be collected and processed. More of the samples shall be processed if the recovered remains are sufficiently concentrated (at least 4-5 identifiable specimens per sample), generally identified to genus or species level, and represent a taxonomically diverse faunal assemblage. With the development of each successive construction site, the paleontologist or monitor, may specify that less than 1,000 pounds shall be processed, based on the amount of excavation and other ground disturbing activities that would occur in areas underlain by the Quaternary alluvium, 10 feet bgs, or Upper Topanga Formation, and on the results of processing samples from the same rock unit at previous construction sites.
- Unless potentially fossilized remains are discovered at or near the surface, no paleontological monitoring of ground disturbing activities in the Quaternary alluvium at depths less than 10 feet bgs, and no samples shall be collected or processed.
- The paleontologist or monitor shall maintain daily monitoring logs that record the tasks accomplished, locations, where ground disturbing activities and monitoring were conducted, geological units encountered, any fossil specimen recovered, and associated specimen data and geologic and geographic site data.

If no fossil remains are found after 50 percent of ground-disturbing activities have been completed in an area underlain by Quaternary alluvium or Upper Topanga Formation, monitoring may be reduced or suspended in the remainder of that area with approval from the City of Los Angeles.

If a site-specific mitigation program is required, the paleontologist shall reach a formal agreement with a recognized museum repository, such as the Los Angeles County Natural History Museum, before the mitigation program begins. The agreement shall include specifications regarding final disposition and permanent storage and maintenance of any fossil specimens recovered as part of the mitigation program as well as archiving associated fossil specimen data and corresponding geologic and geographic site data, and level of treatment/preparation of the fossil specimens. The fossil collection shall be donated to a

public, nonprofit repository with a research interest in the collection. The costs to be charged by the repository for curating and permanently storing the collected fossil specimens shall be specified in the repository agreement.

If paleontological resources are discovered and curated as a result of a required site-specific mitigation program, a final technical report of results and findings shall be prepared by the paleontologist in accordance with City of Los Angeles requirements, as applicable. Copies of the final report and any supporting documentation, including the paleontologist's or monitor's field notes and fossil site maps shall be archived at the designated repository. The final report shall be prepared upon completion of ground disturbing activities for the first applicable phase of Project development. Subsequent reports for additional phases shall be issued as addenda to the first final report. Individual projects whose ground disturbing activities are completed within a single calendar year may be addressed collectively in one report or addendum, as applicable.

MM GEO-3 Worker Paleontological Resource Awareness Program

Prior to construction of each phase, workers shall receive education regarding the recognition of possible paleontological resources, during grading and excavation. Such training shall provide construction personnel with direction regarding the procedures to be followed in the unlikely event that previously unidentified paleontological materials are discovered during construction. Training shall also inform construction personnel that unauthorized collection or disturbance of paleontological resources is not allowed. The training shall be prepared by a City-approved paleontologist and shall provide a description of paleontological resources that may be encountered in the Project site, outline steps to follow in the event that a discovery is made, and provide contact information for the Project paleontologist and appropriate City personnel. The training shall be conducted concurrent with other environmental or safety awareness and education programs for the Project, provided that the program elements pertaining to paleontological resources is provided by a qualified instructor meeting applicable professional qualifications standards. To prevent inadvertent potential significant impacts to paleontological resources that may be encountered during ground disturbance or construction activities, in the event of any inadvertent discovery of paleontological resources during construction, all work within the vicinity of the resource established by the City-approved paleontologist shall temporarily cease. If a paleontological resource is discovered, the City-approved paleontologist shall be notified to assess the significance of the find and provide recommendations as necessary for its proper disposition and the need for a site-specific mitigation plan, consistent with MM GEO-2.

3.7.5 Impacts Summary

Geology, soils, and paleontological impacts would be less than significant with implementation of the above identified mitigation measures. There would be no unavoidable adverse geological impacts associated with the proposed Project.

3.8 GREENHOUSE GAS EMISSIONS

Environmental impacts may arise from atmospheric discharges of pollutants known to contribute to climate change. These greenhouse gases (GHG) are produced by sources involved in facility construction and operation. Sources of emissions involved in construction activities include heavy-duty off-road equipment and on-road vehicle trips. Operational emissions would be predominantly attributed to mobile source vehicle trips by employees and patrons, and additional emissions associated with facility maintenance and other energy and utility resources. A significant GHG emissions impact would occur if a project would generate GHG emissions of sufficient magnitude to conflict with reduction targets promulgated by state, regional, and local authorities. Implementation of the Project, along with applicable mitigation, would result in consistency with many of the state, regional, and local regulations adopted to reduce GHG emissions.

This section analyzes the potential for implementation (i.e., construction and operation) of the Los Angeles Zoo and Botanical Gardens (Zoo) Vision Plan (Vision Plan; Project) to generate GHG emissions of sufficient nature and magnitude to cause significant impacts to the environment pertaining to climate change and achieving applicable GHG emissions reductions targets.

3.8.1 Topical Background

Greenhouse Gases

The term GHG emissions refers to a class of air pollutant emissions that are generally acknowledged to affect global climate conditions. The "greenhouse effect" is an analogy that compares the Earth and its atmosphere to a greenhouse with glass panes. The glass panes in a greenhouse let heat from sunlight in and reduce the amount of heat that escapes; the atmosphere works through similar mechanisms to trap heat energy close to the Earth's surface. The greenhouse effect maintains a habitable climate on the planet, although large magnitudes of GHG emissions from anthropogenic sources since the industrial revolution have created an excess of these gases in the atmosphere.

GHG pollutants most prevalently generated by human activities that have the greatest quantifiable influence on climate include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). In addition to CO_2, CH_4, and N_2O, GHGs include hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF6), black carbon (black carbon is the most strongly light-absorbing component of particulate matter emitted from burning fuels such as coal, diesel, and biomass), and water vapor. CO_2 is the most abundant pollutant that contributes to climate change through fossil fuel combustion. The other GHGs are less abundant but have higher global warming potential than CO_2. To account for this higher

potential, emissions of other GHGs are frequently expressed in the equivalent of CO_2, denoted as CO_2e. CO_2e is a measurement used to account for the fact that different GHGs have different potential to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. This potential, known as the global warming potential (GWP) of a GHG, is dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. Table 3.8-1 shows the GWP for some of the most environmentally prevalent GHGs.

Table 3.8-1. Global Warming Potential for Various Greenhouse Gases

Pollutant	Lifetime (Years)	Global Warming Potential (20-Year)	Global Warming Potential (100-Year)
Carbon Dioxide (CO_2)	--	1	1
Methane (CH_4)	12	21	25
Nitrous Oxide (N_2O)	114	310	298
Nitrogen Trifluoride	740	Unknown	17,200
Sulfur Hexafluoride (SF_6)	3,200	23,900	22,800
Perfluorocarbons (PFCs)	2,600-50,000	6,500-9,200	7,390-12,200
Hydrofluorocarbons (HFCs)	1-270	140-11,700	124-14,800

Source: California Air Resources Board (CARB) 2019a.

GHGs are the result of both natural and human-influenced activities. Volcanic activity, forest fires, decomposition, industrial processes, landfills, consumption of fossil fuels for power generation, transportation, heating, and cooling are the primary sources of GHG emissions. Without human activity, the Earth would maintain an approximate, but varied, balance between the emission of GHGs into the atmosphere and the storage of GHG in oceans and terrestrial ecosystems. Increased combustion of fossil fuels (e.g., gasoline, diesel, coal, etc.) has contributed to a rapid increase in atmospheric levels of GHGs over the last 150 years.

Effects of Global Climate Change

The primary effect of rising global concentrations of atmospheric GHG levels is a rise in the average global temperature of approximately 0.2 degrees Celsius (°C) per decade, determined from meteorological measurements worldwide between 1990 and 2005. Climate change modeling using 2000 emission rates shows that further warming is likely to occur given the expected rise in global atmospheric GHG concentrations from innumerable sources of GHG emissions worldwide (including from economically developed and developing countries and deforestation), which would induce further changes in the global climate system during the current century (U.S. Environmental Protection Agency [EPA] 2013).

The scientific community's understanding of the fundamental processes responsible for global climate change has improved over the past decade, and its predictive capabilities are advancing. However, there remain significant scientific uncertainties in, for example, predictions of local effects of climate change, occurrence, frequency, and magnitude of extreme weather events, effects of aerosols, changes in clouds, shifts in the intensity and

distribution of precipitation, and changes in oceanic circulation. Due to the complexity of the Earth's climate system and inability to accurately model it, the uncertainty surrounding climate change may never be eliminated. Nonetheless, the Intergovernmental Panel on Climate Change (IPCC), in its Fifth Assessment Report, Summary for Policy Makers, stated that, "it is extremely likely that more than half of the observed increase in global average surface temperature from 1951 to 2010 was caused by the anthropogenic increase in greenhouse gas concentrations and other anthropogenic forcings [sic] together" (IPCC 2013). A report from the U.S. National Academy of Sciences (USNAS) concluded that 97 to 98 percent of the climate researchers most actively publishing in the field support the tenets of the IPCC in that climate change is very likely caused by human (i.e., anthropogenic) activity (USNAS 2010).

According to the California Air Resources Board (CARB), adverse effects from global climate change worldwide and in California could include:

- Declining sea ice and mountain snowpack levels, thereby increasing sea levels and sea surface evaporation rates with a corresponding increase in atmospheric water vapor due to the atmosphere's ability to hold more water vapor at higher temperatures;
- Rising average global sea levels primarily due to thermal expansion and the melting of glaciers, ice caps, and the Greenland and Antarctic ice sheets;
- Changing weather patterns, including changes to precipitation, ocean salinity, and wind patterns, and more energetic aspects of extreme weather including droughts, heavy precipitation, heat waves, extreme cold, and the intensity of tropical cyclones;
- Declining Sierra Mountains snowpack levels, which account for approximately half of the surface water storage in California, by 70 percent to as much as 90 percent over the next 100 years;
- Increasing the number of days conducive to ozone formation (e.g., clear days with intense sun light) by 25 percent to 85 percent (depending on the future temperature scenario) in high ozone areas located in the Southern California area and the San Joaquin Valley by the end of the 21st Century; and
- Increasing the potential for erosion of California's coastlines and seawater intrusion into the Sacramento Delta and associated levee systems due to the rise in sea level.

Below is a summary of some of the potential effects that could be experienced in California as a result of global warming and climate change.

Air Quality

Higher temperatures, conducive to air pollution formation, could worsen air quality in California. Climate change may increase the concentration of ground-level ozone, but the magnitude of the effect and, therefore, its indirect effects, are uncertain. If higher temperatures are accompanied by drier conditions, the potential for large wildfires could increase, which, in turn, would exacerbate air quality. Additionally, severe heat accompanied

by drier conditions and poor air quality could increase the number of heat-related deaths, illnesses, and asthma attacks throughout the State (CARB 2013). However, if higher temperatures are accompanied by wetter, rather than drier conditions, the rains would temporarily clear the air of particulate pollution and reduce the incidence of large wildfires, thus ameliorating the pollution associated with wildfires.

In 2009, the California Natural Resources Agency (CNRA) published the California Climate Adaptation Strategy as a response to the Governor's Executive Order (EO) S-13-2008. The CNRA report lists specific recommendations for State and local agencies to best adapt to the anticipated risks posed by a changing climate. In accordance with the California Climate Adaptation Strategy, the California Energy Commission (CEC) was directed to develop a website on climate change scenarios and impacts that would be beneficial for local decision makers. The website, known as Cal-Adapt, became operational in 2011. The information provided on the Cal-Adapt website represents a projection of potential future climate scenarios. The data are comprised of the average values (i.e., temperature, sea-level rise, snowpack) from a variety of scenarios and models and are meant to illustrate how the climate may change based on a variety of different potential social and economic factors. According to the Cal-Adapt website, the portion of the City of Los Angeles (City) in which the Project Site is located could result in an average increase in temperature of approximately 4.7 degrees Fahrenheit (°F) to 7.4 °F by 2070–2099, compared to the baseline 1961–1990 period (73.3 °F), which is a potential increase of approximately 6 to 10 percent. Data suggest that the predicted future increase in temperatures as a result of climate change could potentially interfere with efforts to control and reduce ground-level ozone in the region.

Water Supply

Uncertainty remains with respect to the overall impact of global climate change on future water supplies in California. Studies have found that, "Considerable uncertainty about precise impacts of climate change on California hydrology and water resources will remain until we have more precise and consistent information about how precipitation patterns, timing, and intensity will change." For example, some studies identify little change in total annual precipitation in projections for California while others show significantly more precipitation. Warmer, wetter winters would increase the amount of runoff available for groundwater recharge; however, this additional runoff would occur at a time when some basins are either being recharged at their maximum capacity or are already full. Conversely, a reduced snowpack coupled with increased rainfall during winters could lead to reductions in spring runoff and higher evapotranspiration because of higher temperatures could reduce the amount of water available for recharge.

Hydrology and Sea Level Rise

As discussed above, climate change could potentially affect: the amount of snowfall, rainfall and snow pack; the intensity and frequency of storms; flood hydrographs (flash floods, rain or snow events, coincidental high tide and high runoff events); sea level rise and coastal

flooding; coastal erosion; and the potential for salt water intrusion. Sea level rise can be a product of global warming through two main processes: expansion of seawater as the oceans warm and melting of ice over land. A rise in sea levels could result in coastal flooding and erosion and could jeopardize California's water supply. Increased storm intensity and frequency could affect the ability of flood-control facilities, including levees, to handle storm events.

Agriculture

California has a $30-billion agricultural industry that produces half the country's fruits and vegetables. Higher CO2 levels can stimulate plant production and increase plant water-use efficiency. However, if temperatures rise and drier conditions prevail, water demand could increase; crop-yield could be threatened by a less reliable water supply; and greater ozone pollution could render plants more susceptible to pest and disease outbreaks. In addition, temperature increases could change the time of year certain crops, such as wine grapes, bloom or ripen, and thus affect their quality.

Ecosystems and Wildlife

Increases in global temperatures and the potential resulting changes in weather patterns could have ecological effects on a global and local scale. Increasing concentrations of GHGs are likely to accelerate the rate of climate change. Scientists expect that the average global surface temperature could rise by 2-11.5 °F (1.1-6.4 °C) by 2100, with significant regional variation. Soil moisture is likely to decline in many regions, and intense rainstorms are likely to become more frequent. Sea level could rise as much as 2 feet along most of the United States coastline. Rising temperatures could have four major impacts on plants and animals: (1) timing of ecological events; (2) geographic range; (3) species' composition within communities; and (4) ecosystem processes such as carbon cycling and storage.

Other types of environmental impacts related to air pollutant emissions and energy efficiency are assessed in other sections of this EIR as follows: air pollutant emissions from construction and operation of the Project are addressed in Section 3.2, *Air Quality*, and energy resources and efficiency are addressed in Section 3.5, *Energy*.

3.8.2 Environmental Setting

Regulatory Setting

Global climate change is addressed through the efforts of various federal, state, regional, and local government agencies, as well as national and international scientific and governmental conventions and programs. These agencies work jointly and individually to understand and regulate the effects of GHG emissions and resulting climate change through legislation, regulations, planning, policymaking, education, and a variety of additional programs. Federal, state, and local laws and regulations have been enacted that address GHG emissions

and the consequences of climate change. The EPA is responsible for implementing federal policy to address GHG emissions, and the CARB has jurisdictional authority at the state level.

International and Federal Regulations

The federal government administers a wide array of public-private partnerships to reduce GHG intensity generated in the United States. Those programs focus on energy efficiency, renewable energy, methane and other non-CO_2 gases, agricultural practices, and implementation of technologies to achieve GHG reductions. The EPA implements numerous voluntary programs that contribute to the reduction of GHG emissions. These programs (e.g., the Energy Star labeling system for energy-efficient products) encourage voluntary endeavors by large corporations, consumers, industrial and commercial buildings, and many major industrial sectors to enhance energy efficiency and lessen GHG emissions.

International Protocols.

In 1988, the United Nations established the IPCC to evaluate the impacts of global warming and to develop strategies that nations could implement to curtail global climate change. In June 1992, the U.S. joined other countries in the United Nations Framework Convention on Climate Change (UNFCCC) agreement with the goal of stabilizing GHG emissions. The treaty itself set no binding limits on GHG emissions for individual countries and contains no enforcement mechanisms. In that sense, the treaty is considered legally non-binding. Instead, the treaty provides a framework for negotiating specific international treaties (i.e., "protocols") that may set binding limits on GHGs.

The Kyoto Protocol was the first treaty made under the UNFCCC on December 1, 1997 and was the first international agreement that commits signatories to reduce GHG emissions. The Protocol sets emissions targets for developed countries which are binding under international law. The Kyoto Protocol has had two commitment periods, the first of which lasted from 2005 to 2012, and the second from 2012 to 2020. The U.S. did not ratify the Kyoto Protocol. It has been estimated that if the commitments outlined in the Kyoto Protocol were met, global GHG emissions could have been reduced by an estimated 5 percent from 1990 levels during the first commitment period of 2008 to 2012.

In December 2009, international leaders from 192 nations met in Copenhagen to address the future of international climate change commitments post-Kyoto, but no binding agreements were reached. However, countries did ratify the Copenhagen Accord, a non-binding agreement. The Copenhagen Accord, a voluntary agreement between the U.S., China, India, and Brazil, recognizes the need to keep global temperature rise to below 2 degrees Celsius (°C) or 3.6 degrees Fahrenheit (°F) and obligates signatories to establish measures to reduce GHG emissions and to prepare to provide help to poorer countries in adapting to global climate change.

Representatives from 194 United Nations member nations, including business leaders and nongovernment organizations, met in Cancun, Mexico in December 2010 to participate in the

United Nations Climate Change Conference (COP-16). In all, approximately 12,000 participants met to work out the language and reduction targets of a new agreement. The result was the Cancun Agreements, a voluntary non-binding agreement similar to the Copenhagen Accord, but with broader United Nation member nation support. The Cancun Agreements set the stage for the climate conference in Durban, South Africa, where the unresolved issues – including the future of the Kyoto Protocol and a binding agreement – would be addressed. The key elements of the Cancun Agreements are as follows:

- Countries agree to keep temperature rise below 2 °C above pre-industrial levels and developed countries are urged to make more aggressive pledges on cutting emissions.
- A $30 billion package ("fast-start financing") for 2012 to aid nations taking immediate action to adapt to global warming.
- Creation of a "Global Climate Fund" that will provide financing of $100 million annually for longer-term adaptation and mitigation measures in developing countries. The World Bank was designated as its interim trustee.
- Creation of the forestry program, Reducing Emissions from Deforestation and Forest Degradation, which provides compensation for the preservation of tropical forests in developing countries.
- Specific language and a formal system for monitoring and reporting emissions. This includes a process of "international consultations and analysis" for developing countries that is "nonintrusive, nonpunitive, and respectful of national sovereignty," incorporating analysis by technical experts and resulting in a summary report.

The UNFCCC met again in December 2011 in Durban, South Africa to continue deliberating on a treaty to replace the Kyoto Protocol, which ended in 2012. The conference resulted in progress regarding the creation of a Green Climate Fund (GCF) for which a management framework was adopted.

During the second commitment period, known as the Doha Amendment to the Kyoto Protocol, participants committed to reduce GHG emissions by at least 18 percent below 1990 levels in the 8-year period from 2013 to 2020; however, the composition of participants in the second commitment period is different from the first commitment period. Of the 37 countries with binding commitments during the second commitment period, 7 have ratified. As discussed further below, rather than further amend the Kyoto Protocol, the next climate summit resulted in the Paris Agreement, which became the successor to the Kyoto Protocol.

The 2015 United Nations Climate Change Conference (COP-21) was held in Paris, from November 30 to December 11, 2015. It was the 21st annual session of the Conference of the Parties to the 1992 UNFCCC and the 11th session of the Meeting of the Parties to the 1997 Kyoto Protocol. The conference agreed to a legally binding deal to limit temperature rise well below 2 °C. The deal also includes a long-term emissions goal, which aims to peak global GHG emissions "as soon as possible" and to achieve "balance" between emissions and sinks in the second half of the century. Countries which have submitted targets for 2025 are then urged

to come back in 2020 with a new target, while those with 2030 targets are invited to "communicate or update" them. This process will essentially be repeated every 5 years, with the first post-2020 stock-take occurring in 2023. The agreement also places a legal obligation on developed countries to continue to provide climate finance to developing countries. It also encourages other countries to provide support voluntarily – a compromise between the highly-polarized positions that have taken center stage at the negotiations. The U.S. – along with all 195 United Nations member countries present at the COP-21, committed to the Paris Agreement – and accepted it by Executive Order in September 2016. However, in June 2017, the U.S. gave notice of withdrawal from the Paris Agreement.[1]

Federal Clean Air Act.

The EPA is responsible for implementing federal policy to address global climate change. The federal government administers a wide array of public-private partnerships to reduce U.S. GHG emissions. These programs focus on energy efficiency, renewable energy, methane and other non-CO_2 gases, agricultural practices, and implementation of technologies to achieve GHG reductions.

The U.S. Supreme Court ruled on April 2, 2007, in *Massachusetts v. U.S. Environmental Protection Agency* that CO_2 is an air pollutant, as defined under the Clean Air Act Amendments, and that the EPA has the authority to regulate emissions of GHGs. The EPA announced that GHGs – including CO_2, CH_4, N_2O, hydrofluorocarbons (HFCs), perfluorocarbons (PFC), and Sulfur hexafluoride (SF_6) – threaten the public health and welfare of the American people. This action was a prerequisite to finalizing the EPA's GHG emissions standards for light-duty vehicles, which were jointly proposed by the EPA and the U.S. Department of Transportation's National Highway Traffic Safety Administration (NHTSA). The standards were established on April 1, 2010 for 2012 through 2016 model year vehicles and on October 15, 2012 for 2017 through 2025 model year vehicles.

NHTSA and the EPA issued a final action entitled the "One National Program Rule" in September 2019 to enable the federal government to provide nationwide uniform fuel economy and GHG emission standards for automobile and light duty trucks. This action finalizes critical parts of the Safer, Affordable, Fuel-Efficient (SAFE) Vehicles Rule that was first proposed in August 2018. This action makes clear that federal law preempts State and local tailpipe GHG emissions standards as well as zero emission vehicle (ZEV) mandates (EPA 2019b). California and 22 other states filed a lawsuit in the U.S. Court of Appeals for the District of Columbia Circuit in November 2019 to block the One National Program Rule.

[1] Article 28 of the Paris Agreement states a country may give notice of withdrawal from the agreement after 3 years of its start date in the country, which was on November 4, 2016 for the U.S. On November 4, 2019, the U.S. administration gave a formal notice of intention to withdraw. As the formal notice takes 12 months to take effect, the earliest possible effective withdrawal date by the U.S. is November 4, 2020, 4 years after the Paris Agreement came into effect in the U.S.

There will not be a resolution on the merits for now, as the administration's motion is purely procedural.

On May 13, 2010, the EPA issued a Final Rule that took effect on January 2, 2011, setting a threshold of 75,000 MT CO_2e per year for GHG emissions from major industrial facilities. The EPA has not yet adopted thresholds for other GHG sources, although carbon pollution standards have been proposed to cut carbon pollution from existing and new power plants, the largest source of GHG emissions in the U.S.

Pavley Standards.

In 2009, a national policy was adopted for fuel efficiency and emissions standards in the U.S. auto industry, which applies to passenger cars and light-duty trucks for model years 2012 to 2016 (referred to as the Pavley standards). The standards surpass the prior Corporate Average Fuel Economy standards and requires an average fuel economy standard of 35.5 miles per gallon (mpg) and 250 grams of CO_2 per mile by model year 2016, based on EPA calculation methods. In 2012, standards were adopted for model year 2017 to 2025 for passenger cars and light-duty trucks. By 2025, vehicles are required to achieve 54.5 mpg (if GHG reductions are achieved exclusively through fuel economy improvements) and 163 grams of CO_2 per mile. According to the EPA, a model year 2025 vehicle would emit one-half of the GHG emissions from a model year 2010 vehicle (EPA 2012).

Executive Order 13432

In response to the *Massachusetts v. Environmental Protection Agency* ruling, President Bush signed EO 13432 on May 14, 2007, directing the EPA, along with the Departments of Transportation, Energy, and Agriculture, to initiate a regulatory process that responds to the Supreme Court's decision. EO 13432 was codified into law by the 2009 Omnibus Appropriations Law signed on February 17, 2009. The order sets goals in the areas of energy efficiency, acquisition, renewable energy, toxic reductions, recycling, sustainable buildings, electronics stewardship, fleets, and water conservation.

Energy Independence and Security Act

The Energy Independence and Security Act (EISA) of 2007 includes several key provisions that will increase energy efficiency and the availability of renewable energy, which will reduce GHG emissions as a result. The Act facilitates the reduction of GHG emissions by requiring the following:

- Increasing the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard that requires fuel producers to use at least 36 billion gallons of biofuel in 2022;
- Prescribing or revising standards affecting regional efficiency for heating and cooling products, procedures for new or amended standards, energy conservation, energy

efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances;

- Achieving approximately 25 percent greater efficiency for light bulbs by phasing out old incandescent light bulbs between 2012 and 2014; requiring approximately 200 percent greater efficiency for light bulbs, or similar energy savings, by 2020; and,
- While superseded by the 2019 EPA and National Highway Traffic Safety Administration (NHTSA) actions described in Section 3.3, *Air Quality*, the EISA included, a) establishing a minimum average fuel economy of 35 miles per gallon (mpg) for the combined fleet of cars and light trucks by 2020, and b) directing the NHTSA to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for trucks.

Additional provisions of EISA address energy savings in government and public institutions, promote research for alternative energy, additional research in carbon capture, international energy programs, and the creation of green jobs.

Light-Duty Vehicle Greenhouse Gas and Corporate Average Fuel Economy Standards

On May 19, 2009, President Obama announced a national policy for fuel efficiency and emissions standards in the United States auto industry. The adopted federal standard applied to passenger cars and light-duty trucks for model years 2012 through 2016. The rule surpassed the prior Corporate Average Fuel Economy (CAFE) standards and required an average fuel economy standard of 35.5 mpg and 250 grams of CO_2 per mile by model year 2016, based on EPA calculation methods. These standards were formally adopted on April 1, 2010. In August 2012, standards were adopted for model year 2017 through 2025 passenger cars and light-duty trucks. By 2020, new vehicles are projected to achieve 41.7 mpg—if GHG reductions are achieved exclusively through fuel economy improvements—and 213 grams of CO2 per mile (Phase 2 standards). By 2025, new vehicles are projected to achieve 54.5 mpg and 163 grams of CO_2 per mile, a reduction of approximately 50 percent relative to 2010.

On September 27, 2019, the EPA and the NHTSA published the "Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program" (84 Fed. Reg. 51,310 [September 27, 2019]). The Part One Rule revokes California's authority to set its own GHG emissions standards and set zero-emission vehicle (ZEV) mandates in California. Both the GHG emission standards and the ZEV sales standards reduce GHG emissions and fossil fuel energy consumption; as a result of the loss of ZEV sales requirements, there may be fewer ZEVs sold and thus additional gasoline-fueled vehicles sold in future years. California expects Part Two of these regulations to be adopted in 2020, and it is anticipated that the federal government may adopt revised GHG emission standards and fuel efficiency standards. In November 2019, California and 23 other states, environmental groups, and the cities of Los Angeles and New York, filed a petition with the U.S. Court of Appeals for the District of Columbia Circuit, for the EPA to reconsider the published rule. The Court has not yet ruled on the lawsuit.

Heavy-Duty Vehicle Program

The Heavy-Duty Vehicle Program was adopted on August 9, 2011 to establish the first fuel efficiency requirements for medium- and heavy-duty vehicles beginning with the model year 2014.

State Regulations

California has adopted statewide legislation to address issues related to various aspects of climate change and GHG emissions. The governor of California has also issued several EOs related to the State's evolving climate change policy.

California Greenhouse Gas Reduction Targets

Executive Order S-3-05

EO S-3-05, signed in June 2005, proclaimed that California is vulnerable to the impacts of climate change. To combat those concerns, the EO established total GHG emissions targets. Specifically, emissions are to be reduced to the 2000 level by 2010, to the 1990 level by 2020, and to 80 percent below the 1990 level by 2050.

In addition, achieving these long-term GHG reduction policies will require systemic changes in how energy is produced and used. There are a number of studies that discuss potential mechanisms for limiting statewide GHG emissions to meet the aggressive goals identified by EO S-3-05, including a report by the California Center for Science and Technology, the California Department of Transportation's California Transportation Plan 2040, CARB's First Update to the Assembly Bill (AB) 32 Scoping Plan, and a study published in Science that analyzes the changes that will be required to reduce GHG emissions to 80 percent below 1990 levels by 2050. In general, these studies reach similar conclusions—deep reductions in GHG emissions can only be achieved with significant changes in electricity production, transportation fuels, and industrial processes (e.g., decarbonizing electricity production, electrifying transportation, utilizing alternative fuels for aviation).

Assembly Bill 32 and Senate Bill 32

In 2006, the California State Legislature adopted AB 32—codified in the California Health and Safety Code [HSC], Division 25.5 – California Global Warming Solutions Act of 2006—which focuses on reducing GHG emissions in California to 1990 levels by 2020. AB 32 defines regulated GHGs as CO2, CH4, N2O, HFCs, PFCs, and SF6 and represents the first enforceable Statewide program to limit emissions of these GHGs from all major industries with penalties for noncompliance. The law further requires that reduction measures be technologically feasible and cost effective. Under AB 32, the CARB has the primary responsibility for reducing GHG emissions. AB 32 required CARB to adopt rules and regulations directing State actions that would achieve GHG emissions reductions equivalent to 1990 Statewide levels by 2020.

A specific requirement of AB 32 was to prepare a Climate Change Scoping Plan for achieving the maximum technologically feasible and cost-effective GHG emission reduction by 2020

(Health and Safety Code Section 38561 (h)). CARB developed an AB 32 Climate Change Scoping Plan (2008 Scoping Plan) that contained strategies to achieve the 2020 emissions cap. The 2008 Scoping Plan was approved in 2008, and contains a mix of recommended strategies that combined direct regulations, market-based approaches, voluntary measures, policies, and other emission reduction programs calculated to meet the 2020 Statewide GHG emission limit and initiate the transformations needed to achieve the State's long-range climate objectives.

As required by AB 32, CARB approved the 1990 GHG emissions inventory, thereby establishing the emissions limit for 2020. The 2020 emissions limit was originally set at 427 million metric tons of CO2e (MMTCO2e) using the GWP values from the IPCC Second Assessment Report (SAR). CARB also projected the State's 2020 GHG emissions under No-Action-Taken (NAT) conditions – that is, emissions that would occur without any plans, policies, or regulations to reduce GHG emissions. CARB originally used an average of the State's GHG emissions from 2002 through 2004 and projected the 2020 levels at approximately 596 MMTCO2e (using GWP values from the IPCC SAR). Therefore, under the original projections, the State must reduce its 2020 NAT emissions by 28.4 percent in order to meet the 1990 target of 427 $MMTCO_2e$.

The First Update to the Climate Change Scoping Plan (2014 Scoping Plan) was approved by CARB in May 2014 and built upon the 2008 Scoping Plan with new strategies and recommendations. In 2014, CARB revised the target using the GWP values from the IPCC AR4 and determined that the 1990 GHG emissions inventory and 2020 GHG emissions limit is 431 MMTCO2e. CARB also updated the State's 2020 NAT emissions estimate to account for the effect of the 2007–2009 economic recession, new estimates for future fuel and energy demand, and the reductions required by regulation that were adopted for motor vehicles and renewable energy. CARB's projected Statewide 2020 emissions estimate using the GWP values from the IPCC AR4 is 509.4 $MMTCO_2e$. Therefore, under the 2014 Scoping Plan, the emission reductions necessary to achieve the 2020 emissions target of 431 $MMTCO_2e$ would be 78.4 $MMTCO_2e$, or a reduction of GHG emissions by approximately 15.4 percent.

In 2016, the California State Legislature adopted Senate Bill (SB) 32—which adds Section 38566 to the HSC and requires a commitment to reducing statewide GHG emissions by 2020 to 1990 levels and by 2030 to 40 percent less than 1990 levels—and its companion bill AB 197, which provides additional direction for developing the Scoping Plan. Both were signed by Governor Brown to update AB 32 and include an emissions reductions goal for the year 2030. SB 32 and AB 197 amend AB 32 and establish a new climate pollution reduction target of 40 percent below 1990 levels by 2030 and include provisions to ensure the benefits of State climate policies reach into disadvantaged communities.

In response to the 2030 GHG reduction target, CARB adopted the 2017 Climate Change Scoping Plan (2017 Scoping Plan) at a public meeting held in December 2017. The 2017 Scoping Plan outlines the strategies the State will implement to achieve the 2030 GHG

reduction target, which build on the Cap-and-Trade Regulation, the Low Carbon Fuel Standard (LCFS), improved vehicle, truck and freight movement emissions standards, increasing renewable energy, and strategies to reduce methane emissions from agricultural and other wastes by using it to meet California's energy needs. CARB's projected Statewide 2030 emissions consider 2020 GHG reduction policies and programs. The 2017 Scoping Plan also comprehensively addresses GHG emissions from natural and working lands of California, including the agriculture and forestry sectors. The adopted 2017 Scoping Plan includes ongoing and statutorily required programs and continuing the Cap-and-Trade Program. This Scoping Plan Scenario was modified from the January 2017 Proposed Scoping Plan to reflect AB 398, including removal of the 20 percent refinery measure.

CARB states that the Scoping Plan Scenario "is the best choice to achieve the State's climate and clean air goals. Under the Scoping Plan Scenario, the majority of the reductions would result from the continuation of the Cap-and-Trade regulation. Additional reductions are achieved from electricity sector standards (i.e., utility providers to supply at least 50 percent renewable electricity by 2030), doubling the energy efficiency savings at end uses, additional reductions from the LCFS, implementing the short-lived GHG strategy (e.g., hydrofluorocarbons), and implementing the mobile source strategy and sustainable freight action plan. The alternatives were designed to consider various combinations of these programs, as well as consideration of a carbon tax in the event the Cap-and-Trade regulation is not continued. However, in July 2017, the California Legislature voted to extend the Cap-and-Trade regulation to 2030.

The 2017 Scoping Plan discusses the role of local governments in meeting the State's GHG reductions goals because local governments have jurisdiction and land use authority related to: community-scale planning and permitting processes, local codes and actions, outreach and education programs, and municipal operations. Furthermore, local governments may have the ability to incentivize renewable energy, energy efficiency, and water efficiency measures.

Executive Order B-16-2012

EO B-16-2012 establishes benchmarks for reducing transportation-related GHG emissions. It requires agencies to implement the Plug-in Electric Vehicle Collaborative and California Fuel Cell Partnership by 2015 and sets forth targets specific to the transportation section, including the goal of reducing transportation related GHG emissions to 80 percent less than 1990 levels.

Executive Order B-30-15

EO B-30-15 established a medium-term goal for 2030 of reducing GHG emissions by 40 percent below 1990 levels and requires CARB to update its current AB 32 Scoping Plan to identify measures to meet the 2030 target. The executive order supports EO S-03-05, described above, but is currently only binding on state agencies. However, there are current

(2015/2016) proposals (i.e., SB 32) at the state legislature to adopt a legislative target for 2030.

Executive Order B-55-18

EO B-55-18 (September 2018) establishes a statewide goal to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter. The executive order demonstrates the State's continued commitment to address climate change.

Renewable Energy Standard/Renewable Portfolios Standard

Senate Bill 1078 and Senate Bill 107

SB 1078 (2002) and SB 107 (2006) created the Renewable Energy Standard, which required electric utility companies to increase procurements from eligible renewable energy resources by at least 1 percent of their retail sales annually until reaching 20 percent by 2010. SB 2X 1 (2011) requires a Renewables Portfolio Standard, functionally the same thing as the Renewable Energy Standard, of 33 percent by 2020. In 2013, the statewide average for the three largest electrical suppliers (Pacific Gas and Electric, Southern California Edison, and San Diego Gas & Electric) was 22.7 percent. As noted below, SB 350 increased the renewable requirement to 50 percent for 2030.

Senate Bill 350

SB 350, also known as the Clean Energy and Pollution Reduction Act of 2015, was approved in 2015 and includes key provisions to require the following by 2030: (1) a renewables portfolio standard of 50 percent and (2) a doubling of efficiency for existing buildings.

Pavley Rules/Advanced Clean Cars

AB 1493 required CARB to develop and implement regulations to reduce automobile and light-truck GHG emissions. These stricter emissions standards were designed to apply to automobiles and light trucks beginning with the 2009 model year. In June 2009, the U.S. Environmental Protection Agency administrator granted a CAA waiver of preemption to California. This waiver allowed California to implement its own GHG emissions standards for motor vehicles beginning with model year 2009. CARB approved joint rulemaking efforts to reduce GHG emissions from passenger cars (model years 2017 to 2025) on December 31, 2012.

State CEQA Guidelines

SB 97 (Chapter 185, Statutes of 2007), enacted in 2007, directed the State Office of Planning and Research (OPR) to develop California Environmental Quality Act (CEQA) Guidelines (CEQA Guidelines) "for the mitigation of GHG emissions or the effects of GHG emissions." In December 2009, OPR adopted amendments to the CEQA Guidelines, (Guidelines Amendments), Appendix G, Environmental Checklist, which created a new resource section

for GHG emissions and indicated criteria that may be used to establish significance of GHG emissions. The amendments became effective on March 8, 2010.

The State CEQA Guidelines require lead agencies to describe, calculate, or estimate the amount of GHG emissions that would result from a project. Section 15064.4 calls for a good-faith effort when describing, calculating, or estimating GHG emissions. Section 15064.4 also states that a determination of the significance of GHG impacts should consider whether the project would increase or reduce GHG emissions, exceed a locally applicable threshold of significance, or comply with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions. However, the revised guidelines do not require or recommend a specific analysis methodology or provide quantitative criteria for determining the significance of GHG emissions and the guidelines confirm that lead agencies have the discretion to determine appropriate significance thresholds.

Land Use and Transportation Planning

SB 375 (Chapter 728, Statutes of 2008), which establishes mechanisms for the development of regional targets for reducing passenger vehicle GHG, was adopted by the State on September 30, 2008. Under SB 375, CARB is required, in consultation with the State's Metropolitan Planning Organizations, to set regional GHG reduction targets for the passenger vehicle and light-duty truck sector for 2020 and 2035. In February 2011, CARB adopted the GHG emissions reduction targets of 8 percent by 2020 and 13 percent by 2035 relative to 2005 GHG emissions for the Southern California Association of Governments (SCAG), which is the Metropolitan Planning Organization for the region in which the City is located. Of note, the proposed reduction targets explicitly exclude emission reductions expected from the AB 1493 and the LCFS regulations.

Under SB 375, the reduction target must be incorporated within that region's Regional Transportation Plan (RTP), which is used for long-term transportation planning, in a Sustainable Communities Strategy (SCS). Certain transportation planning and programming activities would then need to be consistent with the SCS; however, SB 375 expressly provides that the SCS does not regulate the use of land, and further provides that local land use plans and policies (e.g., general plan) are not required to be consistent with either the RTP or SCS.

In addition, on April 7, 2016, SCAG adopted the 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (2016-2040 RTP/SCS), which is an update to the previous 2012-2035 RTP/SCS. Using growth forecasts and economic trends, the 2016-2040 RTP/SCS provides a vision for transportation throughout the region for the next 25 years. The 2016-2040 RTP/SCS successfully achieves and exceeds the GHG emission-reduction targets set by CARB. In March 2018, the CARB updated the SB 375 targets to require 8 percent reduction by 2020 and a 19 percent reduction by 2035 in per capita passenger vehicle GHG emissions. As this reduction target was updated after adoption of the 2016-2040 RTP/SCS, the proposed final 2020-2045 RTP/SCS will address this target.

Energy Efficiency

Title 24 Standards

The California Energy Commission (CEC) first adopted Energy Efficiency Standards for Residential and Nonresidential Buildings (California Code of Regulations [CCR], Title 24, Part 6) in 1978 in response to a legislative mandate to reduce energy consumption in the State. Although not originally intended to reduce GHG emissions, increased energy efficiency and reduced consumption of electricity, natural gas, and other fuels would result in fewer GHG emissions from residential and nonresidential buildings subject to the standard. The standards are updated periodically (typically every three years) to allow for the consideration and inclusion of new energy efficiency technologies and methods. The Energy Efficiency Standards for Residential and Nonresidential Buildings focuses on several key areas to improve the energy efficiency of renovations and addition to existing buildings as well as newly constructed buildings and renovations and additions to existing buildings. The major efficiency improvements to the residential Standards involve improvements for attics, walls, water heating, and lighting, whereas the major efficiency improvements to the nonresidential Standards include alignment with the American Society of Heating, Refrigerating and Air-Conditioning Engineers 90.1-2013 national standards. Furthermore, the standards require that enforcement agencies determine compliance with CCR, Title 24, Part 6 before issuing building permits for any construction.

California Green Building Standards

Part 11 of the Title 24 Building Energy Efficiency Standards is referred to as the California Green Building Standards (CALGreen) Code. The purpose of the CALGreen Code is to "improve public health, safety and general welfare by enhancing the design and construction of buildings through the use of building concepts having a reduced negative impact or positive environmental impact and encouraging sustainable construction practices in the following categories: (1) Planning and design; (2) Energy efficiency; (3) Water efficiency and conservation; (4) Material conservation and resource efficiency; and (5) Environmental air quality." The CALGreen Code is not intended to substitute for or be identified as meeting the certification requirements of any green building program that is not established and adopted by the California Building Standards Commission. The CALGreen Code establishes mandatory measures for new residential and non-residential buildings. Such mandatory measures include energy efficiency, water conservation, material conservation, planning and design and overall environmental quality.

Renewable Energy

The State has adopted regulations to increase the proportion of electricity from renewable sources. In November 2008, Governor Schwarzenegger signed Executive Order S-14-08, which expands the State's Renewables Portfolio Standard to 33 percent renewable power by 2020. On April 12, 2011, Governor Jerry Brown signed SB X1-2 to increase California's

Renewables Portfolio Standard to 33 percent by 2020. SB 350 (Chapter 547, Statues of 2015) further increased the Renewables Portfolio Standard to 50 percent by 2030. The legislation also included interim targets of 40 percent by 2024 and 45 percent by 2027. On September 10, 2018, Governor Jerry Brown signed SB 100, which further increased California's Renewables Portfolio Standard to achieve 50 percent renewable resources by December 31, 2026, and a 60 percent target by December 31, 2030, while requiring retail sellers and local publicly owned electric utilities to procure eligible renewable electricity for 44 percent of retail sales by December 31, 2024, 52 percent by December 31, 2027, and 60 percent by December 31, 2030, and that CARB should plan for 100 percent eligible renewable energy resources and zero-carbon resources by December 31, 2045.

California Supreme Court

The California Supreme Court considered the CEQA issue of determining the significance of GHG emissions in its decision, Center for Biological Diversity v. California Department of Fish and Wildlife and Newhall Land and Farming (2015) 62 Cal.4th 204. The Court questioned a then-common CEQA approach to GHG analyses for development projects that compared project emissions to the reductions from NAT that will be needed Statewide to reduce emissions to 1990 levels by 2020, as required by AB 32. The Court upheld the NAT method as a valid approach, but concluded that the NAT method was improperly applied in the case of the Newhall project because the target for the project was incorrectly deemed consistent with the Statewide emission target of a percent below NAT for the year 2020 as specified in the AB 32 Scoping Plan. In other words, the Court said that the percent below NAT target specified in the AB 32 Scoping Plan is intended as a measure of the GHG reduction effort required by the State as a whole. The record did not support that approach for the Newhall project. The Court provided some guidance to evaluating the cumulative significance of a proposed land use project's GHG emissions. This Draft EIR considers the potential GHG emissions associated with the Project within the context of the Court's guidance, which supported evaluation of a project's GHG impacts in light of efficiency metrics, which describe emissions on a per capita basis, per service population basis, or some other rate-oriented descriptor.

The Court also addressed project-level GHG emission inventories in the context of Statewide GHG emission inventories and reduction goals. If a project-level inventory were to include additional upstream embedded emissions associated with consumption of goods and services, or downstream transportation emissions, outside of the State, it would no longer be comparable to the State inventory and a threshold based on State reduction targets could not be used to evaluate the project's GHG emissions. Given the California Supreme Court's determination that it is appropriate under CEQA to compare project GHG emissions to a threshold related to the State reduction goals, there is no logical rationale to include GHG emissions in a CEQA project inventory if they are not included in the State's GHG inventory, nor to use methodologies to account for emissions different from those employed in the State's GHG inventory. Thus, consistent with the Court's ruling, a project-level GHG

emissions inventory under CEQA need not include additional upstream embedded emissions or downstream emissions to maintain consistency with the Statewide GHG emission inventory methodology.

Regional and Local Regulations

Southern California Association of Governments (SCAG)

SCAG is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial counties. SCAG addresses regional issues related to transportation, the economy, community development, and the environment. SCAG develops plans pertaining to transportation, growth management, hazardous waste management, housing, and air quality. SCAG prepares the RTP/SCS that supports the land use and transportation components of the Air Quality Management Plans, which provide some GHG-reduction co-benefits.

The 2016–2040 RTP/SCS integrates land use and transportation strategies to achieve required emission reductions per SB 375 of 8 percent by 2020 and 13 percent by 2035 relative to the base year of 2005 (SCAG 2016). The RTP/SCS was adopted on April 7, 2016. The SCS set forth a development pattern for the region, which, when integrated with the transportation network and other transportation measures and policies, aims to reduce GHG emissions from automobiles and light trucks consistent with CARB targets for SCAG. SCAG is currently developing the 2020-2045 RTP/SCS.

South Coast Air Quality Management District

The South Coast Air Quality Management District (SCAQMD) has primary responsibility for the development and implementation of rules and regulations for attainment of the national and California ambient air quality standards as well as permitting new or modified sources, developing Air Quality Management Plans, and adopting and enforcing air pollution regulations within the South Coast Air Basin. The AB 32 Scoping Plan states that CARB will work actively with air districts in coordinating emissions reporting, encouraging, and coordinating GHG reductions, and providing technical assistance in quantifying reductions.

CEQA requires lead agencies to inform decision-makers and the public about the potentially significant environmental impacts of a proposed Project. The ability of air districts to control emissions (both criteria pollutants and GHGs) is provided primarily through permitting but also through their role as a CEQA lead or commenting agency, the establishment of CEQA thresholds, and the development of analytical requirements for CEQA documents.

Scientists are unable to identify the direct climate effects of projected GHG emissions from a specific project. It can be safely concluded, however, that the individual contributions of most projects to climate change would be negligible to extremely minor, and thus would not be significant. Regional or global climate change related to man-made GHG emissions is, by its nature, a cumulative impact. According to the Association of Environmental Professionals, in

its paper titled *Alternative Approaches to Analyzing Greenhouse Gas Emissions and Global Climate Change in CEQA Documents* (Hendrix and Wilson 2007), "an individual project does not generate enough greenhouse gas emissions to significantly influence global climate change."

City of Los Angeles GreenLA Climate Action Plan

The City has issued guidance promoting sustainable development to reduce GHG emissions Citywide in the form of a Climate Action Plan (CAP). The objective of GreenLA is to reduce GHG emissions 35 percent below 1990 levels by 2030 (City 2007). GreenLA identifies goals and actions designed to make the City a leader in confronting global climate change. The measures would reduce emissions directly from municipal facilities and operations and create a framework to address citywide GHG emissions. GreenLA lists various focus areas in which to implement GHG reduction strategies. Focus areas include energy, water, transportation, land use, waste, port, airport, and ensuring that changes to the local climate are incorporated into planning and building decisions.

The City published an implementation document titled ClimateLA (City 2008). ClimateLA presents the existing GHG inventory for the City, describes enforceable GHG reduction requirements, provides mechanisms to monitor and evaluate progress, and includes mechanisms that allow the plan to be revised in order to meet targets. By 2030, the plan aims to reduce GHG emissions by 35 percent from 1990 levels, which were estimated to be approximately 54.1 million metric tons.

Therefore, the City will need to lower annual GHG emissions to approximately 35.1 million metric tons per year by 2030. To achieve these reductions the City has developed strategies that focus on energy, water use, transportation, land use, waste, open space and greening, and economic factors. To reduce emissions from energy usage, ClimateLA proposes the following goals: increase the amount of renewable energy provided by the Los Angeles Department of Water and Power; present a comprehensive set of green building policies to guide and support private sector development; reduce energy consumed by City facilities and utilize solar heating where applicable; and help citizens to use less energy. With regard to waste, ClimateLA sets the goal of reducing or recycling 70 percent of trash by 2015. With regard to open space and greening, ClimateLA includes the following goals: create 35 new parks; revitalize the Los Angeles River to create open space opportunities; plant one million trees throughout the City; identify opportunities to "daylight" streams; identify promising locations for stormwater infiltration to recharge groundwater aquifers; and collaborate with schools to create more parks in neighborhoods.

City of Los Angeles Sustainable City pLAn (pLAn)

In addition to GreenLA, Mayor Eric Garcetti released Los Angeles's first-ever pLAn on April 8, 2015 (City 2015). The pLAn is a roadmap to achieving short-term results and sets a path to strengthen and transform the City in future decades. Recognizing the risks posed by climate

change, Mayor Garcetti set time-bound outcomes on climate action, most notably to reduce GHG emissions by 45 percent by 2025, 60 percent by 2035, and 80 percent by 2050, all against a 1990 baseline. Los Angeles' emissions are 20 percent below the 1990 baseline as of 2013, putting Los Angeles nearly halfway to the 2025 pLAn reduction target of 45 percent. In addition, the 20 percent reduction exceeds the 15 percent statewide goal listed in the First Update to the AB 32 Scoping Plan.

City of Los Angeles Green Building Program

The purpose of the City's Green Building Program is to reduce the use of natural resources, create healthier living environments and minimize the negative impacts of development on local, regional, and global ecosystems. The program consists of a Standard of Sustainability and Standard of Sustainable Excellence. The Standard of Sustainability establishes a requirement for non-residential projects at or above 50,000 square feet of floor area to meet the intent of the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) Certified level. The Standard also applies to existing buildings that meet the minimum thresholds described above when redevelopment construction costs exceed a valuation of 50 percent of the existing building's replacement cost.

The voluntary Standard of Sustainable Excellence establishes an incentive program for projects that register with the LEED program, contract with a certified LEED professional, and can demonstrate how the project will achieve LEED certification at a Silver or higher level. These projects are eligible for priority processing services within the Department of City Planning and expedited services within the Bureau of Engineering. The Department of Building and Safety provides priority plan check processing and Priority Service Planning is offered by the Los Angeles Department of Water and Power.

Los Angles Green Building Code

The City adopted the Green Building Code to reduce the City's carbon footprint. The Green Building Code is applicable to new buildings and alterations with building valuations over $200,000 (residential and non-residential). The Green Building Code is based on the 2010 California Green Building Standards Code Title 24, Part 11, commonly known as CALGreen, that was developed and mandated by the state to attain consistency among the various jurisdictions within the state; reduce the building's energy and water use; and reduce waste (see discussion of CALGreen, above).

Existing Buildings Energy and Water Efficiency (EBEWE) Program (Los Angeles Municipal Code §91.9701 et seq, Ordinance Nos. 184674, 185198, and 185586)

Effective in 2017, the EBEWE Program added Division 97 to Article I, Chapter IX and amended Division 4 of Article 8, Chapter IX, and makes public the annual energy and water consumption of all buildings over 20,000 square feet in the City. Beginning in 2017, privately owned buildings that are 20,000 square feet or more and buildings owned by the City that are 7,500 or more are required to be benchmarked, and owners must disclose annual energy

and water consumption. Privately owned buildings that are 100,000 square feet or more must begin benchmarking reporting by December 1, 2017, and smaller buildings must begin reporting over the following two years. This Ordinance is designed to facilitate the comparison of buildings' energy and water consumption, and reduce building operating costs, leading to reduced GHG emissions.

LA's Green New Deal (Sustainable City pLAn 2019)

In April 2019, Mayor Eric Garcetti released L.A.'s Green New Deal (Sustainable City pLAn 2019). Rather than an adopted plan, the Green New Deal is a mayoral initiative that consists of a program of actions designed to create sustainability-based performance targets through 2050 that advance economic, environmental, and equity objectives. L.A.'s Green New Deal (Sustainable City pLAn 2019) is the first four-year update to the City's first Sustainable City pLAn that was released in 2015. It augments, expands, and elaborates in even more detail L.A.'s vision for a sustainable future and it addresses climate change with accelerated targets and new aggressive goals.

While not a plan adopted solely to reduce GHG emissions, within L.A.'s Green New Deal (Sustainable City pLAn 2019), climate mitigation is one of eight explicit benefits that help define its strategies and goals. These include reducing GHG emissions through near-term outcomes:

- Reduce potable water use per capita by 22.5 percent by 2025; 25 percent by 2035; and maintain or reduce 2035 per capita water use through 2050.
- Reduce building energy use per square feet for all building types 22 percent by 2025; 34 percent by 2035; and 44 percent by 2050 (from a baseline of 68 million British Thermal Units/square foot (sf) in 2015).
- All new buildings will be net zero carbon by 2030 and 100 percent of buildings will be net zero carbon by 2050.
- Increase cumulative new housing unit construction to 150,000 by 2025; and 275,000 units by 2035.
- Ensure 57 percent of new housing units are built within 1,500 feet of transit by 2025; and 75 percent by 2035.
- Increase the percentage of all trips made by walking, biking, micro-mobility/matched rides, or transit to at least 35 percent by 2025, 50 percent by 2035, and maintain at least 50 percent by 2050.
- Reduce vehicle miles traveled (VMT) per capita by at least 13 percent by 2025; 39 percent by 2035; and 45 percent by 2050.
- Increase the percentage of electric and zero emission vehicles in the city to 25 percent by 2025; 80 percent by 2035; and 100 percent by 2050.
- Increase landfill diversion rate to 90 percent by 2025; 95 percent by 2035 and 100 percent by 2050.

- Reduce municipal solid waste generation per capita by at least 15 percent by 2030, including phasing out single-use plastics by 2028 (from a baseline of 17.85 lbs. of waste generated per capita per day in 2011).
- Eliminate organic waste going to landfill by 2028.
- Reduce urban/rural temperature differential by at least 1.7 °F by 2025; and 3 °F by 2035.
- Ensure proportion of Angelenos living within 0.5 miles of a park or open space is at least 65 percent by 2025; 75 percent by 2035; and 100 percent by 2050.

Transportation Assessment Guidelines

The City of Los Angeles Department of Transportation (LADOT) has developed the City Transportation Assessment Guidelines (TAG) (July 2019) to provide the public, private consultants, and City staff with standards, guidelines, objectives, and criteria to be used in the preparation of a transportation assessment. The TAG establishes the reduction of vehicle trips and VMT as the threshold for determining transportation impacts and thus is an implementing mechanism of the City's strategy to reduce land use transportation-related GHG emissions consistent with AB 32, SB 32, and SB 375. See Section 3.15, *Transportation*.

Existing Conditions

The City is in Los Angeles County within the South Coast Air Basin (SCAB). The SCAB includes all of Orange County and the non-desert portions of Los Angeles, San Bernardino, and Riverside counties. As described in Section 3.2, *Air Quality*, the SCAB is bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. The regional climate within the SCAB is considered semi-arid and is characterized by warm summers, mild winters, infrequent seasonal rainfall, moderate daytime onshore breezes, and moderate humidity. Climate change within the SCAB is influenced by a wide range of emission sources, such as utility usage, heavy vehicular traffic, industry, and meteorology.

Land uses in the City are vastly urban comprising residential, commercial, and industrial uses with areas of open space, such as Griffith Park. Passenger vehicles, motorcycles, and trucks are the primary source of GHG emissions in the City. Additional sources of GHG emissions include the construction and maintenance of buildings, streets, and infrastructure, industrial processes, and building heating, cooling, and power.

Global GHG Emissions

The IPCC was formed by the World Meteorological Organization in 1988 to provide governments at all levels with scientific information that they can use to develop climate policies. The IPCC is the United Nation's body for assessing the science related to climate change and is responsible for tracking and reporting global emissions of GHGs. The IPCC is in the process of preparing the Sixth Assessment Report, tentatively scheduled for publication in June 2022. IPCC's Fifth Assessment Report, which was published in 2014 reported that

global GHG emissions were estimated at 49 Gt CO_2e per year, with CO_2 making up 76 percent of the total anthropogenic GHG emissions. This is an overall increase in GHG emissions of 71 percent from the 28.7 Gt CO_2e of emissions in 1970 (IPCC 2014a). Annual anthropogenic GHG emissions have increased by 10 Gt CO_2e between 2000 and 2010, with this increase directly coming from energy supply (47 percent), industry (30 percent), transport (11 percent), and buildings (30 percent) sectors. About half of cumulative anthropogenic CO_2 emissions between 1750 and 2010 have occurred in the last 40 years. In 1970, cumulative CO_2 emissions from fossil fuel combustion, cement production, and flaring since 1750 were 420 Gt CO_2e, since 1970 to 2010, that cumulative total tripled to 1300 Gt CO_2e (IPCC 2014b).

U.S. GHG Emissions

The U.S. emitted 6.46 billion tons of CO2e in 2017. Total U.S. emissions have increased by 1.3 percent from 1990 to 2017 but decreased by nearly 7 percent from 2010 to 2017. Fossil fuel combustion accounted for 93 percent of CO2 emissions and approximately 75 percent of total U.S. GHG emissions in 2017. Of the six major sectors generating emissions through direct fossil fuel combustion – electricity generation, transportation, industrial, agricultural, residential, and commercial – electricity generation accounts for approximately 28 percent and transportation accounts for 29 percent of these emissions. Of the energy consumed in the U.S. in 2018, approximately 80 percent was produced through combustion of fossil fuels, while the remaining 20 percent came from other energy sources such as hydropower, biomass, nuclear, wind, and solar energy. In 2017, total GHG emissions by sector were 28 percent for the electric power industry, 29 percent for transportation, 22 percent for industry, 9 percent for agriculture, 6 percent for commercial, and 5 percent for residential (EPA 2020).

California GHG Emissions

California's GHG emissions have followed a declining trend since 2008, which is shown in Table 3.8-2. In 2017, emissions from routine emitting activities statewide were 63 $MMTCO_2e$ lower than 2008 levels. Of note, between October 23, 2015 and February 18, 2016, an exceptional natural gas leak event occurred at the Aliso Canyon natural gas storage facility that resulted in unexpected GHG emissions of considerable magnitude. The exceptional incident released approximately 109,000 metric tons of CH_4, which equated to approximately 1.96 $MMTCO_2e$ of unanticipated emissions in 2015 and an additional 0.52 $MMTCO_2e$ in 2016. According to the CARB, these emissions will be mitigated in the future through projects funded by the Southern California Gas Company based on legal settlement and are presented alongside but tracked separately from routine inventory emissions.

Table 3.8-2. California Greenhouse Gas Emissions Inventory

Source/Sector	CO_2e Emissions (Million Metric Tons)									
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Electricity Generation (In-State)	55	54	47	41	51	50	52	50	42	39
Electricity Generation (Imports)	66	48	44	47	45	40	37	34	26	24
Transportation	182	175	170	167	166	166	167	171	173	174
Industrial	100	98	102	101	102	104	105	103	101	101
Commercial	18	19	20	21	21	22	21	22	23	23
Residential	31	31	32	33	31	32	27	28	29	30
Agriculture and Forestry	35	33	34	34	35	34	35	34	34	32
Emissions Total	**487**	**457**	**449**	**444**	**451**	**448**	**445**	**441**	**429**	**424**

Source: CARB 2019b.

Transportation is the source of approximately 40 percent of the state's GHG emissions, followed by industrial sources at 21 percent, and electricity generation – both in-state and out-of-state – at 15 percent. Residential and commercial sources account for 10 percent, respectively, while agriculture accounts for 8 percent (California ARB 2018).

Regional Emissions

SCAG has prepared regional GHG emissions inventories. Similar to California GHG emission profiles, transportation, industrial, and electricity are the three largest contributors to GHG emissions (SCAG 2012). Total SCAG emissions in 2020 were estimated to be 216 $MMTCO_2e$. Transportation emissions are most prevalent relative to all other sectors in California and specifically in the SCAG region. Transportation emissions accounted for approximately 38 percent of total emissions in the SCAG region, compared to 26 percent of total emissions in the United States in 2008.

City of Los Angeles Emissions

The City has been tracking local GHG emissions over the years through an emissions inventory for the pLAn (City 2015). The 2015 GHG emissions inventory for the City accounted for electricity, natural gas, gasoline, and diesel consumption, as well as solid waste generation within the City. Total emissions in 2015 were estimated to approximately 31 $MMTCO_2e$. Building energy use accounted for approximately 15 $MMTCO_2e$, industry accounted for 8 $MMTCO_2e$, transportation accounted for 7 $MMTCO_2e$, and waste accounted for 1 $MMTCO_2e$.

Project Site Emissions

The Zoo is developed with approximately 1,259,930 square feet (sf) of animal care facilities, visitor-serving facilities, food and beverage facilities, retail, administration buildings, service buildings (refer to Table 2-2). These facilities are managed by 570 full- and part-time employees, and the Zoo is visited by approximately 1,743,800 people annually, or an approximate average of 4,791 persons per day, resulting in an existing Zoo service population

(employees plus daily visitors) of approximately 5,361 persons. Operation of the Zoo, as well as vehicle trips generated by employees and visitors, generates GHG emissions. As discussed in Section 3.15, *Transportation*, operation of the Zoo generates an estimated 69,638,350 annual VMT. The estimated annual operational GHG emissions associated with existing Zoo operations have been calculated utilizing the California Emissions Estimator Model (CalEEMod Version 2016.3.2) as recommended by the SCAQMD and are shown in Table 3.8-3. Based on the Zoo's existing estimated GHG emissions and service population, the Zoo generates approximately 3.0 $MTCO_2e$/person/year

Table 3.8-3. Estimated Operational Emissions for the Existing Project Site

Source	Direct/Indirect	Location	Annual Emissions (MTCO2e/year)
Maintenance Sources	Direct	On-Site	50.3
Natural Gas Combustion	Direct	On-Site	2,485.8
Electricity Generation	Indirect	Off-Site	4,464.8
Water Conveyance	Indirect	Off-Site	811.0
Solid Waste Disposal	Direct	Off-Site	658.8
Mobile Vehicle Trips	Direct	Off-Site	7,485.3
Total			**15,956.0**
Zoo Service Population (Employees + Visitors)			5,361
Existing Per Capita Emissions			3.0

[1] Refer to Appendix D for CalEEMod output sheets; overall = emissions based on rounded totals.

3.8.3 Impact Assessment Methodology

Significance Thresholds

According to Appendix G of the CEQA Guidelines, the Project would have a potentially significant effect related to GHG emissions if it would:

a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
b. Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

According to the California Air Pollution Control Officers Association (CAPCOA), "GHG impacts are exclusively cumulative impacts; there are no non-cumulative GHG emission impacts from a climate change perspective" (CAPCOA 2008). Section 15064.4(b) of the CEQA Guidelines states that *"in determining the significance of a project's greenhouse gas*

emissions, the lead agency should focus its analysis on the reasonable foreseeable incremental contribution of the project's emissions to the effects of climate change. A project's incremental contribution may be cumulatively considerable even if it appears relatively small compared to statewide, national or global emissions." Due to the global context of climate change, GHG analysis is based on the cumulative impact of emissions.

Generally, the evaluation of an impact under CEQA involves comparing the project's effects against a threshold of significance. The CEQA Guidelines clarify that "*when adopting thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence.*" For GHG emissions and global warming, there is not, at this time, one established, universally agreed-upon quantified threshold of significance for GHG impacts. The CEQA Guidelines do not establish a quantified threshold of significance for GHG impacts. Instead, lead agencies have the discretion to establish significance thresholds for their respective jurisdictions. A lead agency may look to thresholds developed by other public agencies or other expert entities, so long as the threshold chosen is supported by substantial evidence. SCAG, SCAQMD, and the City have not adopted a GHG significance threshold. Therefore, this analysis considers guidance documents from other agencies and CEQA to determine the appropriate approach to GHG impacts analysis.

The CEQA Guidelines Section 15064.4(b) also provides that, when assessing the significance of impacts from GHG emissions, a lead agency should consider (1) the extent to which the project may increase or reduce GHG emissions compared with existing conditions, (2) whether the project's GHG emissions exceed a threshold of significance that the lead agency determines applies to the project, and (3) the extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions.

Even in the absence of clearly defined thresholds for GHG emissions, the CEQA Guidelines Section 15064.4 provides guidance to lead agencies for determining the significance of impacts from GHG emissions. Section 15064.4(a) provides that a lead agency should make a good-faith effort based, to the extent possible, on scientific and factual data to describe, calculate, or estimate the amount of GHG emissions resulting from a project. Section 15064.4(a) further provides that a lead agency shall have the discretion to determine, in the context of a particular project, whether: (1) to use a model or methodology to quantify GHG emissions resulting from a project and which model methodology to use and/or (2) to rely on qualitative analysis or performance-based standards.

Pursuant to the State CEQA Guidelines Section 15064.4(a), the analysis presented herein uses a model or methodology to quantify GHG emissions resulting from the Project. The analysis contained herein provides a good-faith effort to describe, calculate, and estimate GHG emissions resulting from the Project.

Although the Project's GHG emissions have been quantified, neither CARB, SCAQMD, SCAG, nor the City has adopted quantitative significance thresholds for assessing impacts related to GHG emissions applicable to the proposed Project. Further, while the City completed a CAP in 2007, this CAP does not qualify for tiering under CEQA (specifically, State CEQA Guidelines Section 15183.5) because the CAP has not undergone CEQA review per the tiering requirements from Section 15183.5. Therefore, the Project-specific analysis herein cannot rely on a qualitative tiering analysis with the City's CAP. Thus, there is no City guidance or existing adopted threshold applicable to the proposed Project.

While no thresholds have been adopted, the SCAQMD has been evaluating GHG significance thresholds since April 2008. Most recently, in September 2010, SCAQMD proposed a tiered efficiency target approach to evaluate potential GHG impacts from various uses. This tiered approach allowed for flexibility when analyzing GHG emissions based on project size, land use type, or other characteristics. The various tiers include: (1) potential CEQA exemptions for certain projects; (2) compliance with a qualified GHG reduction strategy; (3) comparison with separate screening level thresholds for industrial (10,000 MTCO2e/year), commercial (1,400 MTCO2e/year), residential (3,500 MTCO2e/year), and mixed-use (3,000 MTCO2e/year) projects or comparison against a single numerical screening threshold of 3,000 $MTCO_2e$/year for all non-industrial projects; (4) consistency with compliance options, including a performance-based reduction analysis (i.e., compare with a Business-As-Usual level), compliance with AB 32, and/or comparison with efficiency-based thresholds (i.e., quantitative thresholds that are based on a per capita efficiency metric; 4.8 MTCO2e/service population/year for project level analysis and 6.6 $MTCO_2e$/service population/year for plan level analysis); and/or (5) implement offsite mitigation to reduce GHG emission impacts to a less-than-significant level. The draft GHG guidance is included as part of the periodic updates to SCAQMD's Air Quality Handbook; however, the SCAQMD draft interim guidance was never officially adopted, and the proposed thresholds were not designed for versatile application to unique project types such as the proposed Project. These proposed targets have also not been adopted by the SCAQMD or distributed for widespread public review and comment, and the working group tasked with developing the targets has not met since September 2010.

Additionally, the efficiency targets proposed under SCAQMD's Tier 4 threshold are no longer applicable as they were specific to outdated AB 32 goals and do not consider the recently adopted 2030 GHG reduction targets contained in SB 32 and EO B-30-15. Instead, the 2017 Climate Change Scoping Plan was recently approved by California ARB on December 14, 2017, and sets the state on a course to reduce GHG emissions an additional 40 percent below 1990 levels by 2030 under SB 32 (California ARB 2017). Under the 2017 Climate Scoping Plan, the California ARB recommends statewide efficiency targets of no more than 6.0 $MTCO_2e$/service population/year by 2030 and no more than 2.0 $MTCO_2e$/service population/year by 2050; however, it is important to note that these efficiency targets are

intended to apply to sum of all sectors and are not appropriate for evaluating GHG emissions specific to the land use sector, such as the proposed Project.

To date, the California ARB, SCAQMD, and the City have not adopted new efficiency targets established consistent with SB 32 for each sector for the 2030 and 2050 target years; however, various other organizations have published technical guidance evaluating potential 2030 efficiency metrics. For instance, in October 2016, the Association of Environmental Professionals (AEP) published *The Final White Paper Beyond 2020 and Newhall: A Field Guide to New CEQA Greenhouse Gas Thresholds and Climate Action Plan Targets for California* (2016). AEP's technical guidance presents data and calculations for a potential adjusted statewide 1990 land use sector emissions inventory and new metric for 2030 of 2.7 $MTCO_2e$/service population/year for the land use sector.

In addition to evaluation of a projects impacts against a quantifiable significant threshold, per CEQA Guidelines Section 15064(h)(3), a project's incremental contribution to a cumulative impact can also be found not cumulatively considerable if the project would comply with an approved plan or mitigation program that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area of the project. To qualify, such a plan or program must be specified in law or adopted by the public agency with jurisdiction over the affected resources through a public review process to implement, interpret, or make specific the law enforced or administered by the public agency. Examples of such programs include a "*water quality control plan, air quality attainment or maintenance plan, integrated waste management plan, habitat conservation plan, natural community conservation plan, [and] plans or regulations for the reduction of greenhouse gas emissions.*" Thus, CEQA Guidelines Section 15064(h)(3) allows a lead agency to make a finding of non-significance for GHG emissions if a project complies with programs and/or other regulatory schemes to reduce GHG emissions.

In light of this shifting regulatory environment and available threshold concepts recommended by expert agencies, for the purposes of this CEQA analysis, a project's contribution to cumulative impacts to global climate change would be considered significant if the proposed project would:

- Generate net new GHG emissions exceeding 3,000 $MTCO_2e$/year OR generate GHG emissions from land use sources exceeding 2.7 $MTCO_2e$/service population/year; or
- Conflict with (and thereby be inconsistent with) the applicable regulatory plans and policies to reduce GHG emissions, which include the emissions reduction measures included within the City's GreenLA CAP, Sustainable City pLAn, Green Building Code, and the General Plan; SCAG's 2016-2040 RTP/SCS; AB/SB 32 and SB 375; the OPR and Climate Action Team recommendations; and CARB's Climate Change Scoping Plan.

Given the nature of the Project being a regional attraction intended to serve a large number of visitors and resulting visitor-oriented emissions, a numerical bright-line threshold is not

considered the most appropriate threshold for evaluating Project impacts. Significance of the Project's GHG emissions are therefore evaluated in the context of an applicable GHG efficiency metric (2.7 $MTCO_2e$/service population/year).

Methodology

The methodology used in this assessment focuses on characterizing annual GHG emissions that would be generated by Project-related activities during phased construction and future operations. Project phases have been separated into near-term improvements occurring within the first 10 years of the Vision Plan (2020–2030) and long-term improvements that would occur during the latter 10 years of the Vision Plan (2030–2040). The near-term improvements are separated into three phases and summarized in Table 2-22, and the long-term improvements are separated into four phases and summarized in Table 2-23. The assessment for construction activities characterized the GHG emissions that would be generated during the three near-term phases, and conservatively doubled the emissions to account for the long-term improvements. The operational assessment characterized annual GHG emissions that would be generated by improvements completed by the interim near-term development year of 2030, as well as the ultimate completion year of 2040. Emissions are presented for an "Existing Plus Project" analysis in the CEQA baseline year of 2019, in which future conditions are modeled with an operational year of 2019, as opposed to the anticipated operational year (2025, 2027, 2030, 2040). This approach presents a highly conservative estimate of potential Project emissions, as the emissions estimates do not reflect future efficiencies (e.g., vehicle fuel efficiencies, energy efficiencies) as further discussed below. The determination of potentially significant environmental impacts does, however, considered both the magnitude of emissions and the extent to which they are reduced in the context of other applicable federal, statewide, and regional regulations.

GHG emissions associated with the construction and operation of the proposed Project were estimated using the CalEEMod Version 2016.3.2 software. CalEEMod is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and GHG emissions associated with both construction and operations from a variety of land use projects (CAPCOA 2017). CalEEMod was developed in collaboration with the air districts of California and is recommended by SCAQMD. Regional data (e.g., emission factors, trip lengths, meteorology, source inventory, etc.) have been provided by the various California air districts and SCAG to account for local requirements and conditions. The model quantifies direct emissions from construction and operations (including vehicle use), as well as indirect emissions, such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use. CalEEMod output sheets and detailed calculations are provided in Appendix D. The methodology of analyzing the Project's GHG emissions, that may result from the construction and operations of the Project, is detailed below.

Construction GHG Emissions

For the purposes of this EIR, construction work is assumed to begin late 2020 and would take place over the 20-year Vision Plan implementation time frame. Construction equipment generates GHGs such as CO_2, CH_4, and N_2O through the combustion of fossil fuels. Methane may also be emitted during the fueling of heavy equipment. Methane may also be emitted during the fueling of heavy equipment. The raw materials used to construct the new building and the waste material from demolished buildings can sequester and release carbon, respectively. However, since the exact nature of the origin or make-up of the construction materials is unknown, only operation of construction vehicles and equipment is considered in the analysis of construction GHG emissions.

The construction GHG analysis considers the anticipated Project construction schedule and construction equipment mix. CalEEMod input values are adjusted to reflect these Project-specific construction characteristics to estimate construction GHG emissions. These values were applied to the same construction phasing assumptions used in the air quality criteria pollutant analysis (refer to Section 3.2, *Air Quality*, of this EIR) to generate annual GHG emissions for each construction year. Construction-related GHG emissions are then amortized over 30 years per current SCAQMD methodology (SCAQMD 2008). This means that the total construction emissions are divided by the lifetime of the project, which is generally assumed to be 30 years (SCAQMD 2008).

Operational GHG Emissions

Operation of the Project would generate GHG emissions from on-site operations such as natural gas combustion for heating/cooking, electricity use, demand for potable and recycled water supplies, operation of landscaping equipment, disposal of solid wastes, and the use of consumer products. GHG emissions would also be generated by Project-generated vehicle trips.

The assessment of potential environmental impacts operation of the Project analyzed annual GHG emissions that would be generated in the near-term improvements' completion year of 2030 and the long-term improvements completion year of 2040. GHG emissions are analyzed on an annual basis due to the cumulative nature of emissions and the complexity of the atmospheric processes contributing to the greenhouse effect. GHG emissions that would be generated by implementation of the Project were estimated for sources involved in temporary construction activities and long-term future operations.

The 2030 analysis evaluated total construction GHG emissions during the 2020–2030 near-term improvements (Phases 1 through 3) amortized over 30 years in combination with operational conditions that would occur under the Vision Plan in 2030. The 2040 analysis evaluated total construction GHG emissions that would occur during the 2020–2040 full buildout (Phases 1 through 7) amortized over 30 years in combination with the operational conditions that would occur under the Vision Plan in 2040. GHG emissions that would be

generated by construction of the Project were quantified in CalEEMod for the near-term activities described in Table 2-22. Sources producing GHG emissions during construction activities include off-road equipment exhaust and on-road vehicle exhaust. Over the course of Project implementation, construction vehicle/equipment efficiency will progressively improve with mandatory increased vehicle fuel efficiency standards and Title 24 energy efficiency improvements; however, it was conservatively assumed that total GHG emissions during the long-term improvements between 2030–2040 would be equal to the GHG emissions generated by construction of the near-term improvements between 2020–2030, thus the near-term construction GHG emissions were doubled to characterize total emissions. Refer to Appendix D for detailed emissions modeling input parameters and CalEEMod output files.

Long-term operational sources of GHG emissions include on-road vehicle trips by Zoo employees and visitors, on-site facility support equipment and vehicles, and electricity and natural gas consumption. Operational mobile source emissions from on-road vehicle travel were estimated using the results of trip generation and VMT data produced by the *Los Angeles Zoo Vision Plan Transportation Assessment* (Fehr & Peers 2020), included as Appendix N of this Draft EIR. Daily VMT under Existing Conditions and in 2030 and 2040 were multiplied by corresponding GHG emission factors produced by the CARB mobile source emissions model named EMissions FACtor (EMFAC2017; refer to Appendix D).

In addition to mobile on-road vehicle trips, operational GHG emissions would be generated by facility maintenance equipment and vehicles and energy consumption. Estimates of facility maintenance equipment and vehicles and energy consumption were obtained through coordination with Zoo facility administrators. Annual GHG emissions associated with these sources were estimated using the equations contained in the *CalEEMod User's Guide – Appendix A Calculation Details for CalEEMod*. Refer to Appendix D for detailed GHG emissions modeling input parameters and calculation sheets for the near-term improvements. Annual operational GHG emissions that would be generated in 2030 and 2040 were added to the amortized near-term and total construction GHG emissions, respectively, to evaluate potential significance. The 2030 and 2040 analysis years are consistent with the statewide GHG emissions reduction target date outlined by SB 32 and the horizon planning year of the SCAG *2016–2040 Regional Transportation Plan/Sustainable Communities Strategy*, respectively.

Total annual GHG emissions that would be generated by the Project in 2030 and 2040 were quantified without taking into account proposed Project design features that will reduce GHG emissions; however, the Project will incorporate numerous features that will contribute to energy efficiency and GHG emissions reductions, including, but not limited to, LEED Silver design standards for new structures, infrastructure, utilities, and landscaping, installation of photovoltaic solar panels providing up to 50 percent of Zoo electricity demand, and provision of electric vehicle charging stations. Additionally, several mitigation measures outlined in other sections of this EIR would further contribute to GHG emissions reductions achieved by

the Project. As an element of the GHG emissions analysis and determination of potentially significant impacts, Project design features and mitigation measures described elsewhere which would contribute to GHG emissions reductions were evaluated in the context of the California Air Pollution Control Officer's Association (CAPCOA) guidance document *Quantifying Greenhouse Gas Mitigation Measures – A Resource for Local Government to Assess Emission Reductions from Greenhouse Gas Mitigation Measures* (CAPCOA, 2010).

Project Design Features

The Vision Plan improvements would enhance and revitalize Zoo facilities over a 20-year timespan. The proposed Vision Plan improvements would include numerous best management practices (BMPs), design features, and other elements that would reduce GHG emissions relative to the unmitigated operational emissions presented in Table 3.8-5 and 3.8-6. Limited details are available related to the schedule of incorporating proposed Project features that will either directly or indirectly reduce GHG emissions, therefore the potential effectiveness of these measures is evaluated qualitatively in the context of full Vision Plan buildout using the methodologies described in the 2010 CAPCOA guidance document. The 2010 CAPCOA quantification measures guidance was prepared when 2008 Title 24 Energy Efficiency standards were applicable. Therefore, the percent improvements analyzed in the guidance document relative to the outdated standards do not accurately reflect the achievable reduction based on the 2019 Title 24 standards and LEED Silver criteria to which the proposed Project improvements will be subject, at a minimum.

Staged utility and infrastructure improvements would be implemented over the 20-year project horizon to replace and upgrade aging systems, serve anticipated growth in visitation through approximately 2040, substantially improve water and energy conservation, and reduce maintenance costs and resource demands. Such improvements are anticipated to include major upgrades to stormwater conveyance, onsite storage, and recycling through onsite treatment and retention, which would allow onsite reuse onsite or permit release of treated water to the Los Angeles River. Major electrical energy initiatives would include generation of substantial electrical energy onsite, installation of photovoltaic solar panels, increased efficiency through use of LEED construction, and visitor space environmental climate controls. The Vision Plan also proposes improvements to water delivery systems, wastewater collection, and new restrooms. The proposed Project is characterized by the following features that would reduce GHG emissions:

- **Construction –** Construction activities will comply with the provisions of the CARB Airborne Toxic Control Measure to limit idling of diesel-fueled commercial motor vehicles to not more than five minutes at any location, including when queuing within 100 feet of sensitive receptors. Reducing idling and ensuring that equipment and vehicles are regularly inspected and maintained to manufacturer specifications will reduce GHG emissions from those sources. Additionally, construction of the proposed Project will use LEED Silver construction techniques outlined in the Sustainable City

pLAn to meet the 80 percent construction and demolition waste recycling requirements. Additionally, the installation of electronic communications lines to automatically control utilities and environmental conditions would further reduce potential future demand.

- **Transportation** – The Vision Plan would include the following transportation improvements which would achieve some reductions in vehicle trips and VMT.
  - Site Enhancement and Traffic Calming: The proposed Project would consolidate service and functional areas of the Zoo to one location, and the Zoo would have the space to include enlarged service and food storage areas for more efficient bulk purchasing, thereby reducing annual vendor deliveries and internal circulation congestion.
  - Transit Access Improvements: The proposed realignment of Western Heritage Way/Crystal Springs Drive would also allow the Zoo's southbound bus stop to be moved to Western Heritage Way between the Zoo and Autry Museum of the American West, improving the efficiency of public transportation access to these attractions.
- **Parking Policy** – The expansion of the EV and ZEV infrastructure is a critical component to incentivizing alternative fuel vehicle use. The Zoo administration and facilities buildings would have electric vehicle charging stations. A minimum of two stations shall be provided for each designated parking area of Zoo vehicles.
- **Energy** – The Vision Plan would include the following energy improvements would which reduce operational energy demands and associated GHG emissions.
  - Building Energy: Throughout all phases of the Project, new structures, infrastructures, utilities, and landscaping would meet the LEED Silver standards of design or better, including all Visitor Centers, to ensure energy- and resource-efficient structures. All renovated and new structures will be outfitted with reduced-flow plumbing fixtures and energy efficient appliances (i.e., restaurant facilities) and comply with all provisions of the Los Angeles Green Building Code.
  - Lighting: Intersection improvements at I-5/Zoo Drive would install a signalized intersection with LED traffic lights. Parking lot improvements would install high-efficiency outdoor lighting throughout Zoo parking facilities. All new lighting within building structures will be ensured to meet LEED Silver or equivalent standards.
- **Water –** The Vision Plan would include the following improvements which would reduce demands for potable water supplies, reducing associated GHG emissions:
  - Water Supply: The proposed Project would implement a stormwater treatment system with capacity up to 35 million gallons annually, that would reduce potable water demand and associated indirect GHG emissions from energy to supply water

by approximately 24 percent. The stormwater capture cisterns would be installed with an end goal of capturing 80 percent of onsite stormwater for treatment and reuse onsite. The stormwater treatment and recirculation system would reduce operational GHG emissions associated with electricity used for potable water supply in 2040 by at least 24 percent relative to the 2019 baseline.

- Water Use: The Zoo currently uses approximately 11.5 million gallons of recycled water annually for parking lot irrigation. The recycled water consumption with implementation of the Vision Plan would increase to approximately 25.9 million gallons in 2040. Expanding recycled water use minimizes potable water supply GHG emissions.

- **Solid Waste –** The Vision Plan includes provisions for new enclosures for trash, recycling, and food waste materials to serve visitor and employee uses. The Zoo would manage trash and recycling generated by animal care, dining facilities, restrooms, and other visitor-serving facilities within the campus. The Zoo presently engages in composting for green waste and herbivore animal waste in Griffith Park, reducing the mass of waste delivered for landfill disposal and reducing the number and length of waste disposal vehicle trips. The Zoo would continue to explore options for diverting additional waste from landfills.

Cumulative Reductions

Although the features described above are voluntarily being incorporated into the Vision Plan improvements and are not specifically designed to mitigate significant GHG emissions impacts, the elements and components would substantially improve facility energy efficiency, expand alternative energy generation capacity, reduce wastewater to sewers and solid waste disposal to landfills, and provide augmented accessibility through public transit. The degree to which GHG emissions would be reduced through these mechanisms cannot be reasonably quantified due to the complexity of the implementation schedule and the potential GHG emissions reductions associated with other cumulative projects, such as the LADWP solar project that would reduce the Zoo facilities' baseline electricity consumption in future years.

Additionally, the GHG emissions increases presented in Table 3.8-5 and Table 3.8-6 do not account for external factors that will reduce GHG emissions in future years relative to existing conditions such as mandated regulatory programs for enhancing energy and fuel efficiency standards. As more stringent energy and fuel efficiency standards are implemented, GHG emissions from those sources would be gradually reduced over time. Proposed Project GHG emissions are conservative based on the following mandated programs that would result in reductions:

- The EMFAC mobile source emissions model accounts for implementation of statewide programs to expand the electric and zero emission vehicle fleet over time. The aggregate average GHG emission factor for passenger, light, and medium duty vehicles

will decrease by approximately 27 percent between 2019 and 2030, and 35 percent by 2040. Assuming that the planned programs are implemented on schedule, proposed Project mobile source GHG emissions would be 27 percent lower in 2030 and 35 percent lower in 2040 than those presented in the analyses.

- The emissions modeling relies on 2013 Title 24 energy efficiency standards built into CalEEMod. All new construction and renovations for the Vision Plan will meet or exceed 2019 Title 24 energy efficiency standards, which would reduce proposed Project GHG emissions from Title 24 building energy sources by approximately 37 percent.

3.8.4 Environmental Impacts Analysis

GHG-1: Would the Project generate GHG emissions, either directly or indirection, that may have a significant impact on the environment? Would the proposed Project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Project Construction and Operational GHG Emissions

Near-Term Project GHG Emissions (2030)

As discussed in detail in Section 2.0, *Project Description*, construction of the proposed Project facilities will be separated into near-term improvements to be completed by 2030 (Phase 1 through Phase 3) and long-term improvements (Phase 4 through Phase 7) to be developed between 2030 and 2040. A greater degree of detail regarding the schedule of improvements and required construction inventories is available for Phase 1 through Phase 3. Given the improvements to be completed in each phase—and acknowledging that construction equipment and vehicle emissions will decrease on average in future years as more stringent emissions standards and newer fleets are introduced—it is anticipated that GHG emissions would be higher during the near-term improvements than during the latter 10 years of the Project.

Sources of GHG emissions that would be involved in construction activities include off-road equipment exhaust and on-road trips by the crew and hauling vehicle fleet. Therefore, GHG emissions were estimated using CalEEMod for activities comprising Phase 1, Phase 2, and Phase 3 construction described in Table 3.8-4. Over the course of Project implementation, construction vehicle/equipment efficiency will progressively improve with mandatory increased vehicle fuel efficiency standards and Title 24 energy efficiency improvements. As a conservative approach, even though efficiency is anticipated to improve in the future, it was assumed that GHG emissions during long-term improvements would be equal to those during the near-term improvements. Table 3.8-4 presents the GHG emissions that would be generated by construction of Phase 1 through Phase 3 during near-term improvements. As

indicated therein, construction activities for the proposed near-term improvements would result in temporary generation of GHG emissions totaling 10,597 MT CO_2e.

Table 3.8-4. Near-Term Improvements GHG Emissions – Construction

Phase	Start Year	End Year	Total MTCO2e
Phase 1	2020	2025	4,812
Phase 2	2025	2027	2,652
Phase 3	2027	2030	3,133
		Total Near-Term Construction	10,597
		Average 30-Year Annual Amortized Rate	**354**

Source: Appendix D, CalEEMod Estimate Worksheets.

Implementation of the Vision Plan would expand Zoo capacity and accommodate more attendance over the next 20 years. Sources of GHG emissions involved in Zoo operations include VMT by patrons and employees, energy consumption, solid waste disposal, water use, and facility maintenance activities. The GHG emissions analysis also includes GHG emissions from direct and indirect sources associated with facility operations on the Project site. Direct GHG emissions are associated with natural gas use and facility maintenance equipment and vehicles, and indirect emissions are associated with electricity generation and solid waste disposal. GHG emissions generated by existing natural gas, maintenance activities, electricity use, and solid waste disposal were estimated using CalEEMod calculation methodologies and data obtained from Zoo planning staff. GHG emissions associated with proposed Project operations in 2030 were estimated using extrapolation methods based the redevelopment areas and features. See Appendix D for CalEEMod assumptions and inputs.

The CEQA Guidelines and recent case law recommend the use of existing conditions as the baseline against which Project emissions should be compared. Table 3.8-5 presents the annual operational GHG emissions associated with implementation of the Vision Plan near-term improvements, as well as an estimate of GHG emissions under existing conditions, and the net change in annual GHG emissions for in the analysis year of 2019.

Table 3.8-5. Near-Term Improvements GHG Emissions: Existing plus Project (2019)

Emissions Sources	Direct/Indirect	Location	Annual Emissions ($MTCO_2e$/year)
Vision Plan 2030			
Maintenance Sources	Direct	On-Site	56.3
Natural Gas Combustion	Direct	On-Site	3,318.1
Electricity Generation	Indirect	Off-Site	5,631.0
Water Conveyance	Indirect	Off-Site	1,070.3
Solid Waste Disposal	Direct	Off-Site	1,071.7
Mobile Vehicle Trips	Direct	Off-Site	12,238.1
Amortized Construction Sources	*Direct*	*On-Site*	*354.0*
Total			***23,739.5***
Existing Conditions			
Maintenance Sources	Direct	On-Site	50.3
Natural Gas Combustion	Direct	On-Site	2,485.8
Electricity Generation	Indirect	Off-Site	4,464.8
Water Conveyance	Indirect	Off-Site	811.0
Solid Waste Disposal	Direct	Off-Site	658.8
Mobile Vehicle Trips	Direct	Off-Site	7,485.3
Total			***15,956.0***
Regional Analysis			
Net New GHG Emissions – Unmitigated			7,783.5
Net New GHG Emissions Threshold			*3,000*
Exceeds Threshold?			**Yes**

Source: Appendix D, CalEEMod Estimate Worksheets.

Implementation of the near-term improvements would generate an unmitigated net increase of 7,783.5 $MTCO_2e$ annually relative to existing conditions in the CEQA baseline year of 2019. Between 2019 and 2030 newer, more fuel-efficient vehicles will be introduced to the regional vehicle fleet meeting more stringent future emissions standards mandated by CARB that will reduce average fleetwide GHG emissions rates. The incremental increase in GHG emissions attributed to mobile vehicle trips and VMT in Table 3.8-5 represents a conservative estimate that does not account for future GHG emissions reduction programs. Furthermore, implementation of the Vision Plan will install substantial solar capacity throughout the Zoo property, reducing future electricity demand by up to 50 percent. Therefore, the proposed Project emissions in Table 3.8-5 represent a conservative estimate of electricity consumption and GHG associated with near-term improvements under the existing plus proposed Project analysis, accounting for no GHG emissions reduction measures. The 7,783.5 $MTCO_2e$ increase represents the maximum possible annual change in emissions resulting from implementation of the near-term Vision Plan improvements. Conservative estimates of net

new GHG emissions generated by Project near-term improvements would exceed 3,000 $MTCO_2e$/year.

By 2030 it is estimated that improvements to the Zoo under the Project would support approximately 2,808,150 visitors annually (approximately 7,715 persons per day on average) and 990 full- and part-time employees, resulting in a service population (employees plus daily visitors) of approximately 8,705 persons. This represents a net increase of 1,064,350 visitors annually (2,924 persons per day on average) and 420 full- and part-time employees, resulting in a net increase in service population of approximately 3,344 persons. Based on the Zoo's estimated annual GHG emissions and future service population, the Project would generate approximately 2.7 $MTCO_2e$/person/year and a net 2.3 $MTCO_2e$/person/year (see Table 3.8-6).

Table 3.8-6. Near-Term Improvements GHG Efficiency

Category	Total Annual Emissions ($MTCO_2e$/year)	Net Annual Emissions ($MTCO_2e$/year)[1]
Vision Plan 2030		
Total Annual Emissions	23,739.5	7,783.5 (Net Emissions)
Zoo 2030 Service Population (Employees + Visitors)	8,705	3,344 (Net Service Population)
Zoo 2030 Per Capita Emissions	2.7	2.3
2030 GHG Emissions Efficiency Metric Threshold	*2.7*	*2.7*
Exceed Threshold?	**No**	**No**

[1] Net increase above existing conditions.

The Project's total and net estimated GHG emissions following implementation of proposed near-term improvements would fall within the established GHG efficiency metric thresholds. Though the Project's estimated efficiency metric (based on total Project emissions and service population) would equal the established efficiency target, the Project's GHG emissions are based on conservative estimates that do not account for proposed Project design features as well as likely GHG efficiency improvements that would be implemented in the future and would contribute to GHG emissions reductions. As such, it is reasonable to assume the Project's GHG emissions would in actuality be further below the GHG efficiency metric threshold than what has been conservatively estimated for the Project. The Project's contributions to cumulative impacts to global climate change as a result of implementation of near-term improvements, when compared against numerical thresholds, are therefore considered *less than significant.*

Long-Term Project GHG Emissions (2040)

In 2040, implementation of long-term Project improvements would increase maximum daily VMT by 74 percent relative to existing conditions (see Section 3.15, *Transportation*). In the absence of the proposed Project, it is anticipated that Zoo operations would continue at their existing capacity and no additional trips or VMT would occur given current constraints. Construction of the long-term improvements is conservatively assumed to generate GHG emissions of equal magnitude to near-term improvements, doubling the annual amortized construction emissions to approximately 708 $MTCO_2e$. Between 2019 and 2040 newer, more fuel-efficient vehicles will be introduced to the regional vehicle fleet meeting more stringent future emissions standards that will reduce average fleetwide GHG emissions rates, as well as implementation of more energy-efficient technologies. Therefore, using 2019 GHG emissions rates to characterize emissions that would be occurring in 2040 represents a conservative approach to satisfy CEQA requirements. Table 3.8-7 presents the existing plus Project GHG emissions analysis during operation of the long-term improvements.

Table 3.8-7. Long-Term Improvements GHG Emissions: Existing plus Project (2019)

Emissions Sources	Direct/Indirect	Location	Annual Emissions ($MTCO_2e$/year)
Vision Plan 2040			
Maintenance Sources	Direct	On-Site	58.3
Natural Gas Combustion	Direct	On-Site	3,392.3
Electricity Generation	Indirect	Off-Site	6,020.8
Water Conveyance	Indirect	Off-Site	1,156.8
Solid Waste Disposal	Direct	Off-Site	1,151.3
Mobile Vehicle Trips	Direct	Off-Site	13,184.9
Amortized Construction Sources	*Direct*	*On-Site*	*708.0*
Total			***25,672.4***
Existing Conditions			
Maintenance Sources	Direct	On-Site	50.3
Natural Gas Combustion	Direct	On-Site	2,485.8
Electricity Generation	Indirect	Off-Site	4,464.8
Water Conveyance	Indirect	Off-Site	811.0
Solid Waste Disposal	Direct	Off-Site	658.8
Mobile Vehicle Trips	Direct	Off-Site	7,485.3
Total			***15,956.0***
Regional Analysis			
Net New GHG Emissions – Unmitigated			9,716.4
Net New GHG Emissions Threshold			*3,000*
Exceeds Threshold?			**Yes**

Source: Appendix D, CalEEMod Estimate Worksheets.

Analyzing the existing plus Project scenario, implementation of the complete Vision Plan would increase annual GHG emissions by approximately 9,716.4 MTCO2e in 2019 without accounting for any improvements to building and lighting energy efficiency, water conservation, waste management, or circulation and accessibility enhancements. As described below, the proposed Project would implement numerous design features and conservation strategies to reduce its environmental impact related to GHG emissions. Furthermore, cumulative regulatory mandates will potentially reduce average GHG emissions factors from utility sources in future years due to plans, policies, and regulations implemented at the state, regional, and local levels. Conservative estimates of net new GHG emissions generated by Project long-term improvements would exceed 3,000 $MTCO_2e$/year.

By 2040 it is estimated that improvements to the Zoo under the Project would support approximately 3,000,000 visitors annually (approximately 8,242 persons per day on average) and 1,101 full- and part-time employees, resulting in a service population (employees plus daily visitors) of approximately 9,343 persons. This represents a net increase of 1,256,200 visitors annually (3,451 persons per day on average) and 531 full- and part-time employees, resulting in a net increase in service population of approximately 3,982 persons. Based on the Zoo's estimated annual GHG emissions and future service population, the Project would generate a total of approximately 2.7 $MTCO_2e$/person/year and a net increase of 2.4 $MTCO_2e$/person/year (see Table 3.8-8).

Table 3.8-8. Long-Term Improvements GHG Efficiency

Category	Total Annual Emissions ($MTCO_2e$/year)	Net Annual Emissions ($MTCO_2e$/year)[1]
Vision Plan 2030		
Total Annual Emissions	25,672.4	9,716.4 (Net Emissions)
Zoo 2030 Service Population (Employees + Visitors)	9,343	3,982 (Net Service Population)
Zoo 2030 Per Capita Emissions	2.7	2.4
2030 GHG Emissions Efficiency Metric Threshold	*2.7*	*2.7*
Exceed Threshold?	**No**	**No**

[1] Net increase above existing conditions.

The Project's total and net estimated GHG emissions following implementation of proposed long-term improvements would fall within the established GHG efficiency metric thresholds for the project. Though the Project's estimated efficiency metric (based on total Project emissions and service population) would equal the established efficiency target, the Project's GHG emissions are based on conservative estimates that do not account for proposed Project design features and future mandatory equipment efficiency improvements that would be implemented in the future and would contribute to GHG emissions reductions. Further, these estimates do not account for transportation demand management mitigation to reduce Project VMT by 2040 (see Section 3.15, *Transportation*)As such, it is reasonable to assume

the Project's GHG emissions would in actuality be further below the GHG efficiency metric threshold than what has been conservatively estimated for this EIR. The Project's contributions to cumulative impacts to global climate change as a result of implementation of long-term improvements, when compared against numerical thresholds, are therefore considered *less than significant*.

Project Consistency with Plans and Policies

Implementation of the proposed Project may cause a significant environmental impact if it would conflict with applicable statewide or regional plans, policies, or regulations adopted to reduce GHG emissions by delaying or interfering with achievement of the relevant reduction targets by their corresponding dates. As described in the regulatory framework, a robust set of regulations are in place pertaining to GHG emissions reductions. For the proposed Project—which is a 20-year planning framework for a regional attraction—this analysis considers the proposed Project's consistency GHG emissions reduction initiatives, including, but not limited to:

- Executive Order S-3-05, which established the goal of reducing the state's GHG emissions to 80 percent below the 1990 levels by 2050, as mandated by AB 32;
- California's 2017 Climate Change Scoping Plan, promulgated by CARB to achieve a 40 percent reduction on GHG emissions from 1990 levels by 2030 as mandated by SB 32;
- California Renewables Portfolio Standard and SB 350 and SB 100, which address renewable energy use and availability to reduce reliance on fossil fuel combustion;
- SCAG's 2016–2040 RTP/SCS, the regional plan for achieving sustainable land use patterns that reduce passenger vehicle GHG emissions, as mandated by SB 375;
- The City's Sustainable City pLAn 2019, which GHG emissions reduction targets established by the 2019 Green New Deal Pathway: 50 percent below 1990 levels by 2025, 73 percent below 1990 levels by 2035, and citywide carbon neutrality by 2050; and,
- City of Los Angeles General Plan, which establish policies for reducing vehicle trips and VMT to improve the citywide transportation network and increase resource efficiency to reduce GHG emissions.

Project Consistency with State Mandates, Plans, Policies, and Regulations

The primary focus of many of the statewide and regional mandates, plans, policies, and regulations is to address worldwide climate change. Global GHG emissions, in their aggregate, contribute to climate change, not any single source of GHG emissions alone.

The significance of the Project's GHG emissions is evaluated based on whether the Project is consistent with the relevant statewide mandates, plans, policies, and regulations to reduce GHG emissions, including AB 32 and SB 32 (Health and Safety Code Division 25.5), the Climate Change Scoping Plan, and other regulations and programs. Because the Project incorporates physical and operational sustainability features that would promote a reduction in GHG emissions, the Project would not cumulatively contribute to significant climate change effects

and would not conflict with the GHG reduction goals of Health and Safety Code Division 25.5 and associated GHG reduction plans. Table 3.8-9 provides a topical overview of the statewide consistency analysis, organized by the applicable plan source category or strategy.

Table 3.8-9. Vision Plan Consistency with Statewide Emissions Reductions

Objective or Strategy	Consistency Analysis
AB 32, SB 32, and the Climate Change Scoping Plan	
SB 350 increases the Renewable Portfolio Standard for California's renewable electricity procurement requirement from 33 percent in 2020 to 50 percent by 2030.	Consistent. The proposed Project would not interfere with statewide initiatives to increase renewable energy production from public utilities and would implement up to 70,000 square feet of solar panels for on-site renewable energy generation to reduce LADWP demand.
SB 350 mandates that State achieve cumulative doubling in energy efficiency savings in electricity and natural gas end uses by 2030.	Consistent. The proposed Project would remove outdated building structures and facilities that would be replaced by buildings meeting LEED Silver or equivalent energy efficiency. All end uses within Zoo facilities will at a minimum comply with the most recent applicable Title 24 energy efficiency standards, currently 2019. The Vision Plan would not interfere with SB 350 goals to double energy efficiency savings by 2030.
Implement Mobile Source Strategy requiring at least 4.2 million zero-emission and plug-in hybrid vehicles by 2030.	Consistent. The proposed Project would not interfere with zero-emission and plug-in hybrid vehicle production or sales. The Vision Plan would include electric vehicle charging stations at all new facility buildings to encourage the use of electric vehicles, which would expand the electric vehicle infrastructure.
Implement California Sustainable Freight Action Plan to improve freight system efficiency; increase near-zero emission fleet.	Consistent. Implementation of the proposed Project would not conflict with the California Sustainable Freight Action Plan; Vision plan improvements would enhance the circulation network and consolidate commercial deliveries to one central location, increasing operational efficiency.

The Project would also support the state's strategies in the 2017 Climate Change Scoping Plan to reduce GHG emissions (Table 3.8-9). The 2017 Climate Change Scoping Plan relies on a broad array of GHG reduction strategies, which include direct regulations, alternative compliance mechanisms, incentives, voluntary actions, and market-based mechanisms, such as the Cap-and-Trade Program. These potential strategies include increasing the fuel economy of vehicles and the number of zero-emission or hybrid vehicles, reducing the rate of growth in VMT, supporting high speed rail and other alternative transportation options, and use of high efficiency appliances, water heaters, and HVAC systems. The Project would benefit from statewide and City efforts towards increasing the portion of electricity provided from renewable resources. The Project would also benefit from statewide efforts towards increasing the fuel economy standards of vehicles. The Project would utilize energy efficiency appliances and equipment, as well as electric-powered vehicles by providing EV vehicle spaces. The Project would be designed with up to 70,000 sf of solar photovoltaic panels to reduce energy demand and increase use of renewably sourced energy. In addition, consistent with the City's Green Building Code, new development under the Project would be designed to include green building measures and be equipped with energy and water efficient systems

or appliances. While CARB is in the process of developing a framework for the 2030 reduction target in the Scoping Plan, the Project would support or not impede implementation of these potential reduction strategies identified by CARB.

Based on the analysis presented in Table 3.8-10 below, the proposed Project would be consistent with the California Renewables Portfolio Standard, SB 350, SB 100, CCR Title 24, California Green Building Standards Code Requirements, SB 375, and recommendations of the State Attorney General, OPR and Climate Action Team with implementation of mitigation requiring preparation of a Storm Water Pollution Prevention Plan (SWPPP) (**MM HYD-2**) and replacement of trees contributing to the urban forest (**MM UF-1** and **MM UF-2**). Therefore, the Project would be consistent with applicable state plans, policies, and regulations and impacts would be *less than significant with mitigation*.

Project Consistency with Regional Mandates, Plans, Policies, and Regulations

The RTP/SCS aims to reduce or limit new trip generation and associated regional growth in traffic congestion and VMT by focusing growth, density, and land use intensity within existing urbanized areas. Additionally, the RTP/SCS strives towards enhancing the existing transportation system and integrating land use into transportation planning. The RTP/SCS recommends local jurisdictions accommodate future growth within existing urbanized areas to reduce VMT, congestion, and GHG emissions. The RTP/SCS specifically encourages future growth to occur within existing High-Quality Transit Areas, which are described as generally walkable transit districts or corridors that are within 0.5 miles of a major transit stop or a transit corridor with 15-minute or less service frequency during peak commute hours.

Table 3.8-11 presents the consistency analysis for the proposed Project in the context of regional plans and policies to reduce GHG emissions. The evaluation focuses on consistency with elements of the SCAG RTP/SCS, which was derived to comply with SB 375 and determined to contain sufficient targets to meet statewide emissions reduction goals associated with regional transportation planning. As discussed therein, though the Project is not located within a High-Quality Transit Area, the Project would not introduce a new land use development outside of a High-Quality Transit Area, and implementation of the Project would improve access to the site via alternative modes of travel by improving access to the site by transit and promoting pedestrian and bicycle access. In addition, implementation of **MM T-2** would require the Zoo to prepare and implement a Transportation Demand Management (TDM) Program and a Paid Parking Program, respectively, to expand alternative transportation modes to the Zoo to reduce trips, VMT, and congestion, and improve safe and reliable transportation alternatives to the Zoo. With implementation of these measures, the Project would be consistent with all applicable goals of the 2016-2040 RTP/SCS intended to improve mobility and access to diverse destinations, promote smart growth, provide more transportation choices, and reduce vehicular demand and associated emissions. As such, the Project would be consistent with regional plans to reduce VMT and associated GHG emissions, and impacts would be *less than significant with mitigation*.

Table 3.8-10. Project Consistency Summary with State GHG Emissions Reduction Strategies

Objective or Strategy	Relationship to Project
California Renewables Portfolio Standard and SB 350 and SB 100	
Increases the proportion of electricity from renewable sources to 33 percent renewable power by 2020. SB 350 requires 50 percent by 2030. It also requires the State Energy Resources Conservation and Development Commission to double the energy efficiency savings in electricity and natural gas final end uses of retail customers through energy efficiency and conservation. SB 100 accelerates the Renewables Portfolio Standard Program goals as follows: (1) 50 percent renewable resources target by December 31, 2026; and (2) 60 percent renewable resources target by December 31, 2030. SB 100 also establishes a state policy that eligible renewable energy resources and zero-carbon resources supply 100 percent of retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all state agencies by December 31, 2045.	Consistent. While this measure does not directly apply to the Project, the Project would be consistent with and would not conflict with this strategy because Southern California Edison is required to meet the State's Renewable Portfolio Standard, including SB 100. Southern California Edison would also be required to meet the 60 percent renewable target in 2030. Furthermore, the Vision Plan proposes up to 70,000 sf of solar photovoltaic panels to increase the Zoo's reliance on renewable energy.
CCR Title 24	
Energy Efficiency Standards for Residential and Nonresidential Buildings	Consistent. The Project would comply with the City's most recent Green Building Code by incorporating photovoltaic panels, high-performance building envelopes, and energy-efficient HVAC and lighting systems, thereby reducing energy use, air pollutant emissions, and GHG emissions. The City's Energy Code makes local amendments to Title 24 Building Energy Efficiency Standards.
Title 24 includes water efficiency requirements for new residential and non-residential uses.	Consistent. The Project would meet this requirement as part of its compliance with the City's requirements and the CALGreen Code. The Project would include water efficient equipment and plumbing infrastructure. With regard to operational landscaping irrigation, the proposed Project would reuse onsite water collected from stormwater runoff and would utilize recycled water from LADWP. These options would be explored as final design plans are further developed.
California Green Building Standards Code Requirements	
All bathroom exhaust fans shall be ENERGY STAR compliant.	Consistent. The Project would utilize energy efficiency appliances and equipment and would meet or exceed the energy standards in the City's Energy Code.
HVAC Systems will be designed to meet ASHRAE standards.	
Energy commissioning shall be performed for buildings larger than 10,000 square feet.	Consistent. The Project would meet this requirement as part of its compliance with Division 12, A5.410.3 of the City's Green Building Code.

Table 3.8-10. Project Consistency Summary with State GHG Emissions Reduction Strategies (Continued)

Objective or Strategy	Relationship to Project
Air filtration systems are required to meet a minimum of MERV 8 or higher.	Consistent. The Project would meet or exceed this requirement as part of its compliance with the City's requirements and the CALGreen Code.
Refrigerants used in newly installed HVAC systems shall not contain any chlorofluorocarbons.	
Parking spaces shall be designed for carpool or alternative fueled vehicles. Up to eight percent of total parking spaces will be designed for such vehicles.	
Long-term and short-term bike parking shall be provided for up to five percent of vehicle trips.	
Stormwater Pollution Prevention Plan (SWPPP) required.	Consistent with Mitigation. The State Water Resources Control Board regulates stormwater runoff from construction activities under Order No. 2009-009-DWQ, as amended by 2010-0014-DWQ and 2012-0006-DWQ. Construction activities subject to the National Pollutant Discharge Elimination System Construction General Permit include sites that disturb at least one acre, and small construction sites less than one acre but part of a larger common plan of at least one acre. The proposed Project would result in construction and redevelopment of the Zoo across the entire 142-acre Project site over the 20-year implementation timeline. Individual improvements and development activities are anticipated to result in disturbance of at least 1 acre. Consistent with the State Water Resources Control Board Order No. 2009-009-DWQ and **MM HYD-2**, the City would prepare a SWPPP as part of acquisition of a National Pollutant Discharge Elimination System Construction General Permit to reduce or prevent the discharge of pollutants during construction activities.
Indoor water usage must be reduced by 20% compared to current California Building Code Standards for maximum flow.	Consistent. Refer to discussion under CCR Title 24 requirements above.
All irrigation controllers must be installed with weather sensing or soil moisture sensors.	Consistent. The Project would meet this requirement as part of its compliance with the City's requirements and the CALGreen Code.
Wastewater usage shall be reduced by 20 percent compared to current California Building Standards.	

Table 3.8-10. Project Consistency Summary with State GHG Emissions Reduction Strategies (Continued)

Objective or Strategy	Relationship to Project
Requires a minimum of 50 percent recycle or reuse of nonhazardous construction and demolition debris.	Consistent. The Project would exceed this requirement as part of its compliance with City Code. The Project would comply with the Construction Waste Reduction, Disposal, and Recycling requirements outlined in Section 99.12.508 of the City's Green Building Code, requiring a minimum diversion of 85 percent of nonhazardous construction and demolition waste from landfills.
Requires documentation of types of waste recycled, diverted, or reused.	Consistent. The Project would meet this requirement as part of its compliance with the City's requirements and the CALGreen Code.
Requires use of low VOC coatings consistent with AQMD Rule 1168.	Consistent. The Project would be consistent with this regulation and would meet or exceed the low VOC coating requirements (refer to Section 3.2, *Air Quality*).
100 percent of vegetation, rocks, soils from land clearing associated with new non-residential developments shall be reused or recycled. Phased projects can stockpile on-site.	Consistent. Project construction would meet this requirement as part of its compliance with the City's requirements and the CALGreen Code. Usable fill material would be taken to local storage yards for later use during construction activities within the City.
Mobile Source Strategy (Cleaner Technology and Fuels)	
Reduce GHGs and other pollutants from the transportation sector through transition to zero emission and low-emission vehicles, cleaner transit systems and reduction of vehicle miles traveled.	Consistent. While this action does not apply to individual projects, the Project would be consistent and would not conflict with this strategy by supporting the use of zero-emission and low-emission vehicles through the onsite provision of EV parking spaces.
AB 1493 (Pavley Regulations)	
Reduces greenhouse gas emissions in new passenger vehicles from model year 2012 through 2016 (Phase I) and model year 2017-2025 (Phase II). Also reduces gasoline consumption to a rate of 31 percent of 1990 gasoline consumption (and associated GHG emissions) by 2020.	Consistent. The Project would be consistent with this regulation and would not conflict with implementation of the vehicle emissions standards.
Low Carbon Fuel Standard (Executive Order S-01-07)	
Establishes protocols for measuring life-cycle carbon intensity of transportation fuels and helps to establish use of alternative fuels.	Consistent. The Project would be consistent with this regulation and would not conflict with implementation of the transportation fuel standards.

Table 3.8-10. Project Consistency Summary with State GHG Emissions Reduction Strategies (Continued)

Objective or Strategy	Relationship to Project
Advanced Clean Cars Program	
In 2012, California ARB adopted the Advanced Clean Cars (ACC) program to reduce criteria pollutants and GHG emissions for model year vehicles 2015 through 2025. ACC includes the Low-Emission Vehicle (LEV) regulations that reduce criteria pollutants and GHG emissions from light- and medium-duty vehicles, and the Zero-Emission Vehicle (ZEV) regulation, which requires manufacturers to produce an increasing number of pure ZEVs (meaning battery electric and fuel cell electric vehicles), with provisions to also produce plug-in hybrid electric vehicles (PHEV) in the 2018 through 2025 model years.	Consistent. While this action does not apply to individual projects, all vehicles used by Project residents, employees, and visitors would not impact or conflict with implementation of the Advanced Clean Cars Program.
SB 375	
SB 375 establishes mechanisms for the development of regional targets for reducing passenger vehicle GHG emissions. Under SB 375, California ARB is required, in consultation with the state's MPOs, to set regional GHG reduction targets for the passenger vehicle and light-duty truck sector for 2020 and 2035.	Consistent. While this measure does not directly apply to the Project, the Project would be consistent with and would not conflict with this strategy because the Project would be consistent with SCAG RTP/SCS goals and objectives outlined below in Table 3.8-11.
SB X7-7	
The Water Conservation Act of 2009 sets an overall goal of reducing per capita urban water use by 20 percent by December 31, 2020. Each urban retail water supplier shall develop water use targets to meet this goal.	Consistent. Refer to discussion under CCR Title 24 requirements above.
California Integrated Waste Management Act of 1989 and AB 341	
The IWMA mandated that state agencies develop and implement an integrated waste management plan which outlines the steps to be taken to divert at least 50 percent of their solid waste from disposal facilities. AB 341 directs CalRecycle to develop and adopt regulations for mandatory commercial recycling and sets a statewide goal for 75 percent disposal reduction by the year 2020.	Consistent. While this action does not apply to individual projects, the Project would be served by a solid waste collection and recycling service, approved or licensed to collect solid waste in the City, that may include mixed waste processing, and that yields waste diversion results comparable to source separation and consistent with and would not conflict with Citywide recycling targets. The City currently recycles and would continue to recycle applicable waste under operation of the Vision Plan. The Zoo would also continue "Zoo Doo" operations associated with the Griffith Park Composting Facility to recycle animal bedding (i.e., hay) and waste. The Zoo would continue to be a source for food waste diversion, working with World Harvest to use appropriate and quality food waste for animal feed, thereby preventing landfill disposal.

Table 3.8-10. Project Consistency Summary with State GHG Emissions Reduction Strategies (Continued)

Objective or Strategy	Relationship to Project
Climate Action Team	
Reduce diesel-fueled commercial motor vehicle idling.	Consistent. The Project would comply with the CARB Air Toxics Control Measure to limit heavy duty diesel motor vehicle idling to no more than 5 minutes at any given time.
Achieve California's 50 percent waste diversion mandate (Integrated Waste Management Act of 1989) to reduce GHG emissions associated with virgin material extraction.	Consistent. While this action does not apply to individual projects, the Project would be served by a solid waste collection and recycling service, approved or licensed to collect solid waste in the City, that may include mixed waste processing, and that yields waste diversion results comparable to source separation and consistent with and would not conflict with Citywide recycling targets. As of February 2020, all the Mixed Construction and Demolition processors currently certified by the City have achieved at least 70 percent mixed construction and demolition waste recycled rates.
Plant five million trees in urban areas by 2020 to effect climate change emission reductions.	Consistent with Mitigation. The Project would require substantial tree removal as part of all proposed improvements; however, important streets (i.e., important trees, mature trees) would be protected in place. Trees that are removed through the Project would be replanted and expanded by the proposed landscaping of trees and vegetation representative of the theme of the proposed improvement area. Impacts to resulting from the removal of protected trees would be mitigated through implementation of **MM UF-1** and **MM UF-2** requiring substantial native tree replacement on- or offsite, as well as substantial replanting of disturbed areas to maintain an urban tree canopy at the Zoo. Though hundreds of trees could be removed as part of the Project, even more trees are expected to be planted as a result of required mitigation or proposed landscaping. Refer also to Section 3.3, *Biological Resources* and Section 3.6, *Urban Forestry Resources*.
Implement efficient water management practices and incentives, as saving water saves energy and GHG emissions.	Consistent. The Project would meet this requirement as part of its compliance with the City's requirements and the CALGreen Code. Refer to discussion under CCR Title 24 requirements above.
Reduce GHG emissions from electricity by reducing energy demand. The California Energy Commission updates appliance energy efficiency standards that apply to electrical devices or equipment sold in California. Recent policies have established specific goals for updating the standards; new standards are currently in development.	Consistent. The Project would utilize energy efficiency appliances and equipment and would meet or exceed the Title 24 Building Energy Efficiency Standards.

Table 3.8-10. Project Consistency Summary with State GHG Emissions Reduction Strategies (Continued)

Objective or Strategy	Relationship to Project
Apply strategies that integrate transportation and land-use decisions, including but not limited to promoting jobs/housing proximity, high-density residential/ commercial development along transit corridors, and implementing intelligent transportation systems.	Consistent with Mitigation. The proposed Project would not introduce a new land use development outside of a high-quality transit area, nor would it impede the development of livable corridors throughout the local communities. Vision Plan improvements would be limited to Griffith Park and the immediate surrounding roadway circulation network which is served by existing transit stops and bicycle facilities. Implementation of the Vision Plan would provide additional bicycle parking to encourage local trips and would enhance pedestrian access and safety. In addition, the Vision Plan proposes substantial redesign of the Zoo Entry and internal circulation system to provide more ADA-accessible and pedestrian friendly navigation for visitors. The proposed Phase 1 road realignment would also allow the Zoo's southbound bus stop to be moved to Western Heritage Way between the Zoo and Autry Museum of the American West, improving the efficiency of public transportation access to the North Hollywood High School Zoo Magnet Center, Autry Museum, and the proposed park north of the proposed parking structure (Phase 7). Further, **MM T-2** would be required to reduce Project-related employee and visitor VMT, secondarily reducing mobile-source GHG emissions. These measures would require the Zoo to implement or expand alternative transportation modes to the Zoo to reduce trips, VMT, and congestion, and improve safe and reliable transportation alternatives to the Zoo. Refer also to Section 3.15, *Transportation*.

Table 3.8-11. Vision Plan Consistency with Regional Emissions Reductions

Objective or Strategy	Relationship to Project
SCAG RTP/SCS	
Land Use Strategies. Focus new growth around transit, develop livable corridors, and provide more options for short trips.	Consistent. The proposed Project would not introduce a new land use development outside of a high-quality transit area, nor would it impede the development of livable corridors throughout the local communities. Vision Plan improvements would be limited to Griffith Park and the immediate surrounding roadway circulation network. Implementation of the Vision Plan would provide additional bicycle parking to encourage local trips and would enhance pedestrian access and safety.
Transportation Strategies. Preserve and improve our current system, manage congestion, and promote safety and security and active transportation.	Consistent. Implementation of the Vision Plan would not cause any deterioration to the existing roadway system. Reconfiguration of the parking lot and Western Heritage Way would improve internal circulation and site accessibility, as well as pedestrian safety and active transportation accommodations through bicycle parking.
Transportation Strategies. Implement Transportation Demand Management	Consistent with Mitigation. The Project does not include a TDM strategy to ensure accessibility to the Zoo while reducing VMTs. **MM T-2** would require TDM planning and a Paid Parking Program to reduce VMT, secondarily reducing mobile-source GHG emissions. These measures would require the Zoo to implement or expand alternative transportation modes to the Zoo to reduce trips, VMT, and congestion, and improve safe and reliable transportation alternatives to the Zoo. Refer also to Section 3.15, *Transportation*. With mitigation, the proposed Project would ensure the Zoo would administer the TDM program to reduce employee vehicle trips.
Pricing Strategies. Implement variable parking pricing to discourage single-occupancy vehicle trips.	Consistent with Mitigation. The Project does not include a paid parking program. The Zoo would be required to consider a Paid Parking Program under **MM T-2** to support efforts to increase multi-modal accessibility to the Zoo, secondarily reducing mobile-source GHG emissions. Refer also to Section 3.15, *Transportation*. With mitigation, the proposed Project, over time, could create a Paid Parking Program for 85 percent the Zoo lot, and also provide discounts and incentives to visitors and employees who use non-vehicle modes of transportation.
Vehicle Technology/ Enhanced Mobility. Expand electric vehicle infrastructure to reduce reliance on fossil fuels.	Consistent. The proposed Project would provide electric vehicle charging infrastructure and parking accommodations at all facility buildings.
Metropolitan Planning Organization Regional Reduction Target. Achieve 19 percent reduction in per-capita GHG emissions from passenger vehicles throughout the SCAG region by 2035.	Consistent. The Project would not change land use patterns or introduce a new source of vehicle trips to the SCAG region. The Project would increase visitation and employment at the Zoo, increasing visitor and employee vehicle trips, annual VMT, and associated GHG emissions; however, anticipated increases in vehicle trips and annual VMT would not increase per-capita GHG emissions above existing conditions. Though not officially adopted, SCAG staff determined that the 2020-2045 RTP/SCS would be consistent with the SB 375 reduction goals. The proposed Project would not conflict with regional objectives to reduce per-capita GHG emissions from passenger vehicles and would be consistent.

Table 3.8-11. Vision Plan Consistency with Regional Emissions Reductions (Continued)

Objective or Strategy	Relationship to Project
Goal 2. Maximize mobility and accessibility for all people and goods in the region.	Consistent with Mitigation. The Vision Plan proposes substantial redesign of the Zoo Entry and internal circulation system to provide more ADA-accessible and pedestrian friendly navigation for visitors. The proposed Phase 1 road realignment would also allow the Zoo's southbound bus stop to be moved to Western Heritage Way between the Zoo and Autry Museum of the American West, improving the efficiency of public transportation access to the Zoo Magnet Center, Autry Museum, and the proposed park north of the proposed parking structure (Phase 7). However, increased visitation would drive impacts related to increased VMT and associated GHG emissions. Further, the Project does not include multi-modal improvements or expansion of active transportation facilities to ensure accessibility to the Zoo. **MM T-2** would be required to reduce Project-related employee and visitor VMT, secondarily reducing mobile-source GHG emissions. These measures would require the Zoo to implement or expand alternative transportation modes to the Zoo to reduce trips, VMT, and congestion, and improve safe and reliable transportation alternatives to the Zoo. Refer also to Section 3.15, *Transportation*.
Goal 3. Ensure travel safety and reliability for all people and goods in the region.	
Goal 5. Maximize the productivity of our transportation system.	
Goal 6. Protect the environment and health of our residents by improving air quality and encouraging active transportation (e.g., bicycling and walking).	Consistent with Mitigation. The Zoo currently provides and would continue to provide bicycle parking at the Zoo Entry to encourage active transportation to the Zoo. However, increased visitation and employment would drive GHG impacts related to increased VMT. Further, the Project does not include multi-modal improvements or expansion of active transportation facilities to ensure accessibility to the Zoo. **MM T-2** would be required to implement or expand non-vehicular transportation modes to the Zoo to reduce trips, VMT, and congestion, and improve air quality. Refer also to Section 3.15, *Transportation*.
Goal 7. Actively encourage and create incentives for energy efficiency, where possible.	Consistent. As discussed above and in Section 3.5, *Energy*, the Vision Plan proposes use of LEED Silver construction techniques, up to 70,000 square feet of solar photovoltaic panels, and electronic communications lines to automatically control utilities and environmental conditions to reduce power demand. The Project would also guide redevelopment of outdated Zoo facilities that do not currently meeting existing energy and building codes (e.g., California's Green Building Standard Code).

Project Consistency with Local Mandates, Plans, Policies, and Regulations

The Project would support the City's GHG reduction goals and policies established in the City's General Plan, Hollywood Community Plan, Sustainable City pLAn, and the City's Green New Deal (see Table 3.8-12). The proposed Project includes several sustainable design features and characteristics, capture and reuse of stormwater runoff for irrigation, utilization of LADWP recycled water supplies to reduce demand for potable water supplies, efficient landscape irrigation systems, installation of up to 70,000 sf of rooftop solar electric photovoltaic panels, use of LEED Silver construction techniques, and redevelopment, and various measures to reduce Project VMT. All these measures are either directly intended to or would indirectly reduce overall GHG impacts.

Table 3.8-12. Vision Plan Consistency with City Emissions Reductions

Objective or Strategy	Relationship to Project
City of Los Angeles General Plan	
Air Quality Element	
Policy 2.1.1. Utilize compressed work weeks and flextime, telecommuting, carpooling, vanpooling, public transit, and improve walking/bicycling related facilities in order to reduce Vehicle Trips and/or Vehicle Miles Traveled (VMT) as an employer and encourage the private sector to do the same to reduce work trips and traffic congestion.	Consistent with Mitigation. The Zoo currently provides and would continue to utilize compressed work weeks and flexible work schedules. This is due to the unique hours of operation, schedules, and employee shifts that align with non-peak hours, thereby reducing traffic congestion. In addition, the Zoo currently provides and would continue to provide bicycle parking at the Zoo Entry. The proposed Phase 1 road realignment would also allow the Zoo's southbound bus stop to be moved to Western Heritage Way between the Zoo and Autry Museum of the American West, improving the efficiency of public transportation access to the North Hollywood High School Zoo Magnet Center, Autry Museum, and the proposed park north of the proposed parking structure (Phase 7). However, increased visitation would drive transportation and GHG impacts related to increased VMT. Further, the Project does not include multi-modal improvements or expansion of active transportation facilities to ensure accessibility to the Zoo for employees and visitors. **MM T-2** would be required to reduce Project-related employee and visitor VMT. These measures would require the Zoo to implement or expand alternative transportation modes to the Zoo to reduce trips, VMT, and congestion, secondarily reducing GHG emissions. Refer also to Section 3.15, *Transportation*.
Policy 2.2.1. Discourage single-occupant vehicle use through a variety of measures such as market incentive strategies, mode-shift incentives, trip reduction plans, and ridesharing subsidies.	Consistent with Mitigation. Survey data collected for the Project's Transportation Impact Analysis (Appendix N) indicates that most employees drive to the Zoo, most commonly as single-occupant vehicles. Further, most visitors drive passenger vehicles and do not have ready access to transit, bicycle, or pedestrian facilities that allow reasonable transportation to the Zoo. The proposed Phase 1 road realignment would improve the efficiency of public transportation access to several uses near the Zoo (e.g., the North Hollywood High School Zoo Magnet Center, Autry Museum, and the proposed public park north of the proposed parking structure) by allowing the Zoo's southbound bus stop to be moved to Western Heritage Way between the Zoo and Autry Museum of the American West. However, increased visitation would drive transportation and GHG impacts related to increased VMT. Further, the Project does not include multi-modal improvements or expansion of active transportation facilities to ensure accessibility to the Zoo. **MM T-2** would be required to reduce Project-related employee and visitor VMT. These measures would require the Zoo to implement or expand alternative transportation modes to the Zoo to reduce trips, VMT, and congestion. These measures would ensure ridesharing, transit use, parking management, and trip reduction strategies are implemented, which would be consistent with these City policies. Refer also to Section 3.15, *Transportation*.
Policy 2.2.2. Encourage multi-occupant vehicle travel and discourage single-occupant vehicle travel by instituting parking management practices.	
Policy 2.2.3. Minimize the use of single-occupant vehicles associated with special events or in areas and times of high levels of pedestrian activities.	
Policy 4.2.3. Ensure that new development is compatible with pedestrians, bicycles, transit, and alternative fuel vehicles.	Consistent with Mitigation. The proposed Phase 1 road realignment would allow the Zoo's southbound bus stop to be moved to Western Heritage Way between the Zoo and Autry Museum of the American West, improving the efficiency of public transportation access to the North Hollywood High School Zoo Magnet Center, Autry Museum, and

Table 3.8-12. Vision Plan Consistency with City Emissions Reductions (Continued)

Objective or Strategy	Relationship to Project
Policy 4.2.5. Emphasize trip reduction, alternative transit, and congestion management measures for discretionary projects.	the proposed park north of the proposed parking structure (Phase 7). The Zoo currently provides and would continue to provide bicycle parking at the Zoo Entry. However, increased visitation would drive transportation and GHG impacts related to increased VMT. Further, the Project does not include multi-modal improvements or expansion of active transportation facilities to ensure accessibility to the Zoo. **MM T-2** would be required to reduce Project-related employee and visitor VMT. These measures would require the Zoo to implement or expand alternative transportation modes to the Zoo to reduce trips, VMT, and congestion. These measures would ensure ridesharing, transit use, parking management, and trip reduction strategies are implemented, which would be consistent with these City policies. Refer also to Section 3.15, *Transportation*.
Policy .5.1.2. Effect a reduction in energy consumption and shift to non-polluting sources of energy in its buildings and operations.	Consistent. As discussed above and in Section 3.5, *Energy*, the Vision Plan proposes use of LEED Silver construction techniques, up to 70,000 square feet of solar photovoltaic panels with the goal of providing up to 50 percent of the Zoo's energy demand, and electronic communications lines to automatically control utilities and environmental conditions to reduce power demand. The Project would also guide redevelopment of outdated Zoo facilities that do not currently meeting existing energy and building codes (e.g., California's Green Building Standard Code).
Policy 5.1.4. Reduce energy consumption and associated air emissions by encouraging waste reduction and recycling.	Consistent. The City currently recycles and would continue to recycle applicable waste under operation of the Vision Plan. The Zoo would also continue "Zoo Doo" operations associated with the Griffith Park Composting Facility to recycle animal bedding (i.e., hay) and waste. The Zoo would continue to be a source for food waste diversion, working with World Harvest to use appropriate and quality food waste for animal feed, thereby preventing landfill disposal.
Policy 5.3.1. Support the development and use of equipment powered by electric or low-emitting fuels.	Consistent. Consistent with LAMC Section 99.05.106.5.3.3, the Project would provide at least 20 percent of the total number of parking spaces as electric vehicle spaces. In addition, as described in Section 2.3.3, *Vision Plan Guiding Principles*, a minimum to two stations shall be provided for each designated parking area of Zoo vehicles.
Conservation Element	
Section 13 Policy 1. Continue striving to meet the city's water, power, and other needs while at the same time striving to be a good steward of natural resources and minimizing impacts on the environment.	Consistent. As discussed in Section 3.5, *Energy*, Section 3.6, *Urban Forestry Resources*, Section 3.8, *Recreation*, Section 3.10, *Hydrology and Water Quality*, Section 3.13, *Public Services*, Section 3.15, *Transportation*, and Section 3.16, *Utilities*, proposed utilities would be resource-efficient, including onsite solar energy collectors and stormwater treatment facilities, to ensure that resources and services provided by the City would be sufficient to address growth in demand while minimizing potential impacts on the environment. For example, the Project would provide up to 70,000 square feet of solar photovoltaic panels to generate solar energy and reduce the Zoo's energy consumption, while required mitigation measures identified in Section 3.15, *Transportation* would increase opportunities for alternative transportation to reduce VMT and fuel energy demands.
Section 19 Policy 1. Continue to encourage energy	Consistent. As discussed in Section 3.5, *Energy*, the Vision Plan would guide redevelopment of outdated Zoo facilities that do not currently meeting existing energy and building codes. Project implementation

Table 3.8-12. Vision Plan Consistency with City Emissions Reductions (Continued)

Objective or Strategy	Relationship to Project
conservation and petroleum product reuse.	would ensure all new development at the Zoo complies with all applicable state and local building codes. Additional improvements across all phases include the installation of electronic communications lines to automatically control utilities and environmental conditions, further reducing future utility demand.
Mobility Element	
Policy 3.4. Provide all residents, workers, and visitors with affordable, efficient, convenient, and attractive transit services.	Consistent with Mitigation. The Zoo is a major regional destination drawing visitors and employees from throughout the Los Angeles region and greater Southern California area. Currently, most trips are made by personal vehicle and nearly all employee trips are made via single-occupant vehicles. Survey data collected for this analysis indicates that most employees (85 percent) drive to the Zoo, most commonly as single-occupant vehicles. Further, most visitors (95 percent) drive passenger vehicles and do not have ready access to transit, bicycle, or pedestrian facilities that allow reasonable transportation to the Zoo. The proposed Phase 1 road realignment would allow the Zoo's southbound bus stop to be moved to Western Heritage Way between the Zoo and Autry Museum of the American West, improving the efficiency of public transportation access to the North Hollywood High School Zoo Magnet Center, Autry Museum, and the proposed park north of the proposed parking structure (Phase 7). However, the Project does not include multi-modal improvements or expansion of active transportation facilities to ensure accessibility to the Zoo. Increased visitation would drive transportation impacts related to increased VMT and existing transit services would not adequately serve increased demand from employees and visitors due to lack of regional connections, diversity of transit services, and efficiency of transit. While the Zoo is not a transit provider and does not have responsibility provision of transit services, the Zoo is served by Metro Bus Line 96 and the Park Line and works collaboratively with these agencies to ensure affordable, efficient, convenient, and attractive transit services. The Project does not include multi-modal improvements or expansion of active transportation facilities to ensure accessibility to the Zoo for employees and visitors. Under the Project, visitors and employees would continue to mainly use passenger vehicles to travel to and from the Zoo, which presents a barrier to mobility and accessibility in the region. Lack of regional transit access and pedestrian/bicycle facilities at the Zoo reduces the productivity of the transportation system to serve Zoo visitors and employees using non-vehicular modes. **MM T-2** would be required to reduce Project-related employee and visitor VMT. These measures would require the Zoo to implement or expand alternative transportation modes to the Zoo to reduce trips, VMT, and congestion, including transit options to increase non-vehicular access to the Zoo. These measures would increase ridesharing, transit use, parking management, and trip reduction strategies, which would be consistent with these City policies. Refer also to Section 3.15, *Transportation*.
Policy 3.5. Support "first-mile, last-mile solutions" such as multi-modal transportation services, organizations, and activities in the areas around transit stations and major bus stops (transit stops) to maximize multi-modal connectivity and access for transit riders.	
Policy 3.7. Improve transit access and service to major regional destinations, job centers, and inter-modal facilities.	
Policy 3.8. Provide bicyclists with convenient, secure, and well-maintained bicycle parking facilities.	Consistent. The Zoo currently provides and would continue to provide bicycle parking at the Zoo Entry under the Vision Plan. Connections to the Los Angeles River bicycle path would remain under the Project to provide regional connectivity.

Table 3.8-12. Vision Plan Consistency with City Emissions Reductions (Continued)

Objective or Strategy	Relationship to Project
Policy 4.8. Encourage greater utilization of Transportation Demand Management (TDM) strategies to reduce dependence on single-occupancy vehicles.	Consistent. The Zoo currently provides and would continue to utilize compressed work weeks and flexible work schedules. This is due to the unique hours of operation, schedules, and employee shifts that align with non-peak hours, thereby reducing traffic congestion. However, the ability to allow City employees to telecommute is at discretion of the Zoo General Manager. In general, there are very few jobs where telecommuting makes sense, since the Zoo requires onsite tasks, but for some (e.g., administrative positions, marketing staff) alternative work schedules, such as the 9/80 or 4/10 schedule, would be available. In addition, the Zoo currently provides and would continue to provide bicycle parking at the Zoo Entry. The proposed Phase 1 road realignment would also allow the Zoo's southbound bus stop to be moved to Western Heritage Way between the Zoo and Autry Museum of the American West, improving the efficiency of public transportation access to the Zoo, the North Hollywood High School Zoo Magnet Center, and Autry Museum. However, increased visitation and employment would drive transportation impacts related to increased VMT. **MM T-2** would be required to reduce Project-related employee and visitor VMT. These measures would require the Zoo to implement or expand alternative transportation modes to the Zoo to reduce trips, VMT, and congestion, including transit options to increase non-vehicular access to the Zoo. These measures would increase ridesharing, transit use, parking management, and trip reduction strategies, which would be consistent with these City policies. Refer also to Section 3.15, *Transportation*.
Policy 5.2. Support ways to reduce vehicle miles traveled (VMT) per capita.	Consistent. The Project would result in a net increase in daily VMT that would range from roughly 80,000 during the mid-week to 158,000 new daily weekend VMTs by 2040. Total VMT associated with development of Vision Plan Phases 1-3 would increase 65 percent over the existing baseline by 2030, and 78 percent by 2040. The Project does not include multi-modal improvements or expansion of active transportation facilities to ensure accessibility to the Zoo. Under the Project, visitors and employees would continue to mainly use passenger vehicles to travel to and from the Zoo, which presents a barrier to mobility and accessibility in the region. Lack of regional transit access and pedestrian/bicycle facilities at the Zoo reduces the productivity of the transportation system to serve Zoo visitors and employees using non-vehicular modes. **MM T-2** would be required to reduce Project-related employee and visitor VMT. These measures would require the Zoo to implement or expand alternative transportation modes to the Zoo to reduce trips, VMT, and congestion, including transit options to increase non-vehicular access to the Zoo. These measures would increase ridesharing, transit use, parking management, and trip reduction strategies, which would be consistent with these City policies. Refer also to Section 3.15, *Transportation*.
Policy 5.4. Continue to encourage the adoption of low and zero emission fuel sources, new mobility technologies, and supporting infrastructure.	Consistent. Consistent with LAMC Section 99.05.106.5.3.3, the Project would provide at least 20 percent of the total number of parking spaces as electric vehicle spaces. In addition, as described in Section 2.3.3, *Vision Plan Guiding Principles*, a minimum to two stations shall be provided for each designated parking area of Zoo vehicles. See Section 3.15, *Transportation*.
Hollywood Community Plan	

Table 3.8-12. Vision Plan Consistency with City Emissions Reductions (Continued)

Objective or Strategy	Relationship to Project
Other Public Services	
Policy 2. That new equipment for public facilities be energy efficient.	Consistent. As discussed in Section 3.5, *Energy*, the Vision Plan proposes use of LEED Silver construction techniques, solar photovoltaic panels, and electronic communications lines to automatically control utilities and environmental conditions to reduce power demand.
Sustainable City pLAn and L.A.'s Green New Deal	
Reduce potable water use per capita by 22.5 percent by 2025; 25 percent by 2035; and maintain or reduce 2035 per capita water use through 2050.	Consistent. Implementation of the proposed Project would incorporate a stormwater capture and treatment system to reduce the Project's future potable water demand increase by approximately 33 percent. Additional water conservation strategies would include plumbing connections and fixtures and appliances to comply with the provisions of the Los Angeles Green Building Code related to water flow controls. The proposed Project would be consistent with per-capita water potable water reductions.
Increase stormwater capture to 75,000 acre-feet per year.	Consistent. The proposed underground stormwater management system would capture, treat, and store stormwater runoff for infiltration and reuse onsite. The use of these storage tanks would retain and reuse 100 percent of all rainfall generated in a 2-year, 24-hour storm event on the Zoo's site and is projected to provide the Zoo with 107 acre-feet of useable water per year. In addition, **MM UT-1** would require the Zoo implement recycled water for additional uses, including washdown of animal holding areas, powerwashing walkways, flushing toilets, in the Zoo's exhibits (e.g., treatment systems, ponds), and for fire suppression where feasible. Refer to Section 3.16, *Utilities*. The increased use of recycled water as part of the Project and as part of required mitigation would be consistent with City objectives of increasing recycled water use.
Increase non-potable reuse of recycled water by an additional 6,000 acre-feet per year by 2025; and an additional 8,000 acre-feet per year by 2035.	
All new buildings will be net zero carbon by 2030 and 100 percent of buildings will be net zero carbon by 2050.	Consistent. All new buildings constructed in the long-term improvements of the Vision Plan would achieve LEED Silver standards, or equivalent, and comply with the net-zero carbon standards promulgated by the LA Green New Deal.
Reduce VMT per capita by at least 13 percent by 2025; 39 percent by 2035; and 45 percent by 2050.	Consistent. Implementation of the proposed Project would not affect per-capita VMT associated with operation of the Zoo (see Section 3.15, *Transportation*). Through coordination with LA Metro and RAP, Zoo administrators will explore options to reduce trips and VMT to the greatest extent feasible. Furthermore, CARB projects that between 2019 and 2040 the aggregate regional average per-mile GHG emissions factor for passenger, light, and medium duty vehicles will decrease from 332.3 grams CO2e to 216.5 grams CO2e, a reduction of approximately 35 percent. The proposed Project would not conflict with achieving the VMT per capita targets and would be consistent.
Increase the percentage of electric and zero emission vehicles in the city to 25 percent by 2025; 80 percent by 2035; and 100 percent by 2050.	Consistent. Implementation of the proposed Project would not interfere with the desired expansion of the electric and zero emission vehicle fleet throughout the City. The Vision Plan would provide electric vehicle charging infrastructure to encourage the use of such vehicles.

Table 3.8-12. Vision Plan Consistency with City Emissions Reductions (Continued)

Objective or Strategy	Relationship to Project
Increase landfill diversion rate to 90 percent by 2025; 95 percent by 2035 and 100 percent by 2050; Reduce municipal solid waste generation per capita by at least 15 percent by 2030, including phasing out single-use plastics by 2028 (from a baseline of 17.85 lbs. of waste generated per capita per day in 2011); Eliminate organic waste going to landfill by 2028.	Consistent. The Project would incorporate effective waste management practices to comply with City municipal standards; Zoo staff would continue to collect and transport trash to Sunshine Canyon Landfill. The City's Bureau of Sanitation would collect all recyclable materials from the Service Center. Animal bedding and waste from hoofed stock and other herbivores would continue to be taken to the Griffith Park Composting Facility. Donations to World Harvest Food Bank continually exceed facility food consumption.
Plant and maintain at least 90,000 trees citywide.	Consistent. The Project would require substantial tree removal as part of proposed improvements; however, important streets (i.e., important trees, mature trees) would be protected in place. Trees that are removed through the Project would be replanted and expanded by the proposed landscaping of trees and vegetation representative of the theme of the proposed improvement area. Impacts to resulting from the removal of protected trees would be mitigated through implementation of **MM UF-1** and **MM UF-2** requiring substantial native tree replacement on- or offsite, as well as substantial replanting of disturbed areas to maintain an urban tree canopy at the Zoo. Though hundreds of trees could be removed as part of the Project, even more trees are expected to be planted as a result of required mitigation or proposed landscaping. Refer also to Section 3.3, *Biological Resources* and Section 3.6, *Urban Forestry Resources*.

The analysis of consistency for the proposed Project in the context of local City regulations which are most applicable to regulating or reducing GHG emissions and effects on the global climate is presented in Table 3.8-12. The consistency analysis presented therein is focused on objectives and strategies directly applicable to GHG emissions and associated impacts. Additional discussion of consistency of the Project with applicable elements of the City's General Plan, Hollywood Community Plan, and the Griffith Park Vision Plan is analyzed in Section 3.11, *Land Use and Planning*. Additional discussion of consistency of the Project with applicable regulations as they relate to transportation and VMT is presented in Appendix N. Based on the below, the proposed Project would be consistent with the City's GHG reduction goals and policies established in the General Plan, Sustainability pLAn, and the Green New Deal with implementation of required mitigation. Therefore, the Project would be consistent with applicable local plans, policies, and regulations and impacts would be *less than significant with mitigation*.

The Project would not interfere with any statewide or regional initiatives to reduce GHG emission associated with the energy production sector, and would contribute to the expansion

of renewable energy infrastructure by installing 70,000 square feet of rooftop solar panels, in addition to the separate LADWP project that would provide up to 163,000 square feet of solar panel coverage. Additionally, implementation of the proposed Project would enhance transportation sustainability by providing a more efficient internal circulation network for patrons, employees, and vendors, providing high efficacy outdoor lighting throughout the Zoo property and in the parking lots and parking structure, and improving pedestrian and bicyclist safety and public transit accessibility along Western Heritage Way by roadway reconfigurations and signalizing the intersection of Zoo Drive and Western Heritage Way. As described above, the Zoo will evaluate numerous potential TDM strategies, as well as coordinate with LA Metro and RAP to explore future connections to additional transit nodes. Therefore, the Project would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions, and this impact would be *less than significant.*

3.8.5 Mitigation Measures

The following mitigation measures, though not directly required to reduce impacts associated with GHG emissions, would result in reductions in overall GHG emissions generated by the Project and/or consistency with applicable plans, policies, and regulations adopted with the intent of reducing GHG emissions.

MM UF-1 and **MM UF-2** would apply.

MM HYD-2 would apply.

MM T-2 would apply.

MM UT-1 would apply.

3.8.6 Impacts Summary

The Project would not generate GHG emissions in excess of applicable numerical thresholds, and the Project would be consistent with state, regional, and local policies addressing GHG emissions; therefore, impacts to GHG emissions would be *less than significant*. Implementation of the mitigation measures identified above, though not required to reduce the significance of Project GHG emissions, would further reduce GHG emissions generated by the Project. Therefore, significant unavoidable adverse impacts to GHG emissions would not occur.

3.9 HAZARDS AND HAZARDOUS MATERIALS

Risks from hazards and hazardous materials are typically associated with historical land uses involving the use of hazardous materials for building construction or for operation. Lead and asbestos may be found in the building materials of older buildings. Additionally, soils and groundwater at some sites in the vicinity of the Zoo may be contaminated due to historical spills and leaking underground storage tanks. Demolition and renovation proposed to occur at the Zoo would facilitate the removal of existing hazardous building materials that may be present, as well as the cleanup of potentially contaminated sites, thus reducing the level of risk at the Zoo. Risks from hazards and hazardous materials can be adequately addressed through compliance with existing federal, state, and local regulations and/or implementation of mitigation measures.

This section analyzes the potential for the implementation of the Los Angeles Zoo (Zoo) Vision Plan (Vision Plan) to expose people and the environment to hazards and hazardous materials. The information in this section is informed by a site-specific Phase I Hazardous Materials Assessment prepared by Ninyo & Moore and peer reviewed by Wood Environment & Infrastructure Solutions, Inc. (Wood) in October 2019. The Phase I Hazardous Materials Assessment includes a records review of applicable federal, state, tribal, and local regulatory agency databases, and available historical information for the site, as well as a site reconnaissance conducted on August 13, 2019.

Hazardous materials are defined as substances with physical and chemical properties of flammability, corrosivity, reactivity, or toxicity, which may pose a threat to human health or the environment. The term “hazardous materials” describes chemicals such as petroleum products, solvents, pesticides, herbicides, paints, metals, asbestos, and other regulated materials. Additionally, the term “release” includes known historical spills, leaks, illegal dumping, or other discharges of hazardous materials to soil, sediment, groundwater, or surface water. Areas where historical releases of hazardous materials have occurred could pose a risk to public health and the environment.

Hazards may include exposure to both natural and man-made hazards. These could include hazards associated with aircraft operations at nearby airports or natural hazards such as wildfires. Other types of hazards are addressed in other sections of this EIR as follows: geologic hazards, such as earthquakes, landslides and bluff stability are addressed in Section 3.7, *Geology and Soils*; air pollution hazards, such as toxic air contaminants (TACs) and particulate matter (PM), are addressed in Section 3.2, *Air Quality*; hazards related to water pollution, such as groundwater contamination and surface runoff, are addressed in Section 3.10, *Hydrology and Water Quality*; wildfire hazards are discussed in Section 3.17, *Wildfire*; urban fire hazards and response/suppression systems are discussed in Section

3.13, *Public Services*; and hazardous solid waste disposal is addressed in Section 3.16, *Utilities*.

3.9.1 Environmental Setting

Regulatory Setting

Federal, state, and local laws and regulations address safe handling and use of hazardous materials and hazardous wastes, as well as management and remediation of sites contaminated by hazardous substances.

Hazardous materials, such as cleaning supplies for the animal enclosures and pesticides to maintain Zoo landscaping, are routinely used and stored at the Project site.

The Certified Unified Program Agency (CUPA) is the agency responsible for enforcing applicable laws and regulations for the handling and cleanup of specific materials determined to pose a risk to human health or the environment. The Los Angeles Fire Department (LAFD) is the CUPA for the City. Enforcement agencies at the state level include two branches of the California Environmental Protection Agency (CalEPA): the DTSC and the Regional Water Quality Control Board (RWQCB). The federal enforcement agency is the U.S. Environmental Protection Agency (EPA).

Federal Regulations

Several federal agencies regulate hazardous materials, including the U.S. EPA, the Department of Labor, Occupational Safety and Health Administration (OSHA), the Office of Resource Conservation and Recovery (ORCR), and the Department of Transportation (DOT). Applicable federal regulations are contained primarily in Titles 10, 29, 40, and 49 of the Code of Federal Regulations (CFR). In particular, Title 49 of the CFR governs the manufacture of packaging and transport containers, packing and repacking, labeling, and the marking of hazardous material transport, and Title 42, Chapter 82 governs solid waste disposal and resource recovery. Some of the major federal laws include the following statutes (and regulations promulgated):

- Comprehensive Environmental Response, Compensation, and Liability Act (1980) – Superfund Law
- Emergency Prevention and Community Right to Know Act (EPCRA, 1986)
- Resource Conservation and Recovery Act (RCRA, 1976)
- Clean Water Act (1977)

- Clean Air Act (1970)
- Toxic Substances Control Act (TSCA) (1976)
- Asbestos Hazard Emergency Response Act (AHERA) (1986).
- National Emission Standard for Hazardous Air Pollutants 40 CFR 61 Subpart M – (NESHAP)
- Federal Occupational Safety and Health Act (OSHA, 1970) – Process Safety Management Standard (29 CFR 1910.119)
- Residential Lead-Based Paint Hazard Reduction Act (1992), also known as Title X
- Hazardous Materials Transportation Act (1975)

U.S. EPA Pacific Southwest Region 9

The Project site lies within U.S. EPA Pacific Southwest Region 9, which administers programs for Arizona, California, Hawaii, Nevada, Pacific Territories, and 148 Native American tribes, including the following:

- Superfund is U.S. EPA's program to identify, investigate and clean up uncontrolled or abandoned hazardous waste sites throughout the U.S.
- Region 9's Brownfields Program work to clean up and redevelop potentially contaminated lands in the Pacific Southwest region, making it easier for such lands to become vital, functioning parts of their communities. The material below describes Brownfields activities within Region 9's states, tribes, and territories. The U.S. EPA's National Brownfields home page provides information on applying for Brownfields grants, recent legislation, news, and more. It is also Region 9's program to prevent, prepare, and respond to environmental emergencies.
- Region 9's PCB Program regulates the processing, distribution, use, cleanup, storage, and disposal of PCBs under the Toxic Substances Control Act (TSCA) and also provides support for TSCA compliance to limit the manufacture, processing, and distribution of PCBs.

Federal Hazardous Waste Programs

Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS): The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), commonly known as Superfund act, was developed to protect the nation's water, air, and land resources from the risks created by past chemical disposal practices. Under CERCLA, the U.S. EPA is authorized to undertake short-term or long-term actions for the cleanup of abandoned contaminated sites in the nation, known as Superfund sites, which pose a risk to human health or the environment. The U.S. EPA maintains the CERCLIS database, which contains information on current Superfund sites, former Superfund sites, and remediation activities. CERCLIS includes Superfund sites that are on the National Priorities List (NPL) or are being considered for the NPL.

Emergency Planning and "Community Right-to-Know." The Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986 was created to help communities plan for emergencies involving hazardous substances. The Act establishes requirements for federal, state, and local governments, Indian tribes, and industry regarding emergency planning and reporting on hazardous and toxic chemicals. There are four major provisions of EPCRA: Emergency Planning (Sections 301 – 303); Emergency Release Notification (Section 304); Hazardous Chemical Storage Reporting (Sections 311 – 312); Toxic Chemical Release Inventory (Section 313); and the Clean Air Act Risk Management Plan Regulations (CAA 112[r]).

Federal Aviation Administration (FAA)

FAA *Heliport Design* Advisory Circular (AC 150/5390-2B), issued on September 30, 2004 recommends the establishment of a Helicopter Protection Zone (HPZ) for each approach/departure surface to enhance the protection of people and property on the ground. The HPZ is the area starting at the edge of the Final Approach and Takeoff (FATO) area perimeter and extending upward at 8:1 (8 units horizontal in 1 unit vertical) for a distance of 280 feet. The FATO is a defined area over which the pilot completes the final phase of the approach to a hover or a landing and from which the pilot initiates takeoff. HPZ areas should be clear of incompatible objects and activities, including residences and places of public assembly. Additionally, the FAA recommends locating hazardous materials, including fuel, outside of the HPZ.

American National Standards Institute (ANSI)

The ANSI is a private non-profit organization that oversees the development of voluntary consensus standards for products, services, processes, systems, and personnel in the U.S. ANSI B77.2-2004, American National Standard for Funiculars–Safety Requirements, establishes a standard for the design, manufacture, construction, operation, and maintenance of funiculars for passenger transport. Additionally, ANSI B77.1 – updated in 2006 – addresses operating personnel, clearances, structures, and foundations from the American National Standards for Passenger Ropeways. This standard includes engineering and operational safety requirements for aerial transit systems (ATS) in the U.S.

Association of Zoos and Aquariums (AZA)

The Zoo is AZA-accredited. AZA actively works to develop and provide guidance on various issues in safety and security through two initiatives, the Zoo and Aquarium All Hazards Preparedness, Response, and Recovery (ZAHP) Fusion Center and the AZA Safety Committee. The ZAHP Fusion Center was created to bridge the gap in communication between the managed wildlife community and the emergency management sector. The Center disseminates critical information on prevention, protection, mitigation, response, and recovery to the greater managed wildlife community while developing new partnerships with federal agencies, local and state emergency responders, and private sector groups

concerned with animal welfare and emergency management. The AZA Safety Committee is comprised of members from various AZA institutions who research and develop guidance on safety and security issues currently effecting our member institutions (AZA 2019). The AZA also develops Accreditation Standards and Related Policies as well as Animal Care Manuals (ACMs) to provide a compilation of animal care and management knowledge that has been gained from recognized species experts (AZA 2019a). The ultimate goals of these standards are to provide the safest work environment for animal care professionals in addition to providing the highest quality of animal management and care.

State Regulations

Primary state agencies with jurisdiction over hazardous chemical materials management include CalEPA, the DTSC, and the State Water Resources Control Board (SWRCB). Other state agencies involved in hazardous materials management are the Department of Industrial Relations (state OSHA implementation), State Office of Emergency Services (OES – California Accidental Release Prevention implementation), California Air Resources Board (CARB), California Department of Transportation (Caltrans), State Office of Environmental Health Hazard Assessment (OEHHA – Proposition 65 implementation), and the California Integrated Waste Management Board (CIWMB). The enforcement agencies for hazardous materials transportation regulations are the California Highway Patrol (CHP) and Caltrans. Hazardous materials waste transporters are responsible for complying with all applicable packaging, labeling, and shipping regulations.

Hazardous chemical and biohazardous materials management laws in California include the following statutes (and general regulation(s) promulgated thereunder):

- Hazardous Materials Management Act – business plan reporting
- Hazardous Waste Control Act – hazardous waste management
- Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) – release of and exposure to carcinogenic chemicals
- Hazardous Substances Act – cleanup of contamination
- Hazardous Waste Management Planning and Facility Siting (Tanner Act) – preparation of hazardous waste management plans and the siting of hazardous waste facilities
- Hazardous Materials Storage and Emergency Response – including response to hazardous materials incidents

DTSC EnviroStor Database

DTSC maintains a database that contains information on properties in California where hazardous substances have been released, or where the potential for a release exists. This database is known as EnviroStor (formerly CalSites) and is one of a number of databases that comprise the Cortese List and Spills, Leaks, Investigations, and Cleanups (SLIC) List. EnviroStor provides a brief history of cleanup activities, contaminants of concern, and

scheduled future cleanup activities. The EnviroStor database also includes properties that have been remediated and certified by DTSC.

SWRCB GeoTracker Database

The GeoTracker is the SWRCB's online database that 1) provides access to statewide environmental data, and 2) tracks regulatory data for the following types of sites:

- Leaking Underground Fuel Tank (LUFT) cleanup sites;
- Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites);
- Military sites (consisting of: Military UST sites; Military Privatized sites;
- Military Cleanup sites [formerly known as Department of Defense [DoD] non-UST]);
- Land Disposal sites (Landfills); and
- Permitted UST facilities.

Site Mitigation and Brownfields Reuse Program (SMBRP)

The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) and the Voluntary Cleanup Program allow DTSC to provide oversight to motivated parties and address Brownfield sites. DTSC maintains a list of sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents land use restrictions that are active. Some sites have multiple land use restrictions. No properties within the Downtown are identified by the SMBRP to have land use restrictions, and there are currently no clean-up efforts underway within the Downtown as of December 2015.

Certified Unified Program Agency (CUPA)

Senate Bill 1082, passed in 1993, created the CUPA. The Unified Program consolidates six state environmental programs into one program at the local level, under the authority of a Certified Unified Program Agency. The SMFD was certified by the CalEPA as the CUPA for the City in 1997. The SMFD is responsible for protecting the public and environment by being the first responders to emergencies and overseeing hazardous waste, underground storage tanks, above-ground tanks, hazardous materials, community right-to-know, and accidental release prevention programs. The Division conducts both CUPA regulatory inspections and Fire Code inspections for all program elements, with the exception of the hazardous waste program. The Division contracts with the Los Angeles County Fire Department (LACoFD) Health Hazardous Materials for hazardous waste inspection and enforcement of the hazardous waste program.

2010 State of California Multi-Hazard Mitigation Plan (SHMP)

The SHMP is the official statement of the state's hazard identification, vulnerability analysis, and hazard mitigation strategy. The goal of the SHMP is to guide implementation activities to achieve the greatest reduction of vulnerability, which results in saved lives,

reduced injuries, reduced property damages, and protection for the environment. In particular, the SHMP helps administer the Local Hazard Mitigation Plan (LHMP) program for the state. The California Emergency Management Agency (CalEMA) supports and assists local governments in the development of LHMPs and tracks the progress and effectiveness of plan updates and projects. It provides local governments with information on integrating hazard identification, risk assessment, risk management, and loss prevention into a comprehensive approach to hazard mitigation and helps them identify cost-effective mitigation measures and projects.

California Department of Occupational Safety and Health Agency (Cal/OSHA)

ATS development and operation in California is governed by Cal/OSHA, with specifications set forth in the California Code of Regulations (CCR), Title 8, Chapter 6.1 Passenger Tramway Safety Orders, Article 8 Wire Rope And Strand Requirements.

California Code of Regulations (CCR) – Asbestos and Lead

The CCR regulate potential asbestos exposure in construction when construction, alteration, repair, maintenance, renovation or demolition of structures, substrates, or portions thereof contain asbestos [8 CCR §1529 (a)(1)(C)]. Additionally, in California, materials containing greater than one-tenth of one percent (>0.1%) asbestos by weight are regulated as ACM.

The CCR Title 17, Division 1, and Chapter 8 (Title 17) pertains to all public and residential buildings in California. Pursuant to Title 17 and USEPA regulations, lead-based paint (LBP) is defined as paint or other surface coatings containing an amount of lead equal to or greater than one milligram per square centimeter (1.0 mg/cm^2) or more than half of one percent [>0.5% or 5,000 parts per million(ppm)] by weight. Title 17 also defines a lead hazard as deteriorated LBP, disturbance of LBP or presumed LBP without containment, or any other nuisances which may result in persistent or quantifiable lead exposure. Additionally, worker exposure to materials containing lead during construction work is regulated by CCR Title 8 §1532.1(a). These regulations require worker protection during construction "where lead or materials containing lead are present."

Regional and Local Regulations

South Coast Air Quality Management District (SCAQMD)

The SCAQMD regulates asbestos through Rule 1403, Asbestos Emissions from Renovation/Demolition Activities. Rule 1403 defines asbestos as a toxic material and controls the emissions of asbestos from demolition and renovation activities by specifying agency notifications, appropriate removal procedures, and handling/cleanup procedures. Rule 1403 applies to owners and operators involved in the demolition or renovation of asbestos-containing structures, asbestos storage facilities, and waste disposal sites.

The SCAQMD also regulates volatile organic compound (VOC) emissions from contaminated soil through Rule 1166, Volatile Organic Compound Emissions from

Decontamination of Soil. Rule 1166 sets requirements to control the emission of VOCs from excavating, grading, handling, and treating soil contaminated with volatile organic compounds as a result of leakage from storage or transfer operations, accidental spillage, or other deposition, including hydrocarbons.

Los Angeles County

The Los Angeles County Department of Public Works (DPW), Environmental Programs Division (EPD), prepares and administers the Los Angeles County Integrated Waste Management Plan and Hazardous Waste Management Plan, which provide direction for proper management of all waste generated within the county. As the county's lead agency, it advises the Los Angeles County Board of Supervisors regarding all waste management issues. EPD implements numerous programs to meet state-mandated solid waste reduction goals, including recycling, composting, source-reduction, household hazardous waste management, and public education programs. These programs regulate USTs in the county's unincorporated areas and more than 76 cities to protect groundwater resources.

Certified Unified Program Agency (CUPA)/Los Angeles Fire Department (LAFD)

Senate Bill 1082 consolidates six state programs into a single environmental control program managed by a CUPA at the regional or local level. These programs regulate business and industry's use, storage, handling, and disposal of hazardous materials. The CUPA is certified by CalEPA to implement the six state environmental programs within the local agency's jurisdiction, as follows:

- Hazardous Materials Reporting and Response Planning (Hazardous Materials Disclosure)
- Uniform Fire Code Business Plan
- Hazardous Waste Generation and Onsite Treatment
- Accidental Release Prevention
- Above-ground Storage Tank
- Underground Storage Tank

The City's CUPA is the LAFD and is the primary local agency with responsibility for implementing federal and state laws and regulations pertaining to hazardous materials management. The LAFD maintains the records regarding location and status of hazardous materials sites in the City and administers programs that regulate and enforce the transport, use, storage, manufacturing, and remediation of hazardous materials. The LAFD contracts with the LACoFD for hazardous waste inspection and enforcement components of the Unified Program.

City of Los Angeles Bureau of Sanitation (LA Sanitation)

LA Sanitation is responsible with collecting, cleaning, and recycling solid and liquid waste (including hazardous waste) generated by residential, commercial, and industrial users in the City of Los Angeles and surrounding communities.

City of Los Angeles Fire Department Hazardous Materials Section

The City of Los Angeles Fire Department Hazardous Materials Section is the administrative agent for the California Health and Safety Code, CCR sections related to emergency planning and community right-to-know laws, and the federal Superfund Amendments and Reauthorization Act, Title III. Three units within this department process information related to hazardous materials. The Disclosure Unit is responsible for enforcing the disclosure law, which requires all establishments that store, produce, or use hazardous substances to inventory the materials on site; this includes new and existing businesses. The Business Plan Unit ensures that businesses take the right measures to mitigate any dangers. The Risk Management and Prevention Unit is responsible for evaluating Risk Management Prevention Plans that businesses must submit according to state law.

City of Los Angeles Fire Department Bureau of Fire Prevention and Public Safety (USTs)

The Bureau of Fire Prevention and Public Safety maintains an Underground Storage Tank (UST) Unit, which implements and enforces the Underground Storage Tank Program. All USTs that are used to store fuel, solvents, or other liquids must be monitored for leakage. The law requires UST installations, removals, or alterations to be regulated under permit from the LAFD.

City of Los Angeles Building Code

Division 71 of the City of Los Angeles Building Code sets forth regulations for the control of methane intrusion emanating from geologic formations. The methane seepage regulations specify site testing requirements and methane mitigation standards for all new buildings and paved areas (i.e., 5,000 square feet of paved area within 15 feet of an exterior wall of a commercial, industrial, institutional, or residential building) within designated methane zones or within methane buffer zones.

Existing Setting

The Project site is located in the City in the northeast corner of Griffith Park, where urban development transitions to natural open space and recreational areas. Griffith Park was established in 1896 and included property immediately west of the Project site. The western portion of the site was primarily undeveloped with a few dirt roads and the eastern portion of the site was developed as part of the Griffith Park Aerodrome, an unpaved airplane runway used by the National Guard Service. Properties north of the Project site were used for agriculture. By 1938, the airplane runway on the eastern portion of the site was paved, structures were developed on the central portion of the site, and the southern portion of the

site was developed as part of a golf course. The National Guard Squadron eventually moved to Van Nuys Airport and the Aerodrome was demolished. In 1946, the eastern portion of the Project site which had formerly been the Aerodrome was developed as a portion of Rodger Young Village, a housing development, which was demolished in the mid-1950s. A portion of the site was redeveloped as the Los Angeles Zoo in 1966, with the eastern portion of the site paved for use as the Zoo parking lot. Several additional developments were constructed and renovated at the Zoo between 1980 and 2010.

The nearest school to the Project site is North Hollywood High School Magnet Center located in the southwest portion of the Zoo's main parking lot. The nearest airport to the Project site is the Bob Hope Airport (BUR), located approximately 4.4 miles northwest of the Zoo. Additionally, the helicopter pad for Dreamworks Hellistop Glendale is located approximately 0.5 miles north of the Zoo's parking lot. Grand Central Air Terminal, located approximately 0.75 miles north of the Project site, is historical air terminal no longer in operation.

The proposed Grayson Power Plant is located approximately 0.35 miles northeast of the Project site at 800 Air Way, Glendale, CA 91201, just northeast of the Interstate (I-) 5 and State Route (SR-) 134 interchange at the Grayson Power Plant. Under the proposed Grayson Repowering Project, the City of Glendale is proposing to replace all of the power plant's existing generation facilities, units, and their related infrastructure (built between 1941 and 1977), with the exception of Unit 9 (completed in 2003), by removing existing aboveground and belowground equipment and facilities, and building new generation facilities located entirely within the existing Grayson Power Plant. The existing generation facilities (with the exception of Unit 9) would be replaced with a combination of combined cycle and simple cycle gas turbine generation units with operation planned for Summer 2022 (City of Glendale Water & Power 2018). According to the Grayson Repowering Project EIR, demolition and excavation activities would involve the removal of hazardous materials, including ACM and LBP. Additional hazardous materials may be encountered during subsurface demolition activities (City of Glendale Water & Power 2018).

The former Toyon Canyon Landfill is located approximately 0.16 miles (860 feet) west and upgradient from the Gottlieb Animal Health and Conservation Center. During its operation from 1957 to 1985, the Class III landfill was used for disposal of refuse such as residential waste, street sweepings, and construction and demolition materials. From 1985 to 2015 a power plant was operated at the site using natural gas generated from the landfill materials. The plant began producing 9MW of electrical power in 1985 and during its 30 years of operation the production gradually declined to 1.4 MW as the landfill gas flow decreased, finally shutting down in 2015 because there was not enough gas to operate the system. Closure activities for Toyon Canyon Landfill were completed as of December 2008 with a monolithic cover system in accordance with the landfill's Final Closure/Post-Closure Maintenance Plan (FCPCMP). In accordance with the Los Angeles RWQCB's conditional approval of the FCPCMP, two moisture monitoring stations were constructed in November

and December of 2008 and operated from December 2008 through December 2010 to ensure that the final cover system prevents infiltration of moisture into the waste mass. Currently, the site is undergoing post-closure tasks such as maintenance of landscaping/irrigation systems, maintenance of landfill gas collection systems, and minor grading work where necessary to maintain adequate stormwater drainage. According to the LA Sanitation, potential future use of the site includes public use facilities, such as a low intensity open meadow area intended for passive recreational activities. All closure construction work completed by LA Sanitation is documented by the Construction Completion Report as specified in the Construction Quality Assurance Plan of the FCPCMP. Due to the completion of closure activities in accordance with the landfill's FCPCMP, which was reviewed and approved by the Los Angeles RWQCB, the former landfill is not considered to be an environmental concern for the Project site.

The former Toyon Canyon Landfill has undergone closure and post-closure activities since 2008 and is currently landscaped for potential future use as a recreational site. The Grayson Power Plant is planned for expansion and renovation beginning in 2022.

Hazardous Materials in Existing Zoo Facilities

Asbestos-Containing Material and Lead-Based Paint

The Phase I Hazardous Materials Assessment did not include an asbestos survey, LBP survey, or testing of materials in buildings proposed for demolition or renovation under the proposed Vision Plan. However, the majority of the buildings at the Zoo were constructed in the 1960s and 1970s (refer to Section 3.4, *Cultural and Tribal Cultural Resources*). Based on the age of the buildings, the following hazardous materials are of concern:

- **Asbestos-Containing Materials –** Asbestos is a carcinogenic mineral fiber that was widely used in a variety of building construction materials for insulation, as well as in friction and heat-resistant products. The use and manufacturing of ACMs was banned in 1977 in California. Older buildings constructed prior to 1978 may contain ACMs. Asbestos release can occur after ACMs are disturbed by cutting, sanding, or other remodeling or demolition activities. Improper attempts to remove ACMs can release asbestos fibers into the air, increasing asbestos levels and affecting human respiratory health.

- **Lead-Based Paint –** Lead is a harmful environmental pollutant with potential exposure pathways through air, drinking water, food, contaminated soil, deteriorating paint, and dust. Before the dangers of lead were documented, it was widely used in paint. In 1978, the State banned the use of LBPs. Older buildings constructed prior to 1978 may contain LBPs. If LBPs are improperly removed from surfaces by dry scraping or sanding, LBP can be absorbed into the body and can pose a potential public health risk.
- **Mold –** The presence of visible water damage, damp materials, visible mold, or mold odor in buildings increases the potential risks of respiratory disease for occupants. Known health risks include the development of asthma, allergies, respiratory infections, increased wheeze, cough, difficulty breathing, and other symptoms.

Disturbance of ACMs, LBPs, or mold during renovation or demolition activities may cause risk of release of these hazardous materials, which can be harmful to human health.

Hazardous Materials Storage

The fueling station, located in the Zoo Construction Shop and Support area, stores diesel fuel, unleaded fuel, and propane.

Daily operation of the Zoo includes the routine use, storage, disposal, and transportation of potential hazardous materials typical of zoo facilities. Hazardous materials and waste storage at the Zoo are limited to the visitor-restricted area in the upper western reaches of the Zoo. A fueling station is located immediately south of the Carpenter Shop in the Zoo Construction Shop and Support area. The fueling station includes one 1,000-gallon capacity diesel fuel UST, a 2,000-gallon unleaded fuel UST, and a 1,000-gallon propane AST. These materials are used for operation of construction equipment at the Zoo, as well as the existing ground tram.

The Carpenter Shop contains small quantity (less than 5-gallon) containers of degreasers, paints, motor oil, gasoline in plastic containers, solvents, compressed oxygen, and acetylene cylinders. Four fire closets within the Carpenter Shop contain gasoline, solvents, paint, and wood stain. Additionally, the Zoo's Hazardous Waste Storage Area is located at the eastern boundary of the Construction Shop and Support area. During the site reconnaissance performed for the Phase I Hazardous Materials Assessment, the Hazardous Waste Storage Area was reported to contain canned aerosols, three 55-gallon drums of solvents with secondary containment, fifteen 5-gallon buckets of primer/sealer, equipment cleaner and paint, two 55-gallon drums of machine oil, and three 55-gallon drums of used oil, with fire closets containing parts cleaners and 5 gallons of gear oil.

The Carpenter Shop building stores various small-quantity hazardous materials shop (left) as well as compressed gas cylinders (right).

South of the Zoo Construction Shop and Support area, the Gottlieb Animal Health and Conservation Center houses the Zoo's veterinarian facilities for daily and preventative medical procedures on the Zoo's animal residents. As such, the facility contains typical veterinarian equipment and medical materials, including less than 5-gallon containers of formaldehyde, xylenes, ethyl alcohol, and corrosives in fire closets, and cylinders of compressed oxygen and nitrogen. Additionally, an emergency diesel generator is maintained at the Gottlieb Animal Health and Conservation Center.

The Gottlieb Animal Health and Conservation Center contains flammable materials in a fire closet with a fire extinguisher nearby.

Within the central portion of the Zoo, an Aquatic Tank Storage Facility and a Construction Materials Storage Area contain additional potentially hazardous substances. The aquatic tank storage facility, located southeast of the Elephant Barn, contains muriatic (hydrochloric) acid, sodium bicarbonate (baking soda), a sodium hypochlorite AST, and two 200-gallon containers of bleach with secondary containment – all of which are used for water purification and/or surface cleaning of the aquatic Life Support System (i.e., recirculating water treatment system) tanks and animal enclosures. North of the Treetops Terrace, the Construction Material Storage Area consists of three storage sheds containing pesticide storage in 5-gallon containers (i.e., Round-up ProMax). Pesticides are utilized by Service staff to maintain the landscaping and vegetation at the Project site.

The Parking Lot Storage Area along the southeast periphery of the Zoo's parking lot consists of one propane AST and shipping containers containing four 5-gallon diesel and unleaded gasoline containers, as well as small quantities of engine oil, paint, and hydraulic oil. In

addition, an old septic tank is located at the Parking Lot Storage Area. According to site records, the septic system, which was used for office personnel in the adjoining temporary office structures, was emptied and inactivated 4 to 5 years prior to the 2019 site reconnaissance. Therefore, this septic tank is no longer in operation.

Regulated UST and AST Facilities

Sites with USTs are required to be regulated by the CUPA under the authority of the LAFD. As shown in Table 3.9-1, there are several active permitted USTs and ASTs located throughout the Zoo. In 1999, the Zoo obtained permits to remove one 2,000-gallon unleaded gasoline UST and associated piping, dispensers, leak detection system, concrete island and water reels, and to install one 2,000-gallon unleaded fuel UST and one 1,000-gallon diesel fuel UST, with two single product dual-hose dispensers and associated piping. In July 1999, a Tank Certification Report reported that the 2,000-gallon steel UST previously containing gasoline was removed from the site address, inspected, and found free of gasoline. Records from the LAFD UST Division include a notice of violation for inability to test diesel line leak detector, dated January 9, 2017. Records were not available indicating soil sampling was conducted as part of the removal and replacement of the UST or that a No Further Action (NFA) letter was issued for the removed UST in 1999.

Corrosive materials, such as Sodium hypochlorite, used for large-scale water disinfection, surface purification, bleaching, and odor removal. Sodium hypochlorite is stored in ASTs located near each Life Support System that requires the chemicals.

Table 3.9-1. Underground and Aboveground Storage Tanks at the Project Site

Type of Storage Tank	Capacity	Hazardous Material	Facility	Location Onsite
Underground	1,000-gallon	Diesel Fuel	Fueling Station	Western portion
Underground	2,000-gallon	Unleaded Gasoline	Fueling Station	Western portion
Aboveground	1,000-gallon	Propane	Fueling Station	Western portion
Aboveground	200-gallon	Sodium Hypochlorite	Aquatic Tank Storage Facility	Central portion
Aboveground	55 pounds	Sodium Bicarbonate	Aquatic Tank Storage Facility	Central portion
Aboveground	--	Propane	Parking Lot Storage Area	Southeast portion

Note: A 100-gallon AST containing citric acid was reported in 2010 and 2011 LAFD hazardous materials inventories but has since been removed as confirmed during the 2019 Phase I Hazardous Materials Assessment.
Source: see Appendix K.

wood.

Existing Hazardous Materials Sites at the Project Site and Vicinity

FIGURE 3.9-1

Vapor Encroachment

A preliminary vapor encroachment screen (pVES) was conducted at the site as part of the Phase I Hazardous Materials Assessment to identify a potential vapor encroachment condition (VEC), which is the presence or likely presence of hazardous vapors in subsurface soils caused by the release of vapors from contaminated soil or groundwater either on or near the Project site. Based on the results of the pVES and the presence of USTs, a VEC may exist beneath the fueling station at the Zoo Construction Shop and Support area (see Figure 3.9-1).

Hazardous Materials Site Listings

A computerized, environmental information database search was also performed as part of the Phase I Hazardous Materials Assessment on April 3, 2019. The search included federal, state, tribal, and local databases to evaluate whether the Project site or properties within the Project vicinity have been documented for potentially hazardous environmental conditions. This includes significant unauthorized releases of hazardous substances or other events with potentially adverse environmental effects.

According to the SWRCB GeoTracker database, the property located adjacent to the southwest corner of the Zoo parking lot is permitted for a UST. This property, listed in the database as 4730 Crystal Springs Drive, is also included in the Historic UST database for the presence of six USTs: one 3,500-gallon cement sump registered as empty in June 1988, a 2,000-gallon, carbon steel, single-walled diesel fuel UST installed in 1980, a 500-gallon and a 700-gallon carbon steel, single-walled, unleaded fuel UST, as well as one 2,000-gallon and one 7,500-gallon carbon steel, single walled, unleaded fuel USTs installed in 1971 and 1980, respectively. While no leaks or spills were reported on the Historic UST database, the City's Department of Recreation and Parks listed the site on the GeoTracker website for a leaking UST (LUST) case, involving an unauthorized release of gasoline to the soil on March 18, 1992. The case was considered closed as of June 27, 2000. Based on the closed case status, this listing is not considered a concern to the Project site.

The Autry Museum of the American West, located immediately east of the Zoo parking lot, was also listed for the historic presence of a UST. No additional information regarding the UST(s) was provided and no leaks or spills have been reported for the site. As such, this listing is not considered a concern to the Project site.

Approximately 0.1 miles to the northeast of the eastern portion of the site, a property listed on the DTSC EnviroStor database as "State Guard Air Field" is reported as a Site Cleanup location. Due to the site's location at the I-5 and SR-134 interchange, this cleanup site is likely associated with the former Griffith Park Aerodrome. The case status was listed as "needs evaluation as of July 1, 2005." Based on the absence of reported leaks or spills, this listing is not considered an environmental concern to the Project site.

According to the Superfund National Priorities List (NPL) database, the San Fernando Valley Area 2 (Crystal Springs Wellfield Area) is a Superfund site with tetrachloroethylene and trichloroethylene-contaminated groundwater underlying an area of approximately 6,680 acres. According to the mapped contamination plume prepared by the U.S. Army Corps of Engineers (USACE) Seattle District (dated September 21, 2018), the boundary of the Superfund site is located north, east, and southeast of the Project site, with nearest edge of the plume located approximately 0.11 miles (600 feet) to the northeast of the eastern portion of the Zoo parking lot (see Figure 3.9-1). The EnviroStor database indicates that sources of contamination are considered to be chemicals released by aeronautical, automotive, dry cleaning, and metal plating facilities during prewar, postwar, and current industrial operations in the area. The case was opened in January 1984, and cleanup and investigation activities are ongoing. Due to the distance of the site's contamination plume from the Project site, this listing is not considered an environmental concern to the Project site.

Other listed sites greater than 0.25 miles from the Project site were determined not to be an environmental concern for proposed Project site (see Appendix K for further information regarding listed sites in the vicinity of the Project site).

The Project site itself was included on the following federal and state databases:

- California Integrated Water Quality System Project (CIWQS),
- Facility Index System (FINDS),
- Resource Conservation and Recovery Act Small Quantity Generator (RCRA-SQG),
- UST,
- Enforcement Compliance History Online (ECHO),
- EPA Exposure Model for Individuals (EMI),
- Hazardous Waste Information System (HAZNET),
- New York (NY) MANIFEST, and
- Well Investigation Wetland Identification Program (WIP).

A majority of the database listings did not contain information regarding the environmental condition of the site. However, the following information was obtained from the RCRA-SQG, UST, ECHO, and HAZNET databases.

- *RCRA-SQG* – The site was listed on the RCRA-SQG database as a municipal small-quantity generator of an unreported type of hazardous waste in 1991, with no violations found.
- *UST* – The UST database as well as the GeoTracker website report that the Project site was permitted for a UST.
- *ECHO* – According to the ECHO database, violations were not reported for the site.

- *HAZNET* – Information for the Project site included a report of hazardous waste from the site in 2016, including hydrocarbon solvents (e.g., benzene, hexane, Stoddard, etc.) and unspecified aqueous solution.

The Zoo maintains two propane ASTs at the Project site, including one near southeast portion of parking lot area.

In addition to federal and state databases, the SCAQMD Facility Information Detail Search (FIND) website was reviewed as part of the Phase I Hazardous Materials Assessment for records regarding the Project site and adjoining addresses. Four Notices of Violation for the Zoo were recorded between August 1998 and December 2006; however, all known cases of violation have been closed with the Zoo in compliance.

1. On August 12, 1998, the Zoo was reported for failure to conduct the required reverification/performance tests (i.e., static pressure-leak decay/dynamic pressure) prior to January 1, 1998 for the gasoline fueling and dispensing equipment. This case was closed as of December 3, 1998.
2. On January 26, 2002, the Zoo was reported for installing and operating a stationary emergency internal combustion engine and two portable internal combustion engines installed in June 2000 without a valid permit to construct and/or operate. The Zoo was considered in compliance on July 5, 2002.
3. on June 24, 2005, the Zoo was reported for failure to maintain gas equipment in good working condition, as a phase II dispensing hose was recorded as torn/cracked (greater than 5 inches). This is also a violation of permit requirement to maintain permitted equipment in proper order. The case was closed as of December 14, 2005, with the Zoo recorded as in compliance.
4. On December 11, 2006, a notice of violation was filed due to operation of a diesel fueled portable internal combustion engine without a valid permit to operate. The Zoo was recorded as in compliance, and the case was closed as of September 27, 2011.

Transport of Hazardous Materials

The transport of hazardous materials through the City is regulated by the CHP and Caltrans. As regional transportation corridors, I-5 and SR-134 provide regional routes through northeast Los Angeles and are used for transport of the hazardous materials listed above (e.g., gasoline, propane) to the Zoo. In addition, within the Project vicinity, there are primary streets over which hazardous materials are routinely transported, such as Zoo Drive

and Western Heritage Way. The LACoFD Health Hazardous Materials Division maintains a list of registered hazardous waste transporters and the types of wastes that they are authorized to transport.

3.9.2 Impact Assessment Methodology

Significance Thresholds

According to Appendix G of the State CEQA Guidelines, a project would have a significant impact related to hazardous materials or wastes if it would:

a. create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
b. create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involved the release of hazardous materials into the environment;
c. emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school:
d. be located on a site which is included on a list of hazardous materials sites complied pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment;
e. for a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area;
f. impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or
g. expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires.

In addition to the thresholds identified in Appendix G, the City CEQA Thresholds Guide holds that a project would normally have a significant impact if it would:

h. be located within the vicinity of a private airstrip and result in a safety hazard for people residing or working in the project area.

Non-applicable threshold(s):

- Thresholds (e) and (h) (*Private Air Strip and Public Airport*): The nearest public airport to the Project site is the Bob Hope Airport (BUR), located approximately 4.4 miles northwest of the Zoo. Los Angeles International Airport (LAX) is located approximately 15 miles southwest. The Zoo is not within the Runway Protection Zones (RPZs) or the Area of Influence (AIA) of either BUR or LAX according to the Los Angeles County ALUP (Los Angeles County Airport Land Use Commission (ALUC) 2004). Further, there are no private airstrips in the vicinity of the Project

site. The Dreamworks Heliport Glendale is a private heliport located approximately 0.5 miles north of the Project site; however, as described in Section 3.9.1, this heliport is located outside of the FAA's recommended 280-foot HPZ. Therefore, the proposed Project would not result in a safety hazard for people visiting or working at the Zoo and this issue is not analyzed further in this EIR.

- Threshold (g) (*Wildfire*): Potential hazards associated with wildfire in the Project vicinity are discussed in Section 3.17, *Wildfire*. Therefore, this issue is not discussed in this section.

Methodology

The methodology used in this assessment includes review of available information and site reconnaissance to assess the potential presence of hazards and hazardous materials within the Project site and vicinity. The information obtained from the records review and site reconnaissance were included in a site-specific Phase I Hazardous Materials Assessment prepared by Ninyo & Moore and peer reviewed by a Hazardous Materials Specialist from Wood Environment & Infrastructure Solutions, Inc. (Wood) in October 2019. The records search consisted of a computerized, environmental information database search performed by Environmental Data Resources Inc. (EDR) on April 3, 2019. The search included applicable federal, state, tribal, and local regulatory agency databases. The records review also included a historical record search, which consisted of evaluating historical fire insurance maps, historical aerial photographs, and topographic maps. In addition, a site reconnaissance was conducted on August 13, 2019 to obtain information indicating the potential for recognized environmental conditions (RECs) in connection with the Project site. The site reconnaissance consisted of walking on site access roads and entering site structures to observe potential RECs, if any. The site reconnaissance did not include observation of the interior of properties outside of the Project site boundaries.

The following analysis evaluates potential effects related to hazards and hazardous materials resulting from implementation of the Project. The impact analysis assesses direct and indirect impacts related to hazards and hazardous materials from implementation of the near-term and long-term phases under the proposed Vision Plan (refer to Section 3.0, *Methodology*), given the existing conditions described above, and determines whether they would exceed any of the thresholds listed below.

3.9.3 Environmental Impacts Analysis

HAZ-1: Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Construction

Construction of the proposed Vision Plan components would require transportation, use, storage, and disposal of small quantities of commercially available hazardous materials.

Construction of the proposed Project components would involve the use of potentially hazardous materials, including vehicle fuels, oils, transmission fluids, and hydraulic fuels. However, applications of such materials would likely be in limited quantities (i.e., not commercially reportable) and would be handled in compliance with federal, state, and local regulations pertaining to their transport, use, or disposal. As such, the potential for hazardous materials release would be limited to disturbance of contaminated soil during ground-disturbing activities (see HAZ-2 below) and accidental spill of chemicals, petroleum, oils, and lubricants within the construction staging areas on the Project site or transportation routes.

The transport of potentially hazardous materials would continue to occur on I-5, SR-134, and local streets, such as Zoo Drive or Crystal Springs Drive. The transport of large quantities of hazardous materials is subject to applicable federal, state, and local regulations to reduce the risk of accidental spills, leaks, fire, or other hazardous conditions. Further, appropriate documentation for all hazardous materials that are transported in connection with individual Project construction activities would be provided as required for compliance with the existing hazardous materials regulations described in Section 3.9.1, *Regulatory Setting*. The U.S. Department of Transportation, Office of Hazardous Materials Safety prescribes strict regulations for the safe transportation of hazardous materials, as enforced by the CHP and Caltrans. Compliance with applicable regulations as well as oversight by the appropriate federal, state, and local agencies would minimize the risk of hazardous materials exposure during transport. Therefore, the proposed Vision Plan would result in a *less than significant* impact with regard to the transport of hazardous materials.

Federal, state, and local regulations govern the disposal of hazardous wastes. ACM, LBP, contaminated soils, or other hazardous material encountered during demolition or construction activities would be disposed of in compliance with all pertinent regulations for the handling of such waste including SCAQMD Rule 1403 (asbestos) and CCR Title 8, Industrial Relations. Therefore, the proposed Vision Plan would result in a *less than significant* impact with regard to the disposal of hazardous waste.

Operation

The Zoo's operational use, storage, and disposal of hazardous materials, substances, and waste would be similar to existing conditions. Operation of the proposed Project would continue to include existing routine cleaning and maintenance procedures using chemicals such as cleaners, paints, solvents, vehicle fuels, etc. Additionally, the Zoo would continue to utilize potentially hazardous materials (i.e., pesticides, herbicides, etc.) for landscaping and cleaning purposes. However, projected growth at the Zoo (refer to Section 3.0, *Methodology*) would require an increase in the use of operational equipment and materials, particularly during the near-term phases due to implementation of the proposed Zoo Entry, California planning area, Rainforest planning area, Africa planning area, and associated service areas. Potentially hazardous materials that would be used and stored in the Zoo

would be typical of those found currently at the Zoo (e.g., paints, fuels/lubricants, cleaning solvents, adhesives, sealers, and pesticides/herbicides) and would be consistent with what already occurs in the Zoo. Additionally, operation of the designated service area at the southern boundary of the Zoo would provide a visitor-restricted area for hazardous materials and waste storage, rather than several locations throughout the Zoo.

The Zoo would continue to be a small quantity generator of hazardous materials under implementation of the proposed Vision Plan.

All hazardous materials used onsite would be subject to all applicable regulation and documentation for the handling, use, and disposal of such materials consistent with all appropriate federal, state, and local regulations and standards established by the U.S. EPA, CalEPA, SCAQMD, Los Angeles County, and the City to protect the public health and safety as described in Section 3.9.1, *Regulatory Setting*. Businesses are required to comply with health and safety and environmental protection laws and regulations, including the CUPA program as administered by the LAFD. The CUPA program requires that businesses handling or storing certain amounts of hazardous materials prepare a Business Emergency Plan that includes an inventory of hazardous materials stored onsite, an emergency response plan, and procedures to be used in the event of a significant or threatening significant release of a hazardous material. The LAFD maintains all public records regarding the use and storage of hazardous materials and conducts routine annual inspections to ensure that hazardous materials are handled and stored properly. If necessary, appropriate permits, worker training, and agency inspections would be obtained and provided. Implementation of standard good housekeeping measures, best management practices (BMPs), site maintenance and security precautions, as well as compliance with standards and regulations would ensure potential impacts related to the routine transport, use, or disposal of hazardous materials are *less than significant*.

HAZ-2: Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involved the release of hazardous materials into the environment?

Construction

Off-site Contamination Migration to the Site

The Project site is located near multiple regulated hazardous material sites, including one LUST with a closed status and one Superfund cleanup site that was opened in January 1984, and is undergoing continuing cleanup and investigation activities. However, the contamination plume map prepared by the USACE Seattle District in September 2018 locates the nearest edge of the plume approximately 0.11 miles (600 feet) northeast of the eastern portion of the Zoo parking lot. Therefore, the nearest Project component to the Superfund site is the Phase 7 parking structure, which would not be implemented until 2037. It is unlikely that existing contaminants identified on other nearby sites would have an impact on the Project site, due to distance, hydraulic gradient in relation to the Project site, or due to past cleanup efforts. These findings are consistent with the regulatory database search executed as part of the Phase I Hazardous Materials Assessment (see Appendix K).

In addition to existing hazardous materials sites in the vicinity of the Project site, the Grayson Power Plant has the potential to affect the Project site due to the risk of release of hazardous materials. Use, handling, and transport of hazardous materials associated with energy production at the plant has the potential to impact workers and the public if not handled and contained properly. Additionally, the potential exists for fuels, oil, and grease to drip from equipment or spill if not conducted properly. However, spills are limited to the immediate area and spill response plans would address containment and clean up; therefore, it is unlikely that the volume of spills will travel beyond the immediate area of the spill and impact offsite receptors such as the Zoo. Therefore, it is unlikely that off-site contamination would affect the Project site and impacts would be *less than significant*.

ACM and LBP

The proposed Project would involve the demolition and renovation of several buildings at the Zoo that were constructed before 1970. Due to the age of the buildings, there is a potential for hazardous materials such as ACM and LBP to be present onsite. As such, the potential exists that workers or the public could be exposed to these materials during demolition of the onsite buildings and hauling of debris materials. The Phase II Environmental Site Assessment (ESA) required under **MM HAZ-1** would identify the potential presence of ACM and LBP in the buildings proposed for demolition or renovation under the Vision Plan. If asbestos is detected during the Phase II ESA, compliance with SCAQMD Rule 1403 would be required, which would require the abatement and control of ACM prior to demolition. Similarly, CCR Title 8, Industrial Relations would require the

removal and control of LBP prior to demolition. Additionally, standard BMPs would be applied, as necessary (e.g., protective equipment, fugitive dust controls etc.). If not properly abated, the accidental release of asbestos and/or lead could pose a hazard to the environment and public health. However, with the implementation of appropriate mitigation, impacts associated with ACM and LBP would be *less than significant with mitigation*.

Soil Contamination

Potential contamination from the USTs located adjacent to the South Parking area and Autry Museum may be disturbed during implementation of the circulation improvements at Zoo Drive and Western Heritage Way during Phase 1 of the Project. However, no reports of contamination were recorded for the UST north of the Autry Museum and the LUST case reported at the South Parking area has been closed since June 2000.

The fueling station located within the visitor-restricted Zoo Construction Shop and Support area is considered a REC and VEC due to the potential release of petroleum products to the subsurface from the fueling dispensers, USTs, and associated piping, which have operated for over 20 years. No other RECs are located at the Project site. The Project construction and demolition activities would not affect the existing REC at the Zoo's fueling station and it would continue to operate under existing regulations and maintenance requirements. Due to the fueling station's location, the areas planned for Zoo development under the Vision Plan that may be affected by the VEC include Condor West, the Construction Shop and Support area, the Gottlieb Animal Health and Conservation Center, and the northwest corner of the Africa planning area. The proposed redevelopment of the southwestern portion of the Project site to construct the Africa planning area is a near-term improvement planning to occur during Phase 3 of the Vision Plan (2027). The proposed improvements to Condor West, the Construction Shop and Support area, and the Gottlieb Animal Health and Conservation Center are long-term improvements planned for Phase 4 of the Vision Plan (2030). As such, ground-disturbing activities (i.e., excavation, trenching, grading) during these Project components has the potential to disturb historic contaminated soil and hazardous vapors. Following Phase 4 of the Vision Plan, no soil contamination or hazardous vapors are anticipated to be encountered during construction or operation.

The USTs at the Zoo's fueling station have operated for over 20 years and may have resulted in soil contamination at the Project site.

Implementation of **MM HAZ-1** would require a Phase II ESA to evaluate the presence of hazardous soil contamination and vapor intrusion in the vicinity of the existing fueling station, the South Parking area, and north of the Autry Museum prior to demolition and grading activities. In the event that the Phase II ESA identifies soil and/or groundwater contamination at or above regulatory levels, implementation of **MM HAZ-2** would require remediation activities prior to the issuance of grading permits to ensure no adverse impacts from exposure to soil contamination. Implementation of **MM HAZ-1** and **MM HAZ-2** would reduce potential impacts related to the REC and VEC at the fueling station to less than significant. Therefore, impacts related to the potential for exposure to hazardous soil contamination or vapors under the Vision Plan would be *less than significant with mitigation*.

Operation

Hazardous Materials and Wastes

Operational impacts related to hazardous materials, substances, and wastes are not considered significant as the types and amounts of potentially hazardous materials used and stored for operation of the proposed Project would not substantially change from existing conditions (refer to Impact HAZ-1). Users of such materials are required to follow manufacturer instructions and dispose of excess solutions and empty containers properly. Therefore, the risk of an accidental release of hazardous materials into the environment during operation of the proposed Project would be reduced and this impact would be *less than significant*.

ATS and Funicular Safety

Development of the proposed ATS and funicular at the Zoo would increase the potential for safety hazards associated with engineering functions. The ATS would comply with the current Safety Requirements for Passenger Tramways (ANSI B77.1) as well as CCR Title 8, Subchapter 6.1, Article 8 Wire Rope And Strand Requirements. The standards included in ANSI and CCR require tramway inspection by a qualified engineer or tramway specialist and a certificate of inspection attesting to the adequacy and safety of the installation and equipment prior to public operation of the tramway. Similarly, design, construction, operation, and maintenance of the California planning area's funicular would comply with the current American National Standard for Funiculars–Safety Requirements (ANSI B77.2). Implementation of the current engineering design and operational standards for the proposed ATS and funicular would ensure there are no near-term or long-term safety impacts associated with operation of these structures. Therefore, incorporation of the ATS and funicular at the Zoo under the Vision Plan would result in no significant impacts to safety.

Animal Safety

Implementation of the proposed Vision Plan would result in additional animal residents at the Zoo, which increases the risk for escape and safety hazards. Many of the existing animal enclosures at the Zoo were constructed prior to 1980 and are outdated. The Vision Plan proposes to construct updated animal enclosures at various exhibits throughout the Zoo. All new animal enclosures would be constructed in compliance with current AZA structural engineering and design standards to include safety measures, such as safety entrances and emergency lighting.

Additionally, the Zoo currently maintains operational procedures pursuant to the AZA Accreditation Standards and Related Policies in order to protect the safety of the animals, zookeepers, and Zoo visitors alike. Under operation of the Vision Plan, the Zoo would continue to comply with existing safety procedures. Therefore, safety hazards related to Zoo animals would not occur due to implementation of the Vision Plan, and safety impacts would be *less than significant*.

HAZ-3: Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

The only school located within 0.25 miles of the proposed Project site is the North Hollywood High School Magnet Center located in the southwest portion of the Zoo's parking lot. Based on a review of the Los Angeles Unified School District (LAUSD) website, new schools are not proposed within the vicinity of the Zoo.

Construction

The proposed Project components that would be implemented in the immediate vicinity of the North Hollywood High School Magnet Center are the circulation and parking improvements and Zoo Entry renovation in Phase 1 and the parking structure proposed for Phase 7. Adverse impacts resulting from incidental hazardous spills during near-term and long-term construction activities may be potentially significant depending on the location, extent, and duration of the spill. However, all construction activities associated with the proposed Project components would comply with applicable federal, state, and local regulations relating to protection of the public and the environment from exposure to hazardous materials. Further, **MM HAZ-1** would require the preparation of a Phase II Environmental Site Assessment (ESA) to ensure no adverse impacts related to hazardous emissions or spills would occur during implementation of the proposed near-term and long-term improvements. As such, construction impacts related to hazardous emissions and hazardous materials, substances, and waste within 0.25 miles of a school would be *less than significant with mitigation*.

Operation

After construction is complete and the heavy equipment is removed from the Project site, the potential for hazardous spills would be low and similar to existing conditions at the Project site. As previously described, the Zoo would continue to operate similarly to existing conditions under the Vision Plan. As such, the Zoo would continue to use, store, and dispose of hazardous materials, substances, and waste in accordance with applicable federal, state, regional, and local policies and regulations. Therefore, operational impacts related to hazardous emissions and hazardous materials, substances, and waste within 0.25 miles of a school would be *less than significant.*

HAZ-4: Would the project be located on a site which is included on a list of hazardous materials sites complied pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

While the Project site is included on several databases for its operation as a small quantity generator of hazardous waste, the Zoo is not included on the DTSC EnviroStor or the SWRCB GeoTracker databases compiled pursuant to Government Code Section 65962.5. As described in Section 3.9.1, *Existing Setting*, the Project site is located in proximity to one site listed on the SWRCB GeoTracker database and one site listed on the DTSC EnviroStor database. The GeoTracker-listed site is a property located adjacent to the southwest corner of the Zoo parking lot at 4730 Crystal Springs Drive. This property is permitted for a UST. The Historic UST database documents the presence of six USTs at the site (refer to Section 3.9.1, *Existing Setting*, above). Additionally, the City's Department of Recreation and Parks listed the site on the GeoTracker website for a LUST case, involving an unauthorized release of gasoline to the soil on March 18, 1992. The case was considered closed as of June 27, 2000. Due to the closed status of the listing, this site is not considered a concern to the Project site.

Implementation of Phase 1 of the proposed Vision Plan would include the reconfiguration of Crystal Springs Drive along the periphery of the Zoo parking lots, which would affect the area adjoining the GeoTracker-listed LUST site. As such, ground-disturbing activities associated with grading for the reconfigured road would increase the risk of disturbing potentially contaminated soil. In the event that contamination is observed during construction activities, implementation of **MM HAZ-2** would be implemented to ensure contaminated soils are properly removed, handled, and transported to an appropriately licensed disposal facility, in accordance with local and state regulations. Therefore, impacts from implementation of near-term improvements included in the proposed Vision Plan would be *less than significant with mitigation*.

In addition to the LUST, a property located approximately 0.1 miles northeast of the Zoo parking lot is listed on the DTSC EnviroStor database as "State Guard Air Field" and is reported as a Site Cleanup. This cleanup site is likely associated with the former Griffith

Park Aerodrome previously located on the eastern portion of the Project site (i.e., Zoo parking lot) and to the northeast of the Project site. The case status was listed as "needs evaluation as of July 1, 2005." As no leaks or spills are reported for this site, this listing is not considered an environmental concern to the Project site. However, similar to the proposed road configuration, implementation of **MM HAZ-2** would be implemented if contaminated soils are encountered during ground-disturbing activities associated with the proposed parking structure on the northeast corner of the Project site in Phase 7. Therefore, impacts from implementation of long-term improvements included in the proposed Vision Plan would be *less than significant with mitigation*.

With implementation of **MM HAZ-2**, near-term and long-term construction activities associated with the Project would have a less than significant impact to sites included on a list of hazardous materials sites complied pursuant to Government Code Section 65962.5, and as such, would not create a significant hazard to the public or the environment.

HAZ-5: Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

The Zoo maintains emergency preparedness procedures in the event of an emergency and/or evacuation in accordance with the AZA Accreditation Standards and Related Policies (AZA 2019a). The Project lies within the service area of the LAFD and would be built in accordance with applicable building and fire codes to meet current fire protection standards. The Project components would be built in compliance with the applicable state and City building, fire, and emergency access codes. Additionally, I-5 and SR-134, both adjacent to the Project site, are designated Primary Disaster Routes by the County of Los Angeles (County of Los Angeles DPW 2013). The Project does not propose changes, obstructions, or reconfigurations to public evacuation routes, so the Project would not result in physical interference or impairment to implementation of this existing emergency and evacuation plan. Construction activities associated with the proposed Project would add vehicles (e.g., construction equipment, worker vehicles, etc.) to regional and local roads that could increase congestion. However, emergency access would be maintained during implementation of near-term and long-term improvements to the maximum extent feasible during construction and impacts related to emergency access would be less than significant (see Section 3.15, *Transportation and Circulation,* and Section 3.17*, Wildfire*). Therefore, Project implementation would not impair implementation or physically interfere with an adopted emergency response plan or emergency evacuation plan. Please also see Section 3.13, *Public Services* for analysis of increased demand on emergency response services (e.g., fire and police protection).

3.9.4 Mitigation Measures

MM HAZ-1 Phase II Environmental Site Assessment (ESA)

Prior to Project implementation, the City shall prepare a Phase II ESA to address the following:

- **Potential soil contamination around known USTs on site**. Prior to ground-disturbance, a qualified environmental specialist (e.g., a licensed Professional Geologist [PG], a licensed Professional Engineer [PE] or similarly qualified individual) shall perform soil sampling and analysis to determine whether contamination exists and, if so, the extent of contamination from the following UST locations within the Project site; if contaminants are detected in soil at or above regulatory levels, then the results of the soil sampling shall be reviewed and acted upon by the LAFD and other regional or state regulatory agencies as needed:
  - The fueling station in the Zoo Construction Shop and Support area
  - West of the South Parking Area
  - North of the Autry Museum.
- **ACM, LBP, and Molds in Buildings**. Prior to any building demolition, the City shall conduct a comprehensive survey of ACM, LBP, and molds. If such hazardous materials are found to be present, the Zoo shall follow all applicable local, state and federal codes and regulations, as well as applicable best management practices, related to the treatment, handling, and disposal of ACM, LBP, and molds to ensure public safety.

If the Phase II ESA identifies contamination at or above regulatory levels, prior to the issuance of grading permits for development, it shall be the responsibility of the Zoo to conduct and conclude all investigation and/or remediation activities under the oversight of the applicable regulatory agency (e.g., LAFD, DTSC, SWRCB). Remediation shall be accomplished in accordance with the requirements of the appropriate oversight agency. No Project construction shall occur in the affected area until case closure reports have been approved by the appropriate oversight agency.

MM HAZ-2 Discovery of Contamination

In the event that previously unknown or unidentified soil and/or groundwater contamination that could present a threat to human health or the environment is encountered during construction at a development site, construction activities in the immediate vicinity of the contamination shall cease immediately. At the start of construction, all construction contractors shall be instructed to immediately stop all subsurface activities in the event that potentially hazardous materials are encountered, an odor is identified, or significantly stained soil is visible. Contractors shall be instructed to follow all applicable regulations regarding discovery and response for hazardous materials

encountered during the construction process. A qualified environmental specialist (e.g., a licensed PG, a licensed PE or similarly qualified individual) shall investigate to identify and determine the level of soil and/or groundwater contamination.

If contamination is encountered, a Human Health Risk Management Plan shall be prepared and implemented that: (1) identifies the contaminants of concern and the potential risk each contaminant would pose to human health and the environment during construction and post-development, and (2) describes measures to be taken to protect workers, and the public from exposure to potential site hazards. Such measures could include a range of options, including, but not limited to, physical site controls during construction, remediation, long-term monitoring, post-development maintenance or access limitations, or some combination thereof. Depending on the nature of contamination, if any, appropriate agencies shall be notified (e.g., LAFD). If needed, a Site Health and Safety Plan that meets Occupational Safety and Health Administration requirements shall be prepared and in place prior to commencement of work in any contaminated area.

3.9.5 Impacts Summary

With implementation of mitigation measures MM HAZ-1 and -2, impacts to potential hazards and hazardous materials would be *less than significant*. Therefore, significant unavoidable adverse impacts to hazards and hazardous materials would not occur.

3.10 HYDROLOGY AND WATER QUALITY

Project development would alter the onsite drainage pattern through excavation, grading, and development of the undeveloped California and Africa hillsides, installation of the proposed stormwater collection system, and increases in development and impervious surfaces. These activities could result in sediment transport into nearby storm drain inlets – particularly during storm events or during onsite watering. Additionally, construction activities have the potential to contribute to polluted stormwater runoff due to the delivery, handling, and storage of construction materials and wastes, as well as potential existing onsite soil contamination. With implementation of standard engineering practices and mitigation to control runoff and erosion, the proposed Project would not cause significant impacts to water quality. Additionally, the proposed Vision Plan includes Project sustainable stormwater collection and low impact development features that would result in beneficial long-term impacts to water quality at the Project site.

This section describes existing hydrology and water quality conditions of the Los Angeles Zoo and Botanical Gardens (Zoo) and nearby waterways, including the Los Angeles River, and analyzes the potential impacts of the proposed Los Angeles Zoo Vision Plan (Project) on stormwater runoff, drainage, flood risk, groundwater, and water quality. Several water resource areas are addressed in other sections of this Environmental Impact Report (EIR). Geologic groundwater basins are addressed in Section 3.7, *Geology and Soils*. Groundwater contamination is addressed in Section 3.9, *Hazards and Hazardous Materials*. Water supply and demand projections are addressed in Section 3.16, *Utilities*.

3.10.1 Environmental Setting

Regulatory Setting

Several federal, state, and local laws and regulations have been enacted to regulate hydrology and water quality as necessary to manage pollutant discharges into the surrounding environment. Regulations that are directly relevant to the proposed Project are summarized below.

Federal Regulations

Clean Water Act

The Clean Water Act (CWA) was designed to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. The CWA was created in 1972, and then amended in 1977, and again in 1987. The CWA authorizes federal, state, and local entities to cooperatively create comprehensive programs for eliminating or reducing the pollution of state waters and tributaries. Key provisions of the CWA address water quality standards and

the establishment of the National Pollutant Discharge Elimination System (NPDES) program for controlling the discharge of stormwater.

- **Section 303(d)(1) and Total Maximum Daily Loads (TMDLs)**: Section 303(d)(1) of the CWA requires each state to identify the waters within its boundaries that do not meet water quality standards. Water bodies that do not meet water quality standards are considered impaired and are placed on the state's "CWA Section 303(d) List." For each listed water body, the state is required to establish a TMDL for each of the pollutants impairing the water quality standards in that water body. A TMDL is a tool for implementing water quality standards and is the maximum amount of an impairing substance or stressor (e.g., pollutant) that a water body can receive while still safely meeting water quality standards. The Los Angeles River is listed as an impaired water body on the CWA Section 303(d) List (see Table 3.10-1).
- **National Pollutant Discharge Elimination System (NPDES)**: Section 402 of the CWA prohibits certain discharges of stormwater containing pollutants except in compliance with a NPDES permit. In 1972 when the NPDES program was first established, most efforts to improve water quality focused on regulating pollutant discharges from known end-of-pipe point sources. However, the 1987 amendments to the CWA extended the NPDES program to encompass non-point source pollution found in stormwater and dry weather runoff. In 1987, the NPDES program began to regulate non-point source runoff to municipal separate storm sewer systems (MS4) and discharges associated with specific categories of industrial activity, such as heavy manufacturing, hazardous waste treatment, and landfills (40 CFR 122.26(b)(14)(i)-(xi)). Since that time, non-point source regulations under the NPDES program have been significantly revised and expanded. The NPDES program regulates stormwater discharges from three potential sources: MS4, construction activities, and industrial activities. To prevent harmful pollutants from being washed or dumped into an MS4, operators must obtain a NPDES permit and develop a stormwater management program. Implementing programs intended to meet TMDLs defined under the NPDES program are managed at the state and regional levels, as discussed below.

Table 3.10-1. Summary of Los Angeles River Segment 3 Section 303(d) Listed Pollutants and TMDLs

Pollutant	Potential Source	First Year Listed	TMDL Requirement Status
Ammonia	Point Source Nonpoint source	1996	5B
Copper	Source Unknown	2006	5B
Indicator Bacteria	Source Unknown	2014	5B
Nutrients (Algae)	Point Source Nonpoint source	1996	5B
Toxicity	Source Unknown	2014	5A
Trash	Nonpoint source Surface Runoff Urban Runoff/Storm Sewers	1996	5B

Note: TMDL requirement status definitions for listed pollutants are: A= TMDL still required, B= being addressed by U.S. EPA approved TMDL.
Source: SWRCB 2018.

National Flood Insurance Act and Flood Disaster Protection Act

The National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973 were enacted to reduce the need for flood protection structures and limit disaster relief costs by restricting development in floodplains (FEMA 2020). The Federal Emergency Management Agency (FEMA) administers programs associated with these acts. One of FEMA's duties is to administer the National Floodplain Insurance Program (NFIP) and develop standards for fluvial and coastal floodplain delineation. The NFIP is a federal program that enables property owners in participating communities to purchase insurance to protect against flood losses in exchange for state and community floodplain management regulations that reduce future flood damages.

State Policies and Regulations

The California Environmental Protection Agency (CalEPA) is charged with developing, implementing, and enforcing the state's environmental protection laws. The State Water Resources Control Board (SWRCB) and nine Regional Water Quality Control Boards (RWQCBs) – including the Los Angeles RWQCB – operate under the regulatory authority of the U.S. Environmental Protection Agency (U.S. EPA). The SWRCB, a branch of the CalEPA, and the nine RWQCBs have the responsibility of granting NPDES permits for certain point source discharges. California issues NPDES permits to selected point-source dischargers and issues either waste discharge requirements or conditioned water quality certification for other discharges. The City of Los Angeles (City) and the Project site are located within Region 4 – Los Angeles RWQCB.

1969 Porter-Cologne Water Quality Control Act

The Porter-Cologne Act grants ultimate authority to the SWRCB over state water rights and water quality policy and authorizes the nine RWQCBs to oversee water quality on a day-to-day basis at the regional and local level. The Porter-Cologne Act is the basic water quality control law for California and works in coordination with the CWA. The Porter-Cologne Act states that a RWQCB may include water discharge prohibitions applicable to conditions, areas, or types of waste within its regional plan. Section 13170 of the California Water Code also authorizes the SWRCB to adopt water quality control plans on its own initiative.

NPDES Construction General Permit

The SWRCB regulates stormwater runoff from construction activities under Order No. 2009-009-DWQ, as amended by 2010-0014-DWQ and 2012-0006-DWQ. Construction activities subject to the NPDES Construction General Permit include sites that disturb at least one acre, and small construction sites less than one acre but part of a larger common plan of at least one acre. The Order requires that, prior to beginning any construction activities, the permit applicant must obtain coverage under the General Construction Permit by preparing and submitting a Notice of Intent (NOI) and an adequate Stormwater Pollution Prevention Plan (SWPPP). The SWPPP has two major objectives: 1) to help identify the sources of sediment

and other pollutants that affect the quality of stormwater discharges; and 2) to describe and ensure the implementation of best management practices (BMPs) to reduce or eliminate sediment and other pollutants in stormwater and non-stormwater discharges. Required elements of a SWPPP include: 1) site description addressing the elements and characteristics specific to the site; 2) descriptions of BMPs for erosion and sediment controls; 3) BMPs for construction waste handling and disposal; 4) implementation of approved local plans; 5) proposed post-construction controls, including a description of local post-construction erosion and sediment control requirements; and 6) non-stormwater management. Additionally, the SWPPP must contain a visual monitoring program; a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of BMPs; and a sediment monitoring plan if the site discharges directly to a water body listed on the CWA Section 303(d) List for sediment.

All construction activities related to the proposed Project are subject to the requirements in the Construction General Permit. The current permit, as amended, establishes the following.

- **Technology-based Numeric Action Levels (NALs)**: The Construction General Permit includes NALs for pH and turbidity. NALs are essentially numeric benchmark values for certain parameters that, if exceeded in effluent sampling, trigger the discharger to take actions. Exceedance of an NAL does not itself constitute a violation of the Construction General Permit; however, if the discharger fails to take the corrective action required by the Construction General Permit, that may constitute a violation.
- **Technology-based Numeric Effluent Limitations (NELs)**: The Construction General Permit contains NELs for pH during any construction phase where there is a high risk of pH discharge and turbidity for all discharges.
- **Risk-based Permitting Approach**: The Construction General Permit establishes a four-level risk calculation. Those dischargers that are determined to be Risk Level 4 are not covered by the Construction General Permit, and thereby are required to submit a Report of Waste Discharge (ROWD) to the appropriate RWQCB and seek coverage under an individual or other applicable general permit.
- **Minimum Requirements Specified**: The Construction General Permit specifies more minimum BMPs and requirements that were previously only required as elements of the SWPPP or were suggested by guidance.
- **Project Site Soil Characteristics Monitoring and Reporting**: The Construction General Permit requires all dischargers to monitor and report soil characteristics. The primary purpose of this requirement is to provide better risk determination and eventually better program evaluation.
- **Effluent Monitoring and Reporting**: The Construction General Permit requires effluent monitoring and reporting for pH and turbidity in stormwater discharges. The purpose of this monitoring is to be used to determine compliance with the NELs and evaluate whether NALs included in this Construction General Permit are exceeded.
- **Receiving Water Monitoring and Reporting**: The Construction General Permit requires some Risk Level 2 and Risk Level 3 dischargers to monitor receiving waters.

- **New Development and Redevelopment Stormwater Performance Standards**: The Construction General Permit specifies runoff reduction requirements for all sites not covered by a Phase I or Phase II MS4 NPDES Permit, to avoid, minimize and/or mitigate post-construction stormwater runoff impacts.
- **Rain Event Action Plan**: The Construction General Permit requires sites to develop and implement a Rain Event Action Plan (REAP) that must be designed to protect all exposed portions of the site within 48 hours prior to any likely storm event.
- **Site Photograph Self-Monitoring and Reporting**: The Construction General Permit requires all projects to provide photographs of their sites at least once quarterly if there are storm events causing a discharge during that quarter. The purpose of this requirement is to help RWQCB staff prioritize their compliance evaluation measures (e.g., inspections). In addition, this reporting makes compliance-related information more readily available to the public.
- **Annual Reporting**: The Construction General Permit requires all projects that are enrolled for more than one continuous 3-month period to submit information and annually certify that their site complies these requirements. The primary purpose of this requirement is to provide information needed for overall program evaluation and public information.
- **Certification/Training Requirements for Key Project Personnel**: The Construction General Permit requires that key personnel (e.g., SWPPP preparers, inspectors, etc.) have specific training or certifications to ensure their level of knowledge and skills are adequate to ensure their ability to design and evaluate project specifications that will comply with all applicable requirements.

Water Quality Control Plan for Ocean Waters of California (Ocean Plan)

Section 13000 of Division 7 of the California Water Code includes water quality objectives for the protection of oceanic water quality. The Ocean Plan sets forth limits or levels of water quality characteristics for ocean waters of the state to ensure the reasonable protection of beneficial uses and the prevention of nuisance. Pursuant to California Water Code Section 13263(a), the requirements of the NPDES program implement the Ocean Plan.

Sustainable Groundwater Management Act

On September 16, 2014, Governor Jerry Brown signed into law a three-bill legislative package, composed of Assembly Bill (AB) 1739 (Dickinson), Senate Bill (SB) 1168 (Pavley), and SB 1319 (Pavley), collectively known as the Sustainable Groundwater Management Act (SGMA). The SGMA requires local governments and water agencies of high and medium priority basins to halt overdraft and bring groundwater basins into balanced levels of pumping and recharge. Under the SGMA, these basins should reach sustainability within 20 years of implementing the required sustainability plans. For critically over-drafted basins, that will be 2040. For the remaining high and medium priority basins, 2042 is the deadline.

SGMA empowers local agencies to form groundwater sustainability agencies (GSAs) to manage basins sustainably and requires those GSAs to adopt groundwater sustainability plans (GSPs) for crucial groundwater basins in California. According to the SGMA, GSAs have

until January 21, 2022 to develop their GSPs. The Project site is partially located within the San Fernando Valley Groundwater Basin, which is designated as a Very Low Priority groundwater basin. As such, SGMA does not require preparation of a GSP for the basin.

California Code of Regulations, Title 22, Division 4, and Chapter 3

Criteria and guidelines for the production and use of recycled water were established by the SWRCB in the California Code of Regulations, Title 22, Division 4, and Chapter 3 (Title 22), updated June 14, 2014. Title 22, also known as the Uniform Statewide Recycling Criteria, establishes required wastewater treatment levels and recycled water quality levels dependent upon the end use of the recycled water. Title 22 additionally establishes recycled water reliability criteria to protect public health. Title 22 specifies recycled water use restrictions based on the potential degree of public exposure to the water and the distance of drinking water wells and edible crops from the area of intended use. Recycled water use applicability also depends on the different levels of treatment. A higher quality water will have a wider variety of applicable uses than a lower quality water. At a minimum, secondary treatment of wastewater is required for recycled water use. In the City, however, all recycled water used is treated, at a minimum, to tertiary levels with additional disinfection. Title 22 allows for other treatment methods, subject to SWRCB approval. The reliability of the treatment process and the quality of the product water must meet Title 22 requirements specified for each allowable treatment level.

Sites where recycled water is used must meet regulatory requirements. Title 22 stipulates use area requirements to protect public health. Use area regulations include requirements addressing recycled water application methods, and requirements addressing runoff near domestic water supply wells, drinking fountains, and residential areas. Other requirements include posting signs notifying the public where recycled water is being used, utilization of quick couplers instead of hose bibs, and the prohibition against connecting recycled water systems with potable water systems. Dual-plumbed recycled water systems in buildings are also addressed. These systems must meet additional reporting and testing requirements.

Regional Policies and Regulations

Water Quality Control Plan for the Los Angeles Region (Basin Plan)

The Basin Plan establishes beneficial uses for surface and groundwater in the region and sets forth the regulatory water quality standards set by the Los Angeles RWQCB that urban runoff must protect those designated beneficial uses. Where multiple designated beneficial uses exist, water quality standards must protect the most sensitive use. In cases where the Basin Plan does not contain a water quality objective for a pollutant, other criteria are used to establish a standard. Other criteria may be applied from SWRCB documents (e.g., the Inland Surface Waters Plan and the Pollutant Policy Document) or from water quality criteria developed under CWA Section 304(a). Permits issued to control pollution (i.e., water quality standards) while taking into consideration beneficial uses to be protected. The Basin Plan

works to preserve and enhance water quality and protect the beneficial uses of the Los Angeles River (e.g., freshwater habitat, groundwater recharge, industrial service supply and industrial process, and municipal and domestic supply).

Municipal Separate Storm Sewer System (MS4) NPDES Permit

The CWA established the NPDES program to regulate the discharge of pollutants from point sources to waters of the U.S. However, pollution from non-point sources (i.e., urban runoff) was largely unabated. In response to the 1987 Amendments to the CWA, the U.S. EPA developed the NPDES Storm Water Permitting Program in 1990, which established a framework for regulating municipal and industrial discharges of urban runoff. U.S. EPA required NPDES permit coverage for discharges from MS4 with populations of 100,000 or more. Operators of MS4s regulated under the NPDES Storm Water Permitting Program are required to obtain permit coverage for municipal discharges of stormwater and non-stormwater to waters of the U.S.

Under SWRCB enforcement, the Los Angeles RWQCB implements the NPDES Storm Water Permitting Program in Los Angeles County. Except for those discharges originating from the City of Long Beach MS4, stormwater and non-stormwater discharges from the County of Los Angeles MS4 are regulated under NPDES permit No. CAS004001 (Final Order No. R4-2012-0175), which went into effect in December 2012. The Los Angeles County MS4 NPDES Permit covers 86 permittees, which include the City. The provisions of this MS4 NPDES Permit are intended to develop, achieve, and implement a timely, comprehensive, cost-effective stormwater pollution control program to reduce the discharge of pollutants in stormwater to the MS4 from the permitted areas in the County of Los Angeles to the waters of the state. Pursuant to CWA, the MS4 NPDES Permit includes effluent limitations and other provisions to implement the TMDLs for the water bodies that have been classified as impaired on the state's CWA Section 303(d) List. The MS4 NPDES Permit prohibits non-stormwater discharges, except for natural flows, uncontaminated groundwater infiltration, and certain exemptions including landscape irrigation, non-commercial car washing, non-emergency fire-fighting activities, and natural dewatering, provided that conditionally exempt non-stormwater discharges avoid potential sources of pollutants in the flow path to prevent the introduction of pollutants to the MS4 and receiving water.

In 2018, the Los Angeles RWQCB approved the removal of fecal coliform from the monitoring requirements contained in Attachment E of the MS4 NPDES Permit for consistency with Resolution No. R10-005, which removed the water quality objective for fecal coliform in freshwater designated for water contact recreation and limited water contact recreation.

The MS4 Permit sets forth the requirements for all permittees, which are discussed below.

- **Construction.** For all construction sites, less than one acre that disturb soil, permittees must require the implementation of an effective combination of erosion and sediment control BMPs to prevent erosion and sediment loss, and the discharge of construction wastes. For all construction sites one acre or more that disturb soil,

permittees must require the preparation or submission an Erosion and Sediment Control Plan (ECSP) prior to the disturbance of land. The Project site is approximately 133 acres, so the proposed Project is subject to erosion and sediment BMPs. The ESCP must contain appropriate site-specific construction site BMPs for controlling erosion during excavation and grading activities. ESCPs must include the elements of a SWPPP and must address methods to minimize footprint of disturbed area, methods to protect native vegetation and trees, sediment/erosion control, non-stormwater controls (e.g., vehicle washing, soil watering, dewatering), materials management (e.g., delivery and storage), spill prevention and control, and waste management (e.g., concrete washout/waste management, sanitary waste management, etc.). SWPPPs prepared in accordance with the requirements of the Construction General Permit can be accepted as ESCPs.

- **Operation.** The NPDES MS4 Permit requires that permittees, including the City, implement operational stormwater runoff controls for new development and redevelopment projects. Under the NPDES MS4 Permit, these projects must be designed to minimize the footprint of the impervious area and to use low-impact development (LID) strategies to disconnect the runoff from impervious area. Projects must be designed to retain onsite the stormwater runoff resulting from either the 0.75-inch per 24-hour storm or the 85th percentile storm as defined in the Los Angeles County 85th percentile, 24-hour storm isohyetal map, whichever is greater. Stormwater runoff may be retained onsite by methods designed to intercept rainwater via infiltration, bioretention, and harvest and use. Examples of LID strategies that may be employed to meet the stormwater retention requirements include rain gardens, bioswales, pervious pavement, green roofs, and rainwater harvesting for use in landscape irrigation.

Standard Urban Stormwater Mitigation Plan (SUSMP)

The NPDES MS4 Permit defines the minimum required BMPs that must be adopted by the permittee municipalities and included by developers within plans for facility operations. To obtain coverage under this permit, a developer must obtain approval of a project-specific SUSMP from the appropriate permittee municipality.

A SUSMP addresses the discharge of pollutants within stormwater generated following new construction or redevelopment. Under recent regulations adopted by the Los Angles RWQCB, projects are required to implement a SUSMP during the operational life of a project to ensure that stormwater quantity and quality is addressed by incorporating BMPs into project design. This plan defines water quality design standards to ensure that stormwater runoff is managed for water quality concerns and to ensure that pollutants carried by stormwater are confined and not delivered to receiving waters. Applicants are required to abide by source control and treatment control BMPs from the list approved by the Los Angles RWQCB and included in the SUSMP. These measures include infiltration of stormwater as well as filtering runoff before it leaves a site. This can be accomplished through various means, including the use of infiltration pits, flow-through planter boxes, hydrodynamic separators, and catch basin filters.

In combination, these treatment control BMPs must be sufficiently designed and constructed to treat or filter the first 0.75 inch of stormwater runoff from a 24-hour storm event, and post-development peak runoff rates and volumes cannot exceed peak runoff rates and volumes of pre-development conditions. Permittees are required to adopt the requirements set forth herein in their own SUSMP. Additional BMPs may be required by ordinance or code adopted by the permittee and applied in a general way to all projects or on a case by case basis.

Groundwater Basins Master Plan

In 2016, the Water Replenishment District of Southern California (WRD), in coordination with other basin stakeholders, developed the Groundwater Basins Master Plan (GBMP) to provide a single reference document for parties operating within and maintaining the West Coast and Central groundwater basins. This plan is intended to help guide the stakeholders develop and assess initial concepts for additional recharge and pumping from these basins to utilize the basins fully and reduce dependence on imported water. This GBMP complements the efforts of WRD's Water Independence Now program by identifying projects and programs to enhance basin replenishment, increase the reliability of groundwater resources, improve and protect groundwater quality, and ensure that the groundwater supplies are suitable for beneficial uses.

This GBMP identifies opportunities to develop supplemental replenishment water supplies to further utilize the West Coast and Central Basins. The key objective for creating additional replenishment water supply is to significantly reduce imported water use by providing for increased pumping from these basins. This GBMP focuses on developing concepts to generate additional water supply of as much as 103,250 acre-feet per year (AFY) above the current Central Basin Allowed Pumping Allocation (APA), or a total annual pumping quantity of 320,617 AFY. Note that the current pumping is below the adjudicated limit (i.e., water rights) in the West Coast Basin and allowable limits (i.e., APA) in the Central Basin.

Enhanced Watershed Management Plans

On November 8, 2012, the Regional Board adopted the current municipal stormwater permit (NPDES Permit No. CAS004001, Order No. R4-2012-0175). This Permit contains the most extensive provisions to date with 32 incorporated TMDLs, of which 22 affect the City, expanded programs for Minimum Control Measures (MCMs), development and implementation of watershed management plans, and expanded monitoring provisions. This 2012 Stormwater NPDES Permit provides for the development of Enhanced Watershed Management Programs (EWMPs) by the MS4 permittees to implement the requirements of the Permit on a watershed scale through customized strategies, control measures, and Best Management Practices. These EWMPs will also address the compliance requirements of the 22 TMDLs that currently are effective, as well other elements of the City's Stormwater Program. As the largest agency within its own watersheds, the City coordinates the development of four EWMPs, engages the technical services of a consultant, and coordinates the planning activities with other

municipalities in the watersheds, the County, and stakeholder organizations. The EWMPs are due to the RWQCB as final documents by April 2016.

Integrated Regional Water Management Plan

Proposition 50, approved by California voters in 2002, set aside $380 million for Integrated Regional Water Management Plan (IRWMP) related grants. Integrated planning involves local agencies and interest groups working together to coordinate planning activities across jurisdictional boundaries. In this regional approach, individual agencies' efforts are combined to leverage resources and meet multiple water resource needs at the same time. The result is a multi-objective approach that multiplies the benefits of any individual agency's single project.

IRWMP includes five Sub-Regions that span from Ventura County to Orange County, including portions of both counties, and from the Pacific Ocean coastline to the San Gabriel Mountains --- an area of over 2,200 square miles. The Region represents approximately nine million people.

The Greater Los Angeles County Region comprises five sub-regions (Upper Los Angeles River, North Santa Monica Bay, South Bay, Upper San Gabriel River and Rio Hondo River and Lower San Gabriel and Los Angeles River), has developed the 2014 IRWMP for the region that describes regional objectives and priorities, water management strategies, implementation, impacts and benefits, data management, financing, stakeholder involvement, relationship to local planning, and state and federal coordination. Stakeholders in a large portion of Los Angeles County joined together to develop the IRWM Plan for Greater Los Angeles County (GLAC). The IRWMP addresses the future water needs in terms of reliability of the water supply, improvement to water quality (including implementing TMDLs), increases in habitat and open space (additionally serving as areas for recharge of stormwater), and replacement of water-related infrastructure as needed. Parts of two subregions of the GLAC fall within the Los Angeles River watershed. The Project site lies within the Upper Los Angeles River Sub-Region.

County of Los Angeles Hydrology Manual

Drainage and flood control within the CPAs are regulated by the Los Angeles Department of Public Works and the Los Angeles County Department of Public Works (LACDPW). The County has jurisdiction over regional drainage facilities. The LACDPW's Hydrology Manual requires that a storm drain system be designed for a 25-year storm event, and that the combined capacity of a storm drain and street flow system accommodate flow from a 50-year storm event. Areas with sump conditions are required to have a storm drain conveyance system capable of conveying flow from a 50-year storm event. The County also limits the allowable discharge into existing storm drain facilities based on the MS4 Permit and is enforced on all new developments that discharge directly into the County's storm drain

system. Any proposed drainage improvements of County owned storm drain facilities such as catch basins and storm drain lines requires the approval/review from the LACFCD department.

Waste Discharge Requirements for Discharges of Groundwater from Construction and Project Dewatering to Surface Waters in Coastal Watersheds of Los Angeles

Discharges of treated or untreated groundwater generated from permanent or temporary dewatering operations or other applicable wastewater discharges not specifically covered in other general or individual NPDES permits are currently regulated under a regional general permit, General Waste Discharge Requirements for Discharges of Groundwater from Construction and Project Dewatering to Surface Waters in Coastal Watersheds of Los Angeles and Ventura Counties (Order No. R4-2013-0095, NPDES No. CAG994004).

Construction dewatering wastes (except stormwater) are regulated as low-threat discharges to surface waters. An NOI and report of waste discharge must be submitted to the Los Angeles RWQCB to comply with this general permit. Based on the depth to groundwater, it is not anticipated that the proposed Project would require groundwater dewatering during construction or be subject to the requirements of this general permit. If groundwater is encountered during construction, it would be covered under the NPDES Construction General Permit.

Local Regulations

One Water LA

The One Water LA Plan is a holistic and collaborative approach to all water resources and crosses departmental and inter-agency boundaries to manage water more efficiently and in a cost effective and sustainable manner (City of Los Angeles 2018). The One Water LA Plan addresses the Zoo, including recent stormwater upgrades such as the Green Parking Lot Stormwater Infiltration project, and opportunities for future improvements such as onsite capture and use stormwater and City-provided recycled water for irrigation and animal exhibits.

Los Angeles Specific Plan for the Management of Flood Hazards

The City has an ordinance governing permit review and mitigation procedures for issuance of development permits in areas prone to flooding, mudflow, or coastal inundation. The City's Specific Plan for the Management of Flood Hazards (Specific Plan) was originally established by Ordinance No. 154,405 and amended most recently in July 1998 by Ordinance No. 172,081. The Ordinance No. 172,081 designates the City Engineer as the Flood Hazard Mitigation Coordinator for the City. The "Flood Hazard Management Specific Plan" (also referred to as the City of LA Floodplain Management Program) also specifies the responsibilities of City agencies that process the permits to ensure consistency with applicable FEMA requirements for NFIP coverage. Mitigation measures include relocation of structures within a property,

increased base elevation, additional structural reinforcement, anchoring, and installation of protective barriers. A permit can be denied if mitigation is deemed insufficient to protect human life.

2009 Water Quality Compliance Master Plan for Urban Runoff

In 2009, the City adopted the Water Quality Compliance Master Plan for Urban Runoff (WQCMP). This document is a 20-year strategy for clean stormwater and urban runoff in the City and to meet all water quality regulations for the City's rivers, lakes, and coastal waters. The Master Plan provides an overview of the existing status of urban runoff management in the City, including a description of watersheds in the City, urban runoff pollutant sources, regulatory requirements for water quality, existing watershed management, and plans for compliance with regulatory requirements. In addition, the Master Plan plans of urban runoff management in the City and discusses three initiatives: Water Quality Management Initiative, Citywide Collaboration Initiative, and Outreach Initiative. Lastly, the Plan contains a financial outlook that evaluates current and future revenues, provides an estimate of the costs needed for implementing the strategies proposed, and presents opportunities for funding.

Los Angeles Municipal Code

Section 17.05(M) of the Los Angeles Municipal Code (LAMC) prescribes performance standards for storm drain systems. Storm drains must be designed in conformance with standards approved by the City Engineer. Storm drain facilities that intercept and convey all runoff to a suitable point of disposal are required when runoff exceeds the limiting depth of street flow as determined by the City Engineer. Storm drains must be of sufficient capacity in all cases to prevent flooding of building sites from a storm of a 50-year frequency.

LAMC Chapter 64.72 lists the City's requirements for stormwater and urban runoff pollution control. Provisions include prohibitions of illicit discharges, illicit connections, and spills, dumping and disposals to the MS4; pollutant control requirements from sites of industrial activities; and requirements for construction activity stormwater measures. The Los Angeles Municipal Code also promulgates requirements for stormwater BMPs, which include the following:

- For parking lots with more than 25 spaces, BMPs must be implemented to reduce the discharge of pollutants to the MEP.
- For other premises exposed to stormwater, BMPs, if they exist, or other steps shall be used to reduce the discharge of pollutants to the MEP. This includes the removal and lawful disposal from all parts of the premises exposed to stormwater of any solid waste or any other substance, which if discharged to the MS4, would be a pollutant.

Los Angeles Stormwater and Urban Runoff Pollution Control Ordinance

The Stormwater and Urban Runoff Pollution Control Ordinance (LAMC Article 4.4) contains requirements for construction activities and facility operations of development and redevelopment projects to comply with the requirements of the SUSMP, integrate low impact

development practices and standards for stormwater pollution mitigation, and maximize open, green and pervious space on all developments and redevelopments consistent with the City's landscape ordinance and other related requirements in the Development BMPs Handbook. Provisions include prohibitions of illicit discharges, illicit connections, and spills, dumping and disposals to the MS4; pollutant control requirements from sites of industrial activities; and requirements for construction activity stormwater measures. The Ordinance also promulgates requirements for stormwater BMPs, which include the following:

- For parking lots with more than 25 spaces, BMPs must be implemented to reduce the discharge of pollutants to the MEP.
- For other premises exposed to stormwater, BMPs, if they exist, or other steps shall be used to reduce the discharge of pollutants to the MEP. This includes the removal and lawful disposal from all parts of the premises exposed to stormwater of any solid waste or any other substance, which if discharged to the MS4, would be a pollutant. The primary purpose of zoning is to segregate uses that are thought to be incompatible; in practice, zoning is used as a permitting system to prevent new development from harming existing residents or businesses and to preserve the "character" of a community. With respect to hydrology hazards, the City implements zoning ordinances to ensure safe construction practices.

Any proposed drainage improvements within the street right of way or any other property owned by, to be owned by, or under the control of the City requires the approval of a B-permit (LAMC Section 62.105). Under the B-permit process, storm drain installation plans are subject to review and approval by the City Department of Public Works, Bureau of Engineering (BOE). Additionally, any connections to the City's storm drain system from a property line to a catch basin or a storm drainpipe requires a storm drain permit from the BOE.

City of Los Angeles Low Impact Development Ordinance

The Low Impact Development (LID) Ordinance was approved on October 7, 2011. The intent of the ordinance is to expand the applicability of the existing SUSMP requirements. It provides stormwater and rainwater LID strategies for all projects that require building permits to maintain or restore the natural hydrologic character of a development site, reduce off-site runoff, improve water quality, and provide groundwater recharge.

Los Angeles River Revitalization Master Plan

In 2002, under the leadership of Councilmember Ed Reyes, the Los Angeles City Council established the new Ad Hoc Committee on the Los Angeles River. The committee serves as a clearinghouse for river projects, encouraging community involvement in the ongoing river improvements, and helping coordinate river projects within the City. The committee spearheaded efforts to launch the Revitalization Master Plan. In 2007, the City Council adopted the Los Angeles River Revitalization Master Plan, establishing a blueprint for future revitalization of the River. The Master Plan guides the City's policy and project implementation along the Los Angeles River and in its watershed (see *Surface Water Quality*

for further information on the current efforts to restore and revitalize the Los Angeles River). The plan is aimed at enhancing existing communities by creating a safe environment with more open space, parks, trails, recreation, environmental restoration, riverfront living and commerce, new jobs, neighborhood identity, economic development, tourism, and civic pride. The Master Plan's 10 guiding principles include:

1. **Encourage Community participation and Consensus:** Diverse communities, neighborhoods, residents, businesses, community groups, young, elderly, and a broad range of governmental agencies are all stakeholders and must be involved to ensure successful projects. River projects should be shaped through consensus pro.
2. **Enhance Connections, and Linkages:** River projects should not be done in isolation but should connect well with nearby communities. Planning for river projects should not consider merely the river channel itself, but communities in a wider corridor. Planning and projects should include open and natural space, transportation, housing, jobs, business, community development, art, and other amenities.
3. **Increase access:** Residents who visit and enjoy river amenities will care about the long-term health of the river. River projects should be welcoming to the public. Public access should be enhanced through environmentally sensitive design and planning.
4. **Foster Economic Development:** A revitalized river corridor is a local and regional destination; and as such can contribute to the economic vitality of the city and the region. River projects should encourage and enhance appropriate sustainable economic development, adding value to underutilized areas and communities.
5. **Support Multiple Purposes:** Our river serves many purposes, including flood protection, recreation, open space, habitat, groundwater recharge, water quality, and more. River projects should enhance multiple beneficial uses and integrate multiple objectives.
6. **Improve Coordination between Departments and Jurisdictions:** Multi-objective projects require effective coordination. Diverse City departments should communicate and coordinate with each other, the public, and other jurisdictions.
7. **Restore Nature:** The Los Angeles River is a unique regional ecological resource. Its revitalization should enhance and restore the river's nature and should acknowledge the interconnectedness of the watershed from the mountains to the sea. Where feasible, habitat, floodwater detention, groundwater recharge, water quality, and other natural processes should be enhanced.
8. **Maintain and Enhance Flood Protection:** River revitalization must maintain, or preferably enhance, current levels of flood protection. Projects should emphasize natural and non-structural methods for flood management where feasible, including minimizing new structures in flood prone areas.
9. **Foster Sustainability Practices:** River projects should foster sustainability goals, including stormwater management, groundwater recharge, water conservation, clean air, and efficient land use.

10. **Safety:** All government agencies shall work to inform the public on the importance, beauty, and power of the Los Angeles River and how to safely enjoy the area.

Proposition O

Proposition O authorized the City to fund projects (up to $500 million) designed to prevent and remove pollutants from our regional waterways and ocean, consequently protecting public safety while meeting Federal Clean Water Act regulations. Los Angeles voters overwhelmingly passed the measure in 2004.

Proposition O funds projects are represented in one or more of the following categories:

- Water-quality protection of rivers, lakes, beaches, bays, and the ocean
- Water conservation, drinking water and source protection
- Flood water reduction, river and neighborhood parks that prevent polluted runoff and improve water quality
- Stormwater capture, cleanup, and re-use

An Administrative Oversight Committee and Citizens Oversight Advisory Committee administer the projects funded by Proposition O (City of Los Angeles Bureau of Sanitation 2020).

Existing Setting

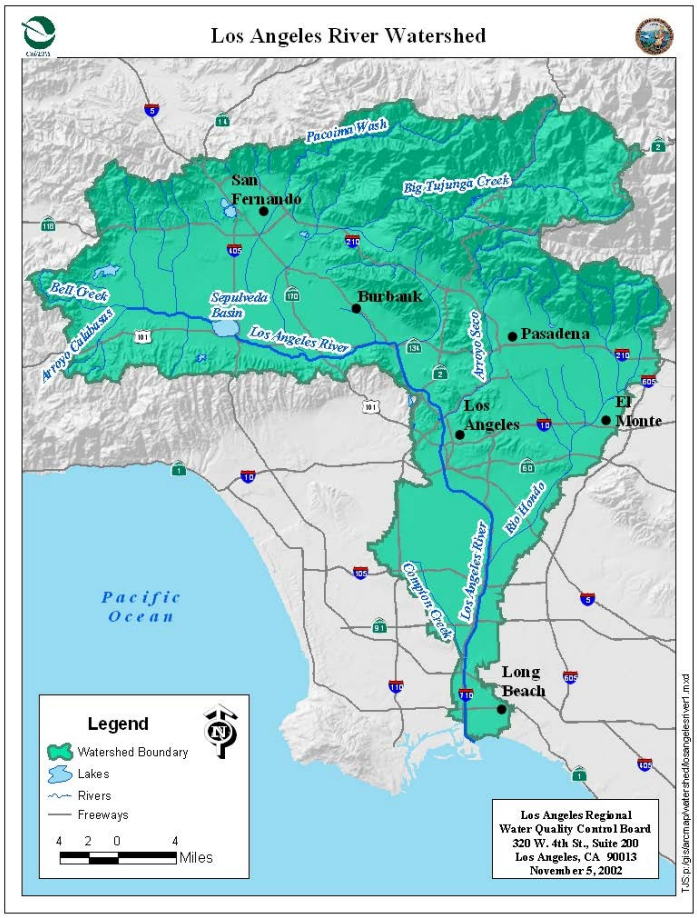
Regional Hydrology

Watersheds and Drainage

The Project site lies with in Los Angeles RWQCB (Region 4), encompassing the coastal drainages between Rincon Point (on the coast of western Ventura County) and the eastern Los Angeles County. The RWQCB divides these watersheds into hydrologic units (drainage areas). The Los Angeles-San Gabriel Hydrologic Unit covers most of Los Angeles County and small areas of southeastern Ventura County. This hydrologic unit or drainage area totaling 1,608 square miles is highly urbanized and much of the area is covered with semi-permeable or non-permeable material (i.e., paved). Most surface waters within the City are managed in concrete-lined channels and underground storm drain systems. This is characteristic of highly urbanized communities such as the City and surrounding communities. Surface waters flow to the storm drain system, which includes some low-flow diversions that direct water to treatment plants and ultimately discharges to the Pacific Ocean from multiple outfalls. These outfalls can have significant discharge rates during large rainfall events

The Project site lies within the jurisdiction the Los Angeles RWQCB, which include watersheds from Ventura River in the west to San Gabriel River in the east, including the Los Angeles River and Santa Monica Bay/Ballona Cree watersheds. Source: Los Angeles RWQCB 2020

because much of the City's land area is covered with impervious surfaces and the existing regional stormwater collection system does not facilitate extensive stormwater retention. These surface waters also recharge large reserves of groundwater that exist in alluvial aquifers underlying the San Fernando and San Gabriel Valleys and the Los Angeles Coastal Plain. Lakes and groundwater recharge areas within the system capture stormwater and provide storage, particularly during drought and dry seasons. The Los Angeles River watershed includes several lakes and reservoirs such as Peck Road Park, Belvedere Park, Hollenbeck Park, Lincoln Park, and Echo Park Lakes, as well as Lake Calabasas. These lakes are heavily used for recreational purposes. Dams and reservoirs within the watershed were designed for flood control and groundwater recharge.



The Project site lies within the Los Angeles River Watershed. Topographical conditions within the Los Angeles River Watershed cause Project site runoff to ultimately flow to the Pacific Ocean near Long Beach. Source: Los Angeles RWQCB 2020

The City covers approximately 301,440 acres and encompasses primarily four watersheds: Los Angeles River (Hydrologic Unit Code [HUC] 18070105); Santa Monica Bay/Ballona Creek (HUC 18070104), Dominguez Channel LA/Long Beach Harbors (HUC 18070104); and San Gabriel River (HUC 18070106). The Los Angeles River, San Gabriel River, and Ballona Creek, which are the major drainage systems in Los Angeles County, drain the coastal watersheds of the Transverse Ranges. The northern portion of the City is surrounded by mountains on three sides and extends west and south to the Pacific Ocean, creating the regional drainage patterns in the Project vicinity. The southwest portion of Griffith Park is located within the Santa Monica Bay/Ballona Creek watershed. The northern and eastern portions of Griffith Park are located within the Los Angeles River watershed (California SWRCB 2018).

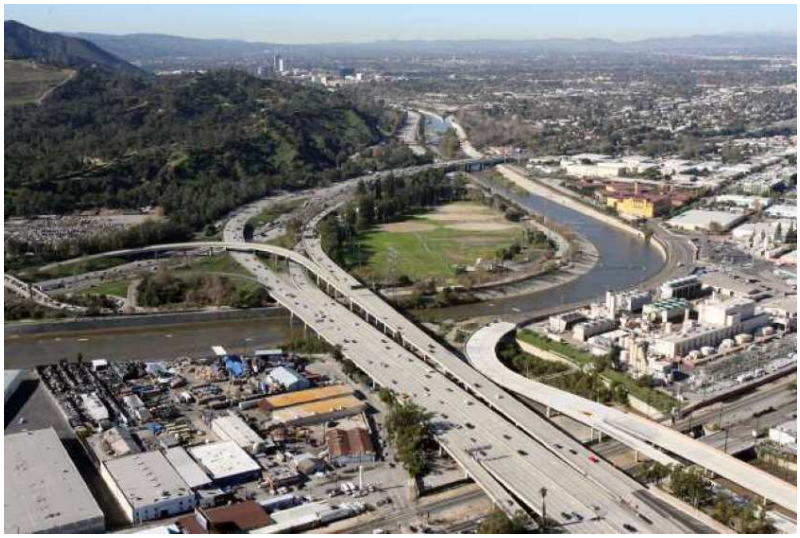
The Project site lies with the Los Angeles River watershed, which covers approximately 533,760 acres. Approximately 207,360 acres (40 percent) of the watershed is open space or forested and the remainder is highly developed and urban (California SWRCB 2018). The 55-mile-long Los Angeles River, a water of the U.S., originates in the San Fernando Valley and flows through the central portion of the City past the Project site immediately to the east, and to San Pedro Bay near Long Beach. The City has jurisdiction over approximately 41 percent of the Los Angeles River watershed. Other cities that share jurisdiction over the watershed include Burbank, Glendale, Downey, Compton, and Long Beach. Predominant land uses within the watershed include residential (36 percent); open space and agriculture (44 percent); and commercial, industrial, and transportation (20 percent) (LADWP 2020). Approximately 207,360 acres of the watershed are covered by forest or open space land including the area near the headwaters which originate in the Santa Monica, Santa Susana, and San Gabriel Mountains. The rest of the watershed is highly developed (California SWRCB 2018).

As development encroached upon the Los Angeles River's floodplain in the 19th and 20th centuries, eventual flooding destroyed homes and property, resulting in channelization of the river (left). Portions of the Los Angeles River remain natural, including the Sepulveda Flood Control Basin. Source: City of Los Angeles 2020.

In response to a series of major flood events in 1914, 1934, and 1938, the U.S. Army Corps of Engineers (USACE) channelized the river with concrete beginning in the 1930s – 1940s (City of Los Angeles 2020). By the 1950s, most of the river was lined with concrete, though some unchannelized portions remain. In the San Fernando Valley, for example, there is a section of the river with a soft bottom at the Sepulveda Flood Control Basin. The basin is a 2,150-acre open space upstream of the Sepulveda Dam designed to collect flood waters during major storms. Because the area is periodically inundated, it remains in a semi-natural condition and supports a variety of low intensity uses such as recreation and provides habitat.

At the eastern end of the San Fernando Valley, the river bends through a gap between the Hollywood Hills and the Verdugo Hills and flows in proximity to Griffith and Elysian Parks, in an area known as the Glendale Narrows. Since the water table was too high to allow laying of concrete, the river in this area has a rocky, unlined bottom with concrete-lined or riprap riverbanks. This stretch of the river is fed by natural springs and supports stands of willows,

sycamores, and cottonwoods. The many trails and paths along the river in this area are heavily used by the public for hiking, horseback riding, and bird watching.



The Los Angeles River delineates the eastern boundary of Griffith Park with Glendale and Burbank, running along the I-5/SR 134 travel corridor. Source: Los Angeles Times; Tim Berger, Photographer.

South of the Glendale Narrows, the topography flattens, allowing the Los Angeles River floodplain to broaden cross a wide expanse as it flows south through downtown Los Angeles. The main tributaries to the Los Angeles River in this stretch are the Arroyo Seco (which drains areas of Pasadena and portions of the Angeles National Forest in the San Gabriel Mountains), the Rio Hondo, and Compton Creek. The river continues south, on the east side of the City's border through the communities of Maywood, East Compton, and Cota until it drains into the Pacific Ocean near the Port of Long Beach. The Los Angeles River tidal prism/estuary begins in Long Beach at Willow Street and runs approximately three miles before joining with Queensway Bay located between the Port of Long Beach and the city of Long Beach. The channel has a soft bottom in this reach with concrete-lined banks for flood protection (California SWRCB 2018). The river is hydraulically connected to the San Gabriel River watershed by the Rio Hondo through the Whittier Narrows Reservoir. Flows from the San Gabriel River and Rio Hondo merge at this reservoir during larger flood events, thus flows from the San Gabriel River watershed may impact the Los Angeles River (California SWRCB 2018).

Rainfall

Precipitation in the San Fernando Valley ranges from 15 to 23 inches per year and averages about 17 inches (California Department of Water Resources [DWR] 2004). Annual average precipitation for the City, excluding mountain areas, is 15 inches but has ranged between 4 and 40 inches since record keeping began in 1880. Mountain areas experience higher rainfall levels than the valley bottoms during the same storm event. The annual rainfall between 2013 and 2019 ranges from 5.34 inches to 18.92 inches and has an average annual rainfall for those seven years of 10.12 inches (Los Angeles Almanac 2019). The City experienced drought between the years 2012 and 2016, which included the driest 4-year statewide precipitation on record (i.e., 2012 to 2015) and the smallest Sierra-Cascades snowpack on record (i.e., 2015, with 5 percent of average) (DWR 2020). Drought years were extraordinarily hot. For instance, 2014, 2015, and 2016 were California's first, second, and

third warmest year based on statewide average temperatures, respectively (DWR 2020). Water year 2017 illustrated the variability in California's annual precipitation, ending the state's 5-year drought and coming in second for statewide runoff, behind 1983 as the State's wettest year on record (DWR 2017).

Seasonal rainfall within the region also varies greatly. The winter months and early spring typical have the highest rainfall, as is typical for mountainous coastal areas. January and February are typically the months with skewed annual averages higher than the other months; however, precipitation occurs regularly between the end of November and early April (Los Angeles Almanac 2019).

Stormwater Drainage and Infrastructure

Urban stormwater runoff occurs following precipitation events, with the volume of runoff flowing into the drainage system depending on the intensity and duration of the rain event. Much of the stormwater within the Los Angeles River watershed is managed through an extensive network of underground storm drains, along with a surface network of drainage ditches, most of which are concrete lined. A majority of this stormwater drains into the Los Angeles River and its tributaries.

The City's storm drain system is mapped by the City's BOE GIS Mapping Division. In the Project vicinity, stormwater is either conveyed directly from municipal storm drains into the Los Angeles River or collected and conveyed via the City's North Outfall Sewer to the Los Angeles – Glendale Water Reclamation Plant (LAGWRP).

The LAGWRP is a tertiary wastewater treatment plant that treats municipal wastewater from domestic, commercial, and industrial sources including from the cities of Los Angeles, Glendale, Burbank, and La Canada-Flintridge and from the Zoo and Autry Museum of the American West. Source: Los Angeles Bureau of Sanitation 2018.

The LAGWRP is a tertiary wastewater treatment plant that treats municipal wastewater from domestic, commercial, and industrial sources and currently receives wastewater from the cities of Los Angeles, Glendale, Burbank, and La Canada-Flintridge and from the Zoo and Autry Museum of the American West. The LAGWRP is designed to treat 20 million gallons per day (mgd). The treatment at the LAGWRP consists of barscreen removal of large solids, primary sedimentation, activated sludge biological treatment with nitrification and denitrification, secondary sedimentation with coagulation, dual media and deep bed sand filtration, chlorination, and dechlorination. There are no facilities provided for solids processing at the

treatment plant. Sewage solids separated from the wastewater are returned to the trunk sewer for conveyance to the North Outfall Sewer, where treatment and disposal occur under Hyperion Wastewater Treatment Plant's NPDES permit. The LAGWRP discharges the treated wastewater to the Los Angeles River at a point located approximately 1,400 feet downstream of Colorado Boulevard, upstream of the river estuary (see Section 3.16, *Utilities*).

Dry Weather (Non-Stormwater) Runoff

Dry weather runoff generally occurs from excess irrigation, accidental spills, construction sites (e.g., vehicle washing, soil watering and dewatering during excavation), pool draining, car washing, pavement washing, etc. Additionally, industrial (e.g., treatment plant) discharges are dry-weather runoff that feed into receiving waters. As of April 2018, there are 176 non-stormwater permits within the Los Angeles River watershed. The average dry-weather flow near the mouth of the Los Angeles River in Long Beach is 153 cubic feet per second (cfs) (LADWP 2020).

Groundwater

The San Fernando Valley Groundwater Basin (SFVGB) is located in the Upper Los Angeles River Area and is the largest of four basins within the Upper Los Angeles River watershed. The SFVGB encompasses an area of 144,640 acres, including the water-bearing sediments beneath the San Fernando Valley, Tujunga Valley, Browns Canyon, and the alluvial areas surrounding the Verdugo Mountains near La Crescenta and Eagle Rock. The SFVGB is bounded on the north and northwest by the Santa Susana Mountains, on the north and northeast by the San Gabriel Mountains, on the east by the San Rafael Hills, on the south by the Santa Monica Mountains and Chalk Hills, and on the west by the Simi Hills.

The SFVGB was adjudicated in 1979 (the San Fernando Basin "Judgment"), and the safe yield was defined as 90,680 AFY. Approximately 99 percent of the SFVGB is adjudicated (DWR 2019). The Judgment upheld the pueblo water rights of the City to all native water (water derived from precipitation). The total extraction rights of the City are 96,838 AFY, with the difference allotted to the cities of Glendale, Burbank, and Los Angeles for water imported to the basin from these cities for storage.

The Los Angeles Department of Water and Power (LADWP) has access to several sources of local groundwater, which comprise approximately 12 percent of LADWP's water supplies. The City primarily produces local groundwater from the SFVGB and the Sylmar Basin within the Upper Los Angeles River Area (ULARA) watershed. LADWP sources approximately 87,000

AFY (80 percent of all local groundwater pumped by LADWP) of its potable water supply from the SFVGB (see Section 3.16, *Utilities*, for further discussion of LADWP's water supply).

Groundwater recharge (i.e. deep drainage or deep percolation) is a hydrologic process where water moves downward through the soil from surface water to groundwater. Recharge occurs both naturally through the water cycle and through artificial (i.e., anthropogenic) groundwater recharge where rainwater and/or reclaimed water is routed to the subsurface and percolates through the soil.

Basin Prioritization is a technical process that utilizes the best available data and information to classify California's 515 groundwater basins into one of four categories high-, medium-, low-, or very low-priority. The technical process is based on population overlying the basin or subbasin, the rate of current and projected growth of the population, the number of public supply wells that draw from the basin/subbasin, the total number of wells that draw from the basin/subbasin, the irrigated acreage overlying the basin/subbasin, and other factors pursuant to California Water Code Section 10933(b). SGMA requires medium- and high-priority basins to establish GSAs, develop GSPs, and manage groundwater for long-term sustainability (California SWRCB 2020a). The SFVGB is listed as "Very Low" priority in the Sustainable Groundwater Management Act 2019 Basin Prioritization (DWR 2019).

There are 115 reliable production wells within the SFVGB. Currently, there are five existing spreading grounds used to recharge the SFVGB. These include the Pacoima, Handsen, Branford, Tujunga, and Headworks Spreading Grounds (LADWP 2018).

Tsunami and Seiche Risk

A tsunami is a series of waves or surges most commonly caused by an earthquake beneath the sea floor. Tsunami risk within the City is limited to the coastal regions, particularly the Port of Los Angeles. There is no potential for tsunamis within the inland areas of the City (California Department of Conservation 2015).

Seiches are oscillations generated in enclosed bodies of water, which can be caused by ground shaking. A seiche wave has the potential to overflow the sides of a water-containing basin to inundate adjacent or downstream areas. Therefore, areas within the City that are susceptible to seiches include areas near large, enclosed bodies of water, such as Silver Lake, the Hollywood Reservoir, and Stone Canyon Reservoir.

Regional Water Quality

Surface Water Quality

Both storm water and dry weather runoff contains greatly varying types of material that can affect surface water quality. Land use strongly influences the types and concentrations of materials found in runoff. As land uses intensify and more impervious surfaces (e.g., roads,

buildings, or pavement) are created, groundwater recharge is reduced, and the volume, rate, and quality of water are degraded. Polluted runoff can have harmful effects on drinking water, recreational water, and wildlife.

Surface water pollutants originate from two types of sources: Point and Non-Point:

- **"Point Sources"** refer to discrete discharges of surface water pollutants from specific generators into receiving waters, including pipes or fabricated ditches, and are subject to permitting requirements to control potential contamination in accordance with the NPDES permit program (refer to Section 3.10.1, *Regulatory Setting*).
- **"Non-Point Sources"** refer typically to urban (storm water and non-storm water) runoff conveyed to receiving waters from surface sheet flows over an area from non-specific generators. Rainwater and urban runoff washes, scours, and intercepts pollutants from the air and ground, including solid waste, leaked motor oil, or heavy metals or chemicals deposited on vegetation. Development increases the imperviousness of the ground and, if not mitigated, increases the volume of runoff. Urban runoff includes all water draining from streets, parking lots, driveways, lawns, etc. and flowing through the municipal storm drain system that conveys urban runoff or storm water from individual parcels and public rights-of-way to subterranean storm drains, treatment facilities, and ultimately to the Los Angeles River and Pacific Ocean.

Los Angeles River watershed impairments include pollutants such as trash, metals, bacteria, nutrients, pesticides, and polychlorinated biphenyls (PCBs). These pollutants are often associated with urbanized, densely populated areas and areas with a high percentage of impervious surface, such as the Los Angeles River watershed. The overall watershed is approximately one-third impervious surface, with higher rates within the City limits. Large areas of impervious surface result in more runoff because water cannot infiltrate to groundwater, and the lack of ponds and wetlands results in less retention time within the watershed (SWRCB 2018). This also results in reduced water quality due to little or no natural treatment of the water.

Under the Basin Plan, urban runoff must meet guidelines set by the Los Angeles RWQCB to retain the beneficial use of the receiving water bodies. When beneficial uses are impaired by a pollutant that chronically exceeds its water quality objective, the RWQCB places the water body and pollutant on the CWA Section 303(d) list of water quality impairments. The RWQCBs must then begin developing a TMDL program that provides a programmatic response to the impairment for the water body to meet the water quality objectives. Beneficial uses of the Upper Los Angeles River include cold freshwater habitat; groundwater recharge; industrial service supply and industrial process; municipal and domestic supply; rare, threatened, or endangered species; noncontact water recreation (i.e., recreational activities involving proximity to water, but not normally involving contact with or ingestion of water); spawning, reproduction, and/or early development; warm freshwater habitat; wetland habitat; and wildlife habitat (Los Angeles RWQCB 2014; 2017).

Segments of the Los Angeles River and its tributaries are on the CWA section 303(d) list for impaired waterbodies for copper, cadmium, lead, zinc, aluminum, and selenium (California

Water Board 2017). The Zoo is located in proximity to Segment 3 of the Los Angeles River, which is listed on the CWA Section 303(d) list for 6 pollutant categories based on the 2016 California Integrated Report (see Table 3.10-1). This reach of the Los Angeles River extends 7.9 miles from its crossing with Figueroa Street near the northwest corner of Griffith Park to the river's crossing with Riverside Drive near the southeast corner of Griffith Park.

Other waterbodies within the watershed that are listed on the CWA section 303(d) list are included in Table 3.10-2.

Polluted stormwater runoff is commonly transported through MS4s, and then discharged, untreated, into local water bodies. An MS4 is a conveyance or system of conveyances that is owned by a state, city, town, village, or other public entity that discharges to waters of the U.S., designed or used to collect or convey stormwater (e.g., storm drains, pipes, ditches), not a combined sewer, and not part of a sewage treatment plant, or publicly owned treatment works (POTW) (i.e., sewage treatment plants typically owned by a government agency). As described under *Regulatory Setting*, the municipal discharges of stormwater and non-stormwater by the Los Angeles County MS4 NPDES permittees, which include the City, are subject to waste discharge requirements under NPDES permit No. CAS004001 (Final Order No. R4-2012-0175), which went into effect in December 2012.

The Upper Los Angeles River Watershed Management Group consists of the City (as the coordinating agency for the EWMP and Coordinated Integrated Monitoring Program development), the County of Los Angeles, Los Angeles County Flood Control District, and the Cities of Alhambra, Burbank, Calabasas, Glendale, Hidden Hills, La Canada Flintridge, Montebello, Monterey Park, Pasadena, Rosemead, San Gabriel, South El Monte, South Pasadena, San Marino, and Temple City. The Draft Upper Los Angeles River EWMP, published in June 2015, promotes green infrastructure and institutional best management practices (BMPs) such as low-impact development (LID) and green streets. LID includes distributed structural practices that capture, infiltrate, and/or treat runoff at the parcel-scale (normally less than 10 acres). Common LID practices include bioretention, permeable pavement, and other infiltration BMPs that prevent runoff from leaving a parcel. Green streets are typically implemented as linear bioretention/biofiltration practices installed parallel to roadways. Systems receive runoff from the gutter via curb cuts or curb extensions14 (sometimes called bump outs) and infiltrate it through native or engineered soil media (Upper Los Angeles River Watershed Management Group 2015).

Table 3.10-2. Summary Impaired Waters within the Los Angeles River Watershed

Waterbody Segment	Pollutant
Aliso Canyon Wash	Copper, Fecal Coliform, Total Selenium
Arroyo Seco Reach 1 (Los Angeles River to West Holly Ave.)	Coliform, Bacteria, Trash
Arroyo Seco Reach 2 (Figueroa St. to Riverside Dr.)	Coliform Bacteria, Trash
Bell Creek	Coliform Bacteria
Burbank Western Channel	Cyanide, Trash, Copper
Compton Creek	Coliform Bacteria, Trash, Copper, Lead, pH
Dry Canyon Creek	Fecal Coliform, Selenium
Echo Park Lake	Algae, Ammonia, Copper, Eutrophic, Lead, Odor, PCBs (tissue), pH, Trash
Lake Calabasas	Ammonia, DDT (tissue), Eutrophic, Odor, Organic Enrichment/Low Dissolved Oxygen, pH
Legg Lake	Ammonia, Copper, Lead, Odor, pH, Trash
Lincoln Park Lake	Ammonia, Eutrophic, Lead, Odor, Organic Enrichment/Low Dissolved Oxygen, Trash
Los Angeles River Estuary (Queensway Bay)	Chlordane (sediment), DDT (sediment), Lead (sediment), PCBs (sediment), Sediment Toxicity, Trash, Zinc (sediment)
Los Angeles River Reach 1 (Estuary to Carson St.)	Coliform Bacteria, Cyanide, Diazinon, Trash, Ammonia, Dissolved Copper, Lead, Nutrients (Algae), pH, Dissolved Zinc
Los Angeles River Reach 2 (Carson St. to Figueroa St.)	Coliform Bacteria, Oil, Trash, Ammonia, Lead, Nutrients (Algae)
Los Angeles River Reach 4 (Sepulveda Dr. to Sepulveda Dam)	Coliform Bacteria, Trash, Ammonia, Lead, Nutrients (Algae)
Los Angeles River Reach 5 (within Sepulveda Basin)	Oil, Trash, Ammonia, Nutrients (Algae)
Los Angeles River Reach 6 (Above Sepulveda Flood Control Basin)	1,1-DCE/Vinylidene chloride, Coliform Bacteria, Tetrachloroethylene/PCE, Trichloroethylene/TCE
McCoy Canyon Creek	Fecal Coliform, Nitrate, Nitrogen, Total Selenium
Monrovia Canyon Creek Peck Road Park Lake	Lead
Peck Road Park Lake	Chlordane (tissue), DDT (tissue), Lead, Odor, Organic Enrichment/Low Dissolved Oxygen, Trash
Rio Hondo Reach 1 (Confluence Los Angeles River to Santa Ana Freeway)	Coliform Bacteria, Trash, Copper, Lead, pH, Zinc
Rio Hondo Reach 2 (At Spreading Grounds)	Coliform Bacteria
Tujunga Wash (Los Angeles River to Hansen Dam)	Coliform Bacteria, Trash, Ammonia, Copper
Verdugo Wash Reach 1 (Los Angeles to Verdugo Rd.)	Coliform Bacteria, Trash
Verdugo Wash Reach 2 (Above Verdugo Rd.)	Coliform Bacteria, Trash

Note: DDT = dichlorodiphenyltrichloroethane, DCE = dichloroethanes, PCE = perchloroethylene, TCE = trichloroethylene.
Source: California SWRCB 2020.

Material handling and storage, equipment maintenance and cleaning, and other activities at industrial facilities are often exposed to the weather. Runoff from rainfall or snowmelt that comes in contact with these activities can pick up pollutants, and transport them directly to a nearby river, lake, or coastal water or indirectly via a storm sewer and degrade water quality. Federal regulations (40 CFR 122.26(b)(14)(i)-(xi)) require stormwater discharges associated with specific categories of industrial activity, such as heavy manufacturing, hazardous waste treatment, and landfills, to be covered under NPDES permits (refer to *Regulatory Setting*). One of the categories—construction sites that disturb five acres or more—is generally permitted separately because of the significant differences between those activities and the others. There are currently 1,319 dischargers in the Los Angeles River watershed enrolled under the SWRCB general industrial stormwater permit, many of which occur in the City (particularly within the community of Sun Valley). Wholesale trade-durable goods, fabricated metal products, trucking & warehousing, and chemicals & allied products are a large component of the businesses with industrial stormwater permits. The Los Angeles River watershed has the largest number of industrial stormwater dischargers in the region, with about twice as much as the adjacent San Gabriel River watershed. Additionally, the SWRCB currently maintains 376 construction stormwater permits within the Los Angeles River watershed (California Water Board 2018).

The Los Angeles River Revitalization Master Plan is a 20-year blueprint for development and management of the Los Angeles River for implementation by the City.

The City implements projects to rehabilitate the Los Angeles River and its beneficial uses, to achieve the vision established in the Los Angeles River Revitalization Master Plan. The revitalization is a joint effort between the City, County of Los Angeles, and the USACE. The Arts, Parks, Health, Aging and River Committee currently guides the City's revitalization efforts, and the City's River Project Office within the BOE is taking a lead role in the implementation process. The process is being coordinated with the County of Los Angeles through the development of a Memorandum of Understanding (MOU). The MOU addresses each agencies' respective responsibilities for maintenance, liability, security, and project implementation. Further, any changes to the physical configuration of the river's concrete channel involves approval and potential funding support by the Federal government.

To implement the Los Angeles River Revitalization Master Plan, the City Council adopted the Los Angeles River Ecosystem Restoration Feasibility Study in June 2016. The project involves restoring 11 miles of the Los Angeles River from approximately Griffith Park to downtown Los

Angeles, while maintaining existing levels of flood risk management. Restoration measures considered include creation and reestablishment of historic riparian strand and freshwater marsh habitat to support increased populations of wildlife and enhance habitat connectivity within the study area, as well as to provide opportunities for connectivity to ecological zones, such as the Santa Monica Mountains, Verdugo Hills, Elysian Hills, and San Gabriel Mountains. Restoration includes the reintroduction of ecological and physical processes, such as a more natural hydrologic and hydraulic regime that reconnects the river to historic floodplains and tributaries, reduced flow velocities, increased infiltration, improved natural sediment processes, and improved water quality. The project also includes opportunities for passive recreation that is compatible with the restored environment.

The Taylor Yard G2 River Park Project is another BOE project proposed to implement the Los Angeles River Revitalization Master Plan. The Taylor Yard G2 River Park Project would develop the approximately 42-acre Taylor Yard G2 parcel of the former Union Pacific Railroad Company rail yard. The 42-acre parcel is adjacent to the soft-bottomed portion of the Los Angeles River. The scope of the project includes a phased remediation along an 11-mile corridor of the river from Griffith Park to Downtown Los Angeles and potentially phased development including interim uses which could align with the long-term goals to restore ecosystem values, such as recreation and open space. The BOE is working closely with the community to gather input and ideas for the development of design concepts for the Taylor Yard G2 River Park Project. Three different design concepts based on community input are being considered (City of Los Angeles Bureau of Engineering 2020).

Groundwater Quality

Groundwater resources in the watershed are also impacted by pollutants. Groundwater within the Los Angeles River watershed is polluted by known leaking underground storage tanks (LUSTs) that have contaminated soil and/or groundwater with petroleum hydrocarbons and volatile organic compounds (VOCs); refineries/tank farms that have contaminated soil and/or groundwater; and nitrate contamination likely due to septic systems. Seawater intrusion is of concern in other, more coastal areas of the watershed which has necessitated wellhead treatment, shutdown, or blending.

Potential Sources of Groundwater Pollution

- Publicly owned treatment works
- Industrial septic systems
- Landfills
- Non-point sources (e.g., horse stables, golf courses, etc.)
- Illegal trash dumping
- Cross-contamination between surface and groundwater

Effective use of the SFVGB, which has a significant volume available for storage, is dependent upon recharge, groundwater cleanup, and management strategies. The principle challenge to

greater use of the SFVGB is contamination by VOCs and other contaminants of concern, including trichloroethylene (TCE) and perchloroethylene (PCE), hexavalent chromium, 1,4-dioxane, 1,2,3-trichloropropane, n-nitrosodimethylamine, perchlorate, and other pollutants. Currently, parts of the basin are contaminated by these pollutants due to historical industrial pollution dating back to the 1940s. Accordingly, the SFVGB has been designated by the U.S. EPA as a Federal Superfund Site due to groundwater contamination. The plume generally extends from the City of San Fernando in the southeasterly direction below the Los Angeles River to the junction of Interstate-5 (I-5) and State Route 2 (SR-2).

During 1980s, testing of water supply wells the SFVGB, trace levels of the contaminants TCE, PCE, and other VOCs were discovered. The presence of these contaminants is due to past improper chemical handling and disposal practices of industries in the San Fernando Valley. Additionally, the 1990s saw the emergence of hexavalent chromium (chromium VI or Cr(VI)) and perchlorate detected in various wells within the SFVGB. Nitrate concentrations have also been detected in an increasing trend since the 1990s. The source of nitrate originates from agricultural activities across the San Fernando Valley. Most recently, 1,4-dioxane has been an emerging chemical of concern with an increasing trend (LADWP 2016).

Industrial contaminants have severely impaired the majority of LADWP's 115 wells in the SFVGB. Only 58 of the wells were considered reliable production wells in 1998. The number of reliable production wells dropped even lower in 2002 to 29 wells. By 2018, LADWP reported 23 reliable production wells within the SFVGB (LADWP 2018). The removal of wells from service has substantially lowered LADWP's pumping capacity. By 2015, various contaminants had been recorded in 45 of the remaining wells at concentrations exceeding the Maximum Contaminant Level (MCL) established by State and Federal regulatory agencies. Among these contaminants of concern are VOCs (TCE, PCE, and carbon tetrachloride), nitrates, and perchlorate. Marginal levels of contamination have been detected in the remaining wells, mostly due to VOCs. Hexavalent chromium has also been detected in some of LADWP's wells (LADWP 2016).

However, LADWP and the other cities are taking active steps to bring the SFVGB back into full production. LADWP remediates groundwater and blends with other sources to remove or lower contaminants to concentrations below MCL to ensure groundwater delivered to customers complies with State and Federal safe drinking water standards. LADWP's established its two largest well fields, Rinaldi-Toluca and Tujunga, in areas that were at one time believed to have been located away from known contamination areas. Since that time, these important well fields have also been significantly impacted by contamination sources that are yet to be fully investigated. LADWP has developed various programs to accelerate basin remediation – including the comprehensive Groundwater System Improvement Study and monitoring well installation program, interim wellhead treatment facilities, and collaborative efforts with State and Federal regulatory agencies to investigate sources of contamination and identify potentially responsible parties (LADWP 2016).

Currently, four remediation projects are planned within the San Fernando Valley, including the North Hollywood West Groundwater Treatment Project, which is expected to be completed in 2020. LADWP was recently awarded a $44.5 million Proposition 1 grant from the SWRCB to help fund construction for the North Hollywood site and is applying for nearly $200 million more to construct three additional remediation projects in the San Fernando Valley, including the North Hollywood Central Response Action, the Tujunga Central Response Action, and the Pollock Well Field Response Action. All four remediation projects are expected to be operational by 2023 (City of Los Angeles 2018a).

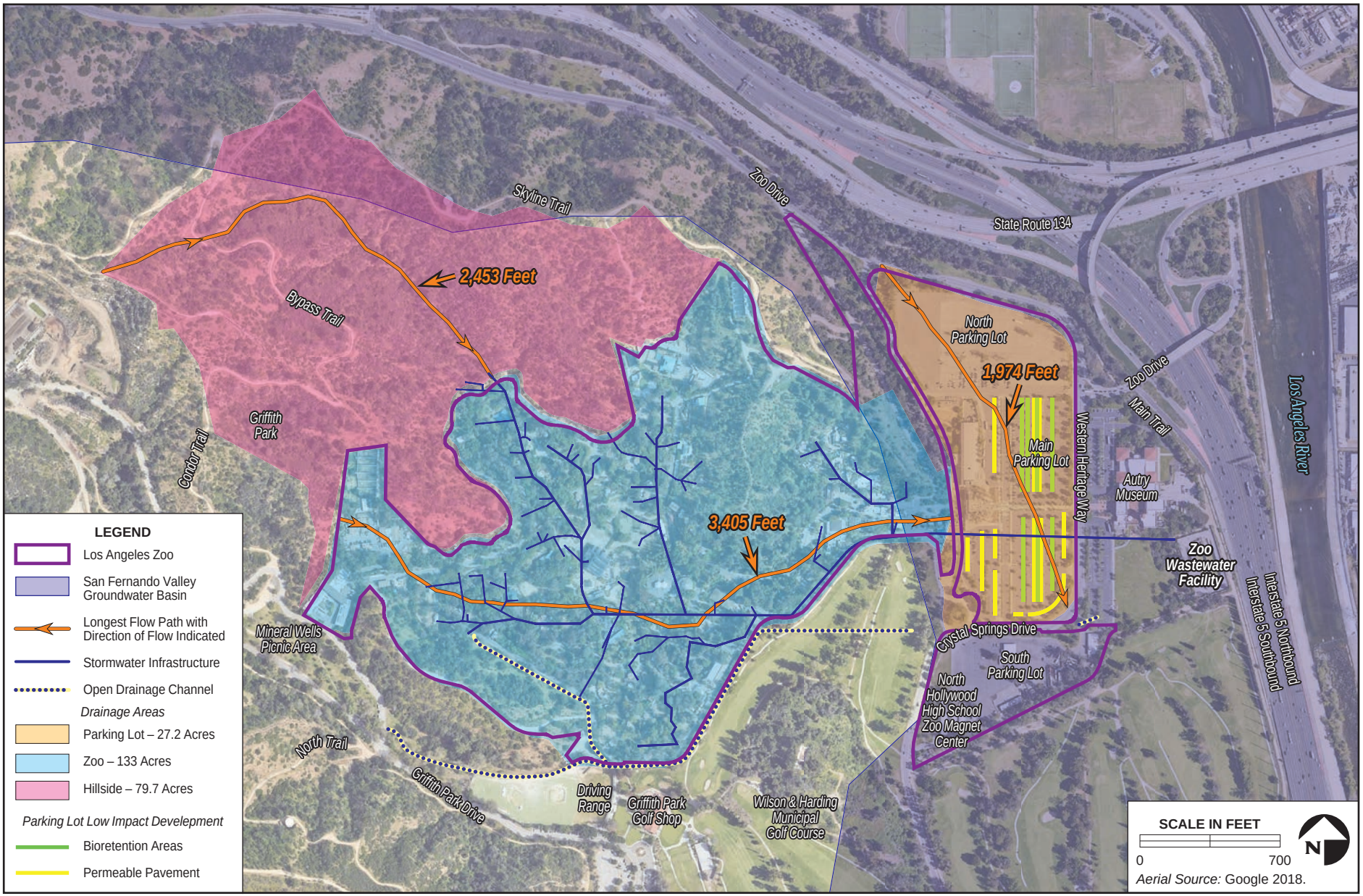
Project Site Hydrology and Water Quality

Site Drainage

The Project site is located within two HUC-12 Sub-Watersheds within the greater Los Angeles River watershed. An HUC-12 Sub-Watershed, or hydrologic unit, is a more local sub-watershed level that can accept surface water directly from upstream drainage areas, and indirectly from associated surface areas such as remnant, noncontributing, and diversions to form a drainage area with single or multiple outlet points (Natural Resources Conservation Service [NRCS], U.S. Department of Agriculture [USDA] 2007). The HUC-12 Sub-Watersheds contributing flow to the Zoo are the Scholl Canyon-Los Angeles River watershed, encompassing approximately 98 percent of the Zoo's property, and the Tujunga Wash-Los Angeles River watershed, encompassing the remaining 2 percent. Surface flows from these sub-watersheds flow into the Los Angeles River adjacent to the northern and eastern borders of Griffith Park.

Drainage patterns throughout the Zoo are greatly influenced by topography, existing development, impervious surfaces, and diversion structures such as curbing and drainage inlets. The drainage area that encompasses the Zoo and surrounding hillside consists of approximately 213 acres, including 133 acres of on-site drainage and 79.7 acres of drainage from the surrounding hillside (see Figure 3.10-1). Approximately 67.83 acres (51 percent) of the Zoo property and approximately 3.99 acres (5 percent) of the adjacent hillside are currently covered with impervious surfaces. The remaining area is covered with pervious surfaces that allow infiltration of stormwater into the ground. The parking lot drainage area is approximately 27.2 acres, approximately 25.84 acres (95 percent) of which are covered with impervious surfaces.

Precipitation that accumulates on the hillside to the west is directed towards the Zoo. The general flow direction is east-southeast, consistent with general topography of the Project site. Some of the stormwater infiltrates into the loamy clay soils, until a saturation point is maximized. Stormwater that falls or flows onto Zoo property continues east towards the south parking area. Within the Zoo's parking lot area, stormwater flows from the northwest corner to the southeast corner (see Figure 3.10-1).



wood.

Los Angeles Zoo
Hydrology in the Project Vicinity

FIGURE 3.10-1

In November 2010, the Proposition O-funded Zoo Parking Lot was constructed, helping prevent polluted run-off from flowing into the Los Angeles River. Features include permeable pavement and bio-retention cells. Source: Google Earth 2020.

Surface water is drained from the Project site by three features. The first is an open concrete-lined channel located immediately outside of the Zoo boundary to the west that drains the southeast portion of the Zoo and the Mineral Wells Picnic Area (see Figure 3.10-1). Runoff collected in this system is conveyed to a channel owned by the California Department of Transportation (Caltrans) located near the I-5 and discharged directly into the Los Angeles River approximately 900 feet to the east of the Project site. The second are the LID features installed in the Zoo's parking lot in 2011, under Proposition O. These LID features include permeable pavement, grassy bioretention cells, native trees, and other vegetation. The bioretention cells line the rows of parking spaces to capture and infiltrate stormwater runoff from the parking lot's impervious surfaces. A vegetated bioswale with a capacity of 120,000 to 150,000 gallons collects stormwater runoff along Zoo Drive (LASAN 2017). Vegetated swales are broad, shallow channels designed to slow runoff, promote water infiltration into the soil, and filter pollutants and sediments while conveying runoff. Swales slow runoff compared to traditional curb, gutter, and storm drain systems, minimizing water quality impacts. Swales remove pollutants through side slope and bottom vegetation filtering sediments and allowing water from roadways to infiltrate into underlying soils rather than flow into nearby receiving waters (e.g., Los Angeles River).

The majority of flows from the Project site are collected via the Zoo's system of stormwater grate inlets and storm drains and conveyed to the Zoo's pre-treatment facility (Zoo Wastewater Facility) which then discharges to the LAGWRP east of the Zoo after pre-treatment, as described in further detail below.

Storm Drain System

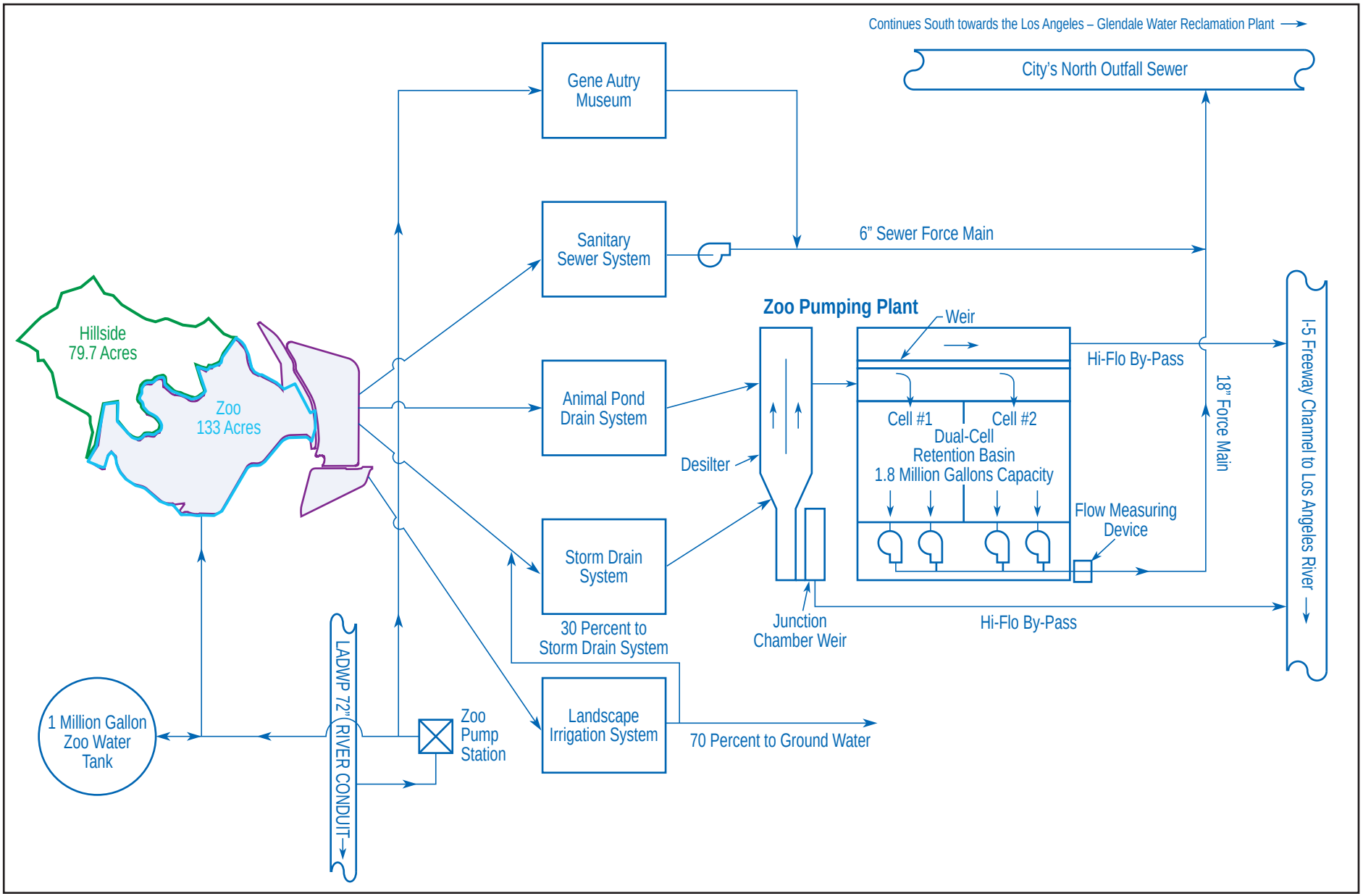
The Zoo's storm drain system collects stormwater and non-stormwater runoff from several stormwater grate inlets located throughout the Zoo property. The system, which is more than 50 years old, is outdated and infested with roots, which can cause stoppages in the flow of stormwater. The drainage inlets within the Zoo capture stormwater and underground storm drains, ranging in size from 6 inches to 21 inches, divert the flow to the Zoo's Wastewater Facility. Wastewater from the animal exhibits is collected via the Zoo's pool drain system and is also conveyed to the Zoo's Wastewater Facility, with the exception of the Sea Life Cliff's pool, which drains directly to the City's North Outfall Sewer located immediately east of the Project site (LASAN 2017). Although the conveyance systems are separate lines, the

stormwater and pool wastewater are comingled once they reach the Zoo's Wastewater Facility.

The Zoo's Wastewater Facility was renovated in 1994 to meet federal water quality standards and comply with the NPDES permits, and to provide relief of localized sewers in the surrounding area. The Wastewater Facility consists of two debris screens, two grit chambers, two retention basins with a 1.8-gallon maximum capacity, and pumps with a threshold of 5.8 mgd. The Wastewater Facility is operated and monitored by the City's Bureau of Sanitation, which monitors water levels remotely using Supervisory Control and Data Acquisition. Upon entering the Wastewater Facility, the stormwater and pool water arrives in a desilter that either diverts the contents to the dual-cell retention basin, which can then be released through a flow measure device to the North Outfall Sewer, or releases the flows through the Hi-Flo By-Pass that discharges directly to the Los Angeles River. The Zoo Wastewater Facility temporarily stores stormwater and pool drainage, removes large debris and grit, and retains the water until midnight.

Desilted discharges from the Wastewater Facility are control-released via an 18-inch iron pipe force main into the 48-inch North Outfall Sewer, which conveys wastewater to the LAGWRP for treatment. The Zoo's sanitary sewer system, which conveys wastewater generated from kitchens, restrooms, offices, and covered animal night quarters, and Gene Autry Museum wastewater discharges directly to the City's North Outfall Sewer for treatment at the LAGWRP.

Overflows from the Wastewater Facility discharge directly to the Los Angeles River. The Wastewater Facility's retention basins have a maximum capacity of 1.8 million gallons. Prior to large storm events, the Bureau of Sanitation will take precautions to drain the retention basins at the Zoo's Wastewater Facility to the City's North Outfall Sewer to allow maximum storage for anticipated stormwater. If the retention basins fill up to a certain threshold during major storm events, the inlet to accept stormwater runoff in the desilter/retention basin is closed and the stormwater drains directly to the Los Angeles River. With the stormwater inlet closed, the Zoo's animal pond water is the only discharge draining to the desilter/retention basin at the Zoo's Wastewater Facility. If the total volume is still too great for the capacity of the retention basins, a diversion weir is opened manually, and the animal pool water is released to the Los Angeles River, rather than the North Outfall Sewer. However, the Zoo and Bureau of Sanitation employees avoid directing the Zoo's animal pond water directly to the river to the maximum extent possible. The Zoo avoids directing animal pond water directly to the river by refraining from draining the animal pools prior to and during large storm events to maximum extent possible. This minimizes the volume of water draining into the retention basins of the Zoo's Wastewater Facility.



Los Angeles Zoo
Stormwater and Wastewater Flow

FIGURE 3.10-2

Groundwater

The Zoo is located on the adjudicated border of the SFVGB, with the northmost portion of the Zoo's property being located within the basin (approximately one-third of the Zoo's overall width). The portion of Zoo property within the SFVGB is currently developed and consists of impervious surface cover, with a general groundwater gradient trending to the east, slightly southeast. The majority of the Zoo is not located within an established groundwater basin (see Figure 3.10-1). According to the geotechnical investigation prepared for the Project, groundwater monitoring wells in the Project vicinity indicate the depth to groundwater in the vicinity of the site is estimated between 20 and 50 feet below ground surface (bgs) of the lower elevation areas of the Project site (e.g., the central portion of the Zoo) (Appendix J). Similar to the topographic gradient of the site, groundwater generally flows to the southeast.

The geotechnical investigation did not identify evidence of wells within the Project site boundaries (Appendix J). The Zoo receives potable water from LADWP and does not withdraw groundwater from production wells in the site vicinity. According to the hydrology study prepared for the proposed Project, approximately 51 percent of the Project site is currently covered with impervious surfaces, and therefore does not facilitate groundwater recharge. Impervious areas consist of concrete walkways, asphalt pavement, saturated soils, ponds, and wetland type features, building structure footprints, etc. Pervious surface cover consists of undeveloped land, landscape areas, LID features, and other vegetated areas.

Rainfall

The Zoo experiences slightly lower rainfall than the average across the greater City and County of Los Angeles due to its location on the leeward side of the Santa Monica Mountains. The majority of rainfall occurs during the rainy season from October to April (see Appendix L).

Flooding

The FEMA publishes Flood Insurance Rate Maps (FIRMs) depicting areas subject to flood hazards. These Special Flood Hazard Areas (SFHAs) or Flood Zones include different types and levels of flooding risks. According to the FIRM Panel 1345F, the Project site is not in a SFHA and therefore, is not subject to 1 percent annual chance (100-year) flood. The Project site is located with Zone X, Other Flood Areas, which means the site is mapped outside of the 0.2 percent annual chance (500-year) floodplain area. Upstream potential flooding areas include portions of the Burbank Channel and the Los Angeles River in the city of Burbank, approximately 1.25 miles north of the Project site (FEMA 2008).

Tsunami and Seiche Risk

Large tsunamis may reach heights of 20 to 50 feet along the coast and would have the potential to affect low-lying areas along the coast, but would not have direct impacts on Griffith Park due to its location atop the relatively high hills and lack of water corridor outlets. Therefore, Griffith Park is not identified by the City as a tsunami inundation zone and would

not be affected by a tsunami. As described in Section 3.7, *Geology and Soils*, the Project site is elevated and not located in proximity to large waterbodies (see Appendix J). Therefore, the risk for damage at the Project site due to tsunamis is low. Further, based on the City Emergency Operations Plan Tsunami Hazard Specific Annex, the Project site is not located along any of the City's Tsunami Evacuation Routes (City of Los Angeles 2018b).

Seiches are oscillations generated in enclosed bodies of water, which can be caused by ground shaking. A seiche wave has the potential to overflow the sides of a water-containing basin to inundate adjacent or downstream areas. The only body of water within Griffith Park is the Hollywood Reservoir, located approximately 2.5 miles southwest of the Gottlieb Animal Health and Conservation Center at the Zoo. There are several mountains that are located between the reservoir and the Project site. Therefore, the Project site is not located in an area that is susceptible to seiches.

Water Quality

The discharge of wastewater from the LAGWRP is regulated under Order No. R4-2011-0197 and NPDES Permit No. CA0053953, which was adopted on December 8, 2011. This Order was subsequently revised by Order No. R4-2011-0197-A01 adopted on July 12, 2012. Order No. R4-2011-0197 also serves as a permit under the NPDES No. CA0053953.

The Zoo maintains several tanks that produce wastewater that is treated by the Zoo's Wastewater Treatment Facility before flowing to the LAGWRP for tertiary treatment. Source: Draft Los Angeles Zoo Vision Plan

Stormwater runoff carries contaminants from sediment and pavement into surface flows. The Zoo's stream of stormwater to the LAGWRP is not tested for water quality separately from the Zoo's wastewater generation. Therefore, the precise types and amounts of pollutants contributed by stormwater from the Zoo is not quantified. However, the anticipated pollutants from the Zoo's stormwater runoff would be associated with typical park and zoo uses. Sediment, Total Suspended Solids (TSS), and Chemical Oxygen Demand are common pollutants generated in vacant or open areas. Typical urban runoff pollutants would be anticipated due to the vehicular and pedestrian traffic in the Project vicinity, which includes trash. Many of the drainage inlets along roadways bordering the Project site include screens or grates to prevent or limit trash from entering the municipal storm drain system and discharging to the Los Angeles River. Additionally, nutrients from fertilizers as well as herbicides and pesticides associated with landscape maintenance may be present in stormwater runoff depending on how and when

the substances are applied. Due to urban runoff and wildlife and recreational (e.g., equestrian) activities surrounding the Zoo, pollutants such as fecal coliform (E. Coli) bacteria are expected to be present in the stormwater runoff.

The Zoo's staff do not perform vehicle and heavy equipment maintenance activities on-site and therefore do not currently discharge hazardous pollutants associated with these activities. However, as described in Section 3.9, *Hazards and Hazardous Materials*, the former fueling station located within the visitor-restricted Zoo Construction Shop and Support area may have contaminated soils and groundwater underlying the Zoo due to the potential release of petroleum products from the fueling dispensers, underground storage tanks (USTs), and associated piping, which operated for over 20 years. Additional groundwater contamination may be present at the site in associated with a historical LUST and Superfund cleanup site in proximity to the Project site (refer to Section 3.9, *Hazards and Hazardous Materials*).

The quality of water used for each of the Zoo's existing exhibit animal ponds is maintained with very specific treatment and/or filtration processes. Fifteen of the Zoo's ponds have "Life Support Systems" that use recirculating filtration systems to ensure continuous water volume and adequate water quality for the specified to the animals' needs. The remaining animal pools are drained and refilled depending on the on the animal needs and how they might interact with the pond water, such as the hippos' tendency to defecate in the pond (see also, Section 2.0, *Project Description*).

3.10.2 Impact Assessment Methodology

Significance Thresholds

According to Appendix G of the State CEQA Guidelines, a project would have a significant impact related to hydrology and water quality if it would:

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 onsite or offsite;
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 onsite or offsite;
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 within a 100-year flood hazard area structures that would impede or redirect flood flows;
h. 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; or
i. expose people or structures to inundation by seiche, tsunami, or mudflow.

Additionally, the *L.A. CEQA Thresholds Guide* states that that a project would normally have a significant impact on water resources based on the following factors:

Surface Water Hydrology

- Cause flooding during the projected 50-year development storm event, which would have the potential to harm people or damage property or sensitive biological resources;
- Substantially reduce or increase the amount of surface water in a water body; or
- Result in permanent, adverse changes to the movement of surface water sufficient to produce a substantial change in the current or direction of water flow.

Surface Water Quality

- Result in discharges that would create pollution, contamination or nuisance as defined in Section 13050 of the CWA; or
- Cause regulatory standards to be violated, as defined in the applicable NPDES stormwater permit or Water Quality Control Plan for the receiving water body.

Groundwater Level

- Change potable water levels sufficiently to:
    - Reduce the ability of a water utility to use the groundwater basin for public water supplies, conjunctive use purposes, storage of imported water, summer/winter peaking, or to respond to emergencies and drought;
    - Reduce yields of adjacent wells or well fields (public or private); or
        - Adversely change the rate or direction of flow of groundwater.
- Result in demonstrable and sustained reduction of groundwater recharge capacity.

Groundwater Quality

- Affect the rate or change the direction of movement of existing contaminants;
- Expand the area affected by contaminants;
- Result in an increased level of groundwater contamination (including that from direction percolation, injection, or saltwater intrusion); or
- Cause regulatory water quality standards at an existing production well to be violated, as defined in the California Code of Regulations, Title 22, Division 4, and Chapter 15 and in the Safe Drinking Water Act.

Non-applicable threshold(s):

- Threshold (g) (*Housing within a 100-year flood hazard area*) and threshold (h) (*Expose people or structures to flooding*): According to the FEMA Flood Insurance Rate Map, the Project site is not located within and 100-year flood hazard area and does not contain any zones that are subject to flood or mudflow hazards. The nearest SFHA to the Project site is the portions of the Burbank Channel and the Los Angeles River in the city of Burbank, approximately 1.25 miles north of the Project site (FEMA 2008). The Project site is not located in proximity to a dam that would have the potential to cause flooding in the Project vicinity. Therefore, the proposed Project would not place within a 100-year flood hazard area structures that would impede or redirect flood flows and this issue is not analyzed further in this EIR.
- Threshold (i) (*Expose people or structures to seiche, tsunami, or mudflow*): According to the FEMA Flood Insurance Rate Map, the Project site does not contain any zones that are subject to tsunami, seiche, or mudflow hazards. The Project site is not located in proximity to a large body of water. The only body of water within Griffith Park is the Hollywood Reservoir, located approximately 2.5 miles southwest of the Gottlieb Animal Health and Conservation Center at the Zoo. There are several mountains that are located between the reservoir and the Project site. Therefore, the Project site is not located in an area that is susceptible to seiches or tsunamis. As further detailed in Section 3.7, *Geology and Soils*, the Project site is not mapped as having the potential for landslides or mudflows. Therefore, the proposed Project would not expose people or structures to inundation by seiche, tsunami, or mudflow and this issue is not analyzed further in this EIR.

Methodology

This analysis of potential hydrology and water quality impacts includes a review of available information to assess the City's hydrologic conditions, groundwater supply, and surface water quality within the regional vicinity and at the Project site. Data sources include the 2015 UWMP (2016), One Water L.A. Technical Memorandum No. 3.2 (2017), the Zoo's Wastewater Schematic (2018), Sewer System Management Plan Update (2019), and other federal and state databases, survey maps, and hydrology reports as referenced. Additionally, a site-specific Hydrology and Water Quality Technical Memorandum was prepared for the proposed Project by Watearth in April 2020 (see Appendix L). This analysis used the U.S. EPA's Storm Water Management Model 5.1 for LID design storm and continuous simulation modeling for the Project and the proposed LID features of the Vision Plan, including the proposed stormwater management system within the Zoo and expanded LID in the Zoo's north and south parking lots. Due to the conceptual nature of many Vision Plan components, including the proposed LID features, typical assumptions were made regarding the geometric configuration of the LID features, as well as estimations of impervious area treated by the LID feature. Sizing was determined by the City's minimum design criteria specified in the *Planning and Land Development Handbook for Low Impact Development (LID)* 5th edition (LASAN 2016). The model was arranged per the LA Zoo Wastewater Schematic (see Figure 3.10-2). For a conservative assessment of the capacity of the proposed onsite stormwater management system, including underground cisterns and flow conveyance infrastructure, the

model assumed a minimum capacity of 6.8 million gallons, which is equivalent to the EPA's SWMM 2-year, 24-hour storm event and would meet minimum City's standards. It is possible that final design and engineering of the onsite stormwater management system would result in a larger capacity system to store and convey up to a 100-year, 24-hour storm event, thereby containing more stormwater onsite for reuse prior to disposal at the Zoo's Wastewater Facility. However, as the Project is long-term and programmatic, the final design and sizing is unknown at this time. This analysis acknowledges that any increase in capacity would have increased benefits for stormwater management, water resource availability, and water quality.

Potential impacts to the storm drain system were analyzed by comparing the calculated existing and proposed peak runoff rates, taking into consideration the capacity of the existing storm drain system serving the Project site and mandatory compliance with applicable state and local regulations addressing stormwater runoff. Components of the proposed Vision Plan that would have the benefit of reducing stormwater runoff and conserving water onsite using LID and outdoor water conservation techniques are considered. The analysis also takes into consideration mandatory compliance with applicable state and local regulations addressing stormwater runoff and water quality.

The following analysis evaluates potential effects related to hydrology and water quality resulting from implementation of the Project. The impact analysis assesses direct and indirect impacts related to hydrology and water quality from implementation of the near-term and long-term phases under the proposed Vision Plan (refer to Section 3.0, *Methodology*), given the existing conditions described above, and determines whether they would exceed any of the thresholds listed below.

3.10.3 Environmental Impacts Analysis

HYD-1: Would the project violate any water quality standards or waste discharge requirements or otherwise degrade water quality?

Construction

Project construction would involve earthwork that would disturb soils across the Project site over the course of the 20-year Project construction/implementation timeline, including demolition of existing pavements and structures, excavation and shoring for subterranean levels, grading, and trenching, which would disturb the underlying soils and expose them to potential erosion and mobilization from wind, rain, and onsite watering activities, necessary to reduce airborne dust (refer to Section 3.7, *Geology and Soils*). These activities could result in sediment transport into onsite storm drain inlets – particularly during storm events or during onsite watering. Additionally, construction activities have the potential to contribute to polluted stormwater runoff due to the delivery, handling, and storage of construction materials and wastes, as well as potential leakage and spills of construction materials (e.g. oil, grease, paints, solvents, or cleaning agents) (refer to Section 3.9, *Hazards and Hazardous*

Materials). During periods of construction when soils are disturbed or stockpiled onsite, rainfall or runoff has the potential to cause substantial soil erosion and sediment transport into the Los Angeles River due to flows moving over exposed areas, loose soils, and newly created slopes and entering the new drainage system leading to and the Zoo Wastewater Facility and the Los Angeles River.

Generally, all phases of Project implementation would involve some degree of earthwork though most site redevelopment and soil disturbance would occur in Phases 1 through 3 with the construction of the Zoo Entry and external circulation improvements, including realignment of Western Heritage Way/Crystal Springs Drive, the California planning area, the Rainforest planning area, and the Africa planning area. Several specific components in the near-term phases would result in major earthwork activities that have a higher potential for mobilization of soils (e.g., erosion) and pollutants that could affect the quality of receiving water bodies (e.g., Los Angeles River) and the Zoo's storm drain system and Zoo Wastewater Facility. Table 3.10-3 provides a list of proposed improvements that would involve large amounts of earthwork, which includes activities such as excavation and construction of Condor Canyon through the hillside area in the California planning area during Phase 1 and possible excavation of subterranean levels for the proposed multi-story parking structure during Phase 7.[1]

[1] As discussed in Section 2.3.6, *Proposed Circulation & Transportation*, the Vision Plan proposes development of a new multi-story parking structure within the Zoo's northern parking lot capable of providing an additional 2,000 parking spaces. The Project presents two options for construction and design of the parking structure to achieve this goal, the first option of which would involve construction of a maximum of two subterranean parking levels within a 3-acre footprint. The second option for the parking structure would not involve subterranean levels but would result in a larger structure footprint (approximately 5 acres) and disturbance area. Earthwork activities are anticipated to be greater under the first option for design of the parking structure due to the amount of soil excavation necessary to accommodate two subterranean parking levels, which is anticipated to require excavation of soils up to 25 feet bgs, or a total of 121,000 cy of earthwork.

Table 3.10-3. Proposed Improvements Requiring Major Earthwork

Phase	Planning Area	Activity
1	Zoo Entry	Installation of utility trunk lines at the Zoo Entry
1	Zoo Entry	Grading Zoo Entry corridors
1	California	Excavation of Condor Canyon
1	California	Construction of California Visitor Center
1	--	Realignment of Western Heritage Way
1	--	Grading and reconfiguration of Crystal Springs Road
2	Asia	Construction of Treetops Visitor Center
2	Rainforest	Demolition of existing Zoopendous Park
	Rainforest	Installation of Rainforest vegetation
	Nature Play Park	Relocation and renovation of natural play area
3	Africa	Demolition of existing buildings and exhibits
3	Africa	Excavation of hillside for development
3	Africa	Construction of the Africa Visitor Center
3	Service Areas	Demolition of existing North America exhibits
1-3	--	Installation of aerial tram infrastructure
1-3	--	Installation of Stormwater Cistern System
4	Bird Show and Animal Programs	Renovation of the exiting amphitheater and service space for operations
4	Service Areas (Condor West)	Reconfiguration of truck access to the construction services area
5	Islands	Installation of new pathways and landscaping
6	Zoo Entry	Construction of Administration Building
7	--	Construction of Multi-Story Parking Structure
7	--	Installation of Public Park

Larger improvements such as excavation to create the proposed Condor Canyon, installation of new exhibits within hillside areas, installation of the Zoo's proposed subterranean

stormwater cistern system, and development of the multi-story parking structure would result in the greatest amount of earthwork and soil distribution across the Zoo. For example, implementation of the proposed Condor Canyon would require approximately 74,000 cubic yards (cy) of excavation. Installation of the proposed stormwater collection system would involve trenching of several storm drains between 4 and 10 inches deep across the Zoo. Construction for the onsite stormwater management system would also include excavation of up to 30 feet bgs for five subterranean cisterns. Further, during Phase 7, to mitigate adverse visual impacts of the proposed 2,000-space parking structure, **MM VIS-2** would potentially result in excavation up to 30 feet bgs to send two levels underground. In this case, a total of 121,000 cy of earthwork in the northern parking lot would potentially occur (refer to Section 2.4.2, *Construction Activities*).

During construction of all improvements under the Vision Plan, soils would be redistributed across the Project site. Several disturbed areas, stockpiles, and internal balancing of loose soils would occur onsite during construction. During storm events, surface runoff from exposed construction areas could flow into onsite storm drains and the Los Angeles River, potentially carrying pollutants such as oils, fuels, lubricants, excess concrete, chemicals, sediments, and construction debris. The first flush of stormwater runoff during a rainfall event typically contains higher concentrations of pollutants than later rainfall. Construction activities could impact water quality by exposing disturbed ground to potential erosion, particularly during major storms and high intensity rainfall events, or by introducing typical construction pollutants (e.g., fuels, lubricants) into the runoff.

Consistent with existing regulations, all Project components would also be required to comply with the Stormwater and Urban Runoff Pollution Control Ordinance (Chapter VI Article 4.4 of the LAMC) to address soil erosion, including topsoil mobilization and loss, and urban runoff. Under this ordinance, construction projects in the City must follow additional specific BMPs. These BMPs must be put into practice at the start of new construction and must remain in place until a certificate of occupancy has been issued. In addition, implementation of **MM HYD-1** through **MM HYD-3**, requiring preparation of a stormwater management plan to determine the appropriate sequencing of improvements, preparation of a SWPPP, and implementation of standard construction BMPs, and timing of construction to avoid adverse effects of seasonal storms would reduce potential for mobilization of sediments and typical construction pollutants during all phases of Project construction. As a result, potential sediments and contaminants would be controlled onsite and would not flow to stormwater management infrastructure or waterways, including the Los Angeles River. Therefore, implementation of these measures would reduce associated impacts on water quality from earthwork and typical construction activities to *less than significant with mitigation.*

The proposed stormwater collection system would consist of five subsurface cisterns within different Zoo drainage areas to store captured runoff (see Figure 2-15). It is assumed the stormwater collection system would be completed in the near-term Phases 1 through 3 and fully operational by 2030 (refer to Section 2.0, *Project Description*). During the near-term

Project components, stormwater would continue to be directed to the existing storm drain system, which conveys stormwater to the Zoo Wastewater Facility, or to the proposed stormwater collection system for the respective area for each completed phase. The Zoo Wastewater Facility would continue to remove silt and grit from the stormwater before discharging to the City's North Outfall Sewer for treatment at the LAGWRP, significantly reducing or eliminating any sediment and polluted runoff generated during construction that would flow into the existing or proposed stormwater system. In addition, **MM HYD-2** would require the City to prepare and submit a SWPPP as part of acquisition of a NPDES Construction General Permit, which would include standard construction BMPs for erosion management and control during construction (e.g., straw bales, sand bags, mulch, erosion control blankets, silt fencing, and soil stabilizers).Under implementation of **MM HYD-3**, the City would be required to conduct construction activities during the dry season to the maximum extent feasible, to avoid discharging polluted runoff into disturbed construction areas and underlying soils. These measures would avoid and minimize the sediments and pollutants that would otherwise flow to the Zoo onsite stormwater management system. Therefore, with implementation of these mitigation measures, Project construction impacts to surface and groundwater quality would be *less than significant with mitigation*.

In addition to standard construction activities, ground disturbing activities associated with construction of the Africa planning area (Phase 3) and improvements to Condor West, the Construction Shop and Support area, and the Gottlieb Animal Health and Conservation Center (Phase 4) have the potential to degrade surface water quality through the disturbance of historic contaminated soil. As described in Section 3.9, *Hazards and Hazardous Materials*, the results of a preliminary vapor encroachment screen conducted for the Project-specific Phase I Hazardous Materials Assessment indicate potential vapor encroachment from operation of a fueling station located within the visitor-restricted Zoo Construction Shop and Support area. The fueling dispensers, USTs, and piping associated with the fueling station, may have released petroleum products to the subsurface. As such, ground-disturbing activities (i.e., excavation, trenching, grading) during construction of Phase 3 and 4 improvements have the potential to disturb historic contaminated soil. If contaminated soils are allowed to flow to onsite storm drains or proposed stormwater management system components (e.g., cisterns), polluted stormwater and dry-weather runoff may flow from the Project site. Following Phase 4 of the Vision Plan, no soil contamination is anticipated to be encountered during construction or operation.

Additionally, Phase 1 would involve the realignment of Crystal Springs Drive/Western Heritage Way, demolition of the Zoo's existing storage area within the southern parking lot near the Los Angeles High School Zoo Magnet Center, and installation of traffic signals and potential intersection lane improvements (e.g., road widening and sidewalk improvement) of the Zoo Drive/Western Heritage Way intersection to improve intersection operations. During construction of these improvements, potential contamination from equipment leaks or spill of stored hazardous chemicals or leaks from the USTs located at or adjacent to the Zoo's

storage yard at the South Parking area and Autry Museum may be disturbed during implementation of the circulation improvements at Zoo Drive and Western Heritage Way during Phase 1 of the Project. However, no reports of contamination were recorded for the UST north of the Autry Museum and the LUST case reported at storage area has been closed since June 2000 (refer to Section 3.9, *Hazards and Hazardous Materials*). Runoff from the Zoo parking lots would continue to flow into existing LID features (i.e., bioretention cells, permeable pavements, vegetated bioswales) in the main parking lot and to the Los Angeles River. Implementation of **MM HAZ-1** would require a Phase II Environmental Site Assessment (ESA) to evaluate the presence of hazardous soil contamination and vapor intrusion in the vicinity of the existing fueling station, the southern parking lot, and north of the Autry Museum prior to demolition and grading activities. In the event that the Phase II ESA identifies soil and/or groundwater contamination at or above regulatory levels, implementation of **MM HAZ-2** would require remediation activities prior to the issuance of grading permits to ensure no adverse impacts from exposure to soil contamination. Therefore, with these measures, potential impacts to water quality from soil contamination would be *less than significant with mitigation*.

Operation

Operation of the Zoo during implementation of Phases 1 through 3 (through 2030) would result in pollutant discharges and runoff similar to existing conditions. However, following Phase 3, all stormwater within the Zoo would be directed to the proposed onsite stormwater management system and proposed LID features. Proposed LID features include permeable pavement and bioretention within the interior of the Zoo and all Zoo parking lots, similar to the existing LID in the Zoo's main parking lot. The proposed stormwater system would be designed to capture 100 percent of stormwater runoff generated during a typical 2-year, 24-hour rainfall event. Under this condition, all stormwater generated within the Zoo's drainage area would be retained onsite and would not be conveyed to the Zoo Wastewater Facility or Los Angeles River, except for runoff generated within the Zoo parking lot, which would be discharged directly to proposed LID features and the Los Angeles River. During larger storm events when capacity of the stormwater collection system is exceeded, stormwater would overflow to the Zoo Wastewater Facility and undergo the same level of treatment as occurs under existing conditions.

Implementation of the stormwater collection system and proposed LID features would improve the water quality within the Zoo drainage area during operation of the Zoo by facilitating infiltration to the ground, pre-treating, and filtering of stormwater prior to treatment and discharge. As presented in Table 3.10-4, the proposed stormwater collection system and LID features would reduce the amount of pollutant concentrations of TSS, nitrogen, copper, lead, zinc, and fecal coliform during the 2-year, 24-hour storm event and under continuous conditions (Appendix L). Since the majority of stormwater flows from the Project site do not feed directly to the Los Angeles River, near-term and long-term pollutant effluent concentrations from the drainage to the Los Angeles River would remain unchanged

when compared with existing conditions, with the exception of fecal coliform, which would be reduced in the long-term with implementation of the proposed onsite stormwater management system. Therefore, in the near-term, impacts to surface water quality during operation of the Zoo would be *less than significant*, while implementation of the stormwater collection system and LID features would result in beneficial long-term impacts to water quality at the Project site for stormwater generated onsite.

Table 3.10-4. Water Quality for the Entire Zoo Drainage Area During a 2-year, 24-hour Storm Event

SWMM Results		Existing (lbs)	Near-Term (lbs)	Long-Term (lbs)	Long-Term Net Change	Long-Term Net Change (%)
TSS	2-Year	6,098	787	872	-5,226	-86
	Annual	1,480,431	548,096	606,480	-873,951	-59
Nitrogen	2-Year	308	40	45	-263	-86
	Annual	74,650	27,577	30,846	-43,804	-59
Copper	2-Year	1,262	162	162	-1,100	-87
	Annual	306,133	113,537	113,155	-192,978	-63
Lead	2-Year	979	126	136	-873	-86
	Annual	238,429	88,716	95,339	-143,090	-60
Zinc	2-Year	9,574	1,236	1,236	-843	-86
	Annual	2,327,003	863,691	863,054	-1,463,949	-63
Fecal Coliform	2-Year	14	13	13	-1	-5
	Annual	17	16	16	-1	-3

Source: Watearth 2020. See Appendix L.

The stormwater collection system is also proposed to allow retention and reuse of stormwater for irrigation at the Zoo to reduce annual irrigation water demands (refer to Section 3.16, *Utilities*). The stormwater capture and retention system as proposed does not include pre-treatment or other LID measures to treat the runoff that would be reused for irrigation of the Zoo. As such, use of captured stormwater for irrigation has the potential to unnecessarily contribute pollutants captured within the system back into the Zoo drainage system or the water could not be of a suitable quality for irrigation. Implementation of **MM HYD-6** would require the Zoo install pre-treatment and LID features to treat water within the stormwater collection system and remove pollutants prior to reuse for irrigation. This measure would ensure that onsite recycled water would be high quality and would not create new water quality issues. With implementation of this measure, impacts to or from water quality would be *less than significant with mitigation.*

HYD-2: Would the project 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)?

Reduction in Groundwater Recharge

The Zoo currently receives potable water from LADWP and does not draw from groundwater production wells in the Project vicinity. Project operation would continue to use the LADWP water supply rather than drawing from the local groundwater production wells. According to the 2015 UWMP, approximately 12 percent of the LADWP's water supply is made up of local groundwater. Between Fiscal Year (FY) 2010/11 and FY 2014/15, an average of 58,741 AFY of the local groundwater supply (88 percent all groundwater suppy) was drawn from the SFVGB (LADWP 2016).

The SFVGB underlies only a portion of the Project site (i.e., Zoo parking lot, entry, and event center) (refer to Figure 3.10-1). The Zoo's main parking lot was retrofitted in 2010 with permeable pavements, bioretention cells, and a vegetate bioswale to capture and collect stormwater runoff, remove sediment, facilitate infiltration, and slow the velocity of runoff draining towards receiving waters (i.e., Los Angeles River). However, the majority of the parking lot, Zoo entry, and event center area is currently paved with impervious surfaces and does not facilitate groundwater recharge within the SFVGB. The remainder of the Zoo property does not overlie a delineated groundwater basin, indicating that slopes onsite generally convey stormwater via surface flow to lower elevation where percolation and infiltration more readily occurs. However, limited onsite percolation occurs within the Zoo in undeveloped areas, primarily in the California and Africa planning areas.

Implementation of the Vision Plan would expand the existing animal exhibits and develop currently undeveloped portions (i.e., California and Africa planning area hillsides) of the Zoo. This redevelopment and expansion within the Zoo would increase impervious surfaces from 51 percent to approximately 70 percent in the near-term (i.e., by 2030). No increase in impervious surfaces would occur during the long-term (i.e., by 2040) development as long-term improvements would involve redevelopment of currently paved and developed areas. Permeable pavements and other LID features would be included in the final design of proposed Project components to facilitate onsite percolation where feasible. The proposed increase in impervious surfaces would be partially offset by installation of permeable pavements and other LID features. Further, the Project effects on amount of percolation and groundwater recharge would be incremental relative to the 144,640-acre SFVGB area. Therefore, Project implementation would not have an adverse affect on groundwater recharge and impacts to groundwater infiltration would be *less than significant*.

Groundwater Quality

As previously described, only 23 of the 115 water production wells have been removed from service, or restricted in use due to historical groundwater contamination in the SFVGB (LADWP 2018). Implementation of ongoing groundwater remediation efforts anticipated to be complete in 2021 would allow LADWP to pump its full groundwater entitlement (LADWP 2016). Groundwater at the Project site and immediate vicinity may be contaminated due to a historical LUST and Superfund cleanup site in proximity to the Zoo's parking lot and Western Heritage Way, as well as from fueling dispensers, USTs, and associated piping within the Zoo Construction Shop and Support area and existing storage yard (refer to Section 3.9, *Hazards and Hazardous Materials*, for further discussion of the potential groundwater contamination onsite). Under **MM HAZ-1**, the City would be required to prepare a Phase II ESA to preform soil sampling and analysis prior to the issuance of grading permits for development, to determine whether contamination exists and, if so, the extent of contamination from the following UST locations within the Project site. If contaminants are detected in soil at or above regulatory levels, then the results of the soil sampling shall be reviewed and acted upon by the Los Angeles Fire Department (LAFD) and other regional or state regulatory agencies as needed. Therefore, Project impacts to groundwater contamination on- and offsite would be *less than significant with mitigation*.

Potential to Encounter Shallow Groundwater

Groundwater monitoring wells in the Project vicinity indicate that the depth to groundwater in the vicinity of the site is estimated between 20 and 50 feet below the existing ground surface of the lower elevation areas of the Project site (e.g., the central portion of the Zoo and parking lot) (refer to Section 3.7, *Geology and Soils*). Development under the proposed Vision Plan could involve the construction of subterranean structures and building footprints up to 30 feet bgs. Groundwater dewatering may be necessary for the construction of subterranean structures in areas with a high groundwater table such as construction of the Treetops Terrace subterranean kitchen, where the 2019 geotechnical investigation indicated depth to groundwater ranging from 20 to 50 feet below grade, and the proposed parking structure, which may require subterranean levels up to 30 feet bgs to reduce visual impacts (refer to Section 3.1, *Aesthetics and Visual Resources*). Additionally, construction of the proposed California and Africa planning areas (Phases 1 and 3, respectively) would require excavation activities (e.g., blasting) that may encounter groundwater. In cases where the there is a high or perched groundwater table where the floor of subterranean structure encounters the groundwater table, ongoing groundwater dewatering may be necessary to prevent the percolation or inflow of groundwater into excavation pits and future basement levels. If the dewatering of groundwater is necessary, the City would obtain a dewatering permit from the Los Angeles RWQCB in compliance with existing RWQCB regulations and the requirements of the NPDES permit program.

As described in Section 3.7, *Geology and Soils*, **MM GEO-1** would require the City to prepare and submit a site-specific geotechnical report for review and approval by the LADBS prior to the issuance of a grading or a building permit. The geotechnical report would be required to identify known historic groundwater levels onsite and identify measures to address groundwater impacts such as dewatering during construction as needed to protect against water contact and to minimize the seeping of water into the subterranean structure. All recommendations and design features in the geotechnical report are required to be incorporated into a Project component's building design. Therefore, impacts to groundwater quality and recharge from Project implementation would be *less than significant with mitigation*.

HYD-3:	Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation onsite or offsite? Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite?

Altered Site Drainage and Erosion

Project development would substantially alter the onsite drainage pattern through excavation, grading, and development of the undeveloped California and Africa hillsides, installation of the proposed stormwater collection system, and increases in development and impervious surfaces. Approximately 22 acres of undeveloped areas with native topsoils would be developed under the Project, including 20 acres of topsoils in undeveloped areas in the California and Africa planning areas that would be graded and developed with pavement, structures, landscaping, and other exhibit features. In addition, Project construction and the proposed stormwater collection and conveyance system would substantially alter the volume and velocity of surface water flows and runoff. The existing storm drain system would be closed and abandoned in place underground and a new system of storm drain inlets, storm drain lines, and underground stormwater cisterns would be constructed to collect, convey, and store captured stormwater for reuse onsite for irrigation. These changes to the topography and proposed new stormwater collection system would substantially alter surface water flows through the site, as well as peak surface flows downstream (i.e., at the Zoo Wastewater Facility), as further described herein.

Generally, all Project construction activities, particularly those involving substantial soil excavation (refer to Table 3.10-3), would result in exposure of soils and would cause minor alterations to onsite drainage, including the potential for temporary ponding during storm events (refer to Impact HYD-1). However, all stormwater generated during construction would continue to be directed either to the Zoo's existing storm drain system in the near-term phases, or the proposed stormwater capture system in the long-term phases. As discussed in

Impact HYD-1, all Project components would also be required to comply with the Stormwater and Urban Runoff Pollution Control Ordinance (Chapter VI Article 4.4 of the LAMC) to address soil erosion, including topsoil mobilization and loss, and urban runoff. The overall existing drainage pattern would be maintained during construction and would be controlled with required BMPs (refer to Impact HYD-1), so substantial erosion or siltation would not occur. While not expected (refer to Impact HYD-2), if dewatering of groundwater is required based on onsite groundwater depth, it would be accomplished in accordance with Los Angles RWQCB's Project Dewatering to Surface Waters in Coastal Watersheds of Los Angeles and Ventura Counties. Construction activities would alter drainage on site, subject to requirements to control water quality and stormwater flows, but would not alter drainage patterns or amounts offsite to the Zoo Wastewater Facility or the Los Angeles River; therefore; construction activities associated with the proposed Project would result in a *less than significant* impact.

Excavation and grading during construction activities would disturb and loosen soils, increasing the potential for soil erosion from wind and rain. For example, substantial ground disturbance under the Project would include tree and vegetation removal, installation of the building foundations and footings, deep excavation of soils for subterranean development and the Condor Canyon, and installation of new landscaping. Installation of the storm drains is anticipated to disturb soil up to a depth of 4 to 10 feet bgs along the proposed storm drain lines. Ground disturbance resulting from installation of the proposed storage cisterns would extend up to 30 feet deep. Implementation of the proposed Project components would result in exposure of large areas of soils during earth work.

All construction activities would be required to comply with standard engineering practices for erosion control (refer to discussion of SCAQMD requirements in Section 3.2, *Air Quality*). **MM HYD-1** would require consideration of the sequence of construction events, in order to reduce the area of soil disturbance and prevent adverse soil erosion and sedimentation into the stormwater collection system. Implementation of **MM HYD-2** would require preparation of a SWPPP under the NPDES Construction General Permit for construction of each phase of the Vision Plan. The SWPPP would require implementation of BMPs to control the discharge of pollutants, including sediment, into the local surface water drainages (i.e., stormwater collection system and Zoo Wastewater Facility). As previously described, ground disturbing activities such as excavation associated with the California and Africa planning areas and installation of the stormwater collection system would occur during the dry season to the maximum extent feasible, to avoid major soil erosion during heavy rain events, as required under **MM HYD-3**. In addition, all Project components would also be required to comply with the Stormwater and Urban Runoff Pollution Control Ordinance (Chapter VI Article 4.4 of the LAMC) to address soil erosion, including topsoil mobilization and loss, and urban runoff.

Following construction, the proposed Project would not increase the potential for soils to be subject to wind or water erosion. **MM HYD-4** would require preparation of an Operations &

Maintenance (O&M) Plan to ensure the maintenance of LID features and the stormwater collection system, such as sediment removal. All disturbed construction areas would be paved with impervious surfaces, landscaped with ornamentals, or planted with native trees. Gorilla mulch would also be applied to landscaped areas, as required under **MM HYD-5**, to prevent erosion and sedimentation and to promote infiltration. Additionally, pre-treatment, filtering, and other LID features would be installed as part of the stormwater collection system, as required by **MM HYD-6**, to ensure that captured water reused for irrigation does not unnecessarily contribute sediment and TSS back into the Zoo's drainage system. The proposed Project would result in beneficial impacts to soil erosion associated with reducing surface runoff and directing all stormwater runoff into the proposed stormwater collection system, rather than conveying runoff to the Los Angeles River. With adherence to existing state and local regulations and Project-specific mitigation measures that address soil erosion, impacts to receiving waters potentially resulting from erosion would be *less than significant with mitigation*.

On and Offsite Flooding Potential

During Project operation, stormwater and urban runoff generated within the Zoo's drainage area would be directed to the stormwater collection system via on the new drainage inlets within the Zoo. The proposed stormwater collection system would remove runoff from the Zoo Wastewater Facility through capture, storage, and reuse as irrigation water, reducing the amount of stormwater and urban runoff that would otherwise flow to the Zoo Wastewater Facility and Los Angeles River.

As discussed under Impact HYD-3, Project buildout would increase the area of impervious surfaces from 51 percent to 70 percent of the Project site during the near-term Phases 1 through 3 and would not increase impervious surfaces onsite during the long-term Phases 4 through 7. The Project would include substantial stormwater retention and treatment facilities onsite to accommodate stormwater runoff and the new impervious areas onsite to avoid on and offsite increases in flooding, consistent with the requirements of the City's Stormwater and Urban Runoff Pollution Control Ordinance (LAMC Article 4.4) and the SWRCB's Post-Construction Requirements. At a minimum, the proposed onsite stormwater management system would be designed to capture a total capacity of 6.8 million gallons, which is equivalent to the EPA's SWMM 2-year, 24-hour storm event. This means that all runoff below the intensity of a 2-year, 24-hour storm event would flow through the proposed stormwater collection system. Attenuation of onsite surface water runoff would be provided via point and non-point source water retention features to slow and retain increased flows, including vegetated retention basins and pervious paving, and other elements designed to promote bio-infiltration.

Under the Project, peak flows under the 2-year, 24-hour storm event would be reduced from 124.29 cfs to 7.52 cfs with implementation of the proposed stormwater management system, which would result in a 22 percent decrease in runoff that would flow to the Zoo Wastewater

Facility and ultimately the Los Angeles River. The remaining runoff not captured by the stormwater management system would be from the parking lots, which drain into existing LID features for onsite treatment prior to flowing to the Los Angeles River. This would result in a 94 percent reduction in the peak flow of stormwater runoff during a storm this size (see Table 3.10-5).

Table 3.10-5. Surface Runoff and Infiltration During a 2-year, 24-hour Storm Event

SWMM Results	Existing	Near-Term	Long-Term	Net Change (%)
Precipitation (in)	2.44	2.44	2.44	0
Surface Runoff (in)	1.00	0.78	0.78	-22
Infiltration (in)	1.42	1.67	1.67	18
Peak Flows (cfs)	124.29	7.52	7.52	-94

Source: Watearth 2020. See Appendix L.

Flows greater than a 2-year, 24-hour storm event would be directed to the Zoo Wastewater Facility via the overflow line that would run beneath the Zoo's parking lot. Following desilting and grit removal at the Zoo Wastewater Facility, stormwater would be discharge to the North Outfall Sewer, which would direct water to the LAGWRP, similar to existing conditions for all stormwater within the Zoo. Since the volume of stormwater directed to the Zoo Wastewater Facility would be substantially reduced when compared to existing conditions, the Zoo Wastewater Facility total capacity of 1.8 million gallons would be adequately sized to accommodate overflow runoff from the Zoo during storm events greater than the 2-year, 24-hour storm event.

It is possible that final design and engineering of the onsite stormwater management system would result in a larger capacity system, thereby containing more stormwater onsite for reuse prior to disposal at the Zoo's Wastewater Facility. Any increase in capacity would have increased benefits for stormwater management, water resource availability, and water quality. As the Project is long-term and programmatic, the final design and sizing is unknown at this time; however, based on system modeling conducted for the Project to store and convey up to a 100-year, 24-hour storm event, it appears feasible to design an onsite stormwater management system to collect and store 100 percent of the annual rainfall underground for reuse. There may be financial or physical barriers to such a system (e.g., type of soils and shallow depth of soil to bedrock), but if pursued in the final Project design, as provided in Table 3.10-6, a system designed to accommodate a 100-year, 24-hour storm event, would reduce peak stormwater flows by approximately 9 percent compared to the proposed system.

Table 3.10-6. Surface Runoff and Infiltration During a 100-year, 24-hour Storm Event

SWMM Results	Existing	Near-Term	Long-Term	Net Change
Precipitation (in)	7.07	7.07	7.07	0%
Surface Runoff (in)	3.61	3.00	3.01	-17%
Infiltration (in)	3.98	4.53	4.52	14%
Peak Flows (cfs)	246.60	222.16	225.42	-9%

Source: Watearth 2020. See Appendix L.

Considering proposed stormwater collection system improvement and the SWMM results presented in the Hydrology and Water Quality Technical Memorandum, stormwater would be adequately managed, maintained, and attenuated through on- and offsite stormwater control features, which are designed consistent with the requirements of the City Stormwater and Urban Runoff Pollution Control Ordinance and SWRCB Post Construction Requirements. Therefore, Project impacts to onsite and offsite flooding would be *less than significant.*

HAZ-4: Would the project 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?

As described under Impact HYD-2, the 19 percent increase (51 percent to 70 percent) in impervious surfaces that would occur primarily from development of the California and Africa planning areas (Phases 1 and 3 of the Vision Plan, respectively) would decrease water infiltration and increase stormwater runoff at the Zoo. However, as described under Impact HYD-3, implementation of the proposed stormwater collection system would substantially reduce stormwater runoff and peak flow by capturing and storing all rainfall from the Zoo and the 79.7-acre hillside area adjacent to the Zoo (refer to Figure 3.10-1) for reuse onsite as irrigation water. Additional LID features, such as bioretention cells and vegetated bioswales, would be considered during final design of the Project planning areas to retain runoff and increase infiltration. The substantial reduction in surface runoff and peak flow would result in minor beneficial impacts to water quality, as the reduced volume and velocity of stormwater flows would reduce the rate of soil erosion and sedimentation. Therefore, implementation of the stormwater collection system would result in beneficial and *less than significant* impacts to polluted runoff.

Table 3.10-7. Volume of Discharge to the North Outfall Sewer and Los Angeles River (gallons)

SWMM Results		Existing	Near-Term	Long-Term	Long-Term Net Change	Long-Term Net Change (%)
North Outfall Sewer	2-Year	235,515	23,099	367,776	132,261	56
	100-Year	507,058	50,706	223,106	-283,952	-56
	Annual	36,260,282	3,556,301	15,897,134	-20,363,148	-56
Los Angeles River	2-Year	308,201	308,201	308,201	0	0
	100-Year	935,465	935,465	935,465	0	0
	Annual	2,032,799	2,032,800	2,032,799	0	0

Source: Watearth 2020. See Appendix L.

Since the Zoo Wastewater Facility would receive only overflow stormwater from flows greater than the 2-year, 24-hour storm event, the volume of water directed to the Zoo Wastewater Facility would be reduced by up to 35 million gallons per year (see Section 3.16, Utilities) and up to 95,890 gallons per day. As the maximum capacity of the Zoo Wastewater Facility is currently 1.8 million gallons per day, this system would not be exceeded during the 2-year or the 100-year storm events (Table 3.10-7).

Implementation of the proposed stormwater collection system would also subsequently reduce the volume of discharge from the Zoo Wastewater Facility to the City's North Outfall Sewer. The Zoo Wastewater Facility would continue to hold animal pond water and overflow stormwater from the Zoo until the demand for wastewater discharge is low (i.e., nighttime). Additionally, the volume of animal pond water drained to the Zoo Wastewater Facility would be reduced under the proposed Project, as existing animal ponds are replaced with recirculating Life Support Systems, which require less frequent water discharges for cleaning. Thus, the Zoo Wastewater Facility would prevent exceedance of the North Outfall Sewer's capacity. Therefore, implementation of the stormwater collection system would result in beneficial and *less than significant* impacts to existing stormwater drainage systems.

3.10.4 Mitigation Measures

MM GEO-1 shall apply.

MM HAZ-1 and **MM HAZ-2** shall apply.

MM HYD-1 Construction Sequencing and Design of Onsite Stormwater Management System

The Zoo shall prepare a stormwater management plan prior to Phase 1 Project implementation. The stormwater management plan shall finalize the design of the subterranean stormwater management system with minimum capacity to capture the equivalent of 2-year, 24-hour storm events as proposed by the Project, and shall consider increased capacity to maximize rainfall capture and reuse. The stormwater management plan

shall indicate the sizing and design of the underground stormwater collection system for all proposed drainage areas. The stormwater management plan shall also determine the appropriate sequencing of system installation relative to the Project's development phasing to provide continuous stormwater management throughout the 20-year implementation of the proposed Vision Plan. This sequencing plan shall ensure each phase of development has a functioning onsite stormwater system prior to operation to contain and convey all stormwater flows to the underground cistern(s), to onsite LIDs (e.g., bioswales), and/or to the Zoo's Wastewater Facility. Sequencing shall avoid or minimize sedimentation into proposed LID features and underground stormwater management system infrastructure, which could lead to a loss of capacity and decrease in water quality benefits. During phased construction of the Project, the City shall also install stormwater storage facilities to supplement the underground cisterns such as rain barrels if needed to temporarily manage stormwater flows. These can be integrated into the Vision Plan redevelopment to be thematically appropriate and visually reminding visitors of the Zoo's efforts for water conservation.

The Zoo shall prepare and submit the stormwater management plan to the City BOE for review and approval prior to issuance of grading permits for each Project phase. All development plans and permits shall reflect the approved sequencing and timing of implementation of stormwater management measures. The Zoo shall be responsible for ensuring all requirements are included in construction plans and implemented as part of construction. All construction activities shall be monitored by a City BOE staff to ensure compliance with the stormwater management plan.

MM HYD-2 Preparation of a Storm Water Pollution Prevention Plan (SWPPP)

For each phase of construction, the City shall require the building contractor to prepare and submit a SWPPP as part of the City's NPDES Construction General Permit 45 days prior to the start of work for approval. The contractor is responsible for understanding the Construction General Permit and instituting the SWPPP during construction. A SWPPP for site construction shall be developed prior to the initiation of grading and implemented for all construction activity on the Project site in excess of 1 acre, or where the area of disturbance is less than 1 acre but is part of the Project's plan of development that in total disturbs 1 or more acres. The SWPPP shall identify potential pollutant sources that may affect the quality of discharges to stormwater and shall include specific BMPs to control the discharge of material from the site, including, but not limited to:

- Temporary detention basins, straw bales, sand bagging, mulching, erosion control blankets, silt fencing, and soil stabilizers shall be used.
- Sufficient physical protection and pollution prevention measures to prevent sedimentation, siltation, and/or debris from entering the onsite storm drain system, proposed stormwater management system, and the Los Angeles River.

- Soil stockpiles and graded slopes shall be covered after 14 days of inactivity and 24 hours prior to and during inclement weather conditions.
- Fiber rolls shall be placed along the top of exposed slopes and at the toes of graded areas to reduce surface soil movement, as necessary.
- Sandbags, or other equivalent techniques, shall be utilized along graded areas to prevent siltation transport to the surrounding areas.
- A routine monitoring plan shall be implemented to ensure success of all onsite erosion and sedimentation control measures.
- Dust control measures shall be implemented to ensure success of all onsite activities to control fugitive dust.
- Streets, parking areas, and paved pathways affected by phased Project construction shall be cleaned daily or as necessary to remove sediment, soils, and other construction debris.
- BMPs shall be strictly followed to prevent spills and discharges of pollutants onsite (material and container storage, proper trash disposal, construction entrances, etc.); additional BMPs shall be implemented for any fuel storage or fuel handling that could occur onsite during construction.

The SWPPP must be prepared in accordance with the guidelines adopted by the SWRCB. The SWPPP shall be submitted to the City BOE along with grading/development plans for review and approval. The SWPPP and notices shall be submitted to the SWRCB under their Stormwater Multi-Application, Reporting, and Tracking System (SMARTS). The SWPPP shall be designed to address erosion and sediment control during all phases of development of the site until all disturbed areas are permanently stabilized.

All development plans and permits shall reflect the approved erosion control plan and BMPs submitted to the SWRCB. The Zoo shall be responsible for ensuring all requirements are included in construction plans and implemented as part of construction. All construction activities shall be monitored by a City BOE staff to ensure compliance with the SWPPP.

All construction activities shall be monitored by City staff to ensure compliance with the SWPPP during grading and after conclusion of grading activities to monitor runoff. A Qualified SWPPP Practitioner shall be retained by the developer for overall management and reporting responsibility regarding the SWPPP and documentation under SMARTS in accordance with their permitting requirement. The City will keep a copy of the SWPPP on the Project site during grading and construction activities.

The City shall file a Notice of Completion once construction of each Project phase is complete, identifying that pollution sources were controlled during the construction of the Project and implementing a closure SWPPP for the site.

MM HYD-3 Avoidance of the Seasonal Storms

Ground disturbing activities such as excavation, grading, earthwork, and installation of the stormwater collection system shall occur during the dry season (May through October), including installation of the storm drains, underground cisterns, hydrological connections, and water pumps for irrigation use. Stormwater management system features shall be fully installed and restored to ensure soil stabilization and adequate stormwater conveyance capacity prior to the storm season (October through April).

The Zoo shall be responsible for ensuring all requirements are included in construction plans and implemented as part of construction. The City shall review grading and construction plans for all phases to ensure compliance. All construction activities shall be monitored by a City BOE staff to ensure compliance with the grading and construction phasing plans.

MM HYD-4 Operation and Maintenance Manual

The City shall prepare and submit an Operation and Maintenance (O&M) Manual to ensure LID features and the underground stormwater capture are maintained following installation under the Project. Regular maintenance is critical for the proper operation and longevity of the LID features and stormwater collection system. For example, the O&M Manual would provide maintenance schedules for type and frequency for items such as replacing mulch, trash removal, or sediment removal for bioretention, permeable pavement, and the stormwater collection system. The O&M Manual shall also include guidelines for each LID life-cycle and appropriate reconstruction at the end of the life-cycle.

The Zoo shall prepare and submit the O&M Manual to the City BOE and Zoo planning staff for review and approval prior to issuance of grading permits. The Zoo shall be responsible for ensuring all requirements are included in O&M Manual and implemented as part of Zoo operations.

MM HYD-5 Mulch

Immediately following the completion of landscaping installation, gorilla-mulch (i.e., shredded redwood) or similar non-animal waste mulch should be applied to landscaped and bioretention areas to minimize the risk of erosion and sedimentation. The application of mulch would also retain irrigated water within the soil, thereby reducing evaporation and irrigation requirements. Sedimentation in the stormwater collection system would result in degraded water quality, requiring additional treatment prior to stormwater reuse. Bark mulch is not recommended (especially in bioretention) as it tends to float and does not include the beneficial soil building properties of a shredded redwood or similar mulch. The Zoo shall be responsible for ensuring all landscaped areas are mulched as part of construction.

MM HYD-6 Underground Stormwater Capture Pre-Treatment and Filtering

The Zoo shall develop a pre-treatment and filtering plan and design for the stormwater collection system to ensure that captured water reused for irrigation does not unnecessarily

contribute pollutants back into the Zoo's drainage system. At a minimum, the stormwater collection system must comply with SWRCB safety regulations and County Guidelines for Alternate Water Sources. Additionally, sediment and TSS shall be filtered out to the level required for the proposed irrigation system.

The Zoo shall submit pre-treatment and filtering plans to the City BOE and Zoo planning staff for review and approval prior to issuance of grading permits for each Project phase. All development plans and permits shall reflect the approved pre-treatment and filtering features. The Zoo shall be responsible for ensuring all requirements are included in construction plans and implemented as part of construction. All construction activities shall be monitored by City BOE staff to ensure compliance with the pre-treatment and filtering plans.

MM HYD-7 Smart Irrigation and Irrigation Retrofits

Existing irrigated areas within the Zoo shall be retrofitted with efficient irrigation systems as part of an overall water conservation program and should be implemented during redevelopment of the proposed planning areas. Smart controllers and efficient irrigation systems should be installed to avoid excess irrigation runoff that may contribute unfiltered pollutants back into the drainage system.

The Zoo shall indicate efficient irrigation systems in all landscape plans submitted to the City BOE and Zoo planning staff for review and approval prior to issuance of grading permits. All development plans and permits shall reflect the approved efficient irrigation features. The Zoo shall be responsible for ensuring all requirements are included in construction plans and implemented as part of construction. All construction activities shall be monitored by a City staff to ensure compliance with the irrigation plans.

3.10.5 Impacts Summary

The Basin Plan and the City's Stormwater and Urban Runoff Pollution Control Ordinance (LAMC Article 4.4) and Low Impact Development Ordinance include comprehensive requirements and standards to ensure that all development within the City include features to protect the existing surface water resources, including the Los Angeles River and associated water bodies. The proposed Project would comply with each of these requirements, as necessary (e.g., preparation of a SWPPP, compliance with the SUSMP, etc.). With implementation of construction related and long-term BMPs required under existing regulations and implementation of mitigation measures identified above, potential impacts to hydrology and water quality would be *less than significant*. Therefore, significant unavoidable impacts would not occur.

3.11 LAND USE AND PLANNING

The Project would guide transformation of the Zoo as an environmentally sustainable, world-class destination for animal care and wildlife conservation. The Project includes a conceptual land use and development plan that covers the main physical aspects of the Zoo, including animal conservation environments, visitor-serving uses, administration and service buildings, pedestrian circulation, infrastructure improvements, and the entry and access/parking. The Project would be consistent with regional and local plans, including the City General Plan and North Hollywood Community Plan.

This section evaluates the consistency of the proposed Los Angeles Zoo and Botanical Gardens (Zoo) Vision Plan (Project) with existing plans and land use designations, including applicable goals, programs, and policies in the City of Los Angeles (City) General Plan, as well as regional plans and related planning policy documents.

3.11.1 Environmental Setting

Regulatory Setting

This section summarizes directly relevant state regulations and regional and local land use plans and procedures. There are no federal regulations that would apply to land use and planning of the Project and surrounding areas. Evaluation of the Project's consistency with specific goals, policies, and requirements from relevant land use plans and regulations is provided below in Section 3.11.3, *Environmental Impact Analysis*, as well as within referenced EIR sections, including Section 3.8, *Greenhouse Gas Emissions* and Section 3.15, *Transportation*.

State Regulations

Southern California Association of Governments Regional Comprehensive Plan

The Southern California Association of Governments (SCAG) is a Joint Powers Authority (JPA) under California state law, established as an association of local governments and agencies that voluntarily convene as a forum to address regional issues. Under federal law, SCAG is designated as a Metropolitan Planning Organization (MPO) and under state law as a Regional Transportation Planning Agency and a Council of Governments SCAG includes Los Angeles, Orange, Riverside, San Bernardino, Imperial, and Ventura counties.

SCAG addresses regional planning issues through various plans and programs, including the 2008 Regional Comprehensive Plan (RCP). The RCP addresses regional issues, including housing, traffic/transportation, water, and air quality, and serves as an advisory document for local agencies in the Southern California region to use when preparing local plans and handling local issues of regional significance.

SCAG 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy

The 2016-2040 SCAG Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), adopted on April 8, 2016, presents the transportation vision for Los Angeles, Orange, San Bernardino, Imperial, Riverside, and Ventura Counties (SCAG 2016). The RTP/SCS identifies priorities for transportation planning within the Southern California region, sets goals and policies, and identifies performance measures for transportation improvements to ensure that future projects are consistent with other planning goals for the area. The 2016 RTP/SCS goals are as follows:

- Align the plan investments and policies with improving regional economic development and competitiveness.
- Maximize mobility and accessibility for all people and goods in the region.
- Ensure travel safety and reliability for all people and goods in the region.
- Preserve and ensure a sustainable regional transportation system.
- Maximize the productivity of our transportation system.
- Protect the environment and health of our residents by improving air quality and encouraging active transportation (e.g., bicycling and walking).
- Actively encourage and create incentives for energy efficiency, where possible.
- Encourage land use and growth patterns that facilitate transit and active transportation.
- Maximize the security of the regional transportation system through improved system monitoring, rapid recovery planning, and coordination with other security agencies.

Local Regulations

City of Los Angeles General Plan

The City General Plan is a comprehensive, long-term declaration of purposes, policies, and programs for the development of the City (Los Angeles Department of City Planning 2013c). It sets forth goals, objectives, and programs for land use and development to meet the existing and future needs and desires of the community while integrating a range of state-mandated elements (e.g., Land Use, Transportation [Mobility], Noise, Safety, Housing, Conservation). In place of a Land Use Element, the City includes community plans that establish policies and standards for each of the 35 geographic areas in the City. The community plans are focused on specific geographic areas of the City, locally defining the General Plan's more general citywide policies and programs. The Project site is in the Hollywood Community Plan area.

Hollywood Community Plan

The Hollywood Community Plan provides a planning policy framework for the Hollywood and Los Feliz communities, as well as the larger 25-square-mile area, which lies south of the U.S. Highway 101 (Ventura Freeway) and west of the Interstate 5 (I-5).

The Hollywood Community Plan is intended to guide and encourage appropriate community development, while protecting historic resources, and integrating land use and transit infrastructure. The Hollywood Community Plan includes a total of six overall goals; however, only three of the six are pertinent to Griffith Park.

From 2005 to 2012, the Hollywood Community Plan Update underwent a comprehensive planning process with extensive community outreach. Both the Draft and Final Environmental Impact Report (EIR) were published in 2011, before adoption of the plan in 2012. A legal challenge to the 2012 Hollywood Community Plan's EIR followed the adoption of the plan. As a result of a Los Angeles Superior Court decision on the 2012 Hollywood Community Plan's EIR in 2014, the City Council rescinded the 2012 Hollywood Community Plan Update. The City has reverted, by operation of law, to the 1988 Hollywood Community Plan and the zoning regulations that existed immediately prior to June 19, 2012 (the date of the adoption of the HCPU and ordinance). The 2012 Hollywood Community Plan is no longer in effect. The goals and policies of the 1988 Hollywood Community Plan aim to maintain and improve existing recreational resources and develop new recreational resources.

The City is in the process of finalizing a new Hollywood Community Plan Update that is anticipated to be adopted in 2020. The Hollywood Community Plan Update includes policies intended to provide quality community-serving facilities and improved access to recreational facilities. The Update improves upon the 2012 Hollywood Community Plan with:

- A revision of the goals and policies in the Community Plan text.
- Revisions to the Community Plan Land Use Map.
- An update to the zoning of certain areas to implement the Community Plan's goals and policies.
- An EIR and a Partially Recirculated Draft EIR to assess potentially significant impacts to the environment.

Mobility Plan 2035

The Los Angeles City Council adopted Mobility Plan 2035 on January 20, 2016. Mobility Plan 2035 updates the General Plan's Transportation Element (last updated in 1999), incorporates "Complete Streets" principles, and lays the policy foundation for how future City of Los Angeles generations will interact with streets. The "Complete Streets" concept considers the many community needs that streets fulfill. The plan identifies goals, objectives, policies, and action items (programs and projects that serve as guiding tools for making sound transportation decisions).

1978 Griffith Park Master Plan (Non-adopted Local Plan)

Although not officially adopted, the 1978 Griffith Park Master Plan established an important informal policy framework that has helped to guide planning and facilities development actions within the Park over the last few decades. The Plan presents two overarching goals. The first goal is that of creating greater visual coherence and visual quality and establishing

park gateways to provide a sense of arrival and orientation to visitors. The second goal is the establishment of a balanced mobility system utilizing mass transit, automobile, pedestrian, and bicycle access to and within the Park, including better connections between the existing Park parking areas. Goal 4 specifies intention to improve the established civic function of Griffith Park. Goal 5 specifies intention to improve the parkwide transportation systems.

Six focal areas are identified in the Griffith Park Master Plan. These include, from northwest to south, Valley Gateway (Forest Lawn Drive), Toyon Meadow (Park wilderness area), Green Park Corridor (connections between Valley Gateway and other popular attractions within the easterly portion of the Park), Natural Zone (Park interior), the Los Feliz (Boulevard) Gateway, and Zoo (Drive) Gateway. Although the Griffith Park Master Plan includes an implementation program, none of its proposed actions are pertinent to the Zoo.

2009 Griffith Park Wildlife Management Plan

Until 2007, few formal wildlife surveys had ever been conducted in Griffith Park, and there was little data available on its species. After a wildfire destroyed 800 acres of the park in May 2007, the City retained a biological consulting firm to document the park's biodiversity, and to provide recommendations for future management of the park's natural resources. The Griffith Park Wildlife Management Plan is the first step toward that goal and establishes a baseline of wildlife resources and known threats to wildlife. The plan includes wildlife management goals and recommendations to ensure future co-existence between the rich diversity of wildlife species supported by Griffith Park and the thousands of human visitors to the park each year. The plan is intended to facilitate effective collaboration between park staff, scientific experts, and interested citizens to protect and enhance the well-being of Griffith Park's biodiversity.

2013 Griffith Park Vision Plan

In 2013, the City Department of Recreation and Parks (RAP) released the draft "Vision Plan for Griffith Park: An Urban Wilderness Identity." The Plan was originally conceived as a "Master Plan," then changed to a "Vision Plan" and finally adopted as "A Vision for Griffith Park" by the Los Angeles Recreation and Park Commission on January 8, 2014. The Plan states that while it is not a Master Plan for Griffith Park, the Griffith Park Master Plan Working Group, the City, and RAP intended the Plan to guide decisions made for Griffith Park until a full Master Plan is developed and adopted. However, the Griffith Park Vision Plan applies only to areas of the Park controlled by RAP, which excludes 133-acre Zoo property. Thus, since the Zoo was not included in the Griffith Park Vision Plan process, the Griffith Park Vision Plan does not apply to Zoo property.

The Griffith Park Vision Plan states that Griffith Park should retain an urban wilderness identity. The Griffith Park Vision Plan states that "there is a growing recognition that one of the Park's greatest values for 21st century Los Angeles is its ability to reconnect people with the natural world". The Griffith Park Vision Plan also acknowledges the unique developed

portions of the park, including the Zoo and the Autry Museum of the West. The Griffith Park Vision Plan includes the following goals and objectives that are specific to land use within the park:

- Identify and maintain the unique recreational opportunities that exist in Griffith Park, such as extensive hiking and open picnic areas, Griffith Observatory, Los Angeles Zoo, Gene Autry Museum, Greek Theatre, etc.
- Ensure that all existing facilities, including those held by leaseholders, are being effectively and efficiently used prior to adding new facilities.
- Consistent with the City's planning for higher density and decreased use of the individual automobile, priority should be given to accessing the park by means other than by private automobile.
- Evaluate new uses, programs and facilities, or expansion of existing uses, programs, and facilities, against the criteria of enhancing the Park's natural attributes and resources and preserving and maintaining the Urban Wilderness Identity.
- Promote natural qualities, minimize new urban intrusions in the Wilderness Area and provide for informal recreation.

Los Angeles River Revitalization Master Plan

The key premise guiding the Los Angeles River Revitalization Master Plan (LRRMP) is that of enhancing the health quality for area residents by restoring the significant hydrologic, biological, and recreational resources that were lost when the river was re-engineered in the 1930s to meet flood control purposes to the exclusion of other needs.

Four overall goals are presented in the LRRMP, including the following:

- Revitalizing the river by creating a continuous riparian habitat corridor, and restoring the river's hydrologic functioning;
- Greening adjacent neighborhoods by establishing a river greenway, creating a stronger river design identity, creating better public access to the river, introducing public art, and repurposing river-adjacent, under-utilized property;
- Promoting community opportunities by establishing guidelines for environmentally sensitive urban design, landscape, and development for the river that will create economic development opportunities calibrated to improve river-adjacent communities; and
- Creating value by improving the quality of life of residents, and enhancing the attractiveness of the river through sustainable, environmentally sensitive urban design that also celebrates the cultural heritage of the river.

L.A.'s Green New Deal – Sustainable City Plan

L.A.'s Green New Deal (2019) is the first four-year update to the 2015 Sustainable City pLAn. It augments and expands the City's vision for a sustainable future and presents accelerated

targets and new aggressive goals to address the global climate emergency. The 2019 update includes four key principles, including: (1) a commitment to the Paris Climate Agreement and to act urgently with a scientifically-driven strategy for achieving a zero carbon grid, zero carbon transportation, zero carbon buildings, zero waste, and zero wasted water; (2) a responsibility to deliver environmental justice and equity through an inclusive economy, producing results at the community level, guided by communities themselves; (3) a duty to ensure that every Angeleno has the ability to join the green economy, creating pipelines to good paying, green jobs and a just transition in a changing work environment; and (4) a resolve to demonstrate the art of the possible and lead the way, walking the walk and using the City's resources - our people and our budget - to drive change. The plan is organized by 13 chapters:

- Environmental Justice,
- Renewable Energy,
- Local Water,
- Clean & Healthy Buildings,
- Housing & Development,
- Mobility & Public Transit,
- Zero Emission Vehicles,
- Industrial Emissions & Air Quality Monitoring,
- Waste & Resource Recovery,
- Food Systems,
- Urban Ecosystems & Resilience,
- Prosperity & Green Jobs,
- Lead by Example.

One Water LA 2040 Plan

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

City of Los Angeles Zoning Code

The City Planning and Zoning Code (Zoning Code) includes standards for different land uses and identifies which land uses are allowed in various zoning districts. Specifically, the Zoning

Code consolidates and coordinates all existing zoning regulations and provisions to designate, regulate, and restrict locations and land uses.

Los Angeles Tree Preservation Ordinance

City of Los Angeles Tree Preservation Ordinance (City Ordinance number 177404, as amended) protects native Southern California tree species recognized for their ecological and cultural value. This ordinance regulates the removal and replacement of protected trees, which include the following four native Southern California tree species measuring four inches or more in cumulative diameter at four and one-half feet above the ground level at the base of the tree:

- Oak trees, including valley oak (*Quercus lobate*) and California live oak (*Quercus agrifolia*), or any other tree of the oak genus indigenous to California but excluding the scrub oak (*Quercus dumosa*)
- Southern California black walnut (*Juglans californica* var. *californica*)
- Western sycamore (*Platanus racemose*)
- California bay (Umbellularia californica)

All trees meeting the criteria above are protected trees and removal or relocation would require a permit from the Board of Public Works and replacement of each tree removed by a ratio of at least 2:1. A protected tree report is required to be submitted to the Board of Public Works to apply for a tree removal permit and must contain the required information listed in the City's Standard Tree Removal Application Checklist.

In January of 2017, a Protected Tree Code Amendment was proposed to the City to amend the existing Tree Preservation Ordinance and expand the definition of "Protected Tree" to include the Mexican elderberry (*Sambucus mexicana*) and toyon (*Heteromeles arbutifolia*) shrubs. Under the proposed amendment, the defined term "Protected Tree" would be changed to "Protected Tree or Shrub" to encompass these two shrubs. Further, the proposed amendment would increase the current replacement requirement from a ratio of 2:1 to 4:1.

City of Los Angeles Department of Recreation and Parks Tree Preservation Policy

The RAP Tree Preservation Policy is a regulatory tool to provide additional protections to urban forest trees within parks beyond the protections regulated by the City of Los Angeles Tree Preservation Ordinance. In addition to the trees protected by the Tree Preservation Ordinance, the Tree Preservation Policy regulates protection of Heritage, Special Habitat Value, and Common Park trees within RAP managed parks and facilities. The Zoo, however, is not a RAP managed facility, but is located adjacent to RAP parkland in Griffith Park.

Existing Conditions

Regional Setting

The Project site is located completely within the City in the northeast corner of Griffith Park, where urban development transitions to natural open space and recreational areas. Griffith Park is entirely designated as Open Space (OS) in the City's zoning and General Plan (City of Los Angeles 2017). Griffith Park is the largest area in the City exclusively intended for recreation and environmental protection. Griffith Park is bordered by the cities of Burbank and Glendale to the northwest and northeast, respectively, as well as communities within the City, including Los Feliz, Hollywood Hills, and Cahuenga Park to the southwest.

Bordering Griffith Park, the nearest land uses to the Project area are in Burbank and Glendale. Land uses bordering Griffith Park within Burbank are primarily single family residential and open space (City of Burbank 2012). North of the park, land uses in Glendale include industrial, commercial service, and medium- to low-density residential. Land uses east of the Park that fall within Glendale's boundaries are primarily industrial and commercial mixed uses, such as construction and demolition, recycling, and stage lighting equipment supply (City of Glendale 2018). Low-density residential areas border Griffith Park to the south and west, with the Forest Lawn Memorial Park – Hollywood Hill located along the Park's western boundary. Major industrial and manufacturing tenants in the vicinity include Walt Disney Studios, Disney Animation, Dreamworks Animation LLC, American Reclamation, Inc., Eaton Corporation Hydraulic Systems, Quixote Studios, and 4Wall Entertainment. In addition, Universal Studios is located directly west of Griffith Park, approximately 3.5 miles from the Zoo.

Griffith Park provides several popular destinations, including the Zoo, the Greek Theater, the Ferraro Soccer Complex, the Autry Museum of the American West, Griffith Park Dog Park, and Griffith Observatory, along with eight service yards and maintenance areas. Other attractions include the Hollywood Sign, the Bronson Caves, the Wilson and Harding Golf Courses, the Los Angeles Equestrian Center, and the Travel Town Train Museum. The abandoned Griffith Park Zoo (aka, Old Zoo, or former location of the Los Angeles Zoo) remains an attraction for visitors to Griffith Park with benches for picnicking and the ruins of large animal exhibits for exploring. The remaining area of Griffith Park is dedicated to open space and recreation. Recreation uses include approximately 55 miles of bridle trails that equestrians share with hikers, more than 26 miles of bicycle routes (23 miles of which are vehicle-free), and 38 miles of paved roads. Also located within Griffith Park is the Hollywood Reservoir, approximately 2.5 miles southwest of the Zoo and the former Toyon Landfill, which closed in 2008 and is currently undergoing active management and vegetation restoration by the City's Bureau of Sanitation. While the Los Angeles River is channelized, oak riparian woodland exists in a limited corridor near the Project site.

The Park's goals and objectives are detailed in the Griffith Park Vision Plan, which address all areas of Griffith Park, including the developed attractions (i.e., Zoo, Griffith Observatory,

Autry Museum of the American West). Goals include highlighting the difference between the Park's nature and the City's urban environments, increasing public transit, environmentally resurfacing parking lots within the Park, ensuring development maintains the character and gateways to the park, and providing safety to pedestrian, cyclist, and equestrian users (RAP 2013).

Project Area and Vicinity

The Zoo is located entirely within the City boundaries and Griffith Park and is included within the Hollywood Community Plan. The entirety of the Project site is designated as Open Space, except for North Zoo Drive, which is designated as Public Facilities. Uses in the vicinity of the Zoo include a mix of recreational open space, I-5 and SR-134 freeways, heavy manufacturing land uses, low-density residential, and neighborhood commercial. The Project site is immediately bordered by open space lands of Griffith Park to the north and west, by Zoo Drive and Western Heritage Way to the north and east, and the Wilson & Harding Golf Course to the south (see Table 3.11-1). Further north and east runs the Los Angeles River, which is located less than one mile from the Zoo and acts as a rough boundary line between the City of Los Angeles, the City of Burbank to the north, and the City of Glendale to the east. The Project site does not lie within the Airport Influence Area of any airport and is not located near any private airstrips.

Table 3.11-1. Land Uses Surrounding the Project Site

Direction	Use
North	Undeveloped open space within Griffith Park.
East	Autry Museum of the American West
South	The Wilson & Harding Golf Courses.
West	Recreational open space, including hiking trails and the Mineral Wells Picnic Area.

3.11.2 Impact Assessment Methodology

Significance Thresholds

According to Appendix G of the State CEQA Guidelines and the *2006 L.A. CEQA Thresholds Guide*, a project would have a significant impact related to land use if it would:

a. Physically divide an established community; or

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

Non-applicable threshold(s):

- Threshold (a) (*Division of an established community*): The proposed Vision Plan would not physically divide an established community. Most construction associated with the Project would occur within the existing footprint of the Zoo, with additional improvements to the parking and circulation immediately surrounding the Zoo property. The Project's proposed uses would be consistent with existing land uses at the Zoo. Therefore, the proposed Project would not physically divide an established community and this issue will not be analyzed further in this EIR.

Methodology

This analysis of land use consistency considers whether the Project would be consistent with applicable plans, policies, and regulations. Sources utilized in the development of this section include the City's General Plan, the City of Los Angeles Municipal Code (LAMC), the City's Hollywood Community Plan, and the Griffith Park Vision Plan. Potential impacts focus on consistency with adopted environmental plans and policies and the compatibility of the proposed Vision Plan with existing and planned land uses in the City. Plan and policy consistency are based on whether the Vision Plan would result in environmental impacts to a resource as outlined in the applicable plan. This analysis is conducted based on the Project assumptions, as described in Section 3.0, *Introduction and Approach to Analysis*. This analysis considers the Project construction and operational components (e.g., events, tours, educational programs) that support the transformation of the Zoo (Appendix A).

3.11.3 Environmental Impact Analysis

LU-1:	Would the project cause a significant environmental impact due to conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

The Project would be subject to regional plans, such as SCAG's RTP/SCS, and local plans and policies, such as the City's General Plan, the Hollywood Community Plan, and the LAMC. The Project's consistency with the policies and goals of applicable land use plans and policy documents are discussed in Table 3.11-2 and Table 3.11-3 below. The discussions in these tables assesses whether any inconsistency with these standards creates a significant physical impact on the environment. As required by CEQA, the Project's consistency with plans and policies related to greenhouse gas emissions is addressed in Section 3.8, *Greenhouse Gas Emissions* and consistency with transportation plans, policies, and ordinances is addressed in Section 3.15, *Transportation*.

Table 3.11-2. SCAG Policy Consistency Summary

Policy	Relationship to Project
SCAG RTP/SCS	
Goal 1. Align the plan investments and policies with improving regional economic development and competitiveness.	Consistent. The proposed Vision Plan would guide comprehensive improvements and capital improvement projects to upgrade Zoo animal environments, facilities, and the visitor experience to ultimately create a transformational, world class zoo for the City, which would support regional economic development and competitiveness.
Goal 2. Maximize mobility and accessibility for all people and goods in the region. Goal 3. Ensure travel safety and reliability for all people and goods in the region. Goal 5. Maximize the productivity of our transportation system.	Consistent with Mitigation. The Vision Plan proposes substantial redesign of the Zoo Entry and internal circulation system to provide more ADA-accessible and pedestrian friendly navigation for visitors. The proposed Phase 1 road realignment would also allow the Zoo's southbound bus stop to be moved to Western Heritage Way between the Zoo and Autry Museum of the American West, improving the efficiency of public transportation access to the North Hollywood High School Zoo Magnet Center, Autry Museum, and the proposed park north of the proposed parking structure (Phase 7). However, increased visitation would drive transportation impacts related to increased vehicle miles traveled (VMT). Further, the Project does not include multi-modal improvements or expansion of active transportation facilities to ensure accessibility to the Zoo. **MM T-2** would require implementation of a comprehensive Transportation Demand Management (TDM) Program which would include measures to incentivize rideshare/carpooling, parking management, and use of non-vehicular modes for both employees and visitors, including expansion of transit service connection to the Zoo. See also Section 3.15, *Transportation*.
Goal 6. Protect the environment and health of our residents by improving air quality and encouraging active transportation (e.g., bicycling and walking).	Consistent with Mitigation. The Zoo currently provides approximately 54 bicycle parking spaces and would continue to provide bicycle parking at the Zoo Entry to encourage active transportation to the Zoo. However, increased visitation would drive transportation impacts related to increased VMT. Further, the Project does not include multi-modal improvements or expansion of active transportation facilities to ensure accessibility to the Zoo. **MM T-2** would be required to implement or expand non-vehicular transportation modes to the Zoo to reduce trips, VMT, and congestion, and improve air quality. Refer also to Section 3.15, *Transportation*.
Goal 7. Actively encourage and create incentives for energy efficiency, where possible.	Consistent. As discussed in Section 3.5, *Energy*, the Vision Plan proposes use of Leadership in Energy and Environmental Design (LEED) Silver construction techniques, up to 70,000 square feet of solar photovoltaic panels, and electronic communications lines to automatically control exhibits utilities and environmental conditions to reduce power demand. The Project would also guide redevelopment of outdated Zoo facilities that do not currently meeting existing energy and building codes (e.g., California's Green Building Standard Code).

Table 3.11-3. General Plan Policy Consistency Summary

Policy	Relationship to Project
City of Los Angeles General Plan	
Air Quality Element	
Policy 2.1.1. Utilize compressed work weeks and flextime, telecommuting, carpooling, vanpooling, public transit, and improve walking/bicycling related facilities in order to reduce Vehicle Trips and/or Vehicle Miles Traveled (VMT) as an employer and encourage the private sector to do the same to reduce work trips and traffic congestion.	Consistent with Mitigation. The Zoo currently provides and would continue to utilize compressed work weeks and flexible work schedules. This is due to the unique hours of operation, schedules, and employee shifts that align with non-peak hours, thereby reducing traffic congestion. In addition, the Zoo currently provides and would continue to provide bicycle parking at the Zoo Entry. The proposed Phase 1 road realignment would also allow the Zoo's southbound bus stop to be moved to Western Heritage Way between the Zoo and Autry Museum of the American West, improving the efficiency of public transportation access to the North Hollywood High School Zoo Magnet Center, Autry Museum, and the proposed park north of the proposed parking structure (Phase 7). However, increased visitation would drive transportation impacts related to increased VMT. Further, the Project does not include multi-modal improvements or expansion of active transportation facilities to ensure accessibility to the Zoo for employees and visitors. **MM T-2** would be required to reduce transportation impacts. These measures would require the Zoo to implement or expand alternative transportation modes to the Zoo to reduce trips, VMT, and congestion. Refer also to Section 3.15, *Transportation*.
Policy 2.2.1. Discourage single-occupant vehicle use through a variety of measures such as market incentive strategies, mode-shift incentives, trip reduction plans, and ridesharing subsidies.	Consistent with Mitigation. Survey data collected for the Project's Transportation Impact Analysis (Appendix N) indicates that most employees drive to the Zoo, most commonly as single-occupant vehicles. Further, most visitors drive passenger vehicles and do not have ready access to transit, bicycle, or pedestrian facilities that allow reasonable transportation to the Zoo. The proposed Phase 1 road realignment would improve the efficiency of public transportation access to several uses near the Zoo (e.g., the North Hollywood High School Zoo Magnet Center, Autry Museum, and the proposed public park north of the proposed parking structure) by allowing the Zoo's southbound bus stop to be moved to Western Heritage Way between the Zoo and Autry Museum of the American West. However, increased visitation would drive transportation impacts related to increased VMT. Further, the Project does not include multi-modal improvements or expansion of active transportation facilities to ensure accessibility to the Zoo. **MM T-2** would be required to reduce transportation impacts. These measures would require the Zoo to implement or expand alternative transportation modes to the Zoo to reduce trips, VMT, and congestion. These measures would ensure ridesharing, transit use, parking management, and trip reduction strategies are implemented, which would be consistent with these City policies. See also Section 3.15, *Transportation*.
Policy 2.2.2. Encourage multi-occupant vehicle travel and discourage single-occupant vehicle travel by instituting parking management practices.	
Policy 2.2.3. Minimize the use of single-occupant vehicles associated with special events or in areas and times of high levels of pedestrian activities.	
Policy 4.2.3. Ensure that new development is compatible with pedestrians, bicycles, transit, and alternative fuel vehicles.	Consistent with Mitigation. The proposed Phase 1 road realignment would allow the Zoo's southbound bus stop to be moved to Western Heritage Way between the Zoo and Autry Museum of the American West, improving the efficiency of public transportation access to the North Hollywood High School Zoo Magnet Center, Autry Museum, and the proposed park north of the proposed parking structure (Phase 7). The Zoo currently provides and would continue to provide bicycle parking at the Zoo Entry. However, increased visitation would drive
Policy 4.2.5. Emphasize trip reduction, alternative transit, and congestion management	

Table 3.11-3. General Plan Policy Consistency Summary (Continued)

Policy	Relationship to Project
measures for discretionary projects.	transportation impacts related to increased VMT. Further, the Project does not include multi-modal improvements or expansion of active transportation facilities to ensure accessibility to the Zoo. **MM T-2** would be required to reduce transportation impacts. These measures would require the Zoo to implement or expand alternative transportation modes to the Zoo to reduce trips, VMT, and congestion. These measures would ensure ridesharing, transit use, parking management, and trip reduction strategies are implemented, which would be consistent with these City policies. See also Section 3.15, *Transportation*.
Policy 5.1.2. Effect a reduction in energy consumption and shift to non-polluting sources of energy in its buildings and operations.	Consistent. As discussed in Section 3.5, *Energy*, the Vision Plan proposes use of LEED Silver construction techniques, up to 70,000 square feet of solar photovoltaic panels with the goal of providing up to 50 percent of the Zoo's energy demand, and electronic communications lines to automatically control exhibits utilities and environmental conditions to reduce power demand. The Project would also guide redevelopment of outdated Zoo facilities that do not currently meeting existing energy and building codes (e.g., California's Green Building Standard Code).
Policy 5.1.4. Reduce energy consumption and associated air emissions by encouraging waste reduction and recycling.	Consistent. The City currently recycles and would continue to recycle applicable waste under operation of the Vision Plan. The Zoo would also continue "Zoo Doo" operations associated with the Griffith Park Composting Facility to recycle animal bedding (i.e., hay) and waste. The Zoo would continue to be a source for food waste diversion, working with World Harvest to use appropriate and quality food waste for animal feed, thereby preventing landfill disposal.
Policy 5.3.1. Support the development and use of equipment powered by electric or low-emitting fuels.	Consistent. Consistent with LAMC Section 99.05.106.5.3.3, the Project would provide at least 20 percent of the total number of parking spaces as electric vehicle spaces. In addition, as described in Section 2.3.3, *Vision Plan Guiding Principles*, a minimum to two stations shall be provided for each designated parking area of Zoo vehicles.
Conservation Element	
Section 5 Policy 1. Continue to protect historic and cultural sites and/or resources potentially affected by proposed land development, demolition, or property modification activities.	Consistent. The Project would not adversely affect any potently historic or cultural sites and/or resources at or near the Zoo. Refer also to Section 3.4, *Cultural and Tribal Cultural Resources*.
Section 6 Policy 1. Continue to require evaluation, avoidance, and minimization of potential significant impacts, as well as mitigation of unavoidable significant impacts on sensitive animal and plant species and their habitats and habitat corridors relative to land development activities.	Consistent with Mitigation. The Project would require land clearance and tree removal for construction of the California and Africa planning areas, which could remove sensitive plant species or habitats for sensitive animal species. Project operation would potentially result in impacts to sensitive wildlife species due to noise disturbance from events at the proposed visitor centers. Implementation of **MM BIO-1** through **MM BIO-6** and **MM UF-1** and **MM UF-2** would reduce Project impacts to a less than significant degree by requiring avoidance of specimens or habitat to the maximum extent feasible and restoration of disturbed trees or habitat on- or offsite. If restoration occurs offsite, restoration activities have the potential to improve habitat, biological value, and wildlife movement within Griffith Park.
Section 6 Policy 2. Continue to administer city-owned and	

Table 3.11-3. General Plan Policy Consistency Summary (Continued)

Policy	Relationship to Project
managed properties so as to protect and/or enhance the survival of sensitive plant and animal species to the greatest practical extent.	Refer also to Section 3.3, *Biological Resources* and Section 3.6, *Urban Forestry Resources*.
Section 8 Policy 2. Continue to prevent or reduce erosion that will damage the watershed or beaches or will result in harmful sedimentation that might damage beaches or natural areas.	Consistent. Project implementation would require excavation and grading for proposed improvements, potential blasting of bedrock to construct the proposed Condor Canyon pathway, and ground disturbance to install the aerial tram foundation and/or footings and underground stormwater system. Such earthwork would increase the potential for erosion onsite with sedimentation to surrounding storm drains that flow to the Los Angeles River watershed. However, standard construction BMPs would be implemented to avoid environmental impacts from erosion, consistent with existing City and State Water Resources Control Board permitting and regulations. Refer to Section 3.7, *Geology and Soils*, and Section 3.10, *Hydrology and Water Quality*.
Section 12 Policy 2. Continue to protect, restore and/or enhance habitat areas, linkages, and corridor segments, to the greatest extent practical, within city owned or managed sites.	Consistent with Mitigation. The Project would require significant tree removal for construction of proposed improvements throughout the Zoo, as well as removal of native vegetation communities in the proposed Africa and California planning areas in Phase 1 through 3. Implementation of **MM BIO-1** through **MM BIO-6** and **MM UF-1** and **MM UF-2** would reduce Project impacts to a less than significant degree by requiring avoidance, preservation, or restoration at appropriate ratios either on- or offsite. Refer also to Section 3.3, *Biological Resources* and Section 3.6, *Urban Forestry Resources*.
Section 12 Policy 3. Continue to work cooperatively with other agencies and entities in protecting local habitats and endangered, threatened, sensitive and rare species.	Consistent with Mitigation. The Project would require significant tree removal for construction proposed improvements and removal of native vegetation communities in the proposed Africa and California planning areas. Implementation of **MM BIO-1** through **MM BIO-6** and **MM UF-1** and **MM UF-2** would reduce Project impacts to a less than significant degree by requiring avoidance, preservation, or restoration at appropriate ratios either on- or offsite. Any offsite restoration or disturbance of resources within Griffith Park will require close coordination with RAP to ensure resources are protected or mitigation occurs within appropriate areas or in a manner consistent with RAP procedures for management of resources within Griffith Park. Refer also to Section 3.3, *Biological Resources* and Section 3.6, *Urban Forestry Resources*.
Section 13 Policy 1. Continue striving to meet the city's water, power, and other needs while at the same time striving to be a good steward of natural resources and minimizing impacts on the environment.	Consistent. As discussed in Section 3.5, *Energy*, Section 3.6, *Urban Forestry Resources*, Section 3.8, *Recreation*, Section 3.10, *Hydrology and Water Quality*, Section 3.13, *Public Services*, Section 3.15, *Transportation*, and Section 3.16, *Utilities*, proposed utilities would be resource-efficient, including onsite solar energy collectors and stormwater treatment facilities, to ensure that resources and services provided by the City would be sufficient to address growth in demand while minimizing potential impacts on the environment. For example, the Project would provide up to 70,000 square feet of solar photovoltaic panels to generate solar energy and reduce the Zoo's energy consumption, while required mitigation measures identified in Section 3.15, *Transportation* would increase opportunities for alternative transportation to reduce VMT and fuel energy demands.

Table 3.11-3. General Plan Policy Consistency Summary (Continued)

Policy	Relationship to Project
Section 18 Policy 2. Continue to encourage the reuse of sand and gravel products, such as concrete, and of alternative materials use in order to reduce the demand for extraction of natural sand and gravel.	Consistent. Project construction would balance soils and reuse existing concrete onsite that requires demolition for new paving to the extent feasible.
Section 19 Policy 1. Continue to encourage energy conservation and petroleum product reuse.	Consistent. As discussed in Section 3.5, *Energy*, the Vision Plan would guide redevelopment of outdated Zoo facilities that do not currently meeting existing energy and building codes. Project implementation would ensure all new development at the Zoo complies with all applicable state and local building codes. Additional improvements across all phases include the installation of electronic communications lines to automatically control exhibit utilities and environmental conditions, further reducing future utility demand.
Safety Element	
Policy 1.1.3. Facility/systems maintenance. Provide redundancy (back-up) systems and strategies for continuation of adequate critical infrastructure systems and services so as to assure adequate circulation, communications, power, transportation, water, and other services for emergency response in the event of disaster related systems disruptions.	Consistent. The Project would include the installation of new underground utility infrastructure, including telephone, data, intercom, public address system, fire alarm and mass evacuation system, and energy management system. This proposed infrastructure would equip the Zoo with emergency power and communications systems in the event of a disaster. The Project would also include substantial improvements to existing water utility services, which includes fire hydrant and fire suppression systems consistent with City standards. In addition, external and internal site circulation would be redesigned to provide improved site access and internal pedestrian and vehicle circulation. Refer also to Section 3.5, *Energy*, Section 3.10, *Hydrology and Water Quality*, Section 3.15, *Transportation and Circulation*, and Section 3.16, *Utilities.*
Policy 1.1.5. Risk reduction. Reduce potential risk hazards due to natural disaster to the greatest extent feasible within the resources available, including provision of information and training.	Consistent. Phase 3 of the Vision Plan would construct a new service center to provide dedicated storage areas for all potentially hazardous materials at the Zoo. All new employees at the Zoo would continue to be trained for potential risks and hazards. Additionally, the proposed underground infrastructure would include a public-address system and fire alarm and mass evacuation system to communicate to visitors and staff in the event of a natural disaster. Refer to Section 3.9, *Hazards and Hazardous Materials.*
Policy 1.1.6. State and federal regulations. Assure compliance with applicable state and federal planning and development regulations (e.g., Alquist-Priolo Earthquake Fault Zoning Act, State Mapping Act and Cobey-Alquist Flood Plain Management Act).	Consistent. All proposed buildings and structures are subject to CBC requirements and would be reviewed and approved by the City's Department of Building and Safety prior to issuance of building permits. Refer to Section 3.7, *Geology and Soils*.
Policy 2.1.2. Health and environmental protection. Develop and implement procedures to protect the environment and public,	Consistent. Animal Care staff would continue to utilize Animal Care Manuals published by the American Zoological Association to provide the specific care required for the animals. Refer to Section 3.9, *Hazards and Hazardous Materials.*

Table 3.11-3. General Plan Policy Consistency Summary (Continued)

Policy	Relationship to Project
including animal control and care, to the greatest extent feasible within the resources available, from potential health and safety hazards associated with hazard mitigation and disaster recovery efforts.	
3.1.2 Health/safety/ environment. Develop and establish procedures for identification and abatement of physical and health hazards which may result from a disaster. Provisions shall include measures for protecting workers, the public and the environment from contamination or other health and safety hazards associated with abatement, repair, and reconstruction programs.	Consistent. Phase 3 of the Vision Plan would construct a new service center to provide dedicated storage areas for all potentially hazardous materials at the Zoo. All new employees at the Zoo would continue to be trained for potential risk hazards. Refer to Section 3.9, *Hazards and Hazardous Materials.*
Mobility Element	
Policy 1.2. Implement a balanced transportation system on all streets, tunnels, and bridges using complete streets principles to ensure the safety and mobility of all users.	Consistent with Mitigation. Access to and around the Zoo currently supports balanced transportation with Class II bike lanes along Zoo Drive and Western Heritage Way and access to the site from equestrian and hiking trails. Metro Bus Line 96 provides services the Zoo. Under the Vision Plan, multi-modal transportation would be further supported through realignment and improvement of Western Heritage Way/Crystal Springs Drive to create a unified guest parking lot, reducing pedestrian street crossings and which would comply with complete streets principles to ensure the safety and mobility of all users. However, the Project does not include multi-modal improvements or expansion of active transportation facilities to ensure accessibility to the Zoo. **MM T-2** would be required to reduce transportation impacts. These measures would require the Zoo to implement or expand alternative transportation modes to the Zoo to reduce trips, VMT, and congestion. These measures would increase ridesharing, transit use, parking management, and trip reduction strategies, which would be consistent with these City policies. Refer also to Section 3.15, *Transportation*. In addition, implementation of **MM T-2** would require implementation of additional multi-modal improvements to reduce VMT and improve safety and mobility in and around the Zoo. **MM REC-1** would require the long-term Zoo Drive/Western Heritage Way intersection improvements be considerate of pedestrian, bicyclist, and equestrian safety with regard to the Main Trail and that use of this important trail is not hindered by implementation of the improvement. See also Section 3.15, *Transportation*.
Policy 1.3. Prioritize the safety of school children on all streets regardless of highway classifications.	Consistent. As discussed in Section 3.15, *Transportation*, Phase 1 of the Project would realign Western Heritage Way/Crystal Springs Drive to the southern perimeter of the parking lots to create a unified guest parking lot, reducing pedestrian street crossings. This would more

Table 3.11-3. General Plan Policy Consistency Summary (Continued)

Policy	Relationship to Project
	strongly link the North Hollywood High School Zoo Magnet Center to the main Zoo campus, eliminating the need for students and Zoo visitors to cross this busy street.
Policy 2.7. Provide vehicular access to the regional freeway system.	Consistent. The circulation system around the Zoo currently provides and would continue to provide access to both I-5 and SR-134. Proposed Phase 1 offsite roadway improvements at the intersection of Zoo Drive and Western Heritage Way may employ grade changes, stoplights, and other circulation improvements to address peak backups and congestion on both I-5 and SR-134. See also Section 3.15, *Transportation*.
Policy 2.10. Facilitate the provision of adequate on and off-street loading areas.	Consistent. As discussed in Section 3.15, *Transportation*, Phase 3 of the Project would construct a new service center with improved roadway access and two new 160-degree radius turns around locations for larger trucks to facilitate deliveries by large trucks and improve loading efficiency.
Policy 3.2. Accommodate the needs of people with disabilities when modifying or installing infrastructure in the public right-of-way.	Consistent. The Project proposes substantial redesign of the Zoo Entry and internal circulation system to provide more ADA-accessible and pedestrian friendly navigation for visitors, including reconstruction of the Zoo Entry Plaza to ensure the maximum grade of less than 5 percent.
Policy 3.5. Support "first-mile, last-mile solutions" such as multi-modal transportation services, organizations, and activities in the areas around transit stations and major bus stops (transit stops) to maximize multi-modal connectivity and access for transit riders.	Consistent. The proposed Phase 1 road realignment would allow the Zoo's southbound bus stop to be moved to Western Heritage Way between the Zoo and Autry Museum of the American West, improving the efficiency of public transportation access to the North Hollywood High School Zoo Magnet Center, Autry Museum, and the proposed park north of the proposed parking structure (Phase 7). However, the Project does not include multi-modal improvements or expansion of active transportation facilities to ensure accessibility to the Zoo. **MM T-2** would be required to reduce transportation impacts. These measures would require the Zoo to implement or expand alternative transportation modes to the Zoo to reduce trips, VMT, and congestion, including transit options to increase non-vehicular access to the Zoo. These measures would increase ridesharing, transit use, parking management, and trip reduction strategies, which would be consistent with these City policies. Refer also to Section 3.15, *Transportation*. In addition, implementation of **MM T-2** would require implementation of additional multi-modal improvements to reduce VMT and improve safety and mobility in and around the Zoo. See also Section 3.15, *Transportation*.
Policy 3.8. Provide bicyclists with convenient, secure, and well-maintained bicycle parking facilities.	Consistent. The Zoo currently provides and would continue to provide bicycle parking at the Zoo Entry under the Vision Plan. Connections to the Los Angeles River bicycle path would remain under the Project to provide regional connectivity.
Policy 5.2. Support ways to reduce vehicle miles traveled (VMT) per capita.	Consistent with Mitigation. As discussed in Section 3.15, *Transportation*, the Project would generate additional vehicle trips associated with projected visitor growth. The Project does not include multi-modal improvements or expansion of active transportation facilities to ensure accessibility to the Zoo. **MM T-2** would be required to reduce transportation impacts. These measures would require the Zoo to implement or expand alternative transportation modes to the Zoo to reduce trips, VMT, and congestion, including transit options to

Table 3.11-3. General Plan Policy Consistency Summary (Continued)

Policy	Relationship to Project
	increase non-vehicular access to the Zoo. These measures would increase ridesharing, transit use, parking management, and trip reduction strategies, which would be consistent with these City policies. Refer also to Section 3.15, *Transportation*. In addition, implementation of **MM T-2** would require implementation of additional multi-modal improvements to reduce VMT and improve safety and mobility in and around the Zoo. See also Section 3.15, *Transportation*.
Policy 5.4. Continue to encourage the adoption of low and zero emission fuel sources, new mobility technologies, and supporting infrastructure.	Consistent. Consistent with LAMC Section 99.05.106.5.3.3, the Project would provide at least 20 percent of the total number of parking spaces as electric vehicle spaces. In addition, as described in Section 2.3.3, *Vision Plan Guiding Principles*, a minimum to two stations shall be provided for each designated parking area of Zoo vehicles. See Section 3.15, *Transportation*.
Open Space Element	
Alteration of drainage patterns shall be minimized in the development of any land in mountainous areas.	Consistent. Project implementation would require excavation and grading of existing disturbed hillsides for proposed improvements, potential blasting of bedrock to construct the proposed Condor Canyon pathway, and ground disturbance to install the aerial tram foundation and/or footings and underground stormwater system. Such earthwork would not substantially alter the drainage patterns onsite. All drainage through the Zoo would continue to be directed to existing water treatment facilities prior to discharge to the Los Angeles River (see Section 3.10, *Hydrology & Water Quality*). Further, the proposed underground stormwater system is intended to capture all stormwater runoff onsite and store it for potential reuse onsite.
The amount of earth moved in grading operations within desirable open space areas should be limited and closely controlled. Aesthetic consideration should be incorporated into the City's approval of grading plans in these areas.	Consistent. As described in Section 3.7, *Geology and Soils*, and Section 3.10, *Hydrology and Water Quality*, Project implementation would require excavation and grading of existing disturbed hillsides for proposed improvements. The proposed Condor Canyon pathway would require substantial modification of the terrain in undeveloped areas of the California planning area. However, open space areas within the Zoo are disturbed and inaccessible to the public. Further, no desirable open space areas within Griffith Park or elsewhere are proposed to be altered, as almost all improvements would occur entirely within the existing Zoo property.
Small parks, public and private, should be located throughout the City. Not only should recreation activities be provided, but an emphasis shall be placed on greenery and openness.	Consistent. Construction of the proposed Phase 7 parking structure would include installation of a new small public park providing grass areas and picnic facilities in the northern most portion of the Zoo parking lot. The public park would be accessible to Zoo visitors and Griffith Park visitors to augment the City's inventory of improved public parks.
Where development is allowed in ecologically important areas, the intensity of development should be kept at a minimum consistent with reasonable uses of the land. All measures should be taken to protect these areas including buffering ecologically	Consistent with Mitigation. As discussed in Section 3.3, *Biological Resources*, and Section 3.12, *Noise and Vibration*, Project operation would potentially result in impacts to sensitive wildlife species due to noise disturbance from construction and operation of the Zoo, particularly from events at the three proposed visitor centers. Construction noise effects on biological resources would be reduced to a less than significant degree with implementation of **MM BIO-**1, **MM BIO-2**, and **MM BIO-6.** Due to the existing urban nature of the Zoo,

Table 3.11-3. General Plan Policy Consistency Summary (Continued)

Policy	Relationship to Project
important areas from conflicting or detrimental uses.	existing frequent noise events, and limited area of natural or native vegetation within the Zoo providing habitat value, operational noise producing activities (i.e., events) would not result in significant impacts to ecological areas.
Hazardous open space areas; including property especially subject to fire, steeply sloping hillsides, and geologically unstable lands; are threats to the public safety. Proposals for their use should be evaluated in light of more restrictive grading requirements, better provision for access and lower densities and/or intensities of development.	Consistent. The Zoo is in an urban wilderness area subject to fire hazards, as described in Section 3.17, *Wildfire*. Safety protocols are maintained to minimize risk of impacts due to wildfires. These include preparation and implementation of Zoo operations manual, which outline safety procedures, emergency preparedness, and evacuation, annual vegetation management in compliance with Los Angeles Fire Department regulations, and maintenance of an onsite fire suppression system. With these required upgrades, the Project would reduce the potential for fire ignition and improve the Zoo's resilience to fire with renovations to buildings and fire response capabilities.
The City should encourage the use of alternative modes of transportation for access to some open space and recreational areas especially in more remote areas. The need for public transportation from impacted areas is considered especially important.	Consistent with Mitigation. The proposed Phase 1 road realignment would allow the Zoo's southbound bus stop to be moved to Western Heritage Way between the Zoo and Autry Museum of the American West, improving the efficiency of public transportation access to these attractions. the However, the Project does not include multi-modal improvements or expansion of active transportation facilities to ensure accessibility to the Zoo. **MM T-2** would be required to reduce transportation impacts. These measures would require the Zoo to implement or expand alternative transportation modes to the Zoo to reduce trips, VMT, and congestion, including transit options to increase non-vehicular access to the Zoo. These measures would increase ridesharing, transit use, parking management, and trip reduction strategies, which would be consistent with these City policies. In addition, implementation of **MM T-2** would require implementation of additional multi-modal improvements to reduce VMT and improve safety and mobility in and around the Zoo. See also Section 3.15, *Transportation*.
Noise Element	
Policy 2.2. Enforce and/or implement applicable city, state, and federal regulations intended to mitigate proposed noise producing activities, reduce intrusive noise and alleviate noise that is deemed a public nuisance.	Consistent. As discussed in Section 3.12, *Noise and Vibration*, the Project would generate construction noise during implementation of each phase, including noise from excavation and potentially blasting during Phase 1 to build Condor Canyon. Operational noise would include increased vehicle noise and continued use of amplified music. However, sensitive receptors would not be significantly affected by Project-generated noise.
Hollywood Community Plan	
Recreation and Parks	
Policy 3. That existing recreational sites and facilities be upgraded through site improvements, rehabilitation and reuse of sound structures, and replacement of obsolete	Consistent. Project implementation would renovate sound structures and replace outdated structures to enhance exhibit space, improve animal welfare, improve the visitor experience, and meet the Zoo goals to become a world class Zoo and destination.

Table 3.11-3. General Plan Policy Consistency Summary (Continued)

Policy	Relationship to Project
structures, as funds become available.	
Other Public Facilities	
Policy 2. That new equipment for public facilities be energy efficient.	Consistent. As discussed in Section 3.5, *Energy*, the Vision Plan proposes use of LEED Silver construction techniques, solar photovoltaic panels, and electronic communications lines to automatically control exhibits utilities and environmental conditions to reduce power demand.
L.A.'s Green New Deal	
Incorporate additional cooling features such as innovative shade design, water features, and cooling centers at parks.	Consistent. The proposed Vision Plan improvements would include installation of shade and rest stops throughout the Zoo, including at the Zoo Entry, the Bird Show and Animal Programs amphitheater, and the Cambodian pavilion. In addition, the Project would result in extensive landscaping improvements and tree plantings to create uniform theme areas and maximize shade areas throughout the Zoo.
Make key upgrades to transmission and distribution systems, substations, and other equipment to enable renewable energy integration into the electricity grid.	Consistent. The proposed Project would provide up to 70,000 square feet of solar photovoltaic panels to generate solar energy and reduce the Zoo's energy consumption by up to 50 percent.
Increase stormwater capture to 75,000 AFY. Increase non-potable reuse of recycled water by an additional 6,000 AFY by 2025; and an additional 8,000 AFY by 2035.	Consistent. The proposed underground stormwater management system would capture, treat, and store stormwater runoff for infiltration and reuse onsite. The use of these storage tanks would retain and reuse 100 percent of all rainfall on the Zoo's site and is projected to provide the Zoo with up to 35 million gallons of useable water per year. Refer to Section 3.10, *Hydrology and Water Quality* and see Section 3.16, *Utilities*.
Plant and maintain at least 90,000 trees citywide.	Consistent with Mitigation. The Project would require substantial tree removal as part of all proposed improvements; however, important streets (i.e., important trees, mature trees) would be protected in place. Trees that are removed through the Project would be replanted and expanded by the proposed landscaping of trees and vegetation representative of the theme of the proposed improvement area. Impacts to resulting from the removal of protected trees would be mitigated through implementation of **MM UF-1** and **MM UF-2** requiring substantial native tree replacement on- or offsite, as well as substantial replanting of disturbed areas to maintain an urban tree canopy at the Zoo. Though hundreds of trees could be removed as part of the Project, even more trees are expected to be planted as a result of required mitigation or proposed landscaping. Refer also to Section 3.3, *Biological Resources* and Section 3.6, *Urban Forestry Resources*.

Table 3.11-4. Griffith Park Vision Plan Policy Consistency Summary

Policy	Relationship to Project
Griffith Park Vision Plan	
II.A.3. Identify and preserve historic and cultural Park resources (Page 16).	Consistent with Mitigation. As described in Section 3.4, *Cultural and Tribal Cultural Resources*, the Project would not adversely affect any historic resources. The Project also involves reconstruction of the Treetops Terrace building to recreate the former iconic spires atop the proposed Treetops Visitor Center, thereby restoring a cultural feature within Griffith Park. There is a possibility that excavation below ground surface would uncover buried archaeological or tribal cultural resources, given the Zoo's regional setting within the traditional ethnographic territory of the Takic-speaking Gabrieleño/Tongva. With implementation of **MM CUL-1** through **MM CUL-7**, cultural and tribal cultural resources would be identified and preserved.
II.A.8. Manage Park programming and events in such a way as to minimize the impact to the wilderness area of the Park (Page 16).	Consistent. The Project would involve ongoing Zoo programming and events within the Zoo only. Zoo-related events and programs would not extend into the wilderness areas of Griffith Park and, therefore, the Project would maintain wilderness values and function of the park.
II.B.2. Implement a watershed management system that maximizes natural drainage systems, retention of storm water, filtering and discharging the water table, and connections to the Los Angeles River (Page 16).	Consistent. The Project would install a comprehensive subterranean stormwater collection and treatment system, including five underground cisterns, that would allow for capture and reuse of runoff in Zoo landscaping. The Project would continue to treat all runoff through existing water treatment facilities prior to discharge to the Los Angeles River.
II.B.4. Recycle and reuse Park waste (Page 17).	Consistent. The City currently recycles and would continue to recycle applicable waste under operation of the Vision Plan. The Zoo would also continue "Zoo Doo" operations associated with the Griffith Park Composting Facility to recycle animal bedding (i.e., hay) and waste. The Zoo would continue to be a source for food waste diversion, working with World Harvest to use appropriate and quality food waste for animal feed, thereby preventing landfill disposal.
IV.B.1. Reduce and prevent pollutant discharges into the environment (Page 38).	Consistent with Mitigation. The proposed underground stormwater management system would capture, treat, and store stormwater runoff for infiltration and reuse onsite. The use of these storage tanks would retain and reuse 100 percent of all rainfall on the Zoo's site and is projected to provide the Zoo with up to 35 million gallons of useable water per year. Refer to Section 3.10, *Hydrology and Water Quality*. Further, as discussed in Section 3.15, *Transportation*, the Project would generate additional vehicle trips associated with projected visitor growth. The Project does not include multi-modal improvements or expansion of active transportation facilities to ensure accessibility to the Zoo. **MM T-2** would be required to reduce transportation impacts, including vehicle emissions that would discharge pollutants to the environment. These measures would require the Zoo to implement or expand alternative transportation modes to the Zoo to reduce trips, VMT, and congestion, including transit options to increase non-vehicular access to the Zoo. These measures would increase ridesharing, transit use, parking management, and trip reduction strategies, which would be consistent with these City policies. Refer also to Section 3.15, *Transportation*. In

Table 3.11-4. Griffith Park Vision Plan Policy Consistency Summary (Continued)

Policy	Relationship to Project
	addition, implementation of **MM T-2** would require implementation of additional multi-modal improvements to reduce VMT and improve safety and mobility in and around the Zoo. See also Section 3.15, *Transportation*.
IV.B.2. Break up areas of impermeable surfacing and replace with permeable surfaces to allow water infiltration (Page 38).	Consistent. The Project would involve reconfiguration of the Zoo's internal circulation system of pathways and improvements to the Zoo's parking lot. Repaving would remove existing impermeable surfaces and install permeable surfaces that allow for water infiltration wherever feasible. For example, improvements to the southern parking lot during Phase 1 and the northern parking lot during Phase 7 would result in parking lots that function much like the existing main parking lot with stormwater capture, infiltration, bioswales, and tree plantings.
Maintenance Areas. In order to reduce the number of acres use for maintenance, services and storage, Park maintenance facilities could be consolidated. Such consolidation could provide for greater efficiency and provide additional recreational areas. Maintenance areas should be relocated out of view of Park visitors so that they do not detract from the Urban Wilderness Identity of the Park (Page 50).	Consistent. The Project would consolidate several service and maintenance areas currently within the Zoo, including the southern parking lot and at the western perimeter, to one service area conveniently located in the Africa planning area constructed during Phase 3. This consolidation would ensure greater efficiency in services and free up areas for improved Zoo animal environment and visitor-serving areas while also hiding the service area from view.
Sustainable Design Principles. Sustainable design principles should be applied throughout the Park to all aspects of additions and restoration, repairs, and maintenance, including building orientation, design and materials, and site design issues such as planting and native plant restoration, habitat enhancement, storm water management and watershed connections to the Los Angeles River (Page 52).	Consistent. As discussed in Section 3.5, *Energy*, the Vision Plan proposes use of Leadership in Energy and Environmental Design (LEED) Silver construction techniques, up to 70,000 square feet of solar photovoltaic panels, and electronic communications lines to automatically control exhibits utilities and environmental conditions to reduce power demand. The Project would also guide redevelopment of outdated Zoo facilities that do not currently meeting existing energy and building codes (e.g., California's Green Building Standard Code). The Project would install a comprehensive subterranean stormwater collection and treatment system, including five underground cisterns, that would allow for capture and reuse of runoff in Zoo landscaping. The Project would continue to treat all runoff through existing water treatment facilities prior to discharge to the Los Angeles River. Refer to Section 3.10, *Hydrology and Water Quality*.
Sustainable Design Principles. Consistent with sustainable design principles and the Urban Wilderness Identity, materials used should be low-maintenance, durable, and vandal-resistant. Whenever possible, previously used and recycled materials should be used. Improvements should comply with the energy efficiency requirements found in	Consistent. As discussed in Section 3.5, *Energy*, the Vision Plan proposes use of Leadership in Energy and Environmental Design (LEED) Silver construction techniques, up to 70,000 square feet of solar photovoltaic panels, and electronic communications lines to automatically control exhibits utilities and environmental conditions to reduce power demand. The Project would also guide redevelopment of outdated Zoo facilities that do not currently meeting existing energy and building codes (e.g., California's Green Building Standard Code). The Project would balance soils onsite to the extent feasible to minimize import of new materials during excavation.

Table 3.11-4. Griffith Park Vision Plan Policy Consistency Summary (Continued)

Policy	Relationship to Project
Title 24 of the California Code of Regulations (Page 52).	
Accessibility. All new structures and playgrounds are designed to be compliant with the Americans with Disabilities Act and will therefore be designed to the fullest extent possible to be universally accessible as they are added or remodeled (Page 53).	Consistent. The Project proposes substantial redesign of the Zoo Entry and internal circulation system to provide more ADA-accessible and pedestrian friendly navigation for visitors, including reconstruction of the Zoo Entry Plaza to ensure the maximum grade of less than 5 percent.
Lighting. Lighting throughout the Park should provide illumination while minimizing light pollution. Lighting fixtures should be consistent with the environmentally sensitive character of the Urban Wilderness Identity (Page 53).	Consistent. As described in Section 3.1, Aesthetics and Visual Resources, Zoo lighting would include nighttime security lighting and evening lighting of visitor-serving areas and animal environments. Light would be contained within the Zoo and would not extend into wilderness areas of Griffith Park.
Parking Lots. Priority should be given to resurfacing the Park's existing asphalt and concrete lots with environmentally responsible, water-permeable materials that will reduce the "heat island" effect and enhance the Park's Urban Wilderness Identity (Page 63).	Consistent. The Project would involve reconfiguration of the Zoo's internal circulation system of pathways and improvements to the Zoo's parking lot. Repaving would remove existing impermeable surfaces and install permeable surfaces that allow for water infiltration wherever feasible. For example, improvements to the southern parking lot during Phase 1 and the northern parking lot during Phase 7 would result in parking lots that function much like the existing main parking lot with stormwater capture, infiltration, bioswales, and tree plantings.
Parking Structures. No parking structures currently exist in the Park and, at this time, there is no identified need for new parking structures in the Park. Furthermore, parking structures are inconsistent with the Park's Urban Wilderness Identity and the increased automobile traffic that inevitably occurs in proximity to such structures materially damages the park-like nature of the picnic areas and recreational facilities that are adjacent to the lots. If, in the future, the need arises for parking structures, those parking structures should be located immediately outside the boundaries of the Park with a fully developed park and ride shuttle system available to transport Park users into and around the Park (Page 63).	Consistent. The Project would involve construction of a multi-story parking structure of up to five stories in height in Phase 7, to accommodate 2,000 spaces within the northern parking lot. The proposed parking structure would lie entirely within Zoo property. The proposed parking would be needed to accommodate the growth in visitation projected under the Project and meet the Zoo's goals for long-term development and programming. Without it, Zoo parking demand would exceed supply 15 days in 2025, 25 days in 2027, and 51 days in 2030 (Appendix N). The Griffith Park Vision Plan applies only to areas of the park controlled by RAP, which excludes Zoo property. Since the Zoo was not included in the Griffith Park Vision Plan process, the Griffith Park Vision Plan does not apply to Zoo property, including the northern parking lot. As the Griffith Park Vision Plan does not apply to Zoo property, the proposed structure included in the Project would not conflict with this aspect from the Griffith Park Vision Plan.

Table 3.11-4. Griffith Park Vision Plan Policy Consistency Summary (Continued)

Policy	Relationship to Project
No new parking structures should be introduced within the boundaries of the Park (Page 64).	
As it has for more than 110 years, parking should remain free in Griffith Park (Page 64).	Consistent with Mitigation. The Project would expand parking capacity at the Zoo's existing lot by adding 300 spaces to the southern parking lot and construction a 2,000-space multi-level parking structure in the northern parking lot. The Zoo currently provides free parking. Parking fees are only charged for priority spaces on peak attendance days. The parking lots are largely unmanaged and are available to Zoo visitors, Autry Museum visitors, Zoo Magnet Center staff, and other Griffith Park visitors, including hikers and cyclists. While free parking supports equitable access to Griffith Park, the Mobility Plan notes that an abundance of free parking has the effect of incentivizing automobile trips and making alternative modes of transportation less attractive. Survey data collected for this analysis indicates that most employees (85 percent) drive to the Zoo, most commonly as single-occupant vehicles. Further, most visitors (95 percent) drive passenger vehicles and do not have ready access to transit, bicycle, or pedestrian facilities that allow reasonable transportation to the Zoo. A parking management plan that includes a fee structure paired with incentives to reduce vehicle trips to the Zoo, particularly on peak days, would increase the Project's consistency with City policies to reduce trips. A parking fee program, as included in **MM T-2**, would potentially charge fees for visitors that currently have access to free parking to reach Griffith Park attractions and trails. However, parking fees are charged at other Griffith Park attractions, including Griffith Observatory. Parking fees are used to enhance multi-modal transportation to the park to increase accessibility, including the Parkline Shuttle, providing free shuttle service within the park. Additionally, the Griffith Park Vision Plan applies only to areas of the Park controlled by RAP, which excludes Zoo property. Since the Zoo was not included in the Griffith Park Vision Plan process, the Griffith Park Vision Plan does not apply to Zoo property, including the northern parking lot. Therefore, a parking fee program within Zoo property does not conflict with this aspect of with the Griffith Park Vision Plan. With regard to trail user's access, safety, and tranquility, changes to the operation and configuration of the Zoo Drive/Western Heritage Way intersection with a signal in Phase 1 and potentially a roundabout or below-grade crossing in Phase 7 would potentially increase vehicle speeds and decrease pedestrian and bicyclist safety. However, **MM REC-1** would require the long-term Zoo Drive/Western Heritage Way intersection improvements be considerate of pedestrian, bicyclist, and equestrian safety with regard to the Main Trail and that use of this important trail is not hindered by implementation of the improvement. With implementation of **MM REC-1**, the Project would be consistent with this local policy.
Consider the impact on trail users' access, safety and tranquility prior to undertaking Park trail and road repairs and improvements (Page 66).	
At this time, there is no clearly identified need for new recreational rides, such as	Consistent. The Project proposes a funicular and an aerial tram to improve accessibility within the Zoo and the Zoo has identified these features as important to improving patron mobility. These facilities would only operate in the Zoo and would not extend into undeveloped

Table 3.11-4. Griffith Park Vision Plan Policy Consistency Summary (Continued)

Policy	Relationship to Project
railroads, aerial tramways, or funiculars (Page 68).	areas of Griffith Park subject to the Griffith Park Vision Plan. The funicular would become operational in Phase 1 to climb a hillside in the California planning area to bring visitors to and from the proposed California Visitor Center. The aerial tram would become operational in Phase 3 to connect the Zoo Entry and orientation plaza with the Africa Visitor Center in the Africa planning area. These improvements would improve accessibility for Zoo visitors and are included in the Project specifically to address unmet needs for transportation within the Zoo. These facilities would only operate in the Zoo and would not extend into undeveloped areas of Griffith Park. It should be noted that the Griffith Park Vision Plan applies only to areas of the Park controlled by RAP, which excludes Zoo property. Therefore, the proposed funicular and aerial tram within Zoo property would be consistent with the Griffith Park Vision Plan.

Project Consistency with Regional and Citywide Plans, Policies, and Regulations

Table 3.11-2, Table 3.11-3, and Table 3.11-4 above were prepared by Wood staff based on the proposed Project. Final policy consistency would be determined as part of Project review and approval process with the City. However, based upon this preliminary analysis, the Project, with implementation of required mitigation measures identified in this EIR and required consistency with existing regulations, would be consistent with the SCAG RTP/SCS, Los Angeles General Plan, Hollywood Community Plan, L.A.'s Green New Deal, and LAMC. The Project would not cause significant environmental impacts due to conflicts with any land use plan, policy, or regulation, and impacts would be *less than significant with mitigation*.

Project Consistency with Griffith Park Plans, Policies, and Regulations

The Griffith Park Master Plan, Draft Griffith Park Wildlife Management Plan, and Draft Vision Plan for Griffith Park goals and policies were analyzed for Project consistency. These plans apply to Griffith Park and acknowledge the Zoo as an attraction within the Park.

The proposed Project would not conflict with the Griffith Park Master Plan. Goals 2, 4 and 5 are applicable to the proposed Project. The remaining goals are only indirectly related. The second goal is the establishment of a balanced mobility system utilizing mass transit, automobile, pedestrian, and bicycle access to and within the Park, including better connections between the existing Griffith Park parking areas. Phase 1 of the Vision Plan would realign Western Heritage Way/Crystal Springs Drive to the southern perimeter of the parking lots to create a unified guest parking lot for the Zoo, High School Magnet Center, and the Autry Museum of the American West, reducing pedestrian street crossings. This would also allow the Zoo's southbound bus stop to be moved to Western Heritage Way between the Zoo and Autry Museum of the American West, improving the efficiency of public transportation access to destinations near the Zoo. Goal 4 specifies intention to improve the established civic function of Griffith Park. The proposed Project would expand recreational opportunities

within the park. Goal 5 specifies intention to improve the parkwide transportation systems. Construction of the parking structure included in the proposed Project would expand park accessibility.

The proposed Project would not conflict with the Griffith Park Wildlife Management Plan. The plan focuses on minimizing human/wildlife conflicts and maintaining the park's urban wilderness. Given that construction of the proposed Project would occur in the boundaries of the Zoo and not near undeveloped portions of Griffith Park that are likely to serve as wildlife habitat, the proposed Project would be consistent with the Griffith Park Wildlife Management Plan.

The Griffith Park Vision Plan is a guidance document that focuses on minimizing impacts from developed portions of the park on natural, undeveloped areas of the park, as well as recognizing and considering the interests of the various groups of park users, including picnickers. The Project is generally consistent with the Griffith Park Vision Plan related to protection of natural resources, including wilderness areas and wildlife. The proposed Project would not intrude on previously undeveloped park areas outside of the Zoo boundary and would not adversely impact existing users' enjoyment of the park. Therefore, the Urban Wilderness identity of Griffith Park would not be adversely impacted by implementation of the proposed Project.

The Griffith Park Vision Plan does not identify a need for new parking structure at the Zoo, but notes that if a need arises, then the parking structure should be developed outside the Park and served by a shuttle. The proposed parking lot has been identified as needed to accommodate the growth in visitation projected under the Project and meet the Zoo's goals for long-term development and programming. Without it, it is possible that the existing surface parking lots would reach capacity on peak visitation days at the Zoo. Additionally, the Griffith Park Vision Plan applies only to areas of the park controlled by RAP, which excludes Zoo property. The proposed parking structure would lie entirely within Zoo property in the northern parking lot. Thus, the Griffith Park Vision Plan does not apply to Zoo property, including the northern parking lot. As the Griffith Park Vision Plan does not apply to Zoo property, the proposed structure included in the Project would not conflict with this aspect from the Griffith Park Vision Plan.

The proposed Project would potentially conflict with the Vision Plan for Griffith Park related to pedestrian accessibility and safety following improvements to the Zoo Drive/Western Heritage Way intersection with a signal in Phase 1 and potentially a roundabout or below-grade crossing in Phase 7. Changes to operations and configurations of these roadways would potentially increase vehicle speeds. However, **MM REC-1** would require the long-term Zoo Drive/Western Heritage Way intersection improvements be considerate of pedestrian, bicyclist, and equestrian safety with regard to the Main Trail and that use of this important trail is not hindered by implementation of the improvement. With implementation of **MM REC-1**, the Project would be consistent with this local policy. See also Section 3.14,

Recreation. The Project would not cause significant environmental impacts due to conflicts with any land use plan, policy, or regulation, and impacts would be *less than significant with mitigation*.

3.11.4 Mitigation Measures

MM BIO-1 through **MM BIO-6** shall apply.

MM CUL-1 through **MM CUL-7** shall apply.

MM UF-1 and **MM UF-2** shall apply.

MM REC-1 shall apply.

MM T-1 and **MM T-2** shall apply.

3.11.5 Impacts Summary

Implementation of the above identified mitigation measures would avoid significant environmental impacts to ensure the Project's consistency with existing land use plans, policies, and regulations. Therefore, the Project along with required mitigation measures would meet all goals and policies within these plans. Final policy consistency would be determined as part of Project review and approval process with the City. However, based upon this preliminary analysis, the Project, with implementation of required mitigation measures identified in this EIR and required consistency with existing regulations, would be consistent with the SCAG RTP/SCS, Los Angeles General Plan, Hollywood Community Plan, Griffith Park Vision Plan, and Plan for a Healthy Los Angeles. The Project would not cause significant environmental impacts due to conflicts with any land use plan, policy, or regulation, and impacts, and the Project would not preclude the City's implementation of any adopted land use policy and/or program. Therefore, impacts would be less than significant with mitigation.

3.12 NOISE AND VIBRATION

The existing noise environment surrounding the Zoo is mainly influenced by noise from vehicular traffic. Additionally, noise at the Zoo can be attributed to daytime and nighttime activity (e.g., events). A noise impact would result if excessive noise is generated relative to standards established in the general plan, noise ordinance, or other applicable standards. Impacts from noise and vibration can result from construction and operational activities. Construction noise is largely related to heavy equipment use or activities such as pile driving. Operational noise may be generated by stationary sources such as mechanical equipment, event spaces, or parking lots. Vibration impacts are rare except in the case of construction near structures. Both noise and vibration impacts resulting from implementation of the Vision Plan can be adequately addressed through compliance with established standards and regulations and implementation of mitigation measures. Project impacts would be less than significant with mitigation.

This section describes the existing noise environment and evaluates the potential noise and vibration impacts that could result from the implementation of the proposed Los Angeles Zoo (Zoo) Vision Plan (Project). This analysis addresses short-term construction-related impacts and long-term operational noise impacts associated with vehicle trips and events that would occur through Project implementation.

3.12.1 Environmental Setting

Regulatory Setting

Regulations have been developed to address the compatibility of land uses and noise levels. Applicable standards are presented below with emphasis on land uses that are noise sensitive.

Federal Regulations

The Noise Control Act of 1972 established programs and guidelines to identify and address the effects of noise on public health, welfare, and the environment. In 1981, the United States Environmental Protection Agency (USEPA) determined that subjective issues such as noise would be better addressed at local levels of government, thereby allowing more individualized control for specific issues by designated federal, state, and local government agencies. Consequently, in 1982, responsibilities for regulating noise-control policies were transferred to specific federal agencies, and state and local governments. However, noise-control guidelines and regulations contained in the USEPA rulings in prior years remain in place. No federal noise regulations are directly applicable to the proposed Project.

Federal regulations governing vibration levels are primarily related to occupational vibration control are not applicable to planning efforts, nor are these areas typically subject to environmental analysis under the California Environmental Quality Act (CEQA). The Federal Transit Administration (FTA) recommends that these criteria be used as a damage threshold for the fragile structures located near the right-of-way of a transit project. While not directly relevant to the proposed Project, the FTA has published guidance and impact criteria that can be used to assess the potential for vibration impacts. The FTA criteria are discussed below in Section 3.12.2, *Impact Assessment Methodology* under *Significance Thresholds*.

State Regulations

The State of California has adopted noise standards in areas of regulation not preempted by the federal government. State standards regulate noise levels of motor vehicles, sound transmission through buildings, occupational noise control, and noise insulation. State regulations governing noise levels generated by individual motor vehicles and occupational noise control are not applicable to planning efforts, nor are these areas typically subject to CEQA analysis. In addition, the Sound Transmission Control requirements of Title 24 of the California Code of Regulations (CCR) for dwellings other than detached single-family dwellings, new hotels, motels, dormitories, and apartment houses do not apply to the proposed Project. There are no state operational noise regulations that applicable to the CEQA analysis. There are also no adopted state vibration standards relevant to this analysis.

California Air Resources Board Anti-Idling Measure

In 2004, the California Air Resource Board (ARB) adopted an Airborne Toxic Control Measure to limit heavy-duty diesel motor vehicle idling (Title 13 California Code of Regulations [CCR], Section 2485). The measure applies to diesel-fueled commercial vehicles with gross vehicle weight ratings greater than 10,000 pounds that are licensed to operate on highways, regardless of where they are registered. This measure does not allow diesel-fueled commercial vehicles to idle for more than five minutes at a time at a location, thereby minimizing engine noise from idling vehicles.

Local Policies and Regulations

The City of Los Angeles (City) has a comprehensive set of regulations concerning the generation and control of noise that could adversely affect people and noise sensitive land uses that are in four different chapters of the City of Los Angeles Municipal Code (LAMC) — the Zoning Ordinance (Chapter I), the General Welfare Chapter (Chapter IV), Building Code (Chapter IX), and Noise Regulation Chapter (Chapter XI). There are numerous specific ordinances, many of which do not relate to the impact analysis presented below. This discussion summarizes the general regulations and focuses on the ordinances relevant to the proposed Project.

City of Los Angeles Municipal Code

The LAMC has adopted presumed ambient noise levels for various land uses that shall not be exceeded by noise generating uses or activities (Table 3.12-1). City-regulated noise sources (e.g., mechanical equipment) shall not exceed 5 A-weighted decibels (dBA) above these presumed ambient noise levels at any time of the day. The LAMC states that the baseline ambient noise shall be the actual measured ambient noise level or the City's presumed ambient noise level, whichever is greater. The City's presumed ambient noise levels do not address standards for open space uses.

Table 3.12-1. LAMC Presumed Ambient Noise Levels

Presumed Ambient Noise Level (dB(A))		
Zone	**Day**	**Night**
Residential, agricultural	50	40
Commercial, Parking	60	55
Manufacturing	60	55
Heavy manufacturing	65	65

Source: LAMC Section 11.03 Minimum Ambient Noise Level.

In addition to the standards for exterior noise levels in Table 3.12-1, the City's noise ordinance sets forth noise limits for construction activities. Chapter 11, Article 2, Section 112.05, of the LAMC states that noise generated from construction and industrial machinery shall not exceed a maximum of 75 dBA within 500 feet of a residential zone of the City between the hours of 7:00 a.m. and 10:00 p.m., except where compliance is technically infeasible. "The burden of proving that compliance is technically infeasible shall be upon the person or persons charged with a violation of this section. Technical infeasibility shall mean that said noise limitations cannot be complied with despite the use of mufflers, shields, sound barriers, and/or any other noise-reduction device or technique during the operation of the equipment."

LAMC Section 41.40 restricts construction activities during different hours of the day. According to this code, no person shall perform any construction or repair work that makes loud noises that disturbs persons occupying sleeping quarters in any place of residence between the hours of 9:00 p.m. of one day and 7:00 a.m. of the following day. If a project's construction schedule would necessitate construction activities to occur outside of the hours allowed by the City's noise ordinance, then a permit from the Police Commission is required.

LAMC Section 112.02 (Air Conditioning, Refrigeration, Heating, Pumping, Filtering Equipment) requires that any heating, ventilation, and air conditioning (HVAC) system within any zone of the City not cause an increase in ambient noise levels on any other occupied property or if a condominium, apartment house, duplex, or attached business, within any adjoining unit to exceed the ambient noise level by more than 5 dBA.

LAMC Section 113.01 (Rubbish and Garbage Collection and Disposal) prohibits collecting or disposing of rubbish or garbage, to operate any refuse disposal truck, or to collect, load, pick up, transfer, unload, dump, discard, or dispose of any rubbish or garbage within 200 feet of any residential building between the hours of 9:00 p.m. and 6:00 a.m. of the following day, unless a permit therefore has been duly obtained beforehand from the Board of Police Commissioners.

LAMC Section 114.03 (Vehicles - Loading and Unloading) prohibits loading or unloading of any vehicle, or operation of any dollies, carts, forklifts, or other wheeled equipment, which cause any impulsive sound, raucous or unnecessary noise within 200 feet of any residential building between the hours of 10:00 p.m. and 7:00 a.m. of the following day, unless a permit therefore has been duly obtained beforehand from the Board of Police Commissioners. The permit program only applies to boundary areas defined by Section 114.03 (b) of the LAMC.

The proposed Project may include blasting activities, which are not regulated by LAMC. The County of Los Angeles (County) has established regulations regarding blasting utilizing explosives within County jurisdiction. Although the County Code is not applicable to the proposed Project. It is noteworthy that Section 105.6.15 (Explosives) of the County Code of Ordinances requires a permit for any use of explosives.

City of Los Angeles General Plan

The City General Plan Noise Element identifies potentially significant noise sources, addresses vibration issues, identifies historic and current noise management approaches, and guides the development of noise regulations. It addresses noise mitigation regulations, strategies and programs and delineates federal, state, and City jurisdiction relative to rail, automotive, aircraft, and nuisance noise. The Noise Element includes noise compatibility guidelines, which may be used to assess potential effects of new projects to the local community (see Figure 3.12-1).

Figure 3.12-1. City of Los Angeles Noise Element Guidelines for Noise Compatible Land Use

Land Use Category	Day-Night Average Exterior Sound Level (CNEL dB)						
	50	55	60	65	70	75	80
Residential Single Family, Duplex, Mobile Home	A	C	C	C	N	U	U
Residential Multi-Family	A	A	C	C	N	U	U
Transient Lodging, Motel, Hotel	A	A	C	C	N	U	U
School, Library, Church, Hospital, Nursing Home	A	A	C	C	N	N	U
Auditorium, Concert Hall, Ampitheater	C	C	C	C/N	U	U	U
Sports Arena, Outdoor Spectator Sports	C	C	C	C	C/U	U	U
Playground, Neighborhood Park	A	A	A	A/N	N	N/U	U
Golf Course, Riding Stable, Water Recreation, Cemetery	A	A	A	A	N	A/N	U
Office Building, Business, Commercial, Professional	A	A	A	A/C	C	C/N	N
Agriculture, Industrial, Manufacturing, Utilities	A	A	A	A	A/C	C/N	N

A = Normally acceptable. Specified land use is satisfactory, based upon assumption buildings involved are conventional construction, without any special noise insulation.

C = Conditionally acceptable. New construction or development only after a detailed analysis of noise mitigation is made and needed noise insulation features are included in project design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning normally will suffice.

N = Normally unacceptable. New construction or development generally should be discouraged. A detailed analysis of noise reduction requirements must be made and noise insulation features included in the design of a project.

U = Clearly unacceptable. New construction or development generally should not be undertaken.

Source: City of Los Angeles General Plan Noise Element 1999.

There are no adopted local vibration standards related to mechanical equipment or heavy-duty construction equipment. However, LAMC Section 41.32 specifies that no person should use any sound amplifying system in such a manner that vibration emitted is received by human ear from more than 50 feet from the property line where such amplification is being conducted.

Existing Setting

Fundamentals of Sound and Noise

Noise is typically defined as unwanted sound that interferes with normal activities or otherwise diminishes the quality of the human or natural environment. Prolonged exposure to high levels of noise is known to have several adverse effects on people, including hearing loss, communication interference, sleep interference, physiological responses, and annoyance (Federal Interagency Committee on Urban Noise [FICUN] 1980). The ambient noise environment typically includes background noise generated from both near and distant noise sources. These can vary from an occasional aircraft overhead or an occasional horn blast from a truck to continuous noise from sources such as consistent vehicle traffic along a major road and/or pedestrian activity in places where people congregate.

The Zoo is located near the I-5 and SR 134 interchange where 8 travel lanes generate relatively high vehicle noise. The Zoo is set within Griffith Park, however, where ambient noise levels are substantially lower. Photo source: AARoads.com

The topical information related to noise was obtained from the California Department of Transportation (Caltrans) Technical Noise Supplement (2013). The topical information related to vibration was obtained from the FTA Transit Noise and Vibration Impact Assessment Manual (2018) and the Caltrans Transportation and Construction Vibration Guidance Manual (2013).

Characteristics of Sound

Sound is technically described in terms of the loudness (i.e., amplitude) and frequency (i.e., pitch) of the sound. The standard unit of measurement of the loudness of sound is the Decibel (dB). Sound frequency is measured in terms of hertz (hz), and the normal human ear can detect sounds ranging from about 20 to 15,000 hz. All sounds in the wide range of frequencies are not heard equally well by the human ear, which is most sensitive to frequencies in the 1,000 to 4,000 hz range. Since the human ear is not equally sensitive to sound at all frequencies (i.e., between 1,000 and 8,000 cycles per second), a special frequency-dependent

rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) adjusts very high and very low frequencies to approximate the human ear's lower sensitivity to those frequencies since. Decibels are based on a logarithmic scale, which compresses the wide range in sound pressure levels to a more useable range of numbers. This is called "A-weighting" and is commonly used in the measurement of ambient community environmental noise. Unless otherwise noted, all decibel measurements presented in the following noise analysis are dBA.

Noise Definitions

This noise analysis discusses sound levels in terms of Community Noise Equivalent Level (CNEL) and Equivalent Noise Level (L_{eq}). CNEL is an average sound level during a 24-hour period. CNEL is a noise measurement scale, which accounts for noise source, distance, single event duration, single event occurrence, frequency, and time of day. Human reaction to sound between 7:00 p.m. and 10:00 p.m. is as if the sound were actually 5 dBA higher than if it occurred from 7:00 a.m. to 7:00 p.m. From 10:00 p.m. to 7:00 a.m., humans perceive sound as if it were 10 dBA higher due to the lower background level. Hence, the CNEL is obtained by adding an additional 5 dBA to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and 10 dBA to sound levels in the night from 10:00 p.m. to 7:00 a.m. Because CNEL accounts for human sensitivity to sound, the CNEL is always a higher number than the actual 24-hour average.

L_{eq} is the average noise level on an energy basis for any specific period. The L_{eq} for one hour is the average energy noise level during the hour. The average noise level is based on the energy content (i.e., acoustic energy) of the sound. L_{eq} can be thought of as the level of a continuous noise which has the same energy content as the fluctuating noise level. The equivalent noise level is expressed in units of dBA.

Table 3.12-2. Representative Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Power saw	—110—	Rock band
Jet fly-over at 100 feet		Crying baby
Subway	—100—	
Gas lawnmower at 3 feet		
Rail transit horn / tractor	—90—	
Jack hammer		Food blender at 3 feet
Rail transit at-grade (50 miles per hour [mph])	—80—	Garbage disposal at 3 feet
Noisy urban area during daytime		
Gas lawnmower at 100 feet	—70—	Vacuum cleaner at 10 feet
Rail transit in station / commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	—60—	Sewing machine
Air conditioner		Large business office
Quiet urban area during daytime	—50—	Dishwasher in next room
		Refrigerator
Quiet urban area during nighttime	—40—	Theater, large conference room (background)
Quiet suburban area during nighttime		
	—30—	Library
Quiet rural area during nighttime		Bedroom at night, concert hall (background)
	—20—	
		Broadcast / recording studio
	—10—	
Lowest threshold of human hearing	—0—	Lowest threshold of human hearing

Source: Caltrans 1998.

Sound Propagation and Shielding

In terms of human response to noise, a noise level increase of 3 dBA is barely perceptible to most people, a 5-dBA increase is readily noticeable, and a difference of 10 dBA would be perceived as a doubling of loudness (100 percent increase). (Federal Interagency Committee on Urban Noise [FICUN] 1980; Harris Miller Miller & Hanson Inc. 2006).

Noise levels decrease as the distance from the noise source to the receiver increases. Noise generated by a stationary noise source, or "point source," will decrease by approximately 6 dBA over hard surfaces (e.g., reflective surfaces such as parking lots or smooth bodies of water) and 7.5 dBA over soft surfaces (e.g., absorptive surfaces such as soft dirt, grass, or

scattered bushes and trees) for each doubling of the distance. For example, if a noise source produces a noise level of 89 dBA at a reference distance of 50 feet, then the noise level would be 83 dBA at a distance of 100 feet from the noise source, 77 dBA at a distance of 200 feet, and so on. Noise generated by a mobile source will decrease by approximately 3 dBA over hard surfaces and 4.8 dBA over soft surfaces for each doubling of the distance.

Noise is most audible when there is a direct line-of-sight. Line-of-sight is an unobstructed visual path between the noise source and the noise receptor. Solid barriers, such as walls, berms, or buildings that break the line-of-sight between the source and the receiver greatly reduce noise levels from the source since sound can only reach the receiver by bending over the top of the barrier. However, if a barrier is not solid, or not high or long enough to break the line-of-sight from the source to the receiver, its effectiveness is greatly reduced.

Health Effects of Noise

The most obvious negative effects of noise are physical damage to hearing. Other obvious effects are the interference of noise with certain activities, such as sleeping and conversation. Less obvious are the stress effects of noise.

A person exposed to high noise levels can suffer hearing damage, either gradual or traumatic. Sustained exposure to moderately high noise levels over a period can cause gradual hearing loss. It starts out as a temporary hearing loss, such as immediately after a loud rock concert. The hearing usually restores itself within a few hours after exposure, although not quite to its pre-exposure level. This is also called a temporary threshold shift. Although the permanent deterioration may be negligible, it will become significant after many repetitions of the exposure. At that time, it is considered permanent hearing damage. The primary cause of permanent hearing damage is daily exposure to industrial noise.

Short, sudden exposure to an extremely high noise level, such as a gunshot or explosion at very close range, can cause a traumatic hearing loss, which is very sudden and can be permanent. Occupational exposure to noise is controlled at the federal level by Occupational Safety and Health Administration (OSHA) and at the state level by the California Division of Safety and Health. The maximum allowable noise exposure over an eight-hour period is a level of 90 dBA. For each halving of the exposure time, the maximum noise level is allowed to increase 5 dBA. Therefore, the maximum allowable noise exposure (100 percent) is 90 dBA for eight hours, 95 dBA for four hours, 100 dBA for two hours, 105 dBA for one hour, 110 dBA for 30 minutes, and 115 dBA for 15 minutes.

Noise can cause stress in humans and may be responsible for stress-related diseases, such as hypertension, anxiety, and heart disease. Although noise is probably not the sole culprit in these diseases, it can be a contributor. The degree to which noise contributes to stress-related diseases depends on noise frequencies, their bandwidths, noise levels, and time patterns. In

general, higher frequencies, pure tones, and fluctuating noise levels tend to be more stressful than lower frequencies, broadband, and constant-level noise.

High noise levels are known to effect animal behavior. High noise levels can interfere with mating activities, stress wildlife, and disturb nesting habitat. See Section 3.3, *Biological Resources*.

Characteristics of Vibration

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Vibration can be a serious concern, causing buildings to shake and rumbling sounds to be heard. In contrast to noise, vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of vibration are trains, buses on rough roads, and construction activities, such as rock blasting, pile driving, and heavy earth-moving equipment.

Vibration Definitions

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings and is usually measured in inches per second. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (VdB) is commonly used to measure RMS as the velocity level in decibels. The VdB acts to compress the range of numbers required to describe vibration.

Health Effects of Vibration

Ground-borne vibration levels rarely affect human health. Instead, most people consider ground-borne vibration to be an annoyance that can affect concentration or disturb sleep. Although responses to vibration differ, 65 VdB is the approximate threshold of perception for many people. The approximate dividing line between barely and distinctly perceptible is 75 VdB, and 85 VdB is typically only acceptable if there are an infrequent number of events per day. Typical human responses to vibration are shown in Table 3.12-3.

Similar to noise, high vibration levels are also known to effect animal behavior. High vibration levels can interfere with mating activities, stress wildlife, and disturb nesting habitat. See Section 3.3, *Biological Resources*.

Effects of Vibration on Buildings

High levels of ground-borne vibration can damage fragile buildings or interfere with equipment that is highly sensitive to ground-borne vibration (e.g., electron microscopes).

Factors that influence ground-borne vibration effects include the foundation type and building materials (e.g., masonry). Typical building responses to vibration are shown in Table 3.12-3.

Table 3.12-3. Human and Structural Responses to Typical Levels of Vibration

Human/Structural Response	Vibration Velocity Level (VdB)	Typical Sources
Threshold, minor cosmetic damage to fragile buildings	100	Blasting from construction projects
Difficulty with tasks (e.g., reading a screen)	90	Bulldozers and other heavy tracked construction equipment
Residential annoyance, transient events	80	Commuter rail, upper range
Residential annoyance, continuous events	70	Rapid transit, typical
Human threshold of perception and limit for vibration sensitive equipment	65	Bus or truck, typical
No human response	50	Typical background vibration

Source: FTA 2018.

Effects of Blasting

When a blast is detonated, only a portion of the energy is consumed in breaking up and moving the rock. The remaining energy is dissipated in the form of seismic waves expanding rapidly outward from the blast, either through the ground (as vibration) or through the air (as air overpressure or air blast). While a blaster can quite easily design their blasts to stay well below any vibration or air overpressure levels that could cause damage, it is virtually impossible to design blasts that are not perceptible by people in the vicinity.

Project Site Noise & Vibration

Noise

In the Project vicinity, urban land uses include a range of residential, commercial, institutional, and recreational open space areas (refer to Section 3.10, *Land Use and Planning*) served by regional and local roadways. Urban areas have higher noise levels associated with traffic and other urban activity. Noise levels outside the Los Angeles Zoo and Botanical Gardens (Zoo) are dominated by traffic noise associated with parking facilities, local roadways, Interstate 5 (I-5), and State Route 134 (SR-134).

The Project site is located within the northeastern edge of Griffith Park, an area of urban wilderness and passive open space uses with generally low noise levels. Noise sources within the park generally include vehicle noise on park roadways; delivery, loading, and garbage truck operations; and other minor noise sources associated with recreation and tourist uses (e.g., amplified music, talking, etc.). Traffic noise is less perceptible within Zoo where most

noise is generated by Zoo operational activities. Other local sources of noise include landscaping activities and aircraft flyovers.

To understand existing ambient noise levels, two long-term, 48-hour noise measurements were taken at the Project site to characterize the existing noise environment. Site 1 was stationed at the Zoo's perimeter with Griffith Park near the Angela Collier World of Birds Theater to capture noise levels that might be experienced by Griffith Park visitors hiking the Condor and Skyline trails adjacent to the Zoo. Site 2 was stationed at the entrance to the Autry Museum of the American West across Western Heritage Way from the Zoo's main parking lot to capture ambient noise levels influence by Zoo parking and adjacent freeway noise. Noise levels were monitored at Site 1 on Friday December 13, 2019 through Saturday December 14, 2019. Noise levels were monitored at Site 2 on Friday December 20, 2019 through Saturday December 21, 2019. Noise levels for each day and 24-hour period graphed over time are shown in Figure 3.12-2.

Based on the 48-hour noise monitoring, existing peak weekend noise levels or CNEL ranges between 54.4 and 70 dBA. Site 1 with the Zoo had a maximum 55.9 dBA CNEL, which is characteristic of the generally low noise levels within Griffith Park. In contract, Site 2 nearer the I-5 travel corridor had a maximum 70 dBA CNEL, reflective of the vehicle noise generated both by the freeway and local roads. Variations in hourly noise levels were also likely a result of various noise sources within the measurement area such as helicopter flyovers, Zoo personnel, and vehicle circulation noise. Monitoring locations are shown in Figure 3.12-2 and existing noise levels are shown in Table 3.12-4.

Monitored noise levels captured the busy holiday season with increased Zoo attendance associated with the evening Zoo Lights event. Event noise related to Zoo Lights did not result in increased noise levels relative to non-Zoo Lights hours. Further, site 1 was positioned specifically to capture potential existing effects of the public address (PA) system used during World of Bird Shows, one of the only amplified attractions within the Zoo. A noticeable difference was not observed regarding operation of this PA system. During monitoring, the Zoo schedule indicated one show from 12:00 p.m. to 12:30 p.m. and another from 2:30 p.m. to 3:00 p.m. on Fridays, and none on Saturdays. A correlated increase in noise levels did not occur during these hours and there is not a substantial difference between the hours monitored during the bird show and not during the show.

Vibration

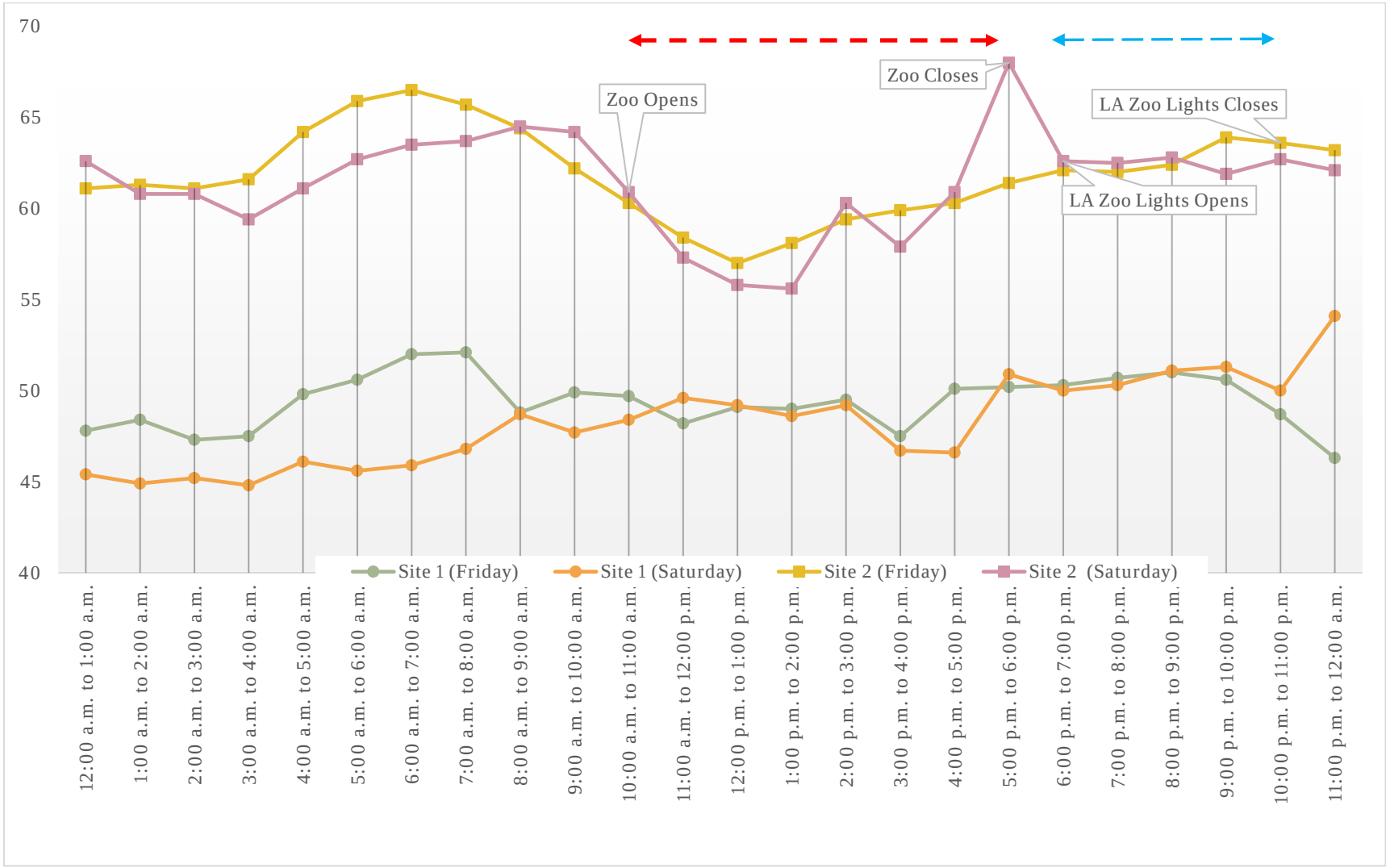
The Project site and surrounding areas were canvassed to assess existing vibration levels. Given the wilderness setting within Griffith Park, existing sources of vibration are limited. Vibration was not perceptible at the Project site, although it is possible for heavy-duty truck activity to generate low levels of vibration along Zoo Drive and Western Heritage Way that may be perceptible to visitors within the Zoo's parking lots. There are no existing Zoo operations or attractions that generate groundborne vibration.

Table 3.12-4. Existing Ambient Noise Levels

Time Period	Hourly Noise Level (dBA, L_{eq})			
	Friday		Saturday	
	Site 1	Site 2	Site 1	Site 2
12:00 a.m. to 1:00 a.m.	47.8	61.1	45.4	62.6
1:00 a.m. to 2:00 a.m.	48.4	61.3	44.9	60.8
2:00 a.m. to 3:00 a.m.	47.3	61.1	45.2	60.8
3:00 a.m. to 4:00 a.m.	47.5	61.6	44.8	59.4
4:00 a.m. to 5:00 a.m.	49.8	64.2	46.1	61.1
5:00 a.m. to 6:00 a.m.	50.6	65.9	45.6	62.7
6:00 a.m. to 7:00 a.m.	52.0	66.5	45.9	63.5
7:00 a.m. to 8:00 a.m.	52.1	65.7	46.8	63.7
8:00 a.m. to 9:00 a.m.	48.8	64.4	48.7	64.5
9:00 a.m. to 10:00 a.m.	49.9	62.2	47.7	64.2
10:00 a.m. to 11:00 a.m.	49.7	60.3	48.4	60.9
11:00 a.m. to 12:00 p.m.	48.2	58.4	49.6	57.3
12:00 p.m. to 1:00 p.m.	49.1	57.0	49.2	55.8
1:00 p.m. to 2:00 p.m.	49	58.1	48.6	55.6
2:00 p.m. to 3:00 p.m.	49.5	59.4	49.2	60.3
3:00 p.m. to 4:00 p.m.	47.5	59.9	46.7	57.9
4:00 p.m. to 5:00 p.m.	50.1	60.3	46.6	60.9
5:00 p.m. to 6:00 p.m.	50.2	61.4	50.9	68.0
6:00 p.m. to 7:00 p.m.	50.3	62.1	50.0	62.6
7:00 p.m. to 8:00 p.m.	50.7	62.0	50.3	62.5
8:00 p.m. to 9:00 p.m.	51.0	62.4	51.1	62.8
9:00 p.m. to 10:00 p.m.	50.6	63.9	51.3	61.9
10:00 p.m. to 11:00 p.m.	48.7	63.6	50.0	62.7
11:00 p.m. to 12:00 a.m.	46.3	63.2	54.1	62.1
CNEL	**55.9**	**70.0**	**55.4**	**68.7**

Source: Appendix M.

Figure 3.12-2. 24-Hour Measurements Hourly Noise Levels



Source: Appendix M.

3.12-15

wood.

Los Angeles Zoo
Noise Monitoring Locations and Sensitive Receptors

FIGURE 3.12-3

Sensitive Receptors

Noise- and vibration-sensitive land uses include locations where people reside or where the presence of unwanted sound could adversely affect the use of the land use. Residences, schools, hospitals, guest lodging, libraries, and some passive recreation areas would each be considered noise- and vibration-sensitive and may warrant unique measures for protection from intruding noise. Existing land uses in the vicinity of the Project site are open space and industrial, with some low- to medium-density residential north of the Zoo (City of Burbank 2012; City of Glendale 2018; City of Los Angeles 2017).

Sensitive receptors that lie near the Project site include the Autry Museum of the American West (adjacent to the west of the Project site), North Hollywood High School Zoo Magnet Center, Mineral Wells Picnic Area (just west of the Gottlieb Animal Health and Conservation Center), and Griffith Park hiking trails such Condor Trail, Bypass Trail and Skyline Trail (refer to Figure 3.12-3). Within the Zoo, sensitive receptors to noise may include Zoo visitors, including children, as well as resident animal species that may be sensitive to operational and construction noise; however, it is noted that captive animal species may have a unique sensitivity to the normal average and peak noise levels generated in an urban environment, unlike their wild counterparts.

Noise sensitive land uses in the Project vicinity include the Griffith Park hiking trails adjacent to the Project site across, including the Condor Trail, which overlooks the Project site (left). The Autry Museum of the American West (right) is also sensitive, but unlike park wilderness areas, lies in an existing higher noise environment associated with the I-5 travel corridor.

There are no residential and health care facilities in the vicinity of the Zoo. The nearest residential sensitive receptors are in the City of Glendale and located 0.5 mile north of the Project site across SR-134 and the Los Angeles River. The nearest elderly housing includes Broadview Residential Care Center, HumanGood and Dreier's Nursing Care Center more than 1 mile north and east of the Project site. Besides the North Hollywood High School Zoo Magnet Center, which lies within the Zoo's southern parking lot, the nearest schools to the Project site are Scholars Preparatory School College of Beauty, Arts, and Sciences and Hoover High School and Eleanor J. Toll Middle School within the City of Glendale. The nearest

hospital is Glendale Memorial Hospital located approximately 2 miles northeast (Table 3.12-5).

Although Wilson and Harding Golf Courses is adjacent Project site, it is not considered a noise sensitive use due to the type of recreational use and its proximity to nearby freeways (I-5). However, this analysis includes potential disturbances that may result for golfers using the course from implementation of the Project.

Table 3.12-5 Noise Sensitive Receptors in Project Vicinity

Sensitive Receptor	Distance from the Project Site	Direction
Recreation		
Autry Museum of the American West	Adjacent	East
Mineral Wells Picnic Area	Adjacent	West
Griffith Park hiking trails		
John Ferraro Athletic Fields	0.3 miles	Northwest
Residences		
Residences within the City of Glendale north of SR-134 and the Los Angeles River	0.5 miles	North
Elderly Housing		
Broadview Residential Care Center	1 mile	East
HumanGood	1.25 miles	East
Dreier's Nursing Care Center	1.25 miles	North
Schools		
North Hollywood High School Zoo Magnet Center	Adjacent	South
Scholars Preparatory School College of Beauty, Arts, and Sciences	0.5 miles	East
Hoover High School and Eleanor J. Toll Middle School	1.25 miles	Northeast
Hospitals		
Glendale Memorial Hospital	2.0 miles	Northeast

Source: Appendix M.

3.12.2 Impact Assessment Methodology

Significance Thresholds

According to Appendix G of the CEQA Guidelines, a project would have a significant impact related to noise or vibration if it would result in the:

- 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; or
- Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels.

In addition to the thresholds identified in Appendix G of the State CEQA Guidelines, the *2006 L.A. CEQA Thresholds Guide* identifies the following thresholds applicable to construction and operational noise and vibration.

Construction Noise

Based on the LAMC, the proposed Project would exceed the local standards and substantially increase temporary construction noise levels if:

- Construction activities would occur within 500 feet of a noise-sensitive use and outside the hours allowed in the LAMC. The allowable hours of construction in the LAMC include 7:00 a.m. to 9:00 p.m. Monday through Friday and 8:00 a.m. to 6:00 p.m. on Saturday. No construction activity is allowed on Sundays or federal holidays; and/or
- Equipment noise levels would exceed 75 dBA Leq at 50 feet unless technically infeasible.

There are no adopted noise thresholds for captive animal species; construction noise impacts to Zoo animals is addressed in Section 3.3, *Biological Resources*.

Operational Noise

Based on the potential to generate a noticeable noise increase the proposed Project would have a significant impact related to operational noise if:

- Operational activities would increase noise levels at sensitive receptors by 5 dBA CNEL.

Construction and Operational Vibration

The vibration analysis considers the potential for building damage and annoyance. For building damage, no historic structures have been identified near the Project site. The threshold has been established for engineered concrete and masonry buildings. For annoyance, the primary off-site concern is the Autry Museum, which is categorized in the FTA guidance as an institutional land use with primarily daytime use. According to FTA guidance for assessing vibration effects, the proposed Project would have a significant impact related to vibration if:

- Vibration levels would exceed 0.3 PPV (inches per second) or 98 VdB thereby potentially resulting in structure damage;

- Vibration levels would exceed 75 VdB (micro-inches per second) for frequent events (occurring more than 70 times per day), 78 VdB for occasional events (occurring 30 to 70 times per day) or 83 VdB for infrequent events (occurring fewer than 30 times per day) thereby resulting in annoyance; and/or
- Blasting ground vibration would exceed 98 VdB which would result in minor cosmetic damage to structure.

According to the Caltrans Vibration Guidance for assessing vibration effect, air overpressure related to blasting would result in a significant impact if:

- Blasting air overpressure levels would exceed 133 dB measured at a frequency of two hertz (Hz); and/or
- Blasting air overpressure levels would exceed 120 to 140 dB which would result in a mildly to distinctly unpleasant annoyance.

Non-applicable threshold(s):

- Thresholds (c) (Private Air Strip and Public Airport): The nearest public airport to the Project site is the Bob Hope Airport (BUR), located approximately 4.4 miles northwest of the Zoo. Los Angeles International Airport (LAX) is located approximately 15 miles southwest. The Zoo is not within the Runway Protection Zones (RPZs) or the Airport Influence Area (AIA) of either BUR or LAX according to the Los Angeles County Airport Land Use Plan (ALUP) (Los Angeles County Airport Land Use Commission [ALUC] 2004). Further, there are no private airstrips near the Project site. The Dreamworks Heliport Glendale is a private heliport located approximately 0.5 miles north of the Project site; however, as described in Section 3.9.1, this heliport is located outside of the Federal Airport Authority's (FAA's) recommended 280-foot Heliport Protection Zone (HPZ). Therefore, the proposed Project would not expose people working in or visiting the Project site to excessive noise levels and this issue is not analyzed further in this EIR.

Methodology

Sensitive receptors were identified using aerial imagery, geographic information systems, and field visits. Only receptors within 500 feet of the Project site were assessed because at distances greater than 500 feet noise and vibration levels generally attenuate to non-impactful levels.

The noise and vibration analysis considers construction and operational sources. Noise levels associated with typical construction equipment were obtained from the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM).[1] This model predicts noise from construction based on a compilation of empirical data and the application of

[1]FHWA, *Roadway Construction Noise Model*, Version 1.1, August 2008.

acoustical propagation formulas. Maximum equipment noise levels were adjusted based on anticipated percent of use. Combined construction activity noise levels were estimated by combining anticipated equipment for each activity using RCNM. The projected noise level during the construction period at receptors was calculated by making a distance adjustment to the construction source sound level and logarithmically adding the adjusted construction noise source level to the ambient noise level. Construction noise levels at sensitive receptors were estimated conservatively assuming that a cluster of equipment would be operating simultaneously next to each other. Typically, equipment would be spread throughout the Project site and would not result in a concentrated noise level at one location. Construction noise levels at sensitive receptors were estimated based on the nearest construction activity to occur. Additional noise and vibration levels related to blasting and other activities were obtained from the FTA Transit Noise and Vibration Impact Assessment Guidance.

Operational stationary noise related to special events, parking, the aerial tram, and service area were assessed for potential impacts. Event noise was assessed based upon conversational noise associated with crowds and incremental changes in noise levels measured during existing Zoo seasonal events. Parking noise was analyzed using a reference noise level for a 1,000-parking space parking facility obtained from the FTA Transit Noise and Vibration Impact Assessment Guidance. The reference noise level was adjusted based upon parking spaces planned for the Project. Aerial tram noise was assessed qualitatively and utilizing knowledge of aerial tram systems. Service area noise was analyzed quantitatively. The CNEL noise level of the service area was calculated by adding the service area noise to 8 daytime hours from 6:00 a.m. to 4:00 p.m. The analysis conservatively assumes that shop faces would be facing the golf course.

Mobile noise levels were calculated using the FHWA Traffic Noise Model 3.0. Noise levels were calculated using a variety of factors such as vehicle speed, vehicle types, lane width, and distance, among other things. Mobile noise was modeled along existing roadways to determine the incremental increase in noise levels as a result of project trips. PM peak hour weekday traffic volumes and midday weekend traffic volumes were used to calculate the mobile noise levels. Existing Conditions (2019), Existing Plus Project Conditions (2025, 2027, 2030, 2040), Future No Project Conditions (2025, 2027, 2030, 2040), and Future Plus Project Conditions (2025, 2027, 2030, 2040) for both weekday and weekend traffic volumes were modeled.

The following analysis evaluates potential effects related to noise and vibration resulting from implementation of the Project. This section is based on the Noise and Vibration Report prepared by Terry A. Hayes & Associates, Inc. (Appendix M). The impact analysis assesses construction and operational impacts related to noise and vibration from implementation of the near-term and long-term phases under the proposed Vision Plan (refer to Section 3.0, Methodology), given the existing conditions described above, and determines whether they would exceed any of the thresholds listed below.

3.12.3 Environmental Impact Analysis

NOI-1: Would the proposed Project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Construction Noise

Construction activity would result in temporary increases in ambient noise levels in the Project site on an intermittent basis. Noise levels would fluctuate depending on the construction phase, equipment type and duration of use, distance between the noise source and receptor, and presence or absence of noise attenuation barriers. Typical noise levels from various types of equipment that may be used during construction are listed in Table 3.12-6.

Table 3.12-6. Construction Equipment and Associated Noise Levels

Equipment	Noise Level at 50 Feet (dBA, Leq)	Equipment	Noise Level at 50 Feet (dBA, Leq)
Backhoe	73.6	Grader	81.0
Boom Lift	79.4	Loader	75.1
Compactor (Roller)	73.0	Miscellaneous Small Tools	82.2
Concrete Pump (Tow)	74.4	Office Trailers	N/A
Concrete Truck	74.8	Paving Machine	74.2
Crane	72.6	Scaffolding	N/A
Dozer	77.7	Scissor Lift	67.7
Dump Truck	72.5	Scraper	79.6
Electric Man Lift	67.7	Sheepsfoot	73.0
Excavator	76.7	Skip Loader	73.6
Flatbed Truck	70.3	Tractor	80.0
Forklift	73.6	Water truck	70.3
Pile driver	94.3	Jackhammer	81.9

Source: FHWA 2008.

Construction would occur over a 20-year period occurring within seven phases. As a long-range planning document, the Vision Plan does not include fully developed construction details. Each phase of the Project would generally entail the following stages: pre-construction design and permitting; demolition and grading; site preparation (including installation of utilities and stormwater infrastructure); construction; architectural coatings/finishing; and final landscaping.

Construction Noise Levels by Activity Type

Construction activities occurring over the seven different phases would often be similar. Typical construction activity would typically include the uses of equipment such as excavators, backhoes, cranes, front end loaders, dump trucks, and pavers. The noise levels shown in Table 3.12-**7** consider the likelihood that multiple pieces of construction equipment would be operating simultaneously and the typical overall noise levels that would be expected for each type of construction. For example, the most perceptible levels of construction noise would likely occur during Phase 1 when the Zoo Entry and California planning area improvements are underway, including excavation, blasting of Condor Canyon, and building construction, concurrent with improvements to the Zoo's southern parking lot, realignment of Western Heritage Way, and the Zoo Drive/Western Heritage Way intersection. Collective noise levels during Phase 1 would be the highest and would occur in the most accessible areas of the Project site. Subsequent phases of the Project would occur within the Zoo, separate from exterior public areas.

The most noise intensive construction activity would be associated with potential pile driving and blasting. Pile driving would be potentially required for the proposed aerial tram footings, the California Visitor Center, Treetops Terrace Visitor Center, and Africa Visitor Center hillside foundations, occurring periodically during Phase 1, 2, and 3 of the Project. Blasting would be potentially required for construction of the Condor Canyon within the California planning area during Phase 1. The noise levels shown in Table 3.12-7 consider the likelihood that multiple pieces of construction equipment would be operating simultaneously and the typical overall noise levels that would be expected for each type of construction.

Table 3.12-8 presents the estimated noise levels at the sensitive receptors nearest to the Project site for typical construction activities (e.g., demolition, site preparation, and structural framing). When considered as an entire process with multiple pieces of equipment, building construction activity would be the loudest phase of construction and would generate a noise level of approximately 86.2 dBA L_{eq} at 50 feet. Table 3.12-8 also presents the estimated noise levels at sensitive receptors related to the most noise intensive activities such as pile driving and blasting. Pile driving has been assessed based on the hourly average noise level (L_{eq}) because pile driving noise would occur over an extended period. Blasting has been assessed using L_{max} because the blast noise would be an instantaneous event.

Equipment noise levels during general construction activities would exceed 75 dBA L_{eq} at nearby sensitive receptors during Phases 1, 2, 3, 5, and 6. During Phase 1 the North Hollywood High School Zoo Magnet Center and the Wilson and Harding Golf Courses would experience noise level above 75 dBA L_{eq} (Table 3.12-9). For Phases 2, 3, 5 and 6 the only sensitive receptor that would experience noise levels above 75 dBA L_{eq} is Wilson and Harding Golf Courses. Pile driving activity related to the aerial tram would result in a noise level of 77.4 dBA L_{eq} at the Wilson and Harding Golf Courses.

Table 3.12-7. Construction Noise Levels by Activity

Noise Source	Noise Level at 50 feet (dBA, Leq)
Demolition	
Concrete Saw	82.6
Dozer	77.7
Excavator	76.7
Backhoe	73.6
Excavator	76.7
Dump Truck	72.5
Demolition Combined Noise Level	85.7
Grading	
Grader	82.6
Backhoe	77.7
Dozer	76.7
Excavator	73.6
Scraper	76.7
Dump Truck	72.5
Grading Combined Noise Level	85.6
Building Construction	
Forklift	79.4
Generator	77.6
Backhoe	73.6
Welder	70.0
Crane	72.6
Pneumatic Tools	82.2
Concrete Pump Truck	74.4
Concrete Truck	74.8
Building Construction Combined Noise Level	86.2
Architectural Coating	
Compressor	73.7
Generator	77.6
Architectural Coating Combined Noise Level	79.1
Paving	
Front End Loader	75.1
Pavers	74.2
Rollers	73.0
Paving Combined Noise Level	79.0
Pile Driving	
Pile Driver	73.7
Pile Driving Combined Noise Level	73.7
Blasting	
Blasting	94.0 dBA L_{max}
Blasting Combined Noise Level	94.0 dBA L_{max}

Source: FHWA 2008.

Table 3.12-8. Construction Noise Levels by Activity

Noise Source	Noise Level at 50 feet (dBA, Leq)
Demolition	
Concrete Saw	82.6
Dozer	77.7
Excavator	76.7
Backhoe	73.6
Excavator	76.7
Dump Truck	72.5
Demolition Combined Noise Level	85.7
Grading	
Grader	82.6
Backhoe	77.7
Dozer	76.7
Excavator	73.6
Scraper	76.7
Dump Truck	72.5
Grading Combined Noise Level	85.6
Building Construction	
Forklift	79.4
Generator	77.6
Backhoe	73.6
Welder	70.0
Crane	72.6
Pneumatic Tools	82.2
Concrete Pump Truck	74.4
Concrete Truck	74.8
Building Construction Combined Noise Level	86.2
Architectural Coating	
Compressor	73.7
Generator	77.6
Architectural Coating Combined Noise Level	79.1
Paving	
Front End Loader	75.1
Pavers	74.2
Rollers	73.0
Paving Combined Noise Level	79.0
Pile Driving	
Pile Driver	73.7
Pile Driving Combined Noise Level	73.7
Blasting	
Blasting	94.0 dBA L_{max}
Blasting Combined Noise Level	94.0 dBA L_{max}

Source: FHWA 2008.

Table 3.12-9. Unmitigated Construction Noise Levels

Sensitive Receptors	Distance to Construction (feet)	Typical Construction Noise Level at Sensitive Receptor (dBA, Leq)	Threshold	Exceed?
Phase 1				
North City High School Zoo Magnet Center	50	79.0	75	**Yes**
Griffith Park Trails	250	72.2	75	No
Autry Museum	300	63.4	75	No
Mineral Wells Picnic Area	2,500	52.2	75	No
Phase 2				
Griffith Park Trails	800	62.1	75	No
North City High School Zoo Magnet Center	1,000	60.2	75	No
Mineral Wells Picnic Area	1,500	56.7	75	No
Autry Museum	1,800	55.1	75	No
Phase 3				
Mineral Wells Picnic Area	380	68.6	75	No
Griffith Park Trails	800	62.1	75	No
North City High School Zoo Magnet Center	1,500	56.7	75	No
Autry Museum	2,700	51.6	75	No
Phase 4				
Mineral Wells Picnic Area	450	67.1	75	No
Griffith Park Trails	500	66.2	75	No
North City High School Zoo Magnet Center	1,450	57.0	75	No
Phase 5				
North City High School Zoo Magnet Center	1,300	57.9	75	No
Mineral Wells Picnic Area	2,000	54.2	75	No
Autry Museum	2,400	52.6	75	No
Griffith Park Trails	2,500	52.2	75	No
Phase 6				
North City High School Zoo Magnet Center	1,100	59.4	75	No
Autry Museum	1,400	57.3	75	No
Griffith Park Trails	1,500	56.7	75	No
Mineral Wells Picnic Area	3,000	50.6	75	No
Phase 7				
Griffith Park Trails	700	63.3	75	No
Autry Museum	900	61.1	75	No
North City High School Zoo Magnet Center	1,900	54.6	75	No

Source: Appendix M.

Table 3.12-10. Unmitigated Construction Noise Levels – Blasting/Pile Driving

Sensitive Receptors	Distance to Construction (feet)	Reference Noise Level (dBA Leq or Lmax	Typical Construction Noise Level at Sensitive Receptor (dBA, Leq or Lmax)	Exceed 75 dBA Leq or Lmax?
Aerial Tram Pile Driving				
Mineral Wells Picnic Area	1,200	94.3 dBA L_{eq}	66.7 dBA L_{eq}	No
North City High School Zoo Magnet Center	1,300	94.3 dBA L_{eq}	66.0 dBA L_{eq}	No
Griffith Park Trails	1,500	94.3 dBA L_{eq}	64.8 dBA L_{eq}	No
Autry Museum	1,600	94.3 dBA L_{eq}	64.2 dBA L_{eq}	No
California Visitor Center Pile Driving				
Griffith Park Trails	800	94.3 dBA L_{eq}	70.2 dBA L_{eq}	No
North City High School Zoo Magnet Center	1,500	94.3 dBA L_{eq}	64.8 dBA L_{eq}	No
Autry Museum	2,000	94.3 dBA L_{eq}	62.3 dBA L_{eq}	No
Mineral Wells Picnic Area	2,600	94.3 dBA L_{eq}	60.0 dBA L_{eq}	No
Treetop Visitor Center Pile Driving				
North City High School Zoo Magnet Center	1,700	94.3 dBA L_{eq}	63.7 dBA L_{eq}	No
Mineral Wells Picnic Area	1,900	94.3 dBA L_{eq}	62.7 dBA L_{eq}	No
Park	2,300	94.3 dBA L_{eq}	61.0 dBA L_{eq}	No
Autry Museum	2,700	94.3 dBA L_{eq}	59.7 dBA L_{eq}	No
Africa Visitor Center Pile Driving				
Mineral Wells Picnic Area	1,400	94.3 dBA L_{eq}	65.4 dBA L_{eq}	No
Griffith Park Trails	1,500	94.3 dBA L_{eq}	64.8 dBA L_{eq}	No
North City High School Zoo Magnet Center	2,200	94.3 dBA L_{eq}	61.4 dBA L_{eq}	No
Autry Museum	3,500	94.3 dBA L_{eq}	57.4 dBA L_{eq}	No
Condor Canyon Blasting				
Griffith Park Trails	250	94.0 dBA L_{max}	80.0 dBA L_{max}	**Yes**
North City High School Zoo Magnet Center	2,000	94.0 dBA L_{max}	62.0 dBA L_{max}	No
Autry Museum	2,200	94.0 dBA L_{max}	61.1 dBA L_{max}	No

Source: Appendix M.

Although the Wilson and Harding Golf Courses would experience elevated noise levels (approximately 86.2 dBA L_{eq} at the property boundary) related to construction of the proposed Project, noise would likely only be a minor nuisance to golf course users. Noise levels would be the highest at fairways and greens nearest to the construction site. As golfers play through each hole, they would move further away from the noise source resulting in reduced noise levels. Furthermore, the existing ambient noise levels are elevated at the golf course due to the presence of the I-5 freeway to the east.

As shown in Table 3.12-9, blasting activity associated with the proposed Condor Canyon would result in the exceedance of 75 dBA L_{max} at the Skyline Trail in Griffith Park. Blasting noise would be an instantaneous event and would not result extended noise impacts over the duration of construction activity. Receptors would only include hikers on trails immediately adjacent to the Zoo. This specific short-term event would be slight comparable to loud

ongoing construction activities and would not be perceived substantially due to absence of nearby sensitive receptors and the temporary adverse effects.

MM NOI-1 through **MM NOI-5** would substantially reduce construction noise levels. The equipment mufflers associated with **MM NOI-1** would reduce construction noise levels by approximately 3 dBA. **MM NOI-2** through **MM NOI-4**, although difficult to quantify, would also reduce and/or control construction noise levels. **MM NOI-4** would require coordination with the construction contractor and the coordinator of the North Hollywood High School Zoo Magnet Center to avoid disruption to classroom instruction. **MM NOI-5** would reduce construction noise levels by approximately 10 dBA at North Hollywood High School Zoo Magnet Center by installing temporary noise barriers around the property boundary. As shown in Table 3.12-11, with implementation of these measures, noise levels would be reduced to approximately 66 dBA L_{eq} at the exterior of the school, which would be below the 75 dBA L_{eq} standard. Therefore, Project impacts related to construction noise would be *less than significant with mitigation*.

Table 3.12-11. Mitigated Construction Noise Levels

Sensitive Receptors	Distance to Construction (feet)	Unmitigated Construction Noise Level at Sensitive Receptor (dBA, Leq)	Attenuation	Mitigated Construction Noise Level	Threshold	Exceed?
Phase 1						
North Hollywood High School Zoo Magnet Center	50	79.0	13	66.0	75	No

Source: Appendix M.

Haul Truck Trips

In addition to onsite construction noise, off-site haul trucks would generate noise along local roadways. Phase 1 would result in the maximum number of truck trips per day. Grading and excavation during Phase 1 would require approximately 40 round-trip haul truck trips per day (80 one-way pass-by trips). Over an 8-hour workday this would result in approximately 10 truck trips per hour. Regional access to the proposed Project is provided via I-5 and SR-134. Local access to the Zoo entrance is provided by Zoo Drive from the north and west and via Crystal Springs Drive/Western Heritage Way from the south. Additionally, Griffith Park Drive provides vehicular access to the west end of the Zoo for employees and deliveries only. Haul trucks could utilize any of these routes for import and export of materials. The desired haul route would be dependent on each phase of construction.

Crystal Springs Drive/Western Heritage Way and Zoo Drive would likely be the most used haul route, as it allows access to different areas of the Zoo from both freeways. The existing

mobile noise levels were calculated using the Federal Highway Administration Traffic Noise Model 3.0 and are summarized in Table 3.12-12. A total of 10 haul trucks were added to each roadway segment to determine the incremental increase in noise. The addition of 10 trucks per hour to existing traffic would result in a maximum noise level increase of approximately 0.8 dBA L_{eq}. Haul truck noise may be more noticeable along Griffith Park Drive and Zoo Drive due to the low level of existing traffic. Existing noise measured within the Zoo at a low traffic area was approximately 50.0 dBA L_{eq}. Although haul trucks would result in an audible increase during the immediate pass-by, they would not result in a substantial increase in noise for an extended period. Therefore, haul truck noise impacts associated with the proposed Project would result in a *less than significant*.

Table 3.12-12. Haul Truck Noise (dBA, L_{eq})

Roadway Segment	Existing Noise Level	Existing + Haul Truck Noise Level	Increase
Zoo Drive from Riverside Drive to Zoo Drive	65.8	66.2	0.4
Western Heritage Way from Zoo Driveway to Zoo Driveway	62.4	63.0	0.6
Crystal Springs Drive from Griffith Park Drive to Zoo Drive	63.0	63.8	0.8

Source: FHWA, 2019; Appendix M.

Operational Noise

Stationary noise sources introduced under the proposed Project would be similar to existing noise sources. Stationary noises sources include Zoo visitors conversing in the park, noise from animals, noise related to special events, mechanical equipment noise within the park, service vehicles, the PA system, parking noise, and background music. However, increased attendance due to Zoo expansion, new Zoo facilities, and Zoo programming may result in increased noise levels and expanded duration of operational noise, including after-hours noise from evening special events.

Special Events

In 2019, the Zoo hosted 87 birthday parties, 60 company picnics, retreats, and meetings, and 19 holiday parties. By 2034 (Phase 5 of the Vision Plan), the Zoo is projected to host an average of 100 birthday parties and 75 private events per year. Each event would generate similar noise levels to existing events. Events would generate noise related to people conversing and walking through the Zoo. In social situations, people often talk at distances of approximately 3 to 12 feet. A typical very loud voice level at this distance is approximately 66 dBA.[2]

[2]The Engineering Toolbox, Voice Level and Distance, available at http://www.engineeringtoolbox.com/voice-level-d_938.html, accessed February 13, 2020.

While the Project would additional special events, including seasonal after-hour events like LA Zoo Lights, noise monitoring indicated no increase in noise levels from sensitive receptor locations.

The size of Project-related events would be variable and dependent upon the size of each venue. The noise modeling methodology requires assessing a group of people speaking at one location. In actual conditions instead of modeled condition, groups would be spread over an entire venue area. A reasonable assumption is that 50 people would be conversing at one time at one grouped location. The noise level for 50 people speaking simultaneously would be approximately 83 dBA L_{eq} at 3 to 12 feet. Eucalyptus Grove, which has a capacity of 200 guests, is the nearest private event venue to a sensitive receptor – the Wilson and Harding Golf Course, located approximately 100 feet away. At this distance, the noise level would be approximately 52.5 dBA L_{eq}.

Private events may occur simultaneously within the Zoo, but due to the distance among the private event venues, are unlikely to combine to result in a cumulatively higher noise level. Private event noise would only occur during private events and are unlikely to result in an increase of the 24-hour CNEL noise level. Private event noise would be contained within the boundaries Zoo and the increase of the number of events would not be significantly different from the existing condition. Therefore, private event noise would not result in a 5 dBA or more increase in CNEL.

The Zoo also hosts several seasonal events that can extend Zoo hours into the evening and draw additional visitors. This would result in increased noise during non-typical Zoo operational hours. To account for the difference in daytime and nighttime operation of the Zoo, noise measurements were taken during the Zoo Lights special event. Monitored noise levels account for the busy holiday season with increased Zoo attendance associated with Zoo Lights. The Zoo Lights event did not result in increased noise levels relative to non-Zoo Lights hours. As shown in Table 3.12-13, a consistent increase in noise levels between the Zoo Lights event and non-Zoo Lights hours did not occur. Variations in hourly noise levels were likely a result of various noise sources within the measurement area such as helicopter flyovers, Zoo personnel, and vehicle noise. Therefore, increases in the number of seasonal event noise and the attendance of seasonal events is not anticipated to result in a 5 dBA or more increase in CNEL. As such, impacts associated with event noise would be *less than significant*.

Table 3.12-13. Comparison of Normal Zoo Operational Noise and Event Operational Noise

Day	Normal Zoo Hour Noise Level Range (dBA, Leq)		Zoo Lights Noise Level Range (dBA, Leq)	
	Min	Max	Min	Max
Site 1				
Friday	47.5	50.2	48.7	51.0
Saturday	46.6	51.0	50.0	51.3
Site 2				
Friday	57.0	62.2	62.0	63.9
Saturday	55.6	64.2	61.9	62.8

Source: Appendix M.

Parking

The Vision Plan proposes to add additional parking to accommodate both employees and guests. The Zoo's southern parking lot surrounding the North Hollywood High School Zoo Magnet Center would be redesigned and restriped to add approximately 300 guest parking spaces during Phase 1 and 2,000 parking spaces would be added by construction of parking structure in the northern parking lot during Phase 7. The Vision Plan also proposes dedicated staff parking lots located at the Service Center building along the south perimeter (56 spaces) during Phase 3 and at the Gottlieb Animal Health and Conservation Center at the west end of the Zoo (92 spaces) during Phase 4, for a total of 148 new employee parking spaces.

Typical parking lot sources of noise at the Zoo include vehicle idling, opening and closing of car doors, people conversing, and on occasion, vehicle alarms or horns. According to the FTA Transit Noise and Vibration Impact Assessment guidance, a 1,000-space parking structure generates a noise level of approximately 56.4 dBA L_{eq} at 50 feet. Parking noise created by each parking facility is shown in Table 3.12-14. The 300-space parking lot east of the North Hollywood High School Zoo Magnet Center could potentially increase noise levels at the school, which is located adjacent to the west of the parking lot. The proposed parking lot would generate similar noise as the existing parking lot. A 300-space parking lot would generate a noise level of approximately 51.2 dBA L_{eq} at 50 feet. Noise measurements indicate that existing ambient noise levels at the Zoo magnet center are approximately 61 dBA L_{eq}. Therefore, restriping of the Zoo's southern parking lot to increase the number of parking spaces is not is not anticipated to result in a 5 dBA CNEL increase in noise levels at the nearest receptor.

The 2,000-space parking structure proposed in the northern surface parking lot is envisioned to have all levels above ground; however, a subterranean structure may be constructed in its place. The proposed parking structure would generate similar noise as the existing parking lot. A 2,000-space parking structure generates a noise level of approximately 59.2 dBA L_{eq} at 50 feet. The nearest sensitive receptor would be the Autry Museum located approximately 800 feet to the southeast. At this distance parking structure noise would be approximately

35.3 dBA L_{eq}. Noise measurements indicate that existing ambient noise levels at the Autry Museum are approximately 61 dBA L_{eq} at the building face. Therefore, parking structure noise is not anticipated to result in a 5 dBA CNEL increase.

The 92 space and 56-space staff parking lots would not result in substantial noise due to their limited size. The 92-space lot would generate approximately 46.0 dBA L_{eq} at 50 feet and the 56-space lot would generate approximately 43.9 dBA L_{eq} at 50 feet. The nearest sensitive use to the 92-space lot is the Mineral Wells Picnic Area and the nearest sensitive use to the 56-space lot is the Wilson and Harding Golf Courses. Due to the relatively low parking noise levels of 43.9 dBA L_{eq} at the Wilson and Harding Golf Course and 26.0 dBA L_{eq} at the Mineral Wells Picnic Area, it is unlikely that parking noise would result in a noticeable increase in ambient noise levels. Furthermore, parking noise would generally only occur during staff arrival and departure times and would not result in a 5 dBA CNEL increase. Therefore, impacts associated with new employee parking noise within the interior of the Zoo would be *less than significant*.

Table 3.12-24. Parking Noise

Parking Facility	Sensitive Receptors	Distance to Centroid (feet)	Noise Level at 50 feet (dBA Leq)	Parking Noise Level at Sensitive Receptor (dBA, Leq)
Guest Parking				
Southern Parking Lot at North Hollywood High School Zoo Magnet Center (300 Parking Spaces)	North City High School Zoo Magnet Center	50	51.2	51.2
Northern Parking Structure (2,000 Parking Spaces)	Autry Museum	800	59.4	35.3
Staff Parking				
Service Center Parking Lot (56 Parking Spaces)	Wilson and Harding Golf Courses	50	43.9	43.9
Gottlieb Animal Health and Conservation Center (92 Parking Spaces)	Mineral Wells Picnic Area	500	46.0	26.0

Source: Appendix M.

Aerial Tram

The proposed aerial tram, proposed to become operational following Phase 3 of the Project, would generate a dominant sound from the electric motor is the magnetic whirr, which generates a whining noise. An internal combustion engine generator or motor would also be installed for use in emergency situations. A typical generator generates a noise level of approximately 77.6 dBA L_{eq} at 50 feet. The aerial tram would be located in the center of the

Zoo and would not generate noise levels that would increase ambient noise levels at off-site uses. Furthermore, the electric motors and generators are anticipated to be housed within enclosures. Electric motor and generator noise would not typically be audible outside of these enclosures, let alone at nearby land uses hundreds of feet away. Therefore, impacts associated with aerial tram noise would be *less than significant*.

Service Area

A major change in operations would include construction of a new 6.1-acre service area at the southern perimeter of the Zoo. This new dedicated service area would expand the total service area within the Zoo from 8,000 to 56,000 square feet (sf), including employee services, maintenance, exhibit fabrication, and other support facilities. Following implementation of the Vision Plan, an estimated three additional deliveries per week for animal care materials and an additional two deliveries per week for food and beverage supplies for visitors would be expected. The fabrication shops and service facilities would use a variety of pneumatic and electric equipment to complete various Zoo maintenance tasks. Pneumatic tools generate a noise level of approximately 82.5 dBA L_{eq} at a distance of 50 feet. The nearest sensitive use is the Wilson and Harding Gold Course located adjacent to the south of the service area. The nearest golf hole would be located approximately 100 feet from the service facilities. At this distance noise levels generated by service facilities would be approximately 76.5 dBA L_{eq}. The analysis conservatively assumes that shop faces would be facing the golf course. The existing CNEL at the adjacent portion of the golf course is estimated to be approximately 55.9 dBA CNEL, based on 24-hour measurements taken in the interior of the Z00. Service facility noise would increase the CNEL to approximately 71.8 dBA CNEL. Therefore, a *potentially significant impact* could result. Although delivery trucks may result in an incremental increase hourly noise levels, an additional five deliveries per week would not result in a 5 dBA or more increase in CNEL. **MM NOI-6**, which would require the Zoo to orient shop faces inwards toward Zoo property, is intended to reduce service area noise through thoughtful design. This would reduce noise levels at the golf course. Therefore, Project impacts associated with service area noise would be *less than significant with mitigation*.

On-Road Vehicles

Mobile source noise may increase due to a higher number of trips being generated by new attractions within the Zoo. In addition to increased vehicle trips to the Zoo, circulation changes may also result in changes to mobile source noise levels. In particular, Crystal Springs would be relocated near the southern portion of the Project site to align with Western Heritage Way. Mobile noise levels were calculated for Existing Conditions (2019), Existing Plus Project Conditions (2025, 2027, 2030,2040), Future No Project Conditions (2025, 2027, 2030,2040), and Future Plus Project Conditions (2025, 2027, 2030,2040) for both weekday and weekend traffic volumes. Weekday mobile noise is shown in Table 3.12-15 and weekend mobile noise is shown in Table 3.12-16. During the weekday, the maximum increase in noise would occur along Zoo Drive between the I-5 Off-Ramp to Zoo Drive to Western Heritage

Way. The increase from Future No Project (2040) to Future Plus Project (2040) would be approximately 0.5 dBA CNEL and the increase from Existing No Project (2040) to Existing Plus Project (2040) would be 0.8 dBA CNEL. During the weekend, the maximum increase in noise would occur along Zoo Drive between the I-5 Off-Ramp to Zoo Drive to Western Heritage Way. The increase from Future No Project (2040) to Future Plus Project (2040) would be approximately 2.0 dBA CNEL and the increase from Existing No Project (2040) to Existing Plus Project (2040) would be 2.3 dBA CNEL. The increase in mobile noise along local roadways would be less than 5 dBA CNEL. Therefore, impacts associated with mobile noise would be *less than significant*.

NOI-2: Would the proposed Project result in generation of excessive groundborne vibration or groundborne noise levels?

Construction Vibration

Construction activity can generate varying degrees of vibration, depending on the construction procedure and the construction equipment used. Operation of construction equipment generates vibrations that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings located in the vicinity of a construction site often varies depending on soil type, ground strata, and construction characteristics of the receiver building(s). The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibration at moderate levels, and to damage at the highest levels.

Due to the short-term nature of construction and movement of equipment around the site, the primary concern regarding construction vibration relates to building damage. Activities that can result in damage include demolition and site preparation in close proximity to sensitive structures. Typical vibration levels associated with relevant construction equipment are provided in Table 3.12-1**7**.

Table 3.12-35. Weekday Mobile Noise (dBA, CNEL)

Roadway Segment	Existing Noise Level	Existing Plus Project Noise Level	Existing vs Existing Plus Project Increase	Future No Project Noise Level	Future Plus Project Noise Level	Future No Project vs Future Plus Project Increase	Existing vs Future Plus Project Increase
2025							
Riverside Dr. from Sonora Ave. to Zoo Dr.	62.8	62.9	0.1	63.0	63.0	0.0	0.2
Zoo Dr. from Riverside Dr. to Zoo Dr.	62.3	62.5	0.2	62.4	62.6	0.2	0.3
Zoo Dr. from I-5 Off-Ramp to Western Heritage Way	60.1	60.3	0.2	60.2	60.4	0.2	0.3
Western Heritage Way from Zoo Driveway to Zoo Driveway	58.9	58.9	0.0	59.0	59.0	0.0	0.1
Crystal Springs Dr. from Griffith Park Dr. to Zoo Dr.	59.5	59.6	0.1	59.6	59.8	0.2	0.3
2027							
Riverside Dr. from Sonora Ave. to Zoo Dr.	62.8	62.9	0.1	63.0	63.1	0.1	0.3
Zoo Dr. from Riverside Dr. to Zoo Dr.	62.3	62.5	0.2	62.5	62.6	0.1	0.3
Zoo Dr. from I-5 Off-Ramp to Western Heritage Way	60.1	60.3	0.2	60.2	60.5	0.3	0.4
Western Heritage Way from Zoo Driveway to Zoo Driveway	58.9	59.0	0.1	59.0	59.1	0.1	0.2
Crystal Springs Dr. from Griffith Park Dr. to Zoo Dr.	59.5	59.6	0.1	59.6	59.9	0.3	0.4
2030							
Riverside Dr. from Sonora Ave. to Zoo Dr.	62.8	63.0	0.2	63.0	63.1	0.1	0.3
Zoo Dr. from Riverside Dr. to Zoo Dr.	62.3	62.6	0.3	62.5	62.8	0.3	0.5
Zoo Dr. from I-5 Off-Ramp to Western Heritage Way	60.1	60.5	0.4	60.3	60.7	0.4	0.6

Table 3.12-45. Weekday Mobile Noise (dBA, CNEL) (Continued)

Roadway Segment	Existing Noise Level	Existing Plus Project Noise Level	Existing vs Existing Plus Project Increase	Future No Project Noise Level	Future Plus Project Noise Level	Future No Project vs Future Plus Project Increase	Existing vs Future Plus Project Increase
Western Heritage Way from Zoo Driveway to Zoo Driveway	58.9	59.1	0.2	59.0	59.2	0.2	0.3
Crystal Springs Dr. from Griffith Park Dr. to Zoo Dr.	59.5	59.9	0.4	59.6	60.0	0.4	0.5
2040							
Riverside Dr. from Sonora Ave. to Zoo Dr.	62.8	63.0	0.2	63.1	63.3	0.2	0.5
Zoo Dr. from Riverside Dr. to Zoo Dr.	62.3	62.7	0.4	62.6	62.9	0.3	0.6
Zoo Dr. from I-5 Off-Ramp to Western Heritage Way	60.1	60.6	0.5	60.4	60.9	0.5	0.8
Western Heritage Way from Zoo Driveway to Zoo Driveway	58.9	59.1	0.2	59.1	59.4	0.3	0.5
Crystal Springs Dr. from Griffith Park Dr. to Zoo Dr.	59.5	59.9	0.4	59.8	60.2	0.4	0.7

Source: FHWA, 2019; Appendix M.

Table 3.12-56. Weekend Mobile Noise (dBA, CNEL)

Roadway Segment	Existing Noise Level	Existing Plus Project Noise Level	Existing vs Existing Plus Project Increase	Future No Project Noise Level	Future Plus Project Noise Level	Future No Project vs Future Plus Project Increase	Existing vs Future Plus Project Increase
2025							
Riverside Dr. from Sonora Ave. to Zoo Dr.	61.0	61.2	0.2	61.1	61.2	0.1	0.2
Zoo Dr. from Riverside Dr. to Zoo Dr.	58.2	58.7	0.5	58.3	58.7	0.4	0.5
Zoo Dr. from I-5 Off-Ramp to Western Heritage Way	56.4	57.4	1.0	56.5	57.4	0.9	1.0
Western Heritage Way from Zoo Driveway to Zoo Driveway	55.6	56.1	0.5	55.7	56.2	0.5	0.6
Crystal Springs Dr. from Griffith Park Dr. to Zoo Dr.	58.6	59.1	0.5	58.7	59.1	0.4	0.5
2027							
Riverside Dr. from Sonora Ave. to Zoo Dr.	61.0	61.2	0.2	61.1	61.3	0.2	0.3
Zoo Dr. from Riverside Dr. to Zoo Dr.	58.2	58.9	0.7	58.3	59.0	0.7	0.8
Zoo Dr. from I-5 Off-Ramp to Western Heritage Way	56.4	57.7	1.3	56.5	57.8	1.3	1.4
Western Heritage Way from Zoo Driveway to Zoo Driveway	55.6	56.8	1.2	55.7	56.6	0.9	1.0
Crystal Springs Dr. from Griffith Park Dr. to Zoo Dr.	58.6	59.3	0.7	58.7	59.4	0.7	0.8
2030							
Riverside Dr. from Sonora Ave. to Zoo Dr.	61.0	61.3	0.3	61.2	61.4	0.2	0.4
Zoo Dr. from Riverside Dr. to Zoo Dr.	58.2	59.2	1.0	58.4	59.3	0.9	1.1
Zoo Dr. from I-5 Off-Ramp to Western Heritage Way	56.4	58.1	1.7	56.6	58.3	1.7	1.9

Table 3.12-66. Weekend Mobile Noise (dBA, CNEL) (Continued)

Roadway Segment	Existing Noise Level	Existing Plus Project Noise Level	Existing vs Existing Plus Project Increase	Future No Project Noise Level	Future Plus Project Noise Level	Future No Project vs Future Plus Project Increase	Existing vs Future Plus Project Increase
Western Heritage Way from Zoo Driveway to Zoo Driveway	55.6	56.8	1.2	55.8	56.9	1.1	1.3
Crystal Springs Dr. from Griffith Park Dr. to Zoo Dr.	58.6	59.6	1.0	58.7	59.8	1.1	1.2
2040							
Riverside Dr. from Sonora Ave. to Zoo Dr.	61.0	61.4	0.4	61.3	61.6	0.3	0.6
Zoo Dr. from Riverside Dr. to Zoo Dr.	58.2	59.3	1.1	58.5	59.6	1.1	1.4
Zoo Dr. from I-5 Off-Ramp to Western Heritage Way	56.4	58.4	2.0	56.7	58.7	2.0	2.3
Western Heritage Way from Zoo Driveway to Zoo Driveway	55.6	57.0	1.4	55.9	57.2	1.3	1.6
Crystal Springs Dr. from Griffith Park Dr. to Zoo Dr.	58.6	59.8	1.2	58.8	60.1	1.3	1.5

Source: FHWA, 2019; Appendix M.

Table 3.12-77. Vibration Velocities for Construction Equipment

Equipment		PPV at 25 feet (Inches/Second)	VdB at 25 feet (Micro-Inches/Second)
Pile Driver	Upper Range	1.518	112
	Typical	0.644	104
Caisson Drilling		0.089	87
Large Bulldozer		0.089	87
Loaded Truck		0.076	86
Jackhammer		0.035	79
Small Bulldozer		0.003	58

Source: FTA 2018.

FTA has published guidance stating that engineered concrete and masonry buildings (e.g., typical buildings) can withstand PPV levels of at least 0.3 inches per second without experiencing damage. Vibration is a localized event and attenuates rapidly with distance and at this distance vibration damage would not occur. Typical construction activity within Zoo property would utilize equipment such as a large bulldozer, which generates a vibration level of approximately 0.089 inches per second at 25 feet. Construction would occur within the confines of Zoo property and vibration generating equipment would typically be located more than 25 feet away from off-site structures. The 0.3 inches per second threshold would not be exceeded at off-site structures. Therefore, impacts associated with typical construction vibration would be *less than significant*.

Pile Driving

Vibration intensive activities such as impact pile driving have the potential to impact off-site structures due to the elevated vibration levels. An impact pile driver generates a vibration level of 0.644 inches per second in the typical range and 1.518 inches per second in the upper range of vibration. Pile driving activity has been assessed conservatively using the upper range of vibration generated by pile drivers. As shown in Table 3.12-18, the 0.3 inches per second damage criterion would not be exceeded at any off-site uses. Therefore, impacts associated with pile driving vibration would be *less than significant*.

Table 3.12-8. Pile Driving Construction Vibration Levels

Sensitive Receptors	Distance to Construction (feet)	Reference Vibration Level (inches/second)	Vibration Level at Receptors (inches/second)	Exceed 0.3 inches/second Threshold?
Aerial Tram Pile Driving				
Golf Course	350	1.518	0.029	No
Mineral Wells Picnic Area	1,200	1.518	0.005	No
North City High School Zoo Magnet Center	1,300	1.518	0.004	No
Autry Museum	1,600	1.518	0.003	No
California Visitor Center Pile Driving				
Golf Course	550	1.518	0.015	No
North City High School Zoo Magnet Center	1,500	1.518	0.003	No
Autry Museum	2,000	1.518	0.002	No
Mineral Wells Picnic Area	2,600	1.518	0.001	No
Treetops Terrace Visitor Center Pile Driving				
Golf Course	600	1.518	0.013	No
North City High School Zoo Magnet Center	1,700	1.518	0.003	No
Mineral Wells Picnic Area	1,900	1.518	0.002	No
Autry Museum	2,700	1.518	0.001	No
Africa Visitor Center Pile Driving				
Golf Course	800	1.518	0.008	No
Mineral Wells Picnic Area	1,400	1.518	0.004	No
North City High School Zoo Magnet Center	2,200	1.518	0.002	No
Autry Museum	3,500	1.518	0.001	No

Source: Appendix M.

Blasting

Blasting of bedrock within the undeveloped hillside near the existing Condor East facility could be required for the construction of the new Condor Canyon as part of the California planning area improvements. There are two primary concerns related to vibration generated by blasting: air overpressure and ground vibration. The vibration generated by blasting is dependent on a variety of factors such as the size of charge, medium the detonation occurs in, and depth of the charge. Due to the preliminary planning stage of the proposed Project, detailed blasting information is not available. A generalized blasting vibration level of approximately 100 VdB at 50 feet has been obtained from the FTA Transit Noise and Vibration Impact Assessment Guidance. Minor cosmetic damage to buildings could occur at a vibration level of 98 VdB at the structure. Regarding annoyance/disruption, blasting vibration is considered an infrequent event and nearby sensitive land uses would experience annoyance if vibration levels exceed 83 VdB. As shown in Table 3.12-19, blasting vibration levels would not exceed the 98 VdB damage criterion or the 83 VdB annoyance criterion.

Table 3.12-99. Blasting Ground Vibration Levels

Sensitive Receptors	Distance to Construction (feet)	Reference Vibration Level (VdB)	Vibration Level at Receptors (VdB)	Exceed 98 VdB Damage Criterion?	Exceed 83 VdB Annoyance Criterion?
Wilson and Harding Golf Courses	1,100	100	51	No	No
North City High School Zoo Magnet Center	2,000	100	43	No	No
Autry Museum	2,200	100	42	No	No

Source: Appendix M.

The air overpressure generated by blasting could potentially result in damage to structures and disturbance of persons within the blast vicinity. Air overpressures from fully confined charges in normal down-hole blasting are lower-frequency pressure pulses that result from movement or bulking of the blasted material, bench-face movement, and the vertical component of ground vibration waves in the vicinity of an air overpressure recording device. Low-frequency overpressures, although they might be below the range of human hearing, can impact the side of a residential structure, resulting in windows rattling and other noise. On hearing this noise, the average homeowner will not be able to distinguish between air overpressure or ground vibration as the source but will generally incorrectly attribute the effect to the latter. The air overpressure generated by blasting travels in sound waves and is best assessed in terms of dB. According to FHWA Roadway Construction Noise Model, blasting generates a noise level of approximately 94 dB at 50 feet. An air overpressure level of 133 dB measured at a frequency of two Hz could potentially result in structure damage. An air overpressure level of 120 dB could potentially result in disturbance of persons within the project vicinity. As shown in Table 3.12-20, blasting air overpressure levels would not exceed the 133-dB damage criterion or the 120-dB annoyance criterion. Therefore, impacts associated with blasting vibration and air overpressure would be *less than significant*.

Table 3.12-20. Blasting Air Overpressure Vibration Levels

Sensitive Receptors	Distance to Construction (feet)	Reference Noise Level (dB) at 50 feet	Noise Level at Receptors (dB)	Exceed 133 dB Damage Criterion?	Exceed 120 dB Annoyance Criterion?
Wilson and Harding Golf Courses	1,100	94	67.2	No	No
North City High School Zoo Magnet Center	2,000	94	62.0	No	No
Autry Museum	2,200	94	61.1	No	No

Source: Appendix M.

Effects of Construction Vibration on Zoo Animals

As further analyzed in Section 3.3, *Biological Resources*, construction vibration may also be disruptive to Zoo animals. Certain animals, such as elephants, have been theorized to communicate through ground seismic waves. The vibration perceptibility threshold for animals such as elephants is lower than that of humans. According to research on elephant communication, elephants communicate in the vibration frequency range of approximately 20 to 25 Hz.[3] According to the FTA Transit Noise and Vibration guidance, humans begin to perceive vibration at a vibration level of 65 VdB at vibration frequency of 30 Hz to 60 Hz. As shown in Table 3.12-21, use of typical construction equipment such as large bulldozers would typically be below the 65 VdB perceptibility threshold at a distance of 200 feet or more. However, blasting vibration would not be below the threshold until a distance of 400 feet from the source and the upper range of pile driving vibration would not be below until a distance of 1,000 feet.

Table 3.12-210. Vibration Attenuation with Distance

Equipment		Vibration Level (VdB)							
		Reference at 25 feet	50 feet	100 feet	200 feet	300 feet	400 feet	500 feet	1,000 feet
Pile Driver	Upper	112	103	94	85	80	76	73	64
	Typical	104	95	86	77	72	68	65	56
Caisson Drilling		87	78	69	60	55	51	48	39
Large Bulldozer		87	78	69	60	55	51	48	39
Loaded Truck		86	77	68	59	54	50	47	38
Jackhammer		79	70	61	52	47	43	40	31
Small Bulldozer		58	49	40	31	26	22	19	10
Blasting		100	91	82	73	68	64	61	52

The Zoo is dedicated to the health and wellbeing of all its animals. Zookeepers and animal caretakers are trained in the monitoring of the Zoo's animals and implement measures appropriate for each individual species to ensure their safety and wellbeing in accordance with the Animal Welfare Act and the AZA, which governs the care, handling, and transport of zoo animals. As the Zoo has done in the past during construction of prior improvements, measures to protect these animals may include their temporary relocation away from construction activities, closure of exhibits, or even the transfer of animals to other zoos. Accommodations specific to each animal would be developed during the planning process for each phase and details would be included in final construction plans. The Zoo is accredited by the AZA and is an active member of many Species Survival Plans. As a result, the Zoo is part of a large consortium of accredited zoos that can provide alternative housing for the Zoo's residents if necessary during construction. With continued management of each species of

[3] Mongabay, *Vibrations from Elephant Calls and Movements Reflect Distinct Behaviors, Study Says*, May 11, 2010, available at https://news.mongabay.com/2018/05/vibrations-from-elephant-calls-and-movements-reflect-distinct-behaviors-study-says/.

animal exhibited or rehabilitated at the Zoo and required compliance with the Animal Welfare Act (AWA), there would be no adverse effects on Zoo animals from vibration during construction of the Vision Plan.

Operational Vibration

The proposed Project does not include stationary sources of vibration, such as heavy-duty industrial equipment. Regarding additional traffic, the FTA has stated that rubber-tired vehicles do not typically generate perceptible vibration levels outside of the right-of-way. There are no operational sources of vibration that would generate vibration levels that exceed 75 VdB. Therefore, impacts associated with operational vibration would be *less than significant*.

3.12.4 Mitigation Measures

MM NOI-1 Equipment Mufflers

The City and its contractors and subcontractors shall ensure that all construction equipment is operated with closed engine doors and is properly muffled according to manufactures specifications or as required by the City Department of Building and Safety (LADBS), whichever is the more stringent. Use of manufacturer-certified mufflers associated with construction equipment has been shown to reduce noise levels by a minimum of 8 dBA and up to 10 dBA. These requirements shall be included in all final Project plans and permit documents.

MM NOI-2 Rubber Tired Equipment

The City and its contractors and subcontractors shall use rubber-tired equipment to the maximum extent feasible during grading, excavation, and building construction activities, rather than metal-tracked equipment, to reduce noise and vibration levels. These requirements shall be included in all final Project plans and permit documents.

MM NOI-3 Equipment Idling

California State law prohibits heavy-duty diesel motor vehicles from idling for longer than five minutes (Title 13 CCR Section 2485). Under this mitigation, all construction equipment shall be turned off when not in use for an excess of five minutes, except for equipment that requires idling to maintain performance.

MM NOI 4 Notification Requirements and Coordination with Neighboring Properties

At least one month prior to the initiation of construction related activities, the City shall prepare and distribute notices to property owners within 500 feet of the Project site, including the Wilson and Harding Golf Courses, Los Angeles Department of Recreation and Parks (RAP), North Hollywood High School Zoo Magnet Center, and the Autry Museum of the American West, as well as affected commercial businesses and residences along the haul truck

route. At a minimum the notices shall describe the overall construction schedule, advise residents, business owners, and employees of increased construction-related noise, and provide a non-automated telephone number to call to submit complaints associated with construction noise.

- The Zoo shall retain a Noise Disturbance Coordinator for the duration of Project construction activities. The Noise Disturbance Coordinator shall be responsible for responding to local complaints about construction noise. The Noise Disturbance Coordinator shall determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and shall be required to implement reasonable measures such that the complaint is resolved. All notices that are sent to sensitive receptors within 500 feet of the construction site and all signs posted at the construction site shall list the telephone number for the Noise Disturbance Coordinator.
- Prior to initiating construction activity, the BOE's construction contractor shall coordinate with the site administrator for the North Hollywood High School Zoo Magnet Center to discuss construction activities that generate high noise levels. Coordination between the site administrator and the construction contractor shall continue on an as-needed basis throughout construction of the proposed Project to mitigate potential disruption of classroom activities.

MM NOI-5 Temporary Noise Barriers

The City and its contractors and subcontractors shall implement noise attenuation measures to the satisfaction of the LADBS. Prior to the initiation of the proposed realignment of Crystal Springs Drive/Western Heritage Way and south parking area improvements (Phase 1), a solid noise barrier wall shall be erected around the property boundary of North Hollywood High School Zoo Magnet Center. The noise barrier wall shall be designed to achieve the maximum sound attenuation feasible by breaking the line of site to the Project site (i.e., it shall be scalable to the height of the mixed-use hotel building during each construction phase). The noise barrier wall shall be based on a site-specific acoustic analysis prepared by a qualified acoustic engineer to be approved by the Community Development Director. The noise barrier wall shall be designed to reduce construction-related noise by a minimum of 10 dBA; however, it is expected that the noise barrier wall could decrease construction-related noise levels by up to 15 dBA during certain phases of construction. The noise barrier wall design shall be subject to City staff approval and shall include an art installation (e.g., painting, adhesive pattern design, etc.) that provides visual relief during the Phase 1 construction period.

MM NOI-6 Noise Reduction Through Design

The City shall design the Zoo's planning areas to reduce operational noise levels. For example, buildings and noise generating uses, such as the proposed Service Center and Zoo Entry shops, should be oriented such that the open faces of these buildings are facing inwards

towards the center of the Zoo. Additionally, noise generators for operational equipment, including but not limited to the aerial tram and funicular motors and generators shall be enclosed to reduce noise exposure.

3.12.5 Impacts Summary

With implementation of mitigation measures **MM NOI-1** through **MM NOI-6**, impacts to potential noise and vibration impacts would be *less than significant*. Therefore, significant unavoidable adverse impacts related to noise and vibration would not occur.

3.13 PUBLIC SERVICES

Public services provided to the Zoo include fire and emergency medical response and law enforcement. The City provides adequate local fire response, emergency medical response, and law enforcement services to the Zoo. Further, onsite Zoo security, first aid facilities, and fire management practices implemented by the Zoo reduce demand for emergency response, fire protection, and law enforcement services. The Zoo also supports the North Hollywood High School's Zoo Magnet Center onsite. The Vision Plan would not increase service populations requiring additional or expanded public services. Implementation of mitigation to address potential interruptions in site emergency access during construction, vehicle theft/break ins, and Zoo Magnet Center parking would reduce impacts to less than significant.

This section describes existing public services, including fire protection, emergency medical services (EMS), law enforcement, public school, and library services provided within the City of Los Angeles (City), analyzes the potential impacts from increased demand for these services that could result from implementation of the proposed Los Angeles Zoo Vision Plan (Project) for the Los Angeles Zoo and Botanical Gardens (Zoo). Table 3.13-1 identifies the public service providers for the Zoo and surrounding City areas. Parks and recreational resources, including Griffith Park, nearby hiking and equestrian trails, and nearby public parks are analyzed in Section 3.14, *Recreation*.

Table 3.13-1. Public Service Serving the Zoo

Public Services Provided	Service Agency
Fire Protection and EMS	Los Angeles Fire Department (LAFD)
Law Enforcement	Los Angeles Police Department (LAPD) Los Angeles Zoo Security (Zoo Security)
Public Schools	Los Angeles Unified School District (LAUSD)
Library Services	Los Angeles Public Library

3.13.1 Environmental Setting

Regulatory Setting

Federal Regulations

The following federal regulations apply to fire and fire protection services. There are no federal regulations that pertain to local law enforcement, local public schools, or libraries.

Uniform Fire Code

The Uniform Fire Code includes specialized technical fire and life safety regulations that apply to the construction and maintenance of buildings and land uses. The Uniform Fire Code addresses fire department access, fire hydrants, automatic sprinkler systems, fire alarm systems, fire and explosion hazards safety, hazardous materials storage and use, provisions intended to protect and assist fire responders, industrial processes, and many other general and specialized fire-safety requirements for new and existing buildings.

Code of Federal Regulations (CFR)

Under 29 CFR 1910.38, when required by an Occupational Safety and Health Administration standard, an employer must have an Emergency Action Plan in writing, kept in the workplace, and available to employees for review. Minimum elements of an Emergency Action Plan include the following procedures: reporting a fire or other emergency; emergency evacuation, including type of evacuation and exit route assignments; employees who remain to operate critical plant operations before they evacuate; accounting for all employees after evacuation; and employees performing rescue or medical duties.

Under 29 CFR 1910.39, an employer must have a Fire Prevention Plan. A Fire Prevention Plan must be in writing, be kept in the workplace, and be made available to employees for review. Under 29 CFR 1910.155, Subpart L, Fire Protection, employers are required to place and keep in proper working order, fire safety equipment within facilities.

State Regulations

The following state regulations apply to fire and fire protection services and local public schools. There are no state regulations that pertain to local law enforcement or libraries.

California Fire Code (Title 24, Part 9, California Code of Regulations)

The California Fire Code is Part 9 of the California Code of Regulations (CCR), Title 24, and is also referred to as the California Building Code (CBC). The CBC includes regulations which are consistent with nationally recognized standards of good practice, intended to facilitate protection of life and property. Among other things, its regulations address the mitigation of the hazards of fire explosion, management and control of the storage, handling and use of hazardous materials and devices, mitigation of conditions considered hazardous to life or property in the use or occupancy of buildings and provisions to assist emergency response personnel.

California Health and Safety Code

State fire regulations set forth in Sections 13000 et seq. of the California Health and Safety Code, address building standards, fire protection and notification systems, provision of fire protection devices such as extinguishers and smoke alarms, high-rise building and childcare facility standards, and fire suppression training.

California Code of Regulations Sections

Under Title 19 of the CCR, the California State Fire Marshal develops regulations relating to fire and life safety. These regulations have been prepared and adopted to establish minimum standards for the prevention of fire and for protection of life and property against fire, explosion, and panic. The California State Fire Marshal also adopts and administers regulations and standards necessary under the California Health and Safety Code to protect life and property.

CCR Section 17620 authorizes school districts to levy a fee, charge, dedication, or other requirement against any construction of new residential, commercial, and industrial uses within their boundaries to fund the construction of new schools or school facilities. CCR Section 65995 limits the maximum fee that school districts can assess. Section 65996 designates Section 17620 of the Education Code and Section 65970 of the Government Code to be the exclusive method for considering and mitigating development impacts on school facilities.

California Occupational Safety and Health Administration

In accordance with the CCR, Title 8, Sections 1270, Fire Prevention, and 6773, Fire Protection and Fire Fighting Equipment, the California Occupational Safety and Health Administration has established minimum standards for fire suppression and EMS. The standards include, but are not limited to, guidelines on the handling of highly combustible materials, fire hose sizing requirements, restrictions on the use of compressed air, access roads, and the testing, maintenance, and use of all firefighting and emergency medical equipment.

California Emergency Management Agency

The California Emergency Management Agency was established as part of the Governor's Office on January 1, 2009, and created by Assembly Bill (AB) 38, which merged the duties, powers, purposes, and responsibilities of the former Governor's Office of Emergency Services with those of the Governor's Office of Homeland Security. The California Emergency Management Agency is responsible for the coordination of overall state agency response to major disasters in support of local government. The agency is responsible for assuring the State's readiness to respond to and recover from all hazards – natural, manmade, war-caused emergencies and disasters – and for assisting local governments in their emergency preparedness, response, recovery, and hazard mitigation efforts.

Emergency Response/Evacuation Plans

Government Code Section 8607(a) directs the Governor's Office of Emergency Services to prepare a Standard Emergency Management System program, which sets forth measures by which a jurisdiction should handle emergency disasters. The program is intended to provide effective management of multi-agency and multijurisdictional emergencies in California. The Standard Emergency Management System program consists of five organizational levels,

which are activated as necessary: 1) Field Response; 2) Local Government; 3) Operational Area; 4) Regional; and 5) State.

California Education Code

The California Education Code contains provisions governing the siting, design, and construction of new public schools. In selecting a future school sites, school districts should consider factors influencing the safety of the site such as proximity to airports, railroads, high voltage power transmission lines, presence of toxic and hazardous substances, and hazardous air emissions within one-quarter mile.

Senate Bill (SB) 50 and Proposition 1A School Funding

Senate Bill (SB) 50 amends Section 17620 of the Education Code, to authorize school districts to levy statutory developer fees at levels that may be significantly higher than those previously permitted, but also provides new and stricter standards for school districts to follow when levying fees. School Districts would continue to be authorized to charge development fees (also known as Level 1 fees) of $1.93 per square foot on residential buildings and $0.31 per square foot on commercial or industrial buildings. However, pursuant to Government Code Sections 65995.5 and 65995.7, SB 50 authorizes school districts to charge additional Level 2 development fees to match 50 percent of school construction costs of state funds, and Level 3 development fees to fund 100 percent of school construction costs if state funds are not available.

Section 65996 of the Government Code, School Mitigation Fees

Section 65996 designates Section 17620 of the Education Code (the mitigation fees authorized by SB 50) and Section 65970 of the Government Code to be the exclusive method for considering and mitigating development impacts on school facilities.

AB 181 and AB 2962

AB 181 and AB 2962 require school districts to pay a share of the cost of school construction based on the square footage of residential, commercial, and industrial construction taking place within their districts. The law commissions school districts to levy a Developer Impact Fee for this purpose, establishes the maximum rate of the fees, and prohibits building permit authorities from issuing building permits without certification from the school district that fee requirements have been met.

Local Regulations

City of Los Angeles Municipal Code (Fire Protection)

The Los Angeles Municipal Code (LAMC) includes regulations and standards related to Public Safety and Protection (Title 5). Fire regulations are set forth in the City of Los Angeles 2014 Fire Code (Chapter V, Article 7 of the Municipal Code). The Zoo is required to comply with all

applicable Fire Code standards, including those listed in the LAFD letter on scope of the Project dated April 3, 2018.

The City Fire Code incorporates by reference chapters of the California Fire Code, including Appendix D, and amends fire regulations to local conditions. Under Section 57.103.3.2.2 (Function), the function of the Bureau of Fire Prevention and Public Safety shall be to administer and enforce the fire prevention and life safety provisions of this article and shall include but not be limited to the following:

1. The prevention of fires.
2. The investigation of the cause, origin, and circumstances of fire or life safety hazards.
3. The elimination of fire and life safety hazards in any building or structure, including those under construction, any premises, marine vessel, aircraft, vehicle, or the appurtenances and equipment thereof.
4. The maintenance of fire protection equipment and systems.
5. The regulation of storage, use, and handling of hazardous materials and hazardous substances.
6. Enforcement of the basic building regulations of the State Fire Marshal as they apply to the City of Los Angeles in matters relating to fire, panic, and explosion safety.

Fire Code Section 57.507.3.1 (Fire-Flow Requirements) establishes minimum fire flow requirements in gallons per minute (gpm) according to designated land use. Fire flow requirements for a commercial use are 6,000 to 9,000 gpm, with a minimum residual water pressure of 20 psi (Fire Code Table 57.507.3.1, Fire Flow by Type of Land Development).

Fire Code Section 57.507.3.3 (Land Use) sets forth requirements for maximum response distances. Fire Code Section 57.512 (Response Distances that if Exceeded Require the Installation of an Automatic Fire Sprinkler System) requires the installation of automatic fire sprinkler systems for buildings that are located in excess of established response distances. Fire flow distances for commercial uses are 1 mile for an Engine Company and 1.5 miles for a Truck Company.

Los Angeles Fire Department Strategic Plan

The City of Los Angeles Fire Department (LAFD) Strategic Plan outlines goals and strategies to improve fire protection and response throughout the City. Goals and relating strategies relevant of wildfire include:

- Goal 1: Provide Exceptional Public Safety and Emergency Service
  - Strategy 3: Improve fire suppression services.
  - Strategy 5: Prepare for large scale disasters.
  - Strategy 6: Ensure and optimal state of readiness focusing on terrorism and disaster preparedness.

City of Los Angeles Municipal Code, Charter, and Administrative Codes (Police Protection)

The law enforcement regulations, powers, and duties of the LAPD are outlined in the City Charter, Administrative Code, and LAMC. City Charter Article V, Section 570 gives power and duty to the LAPD to enforce the penal provisions of the Charter, City ordinances, and State and federal law. The Charter also gives responsibility to the LAPD to act as peace officers and to protect lives and property in case of disaster or public calamity. Section 22.240 of the Administrative Code requires the LAPD to adhere to the state standards described in Section 13522 of the California Penal Code, which charges the LAPD with the responsibility of enforcing all LAMC Chapter 5 regulations related to fire arms, illegal hazardous waste disposal, and nuisances (such as excessive noise), and providing support to the Department of Building and Safety Code Enforcement inspectors and the LAFD in the enforcement of the City's Fire, Building, and Health Codes. The LAPD is given the power and the duty to protect residents and property, and to review and enforce specific security related mitigation measures regarding new development.

City of Los Angeles Emergency Operations Plan

The City's Emergency Management Department maintains and leads the citywide emergency plans, revises, and distributes the Emergency Operations Plan and Master Procedures and Annexes and updates and disseminates guidelines for the emergency response and recovery plans. The Emergency Management Department also reviews and tests departmental emergency plans to ensure City departments are ready to fulfill their respective emergency missions. These annexes identify roles, responsibilities and required actions for various City departments, particularly LAFD, the Los Angeles Police Department and, in some cases, the Zoo Department. Annexes that are particularly relevant to the Zoo and wildfire hazards include the Brushfire Annex, the Early Warnings and Notifications Annex, the Evacuations Annex, and the Mass Care and Sheltering Annex - Large Animal Support Appendix. These annexes address brush fire emergency response, notifications and warnings, evacuation guidelines and care or sheltering of large animals, including those from the Zoo. Every other year, the Emergency Management Department – Planning Division leads a formal review of the Emergency Operations Plan departments and agencies that are identified within each Annex, as well as any other departments or agencies that may need to be part of the review process. If, at any time, a department, agency, or stakeholder to the Emergency Operations Plan changes, develops, or amends any policy, procedure, or operation that will change or affect the contents, that entity is to immediately notify the Emergency Management Department––Planning Division.

Los Angeles Zoo Fire Preparedness, Response, and Emergency Evacuation Plans

The Zoo Safety and Administrations Offices maintain the *Los Angeles Zoo Procedure Manual*. This document includes the Zoo's Fire Preparedness and Response Plan and Zoo Staff and Volunteer Evacuation Plan, most recently updated in April 2017. Together, these

plans described procedures for the Zoo to implement in preparation for a fire or in response to a fire incident. These plans address or outline the following procedures:

- Lines of command and communication;
- Notification of a fire incident;
- Identification of Zoo and LAFD incident commanders;
- Responsibilities of Zoo departments;
- Zoo employee and visitor evacuation instructions;
- Staff evacuation meeting location in the Zoo's southern parking lot; and
- Animal collection, immobilization, crating, relocation, and evacuation, including California Condor Evacuation Procedures. If it is necessary to relocate animals off Zoo grounds, they shall be transported to the Magnet School parking lot.

Zoo Security Division has primary responsibility for carrying out an evacuation under the direction of the Zoo Incident Commander with assistance as needed from other divisions (e.g., Animal Care Division, Admissions, Visitor Services).

City and County of Los Angeles Disaster Route Maps

Disaster Routes are freeway, highway, or arterial routes pre-identified for use during times of crisis. These routes are utilized to bring in emergency personnel, equipment, and supplies to impacted areas to save lives, protect property and minimize impact to the environment. During a disaster, these routes have priority for clearing, repairing and restoration over all other roads. Disaster Routes are not evacuation routes. Although an emergency may warrant a road be used as both a disaster and evacuation route, they are completely different. An evacuation route is used to move the affected population out of an impacted area. The County of Los Angeles (County) has designated disaster routes that are used to bring emergency personnel, equipment, and supplies to impacted areas. These include the Interstate 5 (I-5) and State Route 134 (SR-134) in the Project vicinity, which are designated primary disaster routes (Los Angeles County Department of Public Works 2012). San Fernando Road located 0.53 miles east of Project site, is designated a secondary disaster route by the County. The City also designates these same roads as disaster routes.

Draft Department of Recreation and Parks Standard Operating Procedure - Griffith Park Emergency Operations

This Standard Operating Procedure (SOP) provides guidance and procedures for the coordination of the Department of Recreation and Parks (RAP) response during emergency operations in Griffith Park. The SOP identifies RAP sections of Griffith Park, including the Zoo. The SOP establishes that the RAP Operations Section Chief shall be a park ranger and shall communicate with sections if necessary, including emergency notifications and how and where a Mobile Command Post (MCP), shall be set up. Under direction of RAP On-Scene Coordinator (OSC), Operations Section will coordinate traffic control, evacuation routes,

information distribution, wayfinding and other objectives as directed by the RAP OSC. These procedures have not been adopted and are subject to change.

City of Los Angeles Public School Plans

The City of Los Angeles Public School Plan prepared by the Department of City Planning and the Board of Education outlines objectives to provide a full range of public educational facilities of sufficient size and safety. Future school sites should be selected based on land use compatibility and opportunity for schools to contribute to local identity.

City of Los Angeles Public Libraries Plan

The City of Los Angeles Public Libraries Plan, prepared by the Department of City Planning and the Library Department outlines objectives to continue superior library services and expand where appropriate, locate potential future library sites, enhance the central library and overall library efficiency including using a bookmobile system.

City of Los Angeles Municipal Code (Libraries)

Powers and duties of the Library Department are outlined in Article 5 of the Los Angeles Charter and LAMC. The Library Department establishes, manages, controls, and operates a central library and branch libraries within the City.

Existing Setting

Fire Protection and Emergency Response

The LAFD provides fire protection services and EMS within the City. The LAFD also subcontracts private ambulance providers (Freeman 2013). In total, the LAFD has approximately 3,246 personnel, of whom 1,018 are sworn firefighters. At any given time, there are approximately 1,018 uniformed firefighters on duty, including 270 serving as firefighter/paramedics, strategically located across the 106 stations serving the LAFD's 471 square-mile jurisdiction (LAFD 2020b).

The LAFD is divided between three branches, all overseen by the fire chief: Administrative Operations, Administration Chief of Staff, and Emergency Operations (LAFD 2020a). Service areas of the Emergency Operations branch are organized based on geographic area and fall into one of four bureaus, each of which is commanded by a Deputy Chief. The bureaus are further subdivided into battalions. In total, the City contains 14 battalions and 106 stations that support firefighting and emergency response services divided between four bureaus, including:

- **Valley.** The Valley Bureau encompasses the entire San Fernando Valley portion of Los Angeles. Battalions 10, 12, 14, 15 and 17 are in Valley Bureau.
- **West.** The West Bureau encompasses the western portion of Los Angeles. Battalions 4, 5 and 9 are in West Bureau.

- **Central.** The Central Bureau encompasses Downtown Los Angeles and the surrounding communities. Battalions 1, 2, and 11 are in Central Bureau.
- **South.** The South Bureau encompasses the southern portion of Los Angeles. Battalions 6, 13, and 18 are in South Bureau.

The Project site is served by Station No. 56 of Battalion 5 of the West Bureau, located at 2759 Rowena Avenue, approximately 3.06 miles from the Project site in Silver Lake. Station No. 56 is an engine and rescue company that houses Engine 56, Rescue 56, and Heavy Rescue 56. Station No. 56 is staffed by 18 personnel within three platoons, all of which are sworn firefighters. At least one platoon is on duty at any given time, which consists of 3 firefighter/paramedics, 1 firefighter, 1 engineer, and 1 captain. (Captain Decker, LAFD Station No. 56, Personal Communication, December 28, 2019).

LAFD Station No. 56, located 3 miles from the Project site, responds to fire and EMS calls at the Project site and vicinity.

Emergency access to the Zoo is currently available regionally by SR-135 and I-5 and locally via Crystal Springs Drive, Zoo Drive, and Griffith Park Drive. Access into the Zoo is available at the employee and service entrance located south of the Zoo Entry from Crystal Springs Drive and at the Gottlieb Animal Health and Conservation building from Griffith Park Drive. When needed, the Zoo can also support emergency responders via existing access roads within the Zoo and staging areas for first responders. For example, in response to recent Griffith Park wildfires, LAFD used the Zoo parking lot for staging of command operations and equipment (see also, Section 3.17, *Wildfire*).

In the event of wildfire, the Zoo and LAFD dispatch brush patrols within the Zoo and monitor wildfire movement, flare ups, or hot spots, while firefighting crews establish fire breaks or defense lines and lay hoses around the Zoo's perimeter (Deputy Chief Hogan, Commander of the LAFD West Bureau, Personal Communication, January 14, 2020). In addition, the Zoo maintains perimeter sprinkler systems and water line available for fire suppression along the ridgeline of the California planning area of the Vision Plan. These systems water down the perimeter to provide suppress flammability during a wildfire event, as occurred during the wildfire event on November 9, 2018 (Tom LoVullo, Zoo Director of Construction and Maintenance, Personal Communication, January 8, 2020). Within the interior developed areas, the Zoo maintains a network of fire hydrants consisting of 12 fire hydrants throughout the Zoo along internal roads and pedestrian paths. All Zoo buildings are equipped with fire alarm systems, and newer structures are equipped with fire sprinkler systems (Tom LoVullo, Zoo Director of Construction and Maintenance, Personal Communication, January 8, 2020). Smoking is also banned within the interior of the Zoo and permitted only in the main parking lot.

Fire and Emergency Response Times

The National Fire Protection Association (NFPA) develops, publishes, and disseminates recommended standards for fire response services. NFPA standards address fire department turnout time (i.e., elapsed time from when a unit is dispatched until that unit changes their status to "responding") of 1 minute or less. NFPA also establishes travel times (i.e., elapsed time from when a unit is en route to the emergency incident until the unit arrives at the scene) for fire protection services and EMS operations. Under these NFPA standards, a fire department should establish a time objective of 4 minutes or less for arrival of the first arriving engine company. For EMS operations, travel times of fire departments should also be within 4 minutes. EMS calls needing advanced life support should arrive within 8 minutes. These performance objectives should be met 90 percent of the time (NFPA 2019).

LAFD has not adopted the NFPA standards but aims to maintain services in alliance with NFPA recommendations. LAFD maintains several response metrics to track and gauge fire protections services in the City, including:

- **Operational Response Time**: The time interval that starts when first contact is made (either through 911 or the fire dispatch center) and ends when the first Standard Unit arrives on-scene.[1]
- **Call Processing Time**: The time interval that starts when the call is recorded by a Fire Dispatcher until the initial Fire or EMS unit is dispatched.
- **Turnout Time**: The time interval between the activation of station alerting devices to when the first responders put on their personal protection equipment and are aboard apparatus and en route (wheels rolling). Both station alarm and en route times are required to measure this for each unit that responds. Turnout time is calculated for each unit dispatched to each incident.
- **Travel Time**: The time interval begins when the first Standard Unit is en route to the incident and ends upon arrival of any of the Standard Units first on scene. This requires one valid en route time and one valid on-scene time for the incident. Travel time can differ considerably amongst stations. Many factors, such as traffic, topography, road width, public events, and unspecified incident locations, may impact travel time.
- **Incident Count**: The number of incidents that result in one or more LAFD units being dispatched, regardless of record qualification. Incident types are recorded, including special metrics for:
    - **Advanced Life Support (ALS) Critical Incidents**: This incident type includes all ALS incidents that are marked for immediate dispatch. This includes most types of critical incidents.

[1] A standard unit has the capacity or equipment to administer the full suite of lifesaving services. Other units are only deployed in special circumstances and lack either the capacity or equipment to deliver the full suite of lifesaving services. These specialized units are not considered under any current metric examined by the LAFD.

- **Structure Fire Incidents**: This incident type indicates that a building or structure is reported to be actively burning. This category is calculated on a quarterly basis due their frequency of occurrence.

In 2019, LAFD responded to 499,167 incidents citywide, a 1.62% increase over the prior year and a record high. LAFD daily incident average increased to 1,368, up from 1,346 in 2018. LAFD responded to 4,109 structure fire incidents in 2019, or an average of 11.3 per day. LAFD transported 215,605 patients to local hospitals, a 0.6% decrease from the prior year (LAFD 2020). LAFD average response times citywide were generally consistent with NFPA recommendations, only exceeding NFPA standards for total response time by 36 seconds for EMS and 22 seconds for non-EMS calls (Table 3.13-2).

In 2019, LAFD Station N0. 56 responded to 1,860 EMS incidents and 709 non-EMS incidents, including 164 critical ALS incidents and 27 structure fires. Station No. 56 held an average operational response time of approximately 7 minutes 39 seconds for EMS calls and 7 minutes 42 seconds for non-EMS calls, which are both within 2 minutes of NFPA standards. Station No. 56 also maintained overall response times of 6 minutes 51 seconds for ALS calls and 5 minutes 7 seconds for structure fire incidents (LAFD 2019). Of these, LAFD responded to approximately 16 non-EMS incidents at the Zoo in 2019 with an average response time of 10 minute 44 seconds (City of Los Angeles 2019). The engines from Station No. 56 were dispatch 75.5% of the time in response to calls. Demand for LAFD services to the Zoo is reduced due to provision of an onsite security team that assumes first-aid responsibilities and can handle some EMS-related incidents (see also, *Police Protection* below). A summary of LAFD and Station No. 56 response times in comparison to national standards is provided in Table 3.13-2.

Table 3.13-2. Los Angeles Fire Department Response Metrics (2019)

NFPA Standards		LAFD Citywide Averages				Station No. 56 Averages			
		EMS	Difference from NFPA Standards	Non-EMS	Difference from NFPA Standards	EMS	Difference from NFPA Standards	Non-EMS	Difference from NFPA Standards
Call Processing Times[1,2]	1:04	1:04	0:00	1:04	0:00	-	-	-	-
Turnout Time	1:00	0:52	(0:08)	0:51	(0:09)	0:56	(0:04)	0:57	(0:03)
Travel Time	4:00	4:33	0:33	4:31	0:31	5:25	1:25	5:26	1:26
Total Response Time	**6:04**	**6:40**	**0:36**	**6:26**	**0:22**	**7:39**	**1:35**	**7:42**	**1:38**

Notes:
[1] The point of receipt of the emergency alarm at the answering center, to the point where sufficient information is known to the dispatcher and applicable units are notified of the emergency.
[2] NFPA 1221 establishes that call processing should be completed within 64 seconds 90 percent of the time, and within 106 seconds 95 percent of the time.
Source: LAFD 2019b; NFPA 2019.

Many factors affect response times of the LAFD, such as roadway congestion, intersection level of service (LOS), weather conditions, topography, road width, public events, and unspecified incident locations. Generally, multi-lane arterial roadways allow emergency vehicles to travel at higher rates of speed and permit other traffic to maneuver out of the path of an emergency vehicle. Additionally, the LAFD, in collaboration with the Los Angeles Department of Transportation, has developed a Fire Preemption System (FPS), which automatically turns traffic lights to green when LAFD engines and ambulances have their sirens on and are approaching signalized intersections. This helps to ensure LAFD arrives at a scene as quickly as possible and improves safety by stopping other traffic. The City has over 205 miles of major arterial routes that are equipped with FPS (Los Angeles Department of Transportation 2016).

Although response time is one metric of fire protection services, it is one of many factors that LAFD uses to evaluate its performance in response to fires and life and health safety emergencies. Other considerations include the number and types of incidents typical to a service area; quality and extent of fire water flow, pressure, and infrastructure provided in a service area; distance from existing fire stations and accessibility of fire personnel to service areas; and the LAFD's assessment of unique needs in the service area. For example, if the number of incidents a service area increases, or the type of services needed expands (e.g., taller buildings requiring ladder trucks), it is LAFD's responsibility to assign new staff and equipment and potentially build new or expanded facilities, as necessary, to maintain adequate levels of service. In conformance with the California Constitution Article XIII, Section 35(a)(2) and the *City of Hayward v. Board Trustee of California State University* (2015)242 Cal, App. 4th 833, 847 ruling, the City has and will continue to meet its legal constitutional obligations to provide adequate public safety services, including fire protection and EMS. Currently, based on communications with LAFD, fire protection and EMS are adequately provided to the Project site and the vicinity, and there are no new or expanded facilities needed to continue providing adequate services (City of Los Angeles 2019).

Police Protection

LAPD provides police protection services within the City and is the third largest municipal police department in the U.S., covering an area of approximately 473 square miles and providing police protection services to a population of 3.8 million (LAPD 2019a). The standard equipment used by the LAPD includes handguns, rifles pelican flashlights, personal radios, tactical vests, tasers, ballistic helmets, hand cuffs, police cars and motorcycles. Specialized equipment is

The LAPD Northeast Station provides police protection services to northeast service area of the City, including Griffith Park and the Project site.
Photo Source: Google 2017.

also available to adequately equip special units such as K-9, bomb squad, underwater dive, SWAT, off-road enforcement, air support, or mounted units (LAPD 2020a). As with all municipal police departments in Los Angeles County, the LAPD participates in the Mutual Aid Operations Plan for Los Angeles County, a reciprocal agreement between signatory agencies including local police departments to provide police personnel and resources to assist other member agencies during emergency and/or conditions of extreme peril (County of Los Angeles 1998).

LAPD employs approximately 10,034 sworn personnel and 2,961 civilian personnel (LAPD 2019b). The LAPD contains three offices of law enforcement services: Operations, Special Operations, and Support services (Moore 2020). The Special Operations Office includes a Counter Terrorism Bureau, a Transit Services Bureau, and a Detective Bureau. Service areas are organized according to geographic location and fall into one of four bureaus, each of which is led by a Deputy Chief. The bureaus are further divided into 21 divisions, each of which is commanded by a senior captain that oversees patrol units, commanded by junior captains:

- **Valley.** Valley Bureau is responsible for policing the San Fernando Valley. Valley Bureau oversees operations of seven divisions: Devonshire, Foothill, Mission, North Hollywood, Topanga, Van Nuys, and West Valley. Valley Bureau also includes a Valley Traffic Division which is responsible for the investigation of traffic collisions and traffic-related crimes for all of Valley Bureau. Valley Bureau serves an area encompassing 226 square miles and a population of roughly 1,426,071 million people (LAPD 2020b).
- **West.** West Bureau is responsible for policing the western end of the City, Hollywood, Los Angeles World Airport, Venice Beach, and its vicinities. West Bureau covers a 124-square mile territory with a population of approximately 840,400 residents. West Bureau oversees operations of five divisions: Hollywood, Wilshire, Pacific, West Los Angeles, and Olympic. West Bureau also includes the West Traffic Division, which includes the neighborhoods of Pacific Palisades, Westwood, Century City, Venice, Hancock Park, and the Miracle Mile (LAPD 2020c).
- **Central.** Central Bureau covers a 65-square-mile area with roughly 900,000 people and includes the communities as Downtown, Eagle Rock, the Garment District, MacArthur Park, Dodger Stadium, and Griffith Park. Central Bureau oversees the operations of five divisions including: Central, Hollenbeck, Newton, Rampart, and Northeast, which serves the Griffith Park and the Project site. The Central Bureau also oversees operations of the Central Traffic Division, which is responsible for investigating traffic collisions and traffic-related crimes for all operations in the Central Bureau (LAPD 2020d).
- **South.** South Bureau has a population of roughly 640,000 people, encompasses 57.6 square miles, and includes such notable facilities such as the University of Southern California (USC), Watts Towers, the Harbor Gateway, the Port of Los Angeles, and the Exposition Park Museums. The South Bureau oversees operations in four divisions:

Harbor, 77th Street, Southeast and Southwest. South Bureau also oversees four specialized entities, including the South Traffic Division, responsible for the investigation of traffic collisions and traffic related crimes for all South Bureau, and a Special Enforcement Unit, Complaint Unit, and Sexual Assault Investigative Team (LAPD 2020e).

LAPD stations typically police an average population of approximately 200,000 people and are generally self-contained, except for larger crime investigations (Gascon 2020).

Griffith Park and the Project site are located within the service area of the Northeast Community Police Station (Northeast Division) of the Central Bureau. The station is located at 3353 San Fernando Road approximately 2.9 miles southeast of the Project site The Northeast Division provides service to a population of about 250,000 people over a 29-square mile area that includes the communities of: Los Feliz, Eagle Rock, Elysian Valley, Silver Lake, Franklin Hills, Cypress Park, Highland Park, Echo Park (North of Sunset Boulevard), Atwater, East Hollywood (East of Normandie Avenue), Mount Washington; Glassell Park, and Griffith Park (LAPD 2019c). The Northeast Division is staffed by approximately 280 sworn officers, providing ratio of 1 officer to 893 residents by the Northeast Station (Lieutenant Gomez, LAPD, Personal Correspondence, March 3, 2020). These police officers are supervised by a staff of 32 sergeants (Sergeant Zboravan, Northeast Community Police Station, Personal Communication, March 2, 2020). Northeast Division deploys patrol units 24 hours a day, 356 days a year. On any given day, there are approximately 30 to 40 officers deployed on patrol, responding to calls in the field (Lieutenant Gomez, LAPD, Personal Correspondence, March 3, 2020). Patrols may increase during weekends, holidays, special events, or period in the summer. Staffing in the Northeast Division, as with all of LAPD, fluctuates and is generally assessed monthly (Sergeant Zboravan, Northeast Community Police Station, Personal Communication, March 2, 2020).

LAPD Calls for Service and Response Times

The LAPD determines staffing needs based on both the total number of calls and types of service required, identification of district-specific law enforcement demands, such as traffic control or special enforcement, and community input. Long term staffing need is determined through consideration of trends of city population, crime rates, calls for service and response times. To maximize and maintain workforce potential, the LAPD set goals to strengthen recruitment efforts, especially in the hiring of female, African-American, or Asian Pacific Islander officers, as well as to enhance employee succession programs and promote employee wellness (LAPD 2019c).

The Northeast Division has been consistent in meeting the response time targets. In 2019, the LAPD received 979,592 calls for service, approximately 2.8 percent of these calls, or 27,429, were placed within the service area for Northeast Division (LAPD 2019b; County of Los Angeles Open Data 2020a), equal to approximately 58 calls for service per officer. Sergeant II Zboravan of the Northeast Division characterized the most common calls within the service

area of the Northeast Division as relating to property crimes such as break ins of a home, business, or motor vehicle. The Northeast Division is currently equipped with sufficient vehicles, tactical equipment, and staff to continue providing acceptable levels of police services to the community (Sergeant Zboravan, Northeast Community Police Station, Personal Communication, March 2, 2020). There are no current needs or plans to expand or improve the Northeast Station or increase the number of personnel assigned to the Northeast Station (LAPD Northeast Police Station 2020).

LAPD Crime Statistics

An indicator of police service levels is the number of "Part I" crimes, which are reported in two categories: violent crimes and property crimes. Aggravated assault forced sexual assault, homicide, and robbery are classified as violent. Arson, burglary, larceny-theft, and motor vehicle theft are classified as property crimes. The City experienced approximately 140,00 Part I crimes in 2017, 131,393 Part I crimes in 2018, and 122,251 Part I crimes in 2019, resulting in an average ratio of 34.5 Part I calls per 1,000 residents from 2017 to 2019, with a slight decline in crime each year (LAPD 2019d). The LAPD attributes its 7 percent decrease in Part I crimes in the past year to its initiatives in community outreach, gang intervention, and increased patrols.

In 2019, the Northeast Division made 3,369 arrests. The most common charge code for arrests was under a narcotics charge making up 407 or 12 percent of arrests, followed by drunkenness making up 336 or 10 percent of all arrests and aggravated assault making up 310 or 9 percent of arrests. These numbers are generally consistent with arrests over the past four years (County of Los Angeles Open Data 2020b).

In general, the geographic area surrounding the Project site has a low density to very low-density violent crime occurrence (LAPD 2018). Between September 2019 and February 2020, a total of 277 incidents were recorded within a 1-mile radius of the Zoo, with 33 incidents recorded at the Zoo. The greatest number of recorded incidents at the Zoo made were for vehicle theft or break-ins (30 counts, approximately 91 percent) (CrimeMapping 2020). Based on the Zoo's average monthly attendance of approximately 150,308 persons and an average of 6.6 incidents per month, the Zoo experiences an estimated crime ratio of 1: 22,774 crimes per persons.

Given the Zoo is a visitor destination that attracts thousands of people daily and has open accessibility to the Zoo's parking lot, high rates of vehicle theft and break-ins with personal property theft is not surprising. For instance, in the same period of time, approximately 91 crimes were reported at Universal Studios Hollywood, the most common of which was for vehicle theft or break in (CrimeMapping 2020). Based on average monthly attendance of approximately 762,500 persons (Statista 2020) and an average of 18.2 crimes per month, Universal Studios Hollywood experiences an estimated crime ratio of 1:41,896 crime per persons, less than that currently experienced at the Zoo. Nevertheless, the frequency of vehicle theft/break ins at the Zoo is considered an ongoing issue due to the openness of the

parking lot areas, number of vehicles present, hours of time cars are left parked, and a lack of surveillance (e.g., security cameras) or regular patrol of the parking lot.

Other Law Enforcement Services

Griffith Park Rangers

Additional law enforcement services within Griffith Park are carried out by Los Angeles Department of Parks and Recreation (RAP) park rangers and security officers. Park rangers are sworn law enforcement officers and certified firefighters with credentials to fight fires and administer basic first aid. A total of 33 RAP park rangers and 85 security officers (not sworn law enforcement) patrol Griffith Park and respond to between 20 and 30 calls on a given weekday and between 40 and 50 calls on a given weekend day (Griffith Park Rangers 2020). The park rangers and security officers also respond to activities and incidents observed while patrolling the park and immediate vicinity, such as lost hikers, drinking, and smoking within the park. The park rangers provide first response protection for Griffith Park, while typical ranger duties include patrolling, responding to calls for assistance, providing emergency services (i.e., firefighting, search, and rescue), and supporting community education services (LAPD 2015). The most common incidents that park rangers and security officers respond to are related to medical incidents from dehydrated, lost, or injured hikers and fires within the park (Griffith Park Rangers 2020).

Zoo Security

The Security Services Division (SECSD) of the LAPD is responsible for the safety and security of the Zoo, as well as City buildings, facilities, parks, shops, yards and warehouses, the Zoo, Public Works Bureau of Sanitation Water Treatment Facilities, City Libraries, City Parks and all non-proprietary City facilities, their employees and visitors. SECSD consists of three major components: the police officer component; the security officer component; and the contract security officer component.

- **Police Officer Component** The police officer component is responsible for all law enforcement-related activities surrounding specific City facilities.
- **Security Office Component.** These are unarmed security officers who are City employees. These full-time and “as needed” (part and half time) unarmed civilian security officers staff fixed post positions at various City facilities and rely on the police component to respond to any issues deemed law enforcement related.
- **Contract Security.** Contract security is comprised of private security guards and administered by the SECSD.

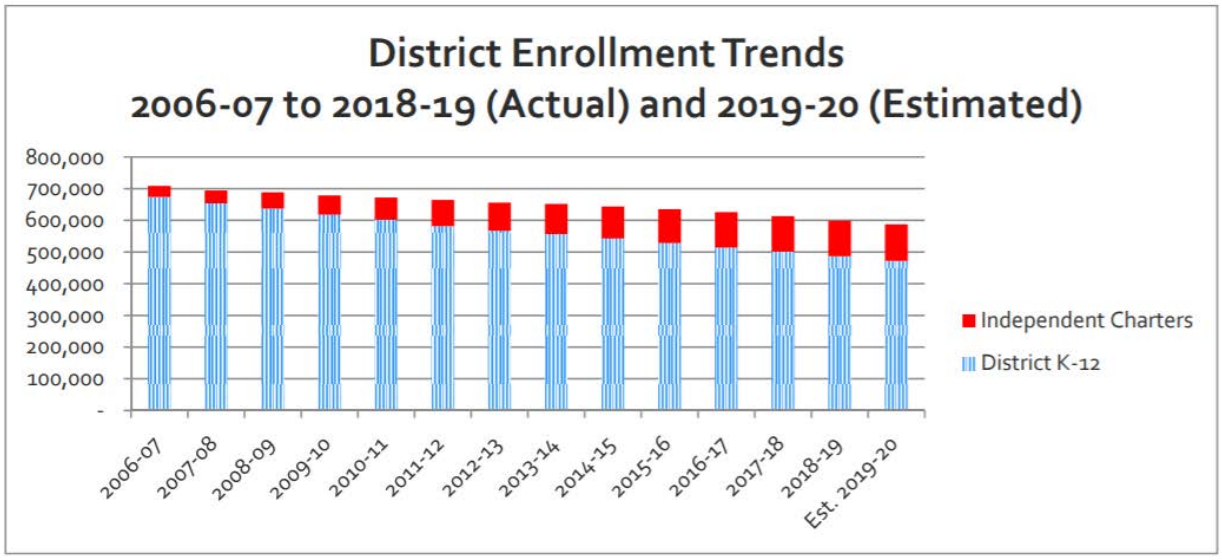
SECSD provides supplementary security at within the Zoo is provided by an onsite security team that assumes policing and first-aid responsibilities, with additional support from off-site LAPD when required. A total of 23 security officers are currently employed at the Zoo, including 1 principal security officer and 1 senior security officer. All security officers are City employees. None of the Zoo security officers are privately contracted or are sworn officers.

Zoo security officer deployment is based on a Memorandum of Agreement between the Zoo and LAPD. As such, security staffing varies between watches; however, security staffing increases during hours the Zoo is open to the public, with additional staffing during peak attendance days such as during holidays and summer weekends. The number of incidents Zoo security responds to in a day varies substantially, with a greater number of calls on weekend days. Most common incidents include vehicle theft, injury, and lost children. All crime-related incidents involve response from the SECSD and the Northeast Division.

Schools

LAUSD is the second largest school district in the nation. LAUSD serves a 710-square mile area, including most of the City along with all or portions of 26 cities and unincorporated areas of Los Angeles County. The LAUSD has over 1,300 schools throughout the District, with more than 673,000 enrolled and 63,500 employed making it the second largest employer in Los Angeles County. LAUSD provides kindergarten through 12th Grade (K-12) public school education in the service area, as well as supplemental adult education services to the neighborhoods adjacent to Los Angeles County. The LAUSD traditional education program includes core curriculum. Individual schools supplement students' education with a variety of elective courses in compliance with the standards created and adopted by the State of California (LAUSD 2019).

LAUSD uses data on live births in Los Angeles County, historical grade retention ratios, economic factors, and other relevant information to project future enrollment trends (LAUSD 2020a). Estimated enrollments in grades K-12 are calculated using a variety of scenarios, generally involving weighted and true averages. LAUSD enrollment peaked in 2002-2003 at 746,831 and has declined each year since. LAUSD enrollment is anticipated to continue to decline 1 to 2 percent each academic year, with an estimated total decline of 17 percent from 2019 to 2030 (Perez and Prichard 2019). This trend is due to several factors, including the reduced birth rate in Los Angeles County and the increasing cost of living, including housing, in southern California (LAUSD 2019). Changes in enrollment are also attributed to trends of student enrolling in private charter schools. The chart below shows the increase in the number of students enrolled in independent charter schools over the past decade. In contrast, LAUSD's total K-12 enrollment has declined over the same period.



Source: LAUDS 2020

The decline in student enrollment creates opportunity for the LAUSD to further goals of reducing class size and removing portable classrooms (Perez and Prichard 2019). The LAUSD determines available space for new students by comparing district capacity with space needed. Space needed is determined by reviewing historic enrollments of the past four years along with the projected enrollment in five years to determine the maximum seats needed to house students in existing homes. Currently, the LAUSD district capacity is 702,113 students and currently supports and enrollment of 648,867 students. As a result, the LAUSD has an additional remaining capacity of 53,246 students (Schoolworks, Inc 2018).

The 1,300 schools of the LAUSD are organized based on geographic location and fall under one of six local districts: Central, East, Northeast, Northwest, South and West. Each local district is overseen by and Administer of Operations. The Project site falls within the Central district, which covers a geographic area bordered by Glendale to the north and Pasadena to the east. Communities included in the Central district include Arlington Heights, Mid-City, Hollywood, Westlake, Wilshire Vista, and Harvard Heights. The Local District Center currently has a Facilities managed by Local District Central include: 24 high schools; 17 middle schools; 87 elementary schools; 21 early education centers; 9 primary centers; 6 option schools; and 3 special education centers (LAUSD 2020a).

Zoo Magnet Program

Magnet Programs are Court-Ordered voluntary integration opportunities available to students in grades K-12 living within the LAUSD and provide specialized coursework focusing on a study area. LAUSD offers 311 magnet programs divided between 8 themes: Science/Technology/Engineering/Math (STEM), public service, business, communication arts, center for enriched studies, gifted/highly gifted, liberal arts, and visual and performing arts. Since 1981, North Hollywood High School (NHHS) of LAUSD has partnered with the

Los Angeles Zoo to provide a Zoo/Biological Sciences Magnet program for NHHS students grades 9-12 (NHHS 2020).

The North Hollywood High School Zoo Magnet Center is located at 5336 Crystal Springs Drive within Zoo's southern parking lot. The North Hollywood High School Zoo Magnet Center is a magnet center of the North Hollywood High School and provides students with specialized courses on animal studies and biological sciences, such as animal husbandry, animal behavior, and zoology, while observing and conducting research at the Zoo facilities and in the nearby park. Senior students enrolled in the program participate in an animal husbandry internship where students are paired with a zookeeper and act as an assistant zookeeper. Students are assigned to a group of animals under the management of their mentoring zookeeper and learn animal care and perform such duties as preparing food, cleaning enclosures, and providing enrichment activities for the animals (Brie-Anna Molina, North Hollywood High School, E-mail Correspondence, March 2, 2020). The animal husbandry internship is limited to 30 students per semester. The North Hollywood High School Zoo Magnet Center courses include specialized biological science courses and core curriculum that meet LAUSD's requirements (Zoo Magnet Center North Hollywood High School 2020).

The Zoo Magnet Center enrollment is competitive with a full capacity of approximately 300 students in total and approximately 75 students enrolled in each grade. The Zoo magnet center program does not currently plan to expand student enrollment, and capacity may be shifted downward to accommodate LAUSD's goals to reduce class sizes (Brie-Anna Molina, North Hollywood High School, E-mail Correspondence, March 2, 2020).

Transportation to and from Zoo Magnet Center and the North Hollywood High School is provided to students via a shuttle bus that departs from the North Hollywood High School campus in the morning and during the school's lunch period. The shuttle returns to the North Hollywood High School campus after lunch and again at the end of the school day. Parking for school buses, faculty and staff is available within the existing parking lot.

Zoo Magnet Center staff include 10 teachers, an office clerk, and a student counselor. The Zoo magnet campus includes nine classrooms divided between three temporary bungalows and occupies approximately 13,800 square feet. The temporary bungalows have been present at the school since its opening in 1981. School facilities have recently undergone external painting, repaving, and the installation of external loudspeakers. No other improvements to the Zoo Magnet Center are currently planned, although the school is considering placing another temporary bungalow within the existing campus boundaries to expand space for teachers (Brie-Anna Molina, North Hollywood High School, E-mail Correspondence, March 2, 2020). All Zoo Magnet Center facilities and programs are private or for school use only.

Libraries

There are two library systems that provide service to residents of Los Angeles within the vicinity of the Project site: the Los Angeles County Library and the Los Angeles Public Library.

The Los Angeles County Library system provides services to over 3.4 million residents living in unincorporated areas and to residents of 49 of the 88 incorporated cities in Los Angeles County. The service area extends over 3,000 square miles, providing a 7.5 million book collection, magazines, newspapers, government publication and many specialized materials including online data bases (County of Los Angeles 2019b).

Library is the nearest library to the Project site and provides library services to the surrounding community including public use Wi-Fi, computers, printers and hosts public events.
Photo Source: Google 2020

The Los Angeles Public Library system serves areas within the City. The Los Angeles Public Library provides 73 locations and serves the largest population of any public library system. On an average day, approximately 45,000 people visit a Los Angeles Public Library, 4,200 people connect to public Wi-Fi provided by the library, and 1,700 people attend a library hosted program. The Los Angeles Public Library website is accessed approximately 73,000 times a day and provides service directory and access to a catalog of over 6 million books, audiobooks, periodicals, DVDs, and CDs available for checkout. The Los Angeles County Library system consists of a staff of 1,560 and 1,666 volunteers (Los Angeles Public Library 2015).

Atwater Village Library, located at 3379 Glendale Boulevard, approximately 2.4 miles southeast of the Zoo and approximately 7,300 square feet, is the nearest Los Angeles Public Library Branch the Project site. The Atwater Village Library staff consists of five full time employees, approximately 10 part-time employees, as well as occasional volunteers. Atwater Library is frequented by a diverse range of age groups within the West Hollywood community, with daily visitors typically ranging anywhere from 5 to 30 people a day (Atwater Village Library 2020). The Atwater Village Library provides programs to appeal to all age groups such as story time readings for babies, toddlers and young children, game and crafts nights targeted at kids and teens, and a scrabble club and computer skill workshop targeted at adults and senior citizens (Los Angeles Public Library 2020). Additionally, the library provides free Wi-Fi, computers, and printers for public use, making it a significant resource for lower-income residents.

3.13.2 Impact Assessment Methodology

Significance Thresholds

According to Appendix G of the CEQA Guidelines, a project would have a significant impact related to public service resources if it would:

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:
    i. Fire Protection
    ii. Police Protection
    iii. Schools
    iv. Parks
    v. Other public facilities

Additionally, the *L.A. CEQA Thresholds Guide* states that determination of significance to police protection and fire protection and EMS shall be made on a case-by-case basis after considering the following factors:

Fire Protection and Emergency Medical Services

- Whether the project would require the addition of a new fire station or the expansion, consolidation, or relocation of an existing facility to maintain service.

Police Protection

- The population increase resulting from the proposed project, based on the net increase of residential units or square footage of non-residential floor area;
- The demand for police services anticipated at the time of project buildout compared to the expected level of service available. Consider, as applicable, scheduled improvements to LAPD services (i.e., facilities, equipment, and officers) and the project's proportional contribution to the demand; and
- Whether the project includes security and/or design features that would reduce the demand for police services.

Public Schools

- The population increase resulting from the proposed project, based on the increase in residential units or square footage of non-residential floor area;
- The demand for school services anticipated at the time of project build-out compared to the expected level of service available. Consider, as applicable, scheduled improvements to LAUSD services (i.e., facilities, equipment, and personnel) and the project's proportional contribution to the demand;
- Whether (and the degree to which) accommodation of the increased demand would require construction of new facilities, a major reorganization of students or classrooms, major revisions to the school calendar (e.g., year-round sessions), or other actions which would create a temporary or permanent impact on the school(s); and

- Whether the project includes features that would reduce the demand for school services (e.g., onsite school facilities or direct support to LAUSD).

Non-applicable Thresholds:

- Threshold (v) (*Libraries*): The Project has no residential components and would not accommodate additional population. As further addressed in Section 5, *Other CEQA Considerations*, the proposed Project would not substantially increase the local residential population or induce growth. The Project may create approximately 660 new full-time equivalent jobs that would be filled by residents in the region. Any growth in population induced by the proposed Project is expected to be insubstantial and is not anticipated to directly increase demand for library services within the City and surrounding area. Further, no public libraries exist on the Project site or immediate vicinity that would be affected by the Project. Therefore, there would be no impacts to libraries and this issue is not further addressed in this analysis.

Methodology

This analysis considers impacts to fire protection, police protection, and schools. As previously described, there would be no impacts to libraries and potential impacts to public parks, including potential impacts to Griffith Park, is considered in Section 3.14, *Recreation*. There are no other public services provided in the vicinity or that would be affected by the Project.

This analysis evaluates Project-related increases in demand for fire protection, EMS, police services, and schools based on the adequacy of existing and planned services or facilities to meet the demands of the Project. Existing service levels, facilities, and equipment were determined through direct communications with staff from LAFD, LAPD, and LAUSD, along with review of publicly available data such as LAFireStat. Information regarding the existing and projected service capacities was obtained from City-published response metrics and published data and documents of LAFD, LAPD, and LAUSD. Personal correspondence with staff from the Zoo, LAFD, LAPD, and Zoo Magnet Center were also utilized in the preparation of this analysis.

Impacts to fire protection and EMS are evaluated based on compliance with LAFD and City development standards and the adequacy of LAFD to maintain service for the Zoo with the Project. As discussed above, the LAFD has not adopted objectives for response times. While existing response times are an important tool in assessing adequacy of fire protection services, impacts are also assessed based on required fire flow (LAMC Fire Code Section 57.507.3.1), response distance from existing fire stations, and the LAFD's judgement for needs in the area. This analysis considers these factors and the input from the LAFD in review of the Project.

Impacts to police protection services are evaluated based on LAPD resident-to-officer ratios, the number of calls for service, and crime rates of the Northeast Division of the Central

Bureau. This analysis considers these factors and the input from the LAPD and Zoo Security in review of the Project.

Impacts to public schools focus on direct impacts to the Zoo Magnet Center, including potential changes to facilities or programming that may result from construction or operation of the Project. The analysis considers the location and condition of the campus on the Project site and the future programming and plans envisioned by LAUSD for the campus.

3.13.3 Environmental Impact Analysis

PS-1: Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for fire protection?

Fire Protection and Emergency Medical Response

Construction

Project construction would introduce a potential ignition source for fires (e.g., flammable materials, sparks) and may create hazardous conditions requiring EMS. However, construction activities are temporary in nature and do not create continuing elevated risks requiring fire protection and EMS response. As documented in Section 3.13.1 above, LAFD maintains fire response and EMS at adequate levels to respond to incidents at the Zoo during Project construction. In addition, "good housekeeping" procedures would be employed by construction contractors and their work crews to minimize risks, which include proper maintenance of mechanical equipment and proper storage of flammable or other hazardous materials (refer also, Section 3.8, *Hazards & Hazardous Materials*). Application of these procedures reduce risk of potential fires, hazardous spills of other conditions during construction that would require fire protection and EMS. Further, construction of the Project would comply with Occupational Safety and Health Administration, LAMC Fire Code, and California Building Code (CBC) regulations pertaining to application of Best Management Practices (BMPs) and other measures for reducing risks associated with construction. Therefore, Project construction would not require additional firefighting or EMS personnel or new or expanded facilities.

Construction activities associated with the implementation of the proposed Project have the potential to affect fire protection services and EMS response times due to:

- Realignment of Crystal Springs Drive to the southern perimeter of the Zoo parking lot to unify the Zoo's main parking lot and south parking lot, which may require temporary detours or lane closures.

- Detours and lane closures required for roadway improvements such as the intersection of Zoo Drive and Western Heritage Way and those associated with Zoo's proposed southern parking lot improvements.
- Periodic construction traffic and congestion associated with the import and export of 220,000 cubic yards of grade and fill (refer to Table 2-26), materials delivery, and worker commute trips.
- Disruptions to internal access while portions of the Zoo are closed during phased construction.

The Project would be constructed incrementally over seven phases, implemented sequentially through 2040. Each construction phase would begin after completion of the previous phase and there would be no overlap in construction activities associated with each phase. Construction activities would result in temporary changes to roadways, access points, and staging areas currently used by LAFD to respond to incidents in the Zoo and nearby areas in Griffith Park.

The Project would not directly impair designated County or City Disaster Routes along I-5, SR-134 and San Fernando Road, as all development would be contained to the Zoo and roadways serving the Zoo. Roads surrounding the Zoo provide direct firefighting and emergency access to the western and southern sides of the Zoo and the southeastern area of Griffith Park. Temporary disturbance of these roadways during Phase 1 (2020-2025) has the potential to temporarily block or delay emergency responders due to realignment and repaving of roadways and staging of large construction equipment. Specifically, the collective effect of potential reconstructing the Zoo Drive/Western Heritage Drive intersection and realigning Crystal Springs Drive during the same phase would potentially cause congestion during peak hour conditions that would obstruct fire engines and EMS vehicles and cause response time delays. These vehicles may also be required to navigate detours and other temporary traffic controls that can often change regularly during construction. Dedicated emergency access points to the Zoo may change or be incidentally blocked by these temporary conditions, which may delay response as firefighters and EMS personnel while alternate access is determined. Additionally, during Phase 7, the Zoo's northern parking lot would undergo construction for a new multi-story parking structure, new public park, and surface parking lot retrofit, thereby temporarily reducing the parking and staging areas used by fire or EMS responders.

Construction of internal Zoo improvements, including visitor-serving uses, pathways, and access roads, would occur over seven phases where each phase would be completed prior to groundbreaking on the next phase. During construction of each phase, the area affected would be closed and fenced off for regular access while the remainder of the Zoo would remain open and accessible. This proposed phasing plan would limit disruption or obstruction of access and evacuation routes within the Zoo during construction. However, during Phase 1, the Zoo Entry and California planning areas would be under construction concurrently and closed to the public, which would impair both access and evacuation through the front gates. Also,

throughout construction, internal rerouting and temporary closures of the proposed planning areas may block evacuation routes or cause circuitous or inefficient evacuation, as well as limit firefighter access to internal areas of the Zoo.

To ensure firefighters and EMS responders can efficiently reach the Zoo during Project construction, a construction-phase Zoo circulation and access plan would ensure that an alternate entrance and secondary access is available and clearly indicated and that firefighters and EMS responders could proceed directly to the most efficient entrance without undue delay or confusion. LAFD, including Station No. 56, would be notified of any Project traffic control plans implemented during construction of external roadway improvements (e.g., Crystal Springs Drive/Western Heritage Way) to coordinate emergency response routing. With this coordination, the proposed Project would not interfere with the ability of emergency response to access the site. Similarly, current Zoo access plans on file with LAFD would ensure that any temporary access routes delineated during construction would inform firefighters and EMS responders of alternate primary and secondary entrances.

Implementation of **MM T-1**, requiring a Construction Traffic & Access Management Plan with measures for controlling and ensuring continued access to the Zoo and through the interior of the Zoo circulation system, would address impacts from construction of proposed improvements on emergency access and response. Therefore, impacts associated with hinderance of emergency response times during Project construction would be *less than significant with mitigation*.

Operation

Demand for Fire Protection and EMS

The proposed Project would not induce residential population growth or result in direct population growth. However, the proposed Project would increase annual Zoo attendance from 1.7 million to 2.3 million by the end of Phase 1 of Project implementation (2020-2025), representing an annual attendance increase of 30 percent. By the time of Project completion in 2040, annual Zoo attendance is anticipated to reach 3 million. The proposed Project would also include the hiring of approximately 660 additional staff. As such, implementation of the Project has the potential to increase the number of persons within the Zoo at any given time compared to existing conditions (see Section 2.3.9.0, *Project Operation*). Increases in daily attendance consequently has the potential to result in increases the frequency of incidents with commensurate increases in demand for fire protection and EMS from LAFD.

The Zoo would continue to be served by Station No. 56, located approximately 3.06 miles southeast. Response times from Station No. 56 are within 2 minutes of NFPA standards. Upon review of the Project, the LAFD determined that it has adequate resources and personnel to continue to serve the Zoo under the Project without needing to expand any facilities or personnel (Captain Decker, LAFD Fire Station No. 56, personal communication,

December 28, 2019; Deputy Chief Hogan, Commander of the LAFD West Bureau, personal communication, January 14, 2020).

Further, given LAFD Fire Station No. 56 is located more than 1.5 miles away from the Zoo, the LAMC Fire Code Section 57.512 requires new development under the Vision Plan to install automated fire suppression systems (refer to section 3.13.1 *Regulatory Setting*). These requirements would maximize the Project site's ability to handle fire-related emergencies onsite until emergency responders can arrive. Each Project planning area and improvement would be constructed in accordance with applicable sections of the LAMC Fire Code and CBC, which require the provision of adequate emergency access, use of ignition-resistant construction materials, emergency water supply and adequate fire flow rates, and appropriate defensible space requirements. The Project would also include emergency evacuation plans allowing for quick and safe evacuation of Zoo guests, employees, and specimens in the event of an emergency (See Section 3.15, *Transportation*). Consistent with LAFD standards, this combination of development standards for new development and existing LAFD service capabilities would ensure demands for fire protection and EMS would continue to be met under the Project. Therefore, no additional LAFD facilities or personnel would be required to serve the Project and impacts related to fire response and EMS demand would be *less than significant*.

Emergency Access

Current response times of LAFD Station No. 56 are within 2 minutes of NFPA standards, but response times to the Zoo itself appear to exceed standards by approximately 10 minutes, based on 2019 LAFD data for non-EMS incidents. Delays are likely due to traffic congestion. The proposed Project would include improvements to existing roadways and circulatory systems both within and surrounding the Zoo, which would improve direct access to the Zoo for firefighters and EMS. Emergency access to the Zoo is currently available via Crystal Springs Drive, Zoo Drive, and Griffith Park Drive. Access into the Zoo is available at the employee and service entrance located south of the Zoo Entry from Crystal Springs Drive and at the Gottlieb Animal Health and Conservation building from Griffith Park Drive. Under the Project, emergency vehicles would access the Project site through either:

The main entrance of the Zoo can accommodate access of emergency access vehicles and the surrounding parking areas can be utilized as parking and staging areas for emergency response vehicles.

- The Zoo's existing main service and administrative entrance on the east end;

- An improved delivery vehicle entry at the Gottlieb Animal Health and Conservation Center on the west end; or
- A new vehicle entrance proposed at the existing employee parking area at the north end of the Zoo within the California planning area.

Emergency vehicle access to the interior of the Zoo would be expanded and enhanced by the proposed improvements to the Project site's internal circulatory system, including the reconfiguration of internal pedestrian and non-pedestrian service roads lining the boundaries of the Zoo, leading either to the Gottlieb Animal Health and Conservation Center or the proposed Service Center Building. Further, installation of a perimeter tram road and improved service roads would provide improved firefighter and vehicle access to high fire hazard areas along the Zoo's perimeter. These improvements would create more direct and efficient emergency response access to all areas within the Zoo and would not degrade or further exacerbate existing emergency response times to the Zoo.

Proposed offsite improvements at the intersection of Zoo Drive and Western Heritage Way would also reduce congestion on local roads and both I-5 and SR-134. Proposed realignments of Zoo southern parking lot and surrounding roads would enhance vehicle flow and circulation onsite. Proposed parking improvements, including an additional 300 spaces at the east end of the Zoo Magnet Campus during Phase 1, the construction of a multi-story above ground parking structure on the north parking lot during Phase 7, and the addition of staff parking lots at the Gottlieb Animal Health and Conservation Center and proposed service center building, would expand parking availability, thereby reducing congested circulation as vehicles make multiple rounds in search of open parking spots. Such external improvements could reduce overall traffic congestion and increase site accessibility for emergency response vehicles as well (refer to Section 3.15, *Transportation)*.

Proposed improvements to site circulation and access would maintain or improve the ability for emergency responders to access the site and handle fire or medical related emergencies. Therefore, Project impacts to fire protection and emergency response services would be *less than significant*.

PS-2: Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for police protection?

Police Protection

Construction

Construction sites can be vulnerable to theft if left unattended and, therefore, have the potential to increase demand for police services to respond to incidents. During construction, the areas within the Zoo undergoing construction would be fenced and screened to prevent access by Zoo visitors and avoid potential construction-related safety hazards. Nighttime lighting would be provided, and access would be controlled to deter theft. Existing Zoo security personnel would continue to provide continuous patrol of the Project site. LAPD would be notified of construction-related traffic control plans to coordinate emergency response routing. Given that each Project phase would be fenced for safety and security and would be subject to periodic patrol by Zoo security personnel, thefts or other issues that would require LAPD intervention would likely be avoided or minimized during construction of the Project. Associated impacts on police protection services would be *less than significant*.

Zoo security would continue to be the primary providers of law enforcement services at the Zoo. The proposed Project would expand security facilities on site through the construction of a new security and first-aid center.
Photo: Harrelson 2018

Operation

Measurement of LAPD performance is considered through crime rates, LAPD officer-to-resident ratios, calls for service and response times. As described in Section 3.13.1, the Project site is in an area with comparatively low crime rates, has an adequate officer-to-resident ratio, and provides adequate response times (LAPD 2019b; County of Los Angeles Open Data 2020a; Sergeant Zboravan, Northeast Community Police Station, Personal Communication, March 2, 2020). However, the Zoo currently experiences a relatively high number of vehicle theft/break ins. Under the Project, this trend is expected to continue since the Project would maintain the open, publicly accessible parking lot and does not propose measures to limit access or increase patrol or parking lot security.

The Project would expand Zoo facilities in the California and Africa planning areas with major facility renovations throughout the Zoo and would increase annual Zoo visitation by 1.2 million through 2040. Due to the project increase of Zoo guests under the proposed Project,

there may be an increased demand for additional police protection at and at the Zoo, with calls possibly related to theft, trespassing, car break-ins, or vandalism, especially during highly-attended special events. To address anticipated increase in demand for law enforcement services, the Project would include construction of a new 13,000 sf single-story security and first aid center, located within the proposed entry plaza where it would be easily accessible to Zoo guests, and the hiring of additional security personnel to accommodate the such needs. Zoo Security would continue to respond to most incidents at the Zoo, therefore, not causing a substantial increased demand for LAPD services. Because Zoo Security is provided onsite and would not regularly necessitate responses from community LAPD stations, the proposed Project would not substantially interfere with LAPD response times.

Further, improvements to Zoo facilities would include modernization of security systems such as access control to buildings, secured parking facilities, walls/fences with key systems, and well-illuminated spaces designed with a minimum of dead space to eliminate areas of concealment. Security at the Zoo is provided by an onsite security team that assumes policing and first-aid responsibilities, with support from LAPD when required. Most incidents occurring within the Zoo are responded to by the Zoo Security. All crime-related incidents involve response from SECSD and the Northeast Division.

However, the Vision Plan does not currently propose, or little detail is known about, improvements or increases in security or surveillance of the Zoo's parking lots to address the high frequency of vehicle theft/break-ins. It is reasonable to assume that vehicle theft and break-ins would become an increasing law enforcement issue under the Project with substantial increases in visitation and frequency of high attendance days in which the parking lot areas would be full. Implementation of **MM PS-1**, requiring the Zoo implement measures to increase security of the Zoo's parking lot areas such as frequent patrolling and installation of additional surveillance cameras, would help to reduce the likelihood for vehicle theft/break in and manage crime within the Zoo, thereby reducing LAPD and Zoo Security demands.

An estimated 660 new jobs are anticipated to be created under the Project. If all new jobs were also new residents, this growth would represent less than a 0.02 percent increase in the existing population and would not measurably affect the resident-to-officer ratio of the LAPD. Further, most jobs associated with the proposed Project are anticipated to be filled by the existing local or regional labor force within the City, surrounding cities, and surrounding Los Angeles region. Therefore, any net population increase spurred by the proposed Project is anticipated to be nominal and would not substantially affect LAPD officer-to-resident ratios.

Existing resources of the LAPD and Northeast Community Police Station are adequate to continue providing acceptable levels of service to the Zoo with the implementation of the proposed Project. Any negligible increase in population within the City or region because of the Project would be adequately serviced by existing LAPD facilities and personnel and would not require expansion of existing facilities or construction of new facilities. As discussed above, with implementation of **MM PS-1** to address increased law enforcement issues from

vehicle theft/break ins, impacts to public safety and police protection services would be *less than significant with mitigation*.

PS-3: Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered school facilities, the construction of which could cause significant environmental impacts?

The proposed Project would not include residential development. Therefore, the Project would not result in an increased number of school-aged children in the LAUSD. The Project would create approximately 660 new jobs, but it is anticipated that these jobs would be filled by the existing local workforce, and, therefore, would not create population growth in the area, thereby increasing demand for public school services.

Enrollment trends of the LAUSD have been declining and this trend is anticipated to continue into 2030. Further, enrollment into the Zoo Magnet Center program is competitive and limited to 300 students. The Zoo has no direct influence over Zoo Magnet enrollment. Student acceptance and enrollment is determined by NHHS in compliance with LAUSD policies. The proposed Project would not alter existing facilities of the Zoo Magnet campus or initiate improvements that would expand the capacity of the Zoo Magnet program to support more students such as classroom seats, teachers, or funding. The Zoo Magnet Program currently has no plans to expand student enrollment or expand school facilities as to expand campus capacity to support students (Brie-Anna Molina, North Hollywood High School, E-mail Correspondence, March 2, 2020). As such, the Project would not spur academic enrollment, thereby eliminating potential for the proposed Project to exhaust existing school facilities or generate a need for expanded or additional public-school facilities. The Project would not require the addition of a new school or the expansion, consolidation, or relocation of an existing facility to maintain service levels, and construction activities would not adversely affect local schools.

The Project would not result in physical changes to existing LAUSD facilities, including the Zoo Magnet Center. As described in Section 2.0, *Project Description*, most Project improvements would occur within Zoo planning areas inside the Zoo and away from the Zoo Magnet Campus (see Figure 2-4). However, the Project would realign Crystal Springs Drive to the perimeter of the southern parking lot to link the Zoo Magnet Center parking lot with the Zoo's main lot (refer to Figure 2-15). In addition, approximately 300 guest surface parking spaces would be added in the southern parking lot, immediately adjacent to the Zoo Magnet Campus through removal of existing Zoo uses and restriping of parking spaces.

The southern Zoo parking lot is utilized by Zoo Magnet Center school buses and staff in addition to visitors of the Zoo and Griffith Park. There are currently no designated parking spaces or stalls for Zoo Magnet Center school buses and staff. Historically, there has not been significant conflict in parking availability for Zoo Magnet Campus and Zoo guests. This is most likely because drivers affiliated with the campus arrive anywhere from 2 to 3 hours

before the Zoo opens at 10:00 A.M. and Zoo Magnet Campus does not operate on weekends when Zoo parking demand is highest. Competitive parking on weekends typically only occurs on occasions when teachers choose to work in their classrooms on weekends or host review sessions for Advanced Placement students (Brie-Anna Molina, North Hollywood High School, E-mail Correspondence, March 2, 2020). The Zoo Magnet Center also hosts Saturday morning cleanups once a semester, but this also begins hours before the Zoo opens and does not create competitive parking conflict. Additionally, the Zoo's southern parking lot is positioned at a greater distance from the main entrance of the Zoo, making this parking less desirable to Zoo guests.

However, completion of the proposed Project is anticipated to increase daily attendance to the Zoo and substantially increase demand for Zoo parking (refer to Section 3.15, *Transportation*). Even with the construction of a new parking structure during Phase 7 and the additional 300 parking spaces to the southern parking lot during Phase 1, potential remains for an increased demand for parking to reduce parking availability for Zoo Magnet Center visitors, staff, and buses. To ensure parking availability remains for Zoo Magnet Center students and staff and avoid need for additional facilities to serve school operations, **MM PS-2** would be required. Implementation of **MM PS-2** would require improvements to the southern parking lot to include designated parking spaces for Zoo Magnet Center school buses and implement parking hour limitations to accommodate 10 teachers, the office administrator, and campus counselor, with an additional reserve space for visitors. Reserved parking stalls would be in effect during hours of Zoo Magnet Center operation. With implementation of this measure, Project impacts to schools would be *less than significant with mitigation*.

Despite potential impacts to parking, the Project has the potential to benefit the Zoo Magnet Center program through the expansion of Zoo exhibits and animal habitat. Zoo Magnet Center coursework often involves observations and fieldwork within the Zoo. Under the Project, expansion of resources available to Zoo Magnet Center students, including animal observation space, may improve the quality or quantity of educational opportunities to students. Further, as previously described, senior students in the program could engage in an animal husbandry internship where each student is paired with a zookeeper and assists that keeper in providing animal care to a group of animals managed by the zookeeper. Internships are limited to 30 open positions per semester, for a class size of approximately 75 students. Under the Project, expanded Zoo facilities would aid in the Zoo's mission of expanding animal conservation programs and expand the Zoo's capacity to provide care for additional animals. As such, the Project could increase both the number of zookeepers employed by the Zoo and animals under their care, which in turn, could expand the number of student animal husbandry internships the Zoo can provide.

3.13.4 Mitigation Measures

The following measures are identified to ensure continued unhindered emergency access and response to the Zoo during construction of proposed improvements and to prevent impacts to the Zoo Magnet Center facilities regarding parking availability.

MM T-1 shall apply.

MM PS-1 Zoo Parking Lot Security Improvements

In coordination with the City and LAPD, the Zoo shall prepare a Parking Lot Security Plan. The Plan shall identify and implement strategies to improve security within the Zoo's parking areas to reduce vehicle theft/break in or other crimes. Strategies may include but not be limited to installation of surveillance cameras to provide 24-hour video coverage of all Zoo parking areas and frequent foot- or bicycle-based patrolling of the Zoo parking areas by Zoo Security personnel. LAPD shall review and approve the Plan and parking lot security improvements shall be implemented prior to completion of Phase 1. The parking structure improvements proposed as Phase 7 shall be equipped with video surveillance.

MM PS-2 Zoo Magnet Center Parking Restrictions

The City and Zoo shall work with the LAUSD North Hollywood High School Zoo Magnet Center to coordinate improvements to the southern Zoo parking lot in Phase 1 of the Project. Parking lot design and management shall ensure adequate provision of parking for the Zoo Magnet Center during peak Zoo attendance days. Measures may include, but not be limited to, reserved parking spaces for Zoo Magnet Center school buses and adequate spaces to accommodate teachers, the office administrator, and campus counselor, with an additional reserve space for visitors. Reserved parking stalls shall be in effect during hours of Zoo Magnet Center operation. Signage shall indicate all restrictions on public parking within the southern parking lot. All proposed parking improvements shall be noted on final plans and reviewed and approved by the City Bureau of Engineering and the LAUSD prior to Project construction of Phase 1.

3.13.5 Impacts Summary

With implementation of above identified mitigation measures, impacts to existing public services would be *less than significant*. There would be no unavoidable adverse impacts on fire protection, law enforcement, public schools, or other public services (e.g., libraries) associated with implementation of the proposed Project.

3.14 RECREATION

The Zoo is a unique attraction within Griffith Park and the greater Los Angeles area. The proposed Project is expected to increase visitation to the Zoo and surrounding area, creating the potential for additional use and physical deterioration of recreational facilities, including those within the Zoo and Griffith Park. Additionally, proposed expansion to the Zoo and associated recreational facilities could result in physical impacts to the surrounding environment. However, proposed expansion in visitor-serving areas and public parkland would accommodate the projected increase in use, reducing potential for adverse impacts. Therefore, impacts to recreational facilities from the Project would be less than significant.

This section addresses recreational facilities that would be affected by the Los Angeles Zoo Vision Plan (Vision Plan) in the City of Los Angeles (City). The analysis describes the regulatory setting, the existing conditions at the Zoo and vicinity, and the potential impact of the implementation of the Vision Plan (Project) on recreational facilities. Impact analysis considers the potential for physical detriment or reduction in access to existing recreational facilities and whether development of new recreational facilities would significantly affect the environment.

3.14.1 Environmental Setting

Regulatory Setting

State and local laws and regulations have been enacted to ensure adequate provision of recreational facilities in the City. There are no federal regulations that apply to the Project.

State Regulations

Quimby Act (California Government Code Section 66477)

The Quimby Act (California Government Code Section 66477) was established in 1965 by the California Legislature to set forth provisions in the State Subdivision Map Act for the dedication of parkland (e.g., dedication ratio of three acres per 1,000 population) and/or payment of in-lieu fees as a condition of approval of certain types of residential development projects. The Quimby Act allows local agencies, such as the City, to establish ordinances that require residential subdivision developers to pay impact fees, which can be used to purchase and develop land and/or recreational facilities.

Local Regulations

City Quimby Code

To implement the Quimby Act, the City has two primary regulations. The Park and Recreation Site Acquisition and Development Provisions, including the Subdivision Fees Trust, are established in Los Angeles Municipal Code Section 17.12. A separate park impact fee, the Zone Change Park Fee, is established in Los Angeles Municipal Code Section 12.33 and applies to the finalization of zoning changes for multi-unit residential projects. Fee schedules, collections, and administration under the Subdivision Fees Trust and the Zone Change Park Fee programs are identical. Together, these programs are colloquially referred to as the City's "Quimby Code" and apply to residential project only. Most residential development projects that request a subdivision or zoning change within the City are required to either dedicate land for recreation and park purposes or pay an in-lieu fee (Quimby fees). Quimby fees can only be spent, and land can only be dedicated, within a service radius of 1 to 2 miles from the development that paid the fee, per the City's Quimby Code. Collected fees must be used to acquire new parkland or fund capital improvements at existing parks and may not be used to offset staff operation and maintenance costs. The City's Quimby Code is administered by the Department of Recreation and Parks (RAP).

Los Angeles Regional Park and Open Space District

Los Angeles Regional Park and Open Space District (RPOSD) is a special district to improve the safety of recreation areas for children and seniors, prevent gangs by increasing the safety of neighborhood parks, planting trees, and acquiring, restoring, and preserving beach, park, wildlife, and open space resources throughout Los Angeles County. RPOSD was formed following voter approval of Proposition A - the Safe Neighborhood Parks Proposition - in 1992. Proposition A passed with a 64 percent approval by County of Los Angeles voters. Proposition A both formed the RPOSD and established a dedicated funding source (e.g., property assessment on approximately 2.25 million parcels) for capital improvements for park and recreational facilities, funding to all cities and unincorporated areas, and support for specific city projects that meet established eligibility criteria.

In 1996, the County of Los Angeles enacted an amendment to Proposition A of 1992 to levy an additional assessment within the RPOSD and placed Proposition A of 1996 on the general election ballot. Again, voters passed the initiative with a 65.1 percent vote. Most recently, in 2016, the County of Los Angeles initiated and passed Measure A - the Safe, Clean Neighborhood Parks Measure - with a 75 percent vote. Measure A replaces and improves upon expired funding from Proposition A of 1992 and 1996 and authorizes continued dedicated local funding for grant projects and their maintenance. Measure A enacted an annual parcel tax of 1.5 cents per square foot of improved property to fund RPOSD projects and grants.

Proposition K

In 1996, Proposition K was passed by City voters and created a citywide assessment district that would generate 25 million dollars each year for a period of 30 years. Funds generated from Proposition K assessments are to be used for capital improvement projects involving the acquisition, development, improvement, or restoration of park and recreational facilities in the City. Through a separate process, a portion of the Proposition K funds provide annual maintenance resources for such facilities. Proposition K requires almost 20 percent of the 750 million dollars assessment to be distributed over a 30-year period through an open and competitive process to eligible governmental agencies, City departments, and nonprofit organizations.

City of Los Angeles General Plan

The City of Los Angeles General Plan serves as the foundational guide for planning, outlining how land is used and how the City allocates its resources. It also serves as the vision for how the City will evolve, reflecting the values and priorities of its communities. Two elements of the General Plan addressing the goals and vision of City recreational resources are the Open Space Element and Public Facilities and Services Element.

Open Space Element

Adopted in 1973, the Open Space Element, titled Open Space Plan, is an element of the City's General Plan providing guidance on the identification, preservation, conservation, and acquisition of open space in the City. Open space may be privately or publicly owned and is defined as land which is essentially free of structures and buildings and/or is natural in character and functions in one or more of the following ways:

- Provides opportunities for recreation and education;
- Preserves scenic, cultural, or historic values;
- Conserves or preserves natural resources or ecologically important areas;
- Provides or preserves lands for managed production of natural resources;
- Protects or provides for the public health and safety;
- Enhances the economic base of the City;
- Preserves or creates community scale and identity; and
- Buffers or defines activity areas.

In accordance with Article 10.5 of the California Government Code, the City Open Space Plan defines open space lands as lands which are both devoted to open space use and so designated. The Open Space Plan also defines open space use in accordance with the definition provided at the time when the plan was first adopted, the 1972 State of California Government Code. From this definition, open space use means the use of essentially unimproved land or water for (1) preservation of natural resources, (2) managed production of resources, (3) outdoor recreation, and (4) public health and safety.

The City of Los Angeles General Plan includes elements to protect and preserve open space providing recreational opportunities for the community. Photo Source: Los Angeles City Planning 2019

The Open Space Plan establishes, goals, policies, standards, and criteria for open space resources within them including:

- **Goal:** To insure the preservation and conservation of sufficient open space to serve the recreational, environmental, health and safety needs of the City.
- **Recreation Standard:** Six acres of land per 1000 persons should be provided for regional parks.

Public Facilities and Services Element: Public Recreation Plan

The Public Recreation Plan of the Public Facilities and Services Element sets forth objective and standards intended to provide a basis for satisfying the needs for neighborhood and community recreational sites. This element of the General Plan defines a community recreational site as a site designed to serve the residents of all ages in several surrounding neighborhoods that provides facilities to serve the interests of surrounding neighborhoods. Community recreational sites typically offer baseball diamonds, football and soccer fields, tennis and handball courts, swimming pools, in addition to the facilities provided for a neighborhood site. Specialized facilities may be needed to meet the needs of the community.

As defined in this element of the General Plan, a Regional Park is generally over 50 acres in size and provides specialized recreational facilities such as lakes, golf courses, campgrounds, wilderness areas and museums, which normally serve persons living throughout the Los Angeles basin. A regional park may include or emphasize, exceptional scenic attractions. A regional park may also contain the types of facilities provided in neighborhood and community recreational sites.

The Plan also establishes satisfactory recreation systems must provide sufficient land area to be used for recreation, recreation areas must be properly distributed, and recreation areas

across the City must be equipped with appropriate and diverse facilities to meet the recreational needs of groups of all ages and abilities.

Hollywood Community Plan

In the City, 35 community plans serve as the Land Use Element of the General Plan and coupled with the City's Framework Element, guide long-term land use, growth, and development. The Zoo lies within the Hollywood Community Plan area, which includes the neighborhoods of Hollywood, various Hollywood Hills communities, Los Feliz, East Hollywood, and Griffith Park, among others. The Hollywood Community Plan that is currently in effect was adopted in 1988. Per the 1988 Hollywood Community Plan, it is the City's policy that the desires of the local residents be considered in the planning of recreational facilities, including the following goals:

1. That recreational facilities, programs and procedures be tailored to the social, economic, and cultural characteristics of individual neighborhoods and that these programs and procedures be continually monitored.
2. That existing recreational sites and facilities be upgraded through site improvements, rehabilitation and reuse of sound structures, and replacement of obsolete structures, as funds become available.
3. That, in the absence of public land, and where feasible, intensified use of existing facilities and joint use of other public facilities for recreational purposes be encouraged.
4. That the expansion of existing recreational sites and the acquisition of new sites be planned so as to minimize the displacement of housing and the relocation of residents.

A community plan update process is actively underway. A 2012 update to the Hollywood Community Plan had become effective on August 6, 2012, but a legal challenge to its EIR caused the City to revert to the 1988 Hollywood Community Plan and zoning regulations. In 2018, a new EIR, referred to as the Hollywood Community Plan Update (HCUP2) was published. As of December 2019, the new draft plan has been presented to stakeholders and City Council. Adoption of the HCPU2 is expected to occur in 2020. If approved, the HCPU2 would implement the following goals and policies applicable to parks and recreational facilities:

Goal PR.4: Quality public facilities that serve the community.

- **PR4.1: Adequate parks and recreation facilities.** Provide adequate park and recreational facilities that meet the recreational needs of existing and new residents for all age-groups in the community.
- **PR4.2: Parks and recreational spaces.** Conserve, maintain, and better utilize recreational facilities and park spaces.

- **PR4.3: Community-serving facilities.** Encourage the provision of community facilities and open space within private discretionary projects. Such facilities could include those to be used for classes, bicycle amenities, adult and child daycare, community meetings and other community purposes.
- **PR4.4: Parking at community facilities.** Allow community-serving facilities to utilize alternative means of providing required parking.
- **PR4.5: Open space designations.** Maintain all open space designations within the Hollywood Community Plan Area. Designate parkland as Open Space as it is acquired by the Department of Recreation and Parks (RAP).

Goal PR.5: Improved access to recreation facilities and open space.

- **PR5.4 Joint use agreements.** Support the establishment of joint-use-agreements with other public and private entities to increase recreational opportunities in Hollywood, including shared dues of land owned.

Other Planning Documents

While not directly applicable to the Zoo, several plans address recreation in Griffith Park and have been considered in this analysis for context in impact assessment and significance thresholds.

1978 Griffith Park Master Plan (Non-adopted Local Plan)

Released in 1978, the Griffith Park Master Plan, although not formally adopted, is used to guide the future of Griffith Park (City of Los Angeles Department of Recreation and Parks 1978). Intended as a "comprehensive physical plan and management program that addresses both the problems of the present and the expectations of the future," the document contains broadly defined objectives as well as specific projects, including an electric trolley along Crystal Springs Drive and Zoo Drive, entrance enhancements, and other capital projects. Although not all of the specific projects identified were implemented, the following overall objectives of the 1978 Griffith Park Master Plan are applicable:

1. Enhance the beauty and the scale of the vast natural areas of the park where scenic and open space values should predominate.
2. Improve the visual and environmental quality of the developed recreation areas at the entries and around the perimeter of the park.
3. Make more efficient use of existing facilities and developed areas before using more open parklands for new facilities.
4. Continue and improve the established civic function of Griffith Park.
5. Improve the parkwide transportation system for more efficient movement of people and the potential recreation experience it can provide.
6. Give higher priority to essential park operations in future planning, especially those operations that enable the public to more closely relate to basic park values.

2009 Griffith Park Wildlife Management Plan

Until 2007, few formal wildlife surveys had ever been conducted in Griffith Park, and there was little data available on its species. After a wildfire destroyed 800 acres of the park in May 2007, the City retained a biological consulting firm to document the park's biodiversity, and to provide recommendations for future management of the park's natural resources. The Griffith Park Wildlife Management Plan was adopted in January 2009. The plan includes wildlife management goals and recommendations to ensure future co-existence between the rich diversity of wildlife species supported by Griffith Park and the thousands of human visitors to the park each year. Among the goals identified in the Draft Griffith Park Wildlife Management Plan, those applicable to the Project include:

- Promote native wildlife populations and habitat,
- Identify and defend native vegetation and biological "hot spots,"
- Clarify the location and usage of wildlife corridors;
- Minimize human/wildlife conflict,
- Strengthen law enforcement,
- Reduce "edge effects,"
- Manage recreation to avoid conflicts with wildlife; and
- Promote environmental education among the park's staff and park users.

2013 Vision Plan for Griffith Park

A Griffith Park Working Group made up of council district appointees, homeowner group representatives, neighborhood council members, and representatives of other organizations was convened to develop a Draft Vision Plan for Griffith Park, which was released for public review in 2013 by RAP. The Vision Plan for Griffith Park was created for the purpose providing guidance to developments within Griffith Park until the development and adoption of a full Griffith Park master plan.

Chapter 1 of the Vision Plan for Griffith Park emphasizes Griffith Park's Urban Wilderness Identity and role as a natural refuge within an intense urban environment. Chapter 1 contains a number of goals and objectives for maintaining this Urban Wilderness Identity through a balance of natural resource preservation and management of recreational use of Griffith Park. Policies relevant to recreational use of Griffith Park include:

- **Goal A.** Manage the entirety of the park consistent with the park's Urban Wilderness identity.
    - **Objective 4.** Promote natural qualities, minimize new urban intrusions in the Wilderness Area, and provide for informal recreation.

Chapter 2 of the Draft Vision Plan for Griffith Park does not contain formal goals and policies Wilderness Area of the park but does recognize the historical legacy of Colonel Griffith's gift,

the existing user groups, and the need for the equitable provision of active and passive recreational opportunities. The following introduction is therefore pertinent:

Existing Conditions

Regional Setting

City of Los Angeles

The operation and management of City parks and recreation facilities, including Griffith Park, is carried out by RAP. Within the City, RAP stewards over 16,000 acres of parkland and 444 park sites, which include open space and active recreation amenities. RAP is responsible for the operation and maintenance of hundreds of athletic fields, 422 playgrounds, 321 tennis courts, 184 recreation centers, 72 fitness areas, 62 swimming pools and aquatic centers, 30 senior centers, 26 skate parks, 13 golf courses, 12 museums, 9 dog parks, and 187 summer youth camps located within the City (RAP 2019).

The City of Los Angeles provides hundreds of parks, facilities, and recreational amenities to residents, including a wide range of amenities within Griffith Park, such as Shane's Inspiration playground (pictured). Photo Source: RAP.

City of Glendale

The City of Glendale, located adjacent to the Zoo east of the Los Angeles River, owns and manages 5,034 acres of natural open space and approximately 281.4 acres of parks and recreational facilities (City of Glendale 2019a). Two of the 34 parks managed by the City of Glendale, are greater than 30 acres (30.40 acres and 38.18 acres), qualifying them as regional parks. Facilities and amenities available for public use through Glendale Parks include splash pads, wading pools, community pools, skate parks, basketball parks, gymnasiums, soccer fields, tennis courts, volleyball courts (indoor and outdoor), horseshoes and a golf course (City of Glendale 2016). The Glendale Sports Complex provides several of these amenities and is also home to the "Mountain Do" trail and the Catalina Verdugo Trail trailhead. Over 30 miles of fire roads and 7.5 miles of single-track trails are utilized by joggers, dog-walkers, and mountain bikers – particularly in Brand Park and Deukmejian Wilderness Park (City of Glendale 2019b).

The current Trails and Open Space program, sponsored by the non-profit Glendale Parks & Open Space Foundation, consists of six elements: The Restoration Program, Interpretive Program, Trail Maintenance Crew, Trail Safety Patrol, the Iris Gardeners, and the GO! (Glendale Outdoors!) Program, a children's educational outdoor program (Glendale Parks

and Open Space Foundation 2019). Sites and museums available for public tours include Catalina Verdugo Adobe, Casa Adobe de San Rafael Park, Shoesian Whispering Pine Teahouse and Friendship Garden, and Doctor's House Museum and Gazebo (City of Glendale Community Services and Parks 2019).

City of Burbank

The City of Burbank, located north of the Zoo, operates and maintains 26 public parks and provides recreation service programs that include special interest classes; youth and adult sports programs; day camps; afterschool programs; youth resource programs; environmental and educational nature programs; cultural arts activities, including visual and performing arts; commercial recreation services; volunteer programs for residents of all ages; and year-round special events (City of Burbank 2019).

In 2010, there were approximately 7.1 acres of parkland for every 1,000 Burbank residents (AECOM 2013). When broken down by park type, park inventory translated to 5.84 acres of regional parks, 0.69 acre of community parks, 0.54 acre of neighborhood parks, and 0.02 acre of pocket parks per 1,000 residents. Although Burbank maintains more than 7 acres of parkland for every 1,000 residents, most of this is in the form of regional parks where acreage is unimproved and difficult to access, especially regional parks located in the Verdugo Mountains, as opposed to parks located in flatter areas of the city.

Los Angeles River

The Los Angeles River, located adjacent to the Zoo east across Zoo Drive and Crystal Springs Drive, is open for public recreational purposes at two segments of the river referred to as the Recreation Zone. These are the 1.7-mile Elysian Valley River Recreation Zone and the 2-mile Sepulveda Basin River Recreation Zone (Mountains Recreation and Conservation Authority 2019). The Elysian Valley River Recreation Zone is located approximately 3.5 miles southeast of the Zoo in the Elysian Valley neighborhood. At designated recreation zones the public is allowed to launch non-motorized and steerable boats such as kayaks or canoes into the river. Several organizations provide rentals and guided tours of the River Recreation Zone. Specialty kayak programs are available for developmentally disabled children and adults through use of custom, boat-accessible walkers, and wheelchairs. Visitors may also fish or engage in nature walking and enjoy native habitat and wildlife surrounding the river.

Griffith Park

The Los Angeles Live Steamers Railroad Museum within Griffith Park provides educational and recreational opportunity to visitors and offers rides on live steam scale model trains to the public. Photo Source: RAP

Within the City, Griffith Park, located on the east of the Santa Monica Mountain range and spanning over 4,511 acres, is one of the largest municipal parks with an urban wilderness in the U.S. and the largest regional open space within the City. Griffith Park is open to the public from 5:00 A.M. to 10:30 P.M. daily. Griffith Park's urban wilderness setting and trail network spanning over 70 miles make it a popular destination for hikers, bikers, and equestrians. Within the open spaces and hiking areas, bridle trails, hiking paths, and mountain roads close at sunset. Dogs are allowed off-leash in designated areas. Other passive recreation facilities provided by Griffith Park include picnicking areas and cafes where food is available for purchase.

Children's playgrounds are spread throughout the park, typically located near picnicking areas so that families can sit and relax while their children play. The playground nearest to the Project site is located approximately 3.9 miles northeast at the Ferrano Fields Active recreation facilities provided by Griffith Park include two 18-hole golf courses, two 9-hole golf courses, three tennis complexes, a swimming pool, soccer and rugby fields and special areas designated for badminton, baseball and softball. Griffith Park also provides reservable campgrounds for organized groups of 50 or more (City of Los Angeles Department of Parks and Recreation 2017).

In addition to traditional recreational amenities, Griffith Park is also home to several cultural and scientific institutions that offer both important and unique recreational opportunities, attracting both residents and tourists alike. Among these include the Autry Museum of Western Heritage, Ferndell Nature Museum, Travel Town Transportation Museum. These amenities respectively provide visitors the educational opportunity to learn more about the American West's heritage, the natural environment of Griffith Park while hiking public trails, and history of locomotives and railroad cars. Sightseeing opportunities within Griffith Park include the iconic Hollywood Sign and the Bronson Caves, which were used in the filming of many popular movies and accessible to guests by a hiking trail. The Greek Theatre regularly hosts events and concerts accessible with ticket purchase. Children may also enjoy pony rides, the merry-go-round, and a ride-on a scale model or miniature train during their visit (via the Southern Railroad or Travel Town Railroad, respectively).

The Los Angeles Zoo and the Los Angeles Equestrian Center, although managed separately from Griffith Park itself, are geographically within the park's boundaries. The Equestrian Center provides an area for member of Los Angeles County space to enjoy and participate in

equestrian related activities and competitions (The Los Angeles Equestrian Center). Recreational opportunities of the Los Angeles Zoo are described in detail further below.

In May 2016, the Los Angeles County Department of Parks and Recreation published the *Los Angeles Countywide Comprehensive Parks and Recreation Needs Assessment* representing efforts to document existing parks and recreation facilities in cities and unincorporated communities and to use these data to create a paradigm for determining the scope, scale, and location of park need in Los Angeles County. To fully and accurately assess park need throughout the 88 incorporated cities and over 2,6000 square miles of unincorporated area, the county was divided into 189 study areas, each analyzed through five park metrics: Park Land, Park Access, Park Pressure, Park Amenities, Park Condition. Griffith Park fell under the Study Area of North Hollywood (along with Carlton Way Pocket Park, Las Palmas Senior Citizen Center, Selma Park, Yucca Community Center, Dorothy J. and Benjamin B. Smith Park, Highland Camrose Park, Runyon Canyon Park and Wattles Garden Park). While the assessment concluded North Hollywood had a moderate park need, it was determined that Griffith Park alone provides 41.8 park acres per 1,000 residents. The *Los Angeles Countywide Comprehensive Parks and Recreation Needs Assessment* calculated that Griffith Park experiences low park pressure within its community of North Hollywood and currently provides 6.91 acres of regional parkland per 1,000 people in a 25-mile radius. (Los Angeles County Department of Parks and Recreation 2016).

Table 3.14-1. Griffith Park Recreational Facilities and Opportunities

Facility	Operating Hours	Price
Travel Town Museum	Weekdays: 10:00-4:00 P.M. Weekends (March-October): 10:00 A.M. – 6:00 P.M. Weekends (November-February): 10:00 A.M.- 5:00 P.M.	Donations Appreciated Small fee for Miniature Train Ride
Pony Rides	Winter Hours: Tuesday- Sunday 10:00 A.M. -4:00 P.M. Summer Hours: Tuesday-Friday 10:00 A.M.- 5:00 P.M.	$5
Los Angeles Live Steamers Railroad Museum	Sunday (excluding Sunday before Memorial Day and first Sunday in October): 11:00 A.M.- 3:00 P.M.	Suggested donation: $3
Griffith Observatory	Tuesday- Friday: 12:00 P.M. – 10:00 P.M. Saturday-Sunday: 10:00 A.M. – 10:00 P.M. Mondays: Closed	Free
Griffith Park Merry-Go-Round	11:00 A.M.- 5:00 P.M. weekends throughout the year and weekdays during the summer and Christmas and Easter vacations	$2
Autry National Center Museum	Tuesday- Friday: 10:00 A.M. – 4:00 P.M. Saturday- Sunday: 10:00 A.M. – 5:00 P.M. Monday- Closed except Martin Luther King Jr. Day and President's Day	Adults: $14 Students and Seniors: $10 Children (3-12): $6 Children under 3: Free
Greek Theater	Varies	Varies

Project Area and Vicinity

The Zoo provides special events and programming for local schools. Photo Source: LA Zoo

The Project area is situated in the northeast of Griffith Park, located immediately west of the Autry Museum of the American West, North of the Wilson and Harding Golf Course, and surrounded by several of the park's hiking trails, including Skyline Trail, Condor Trail, and Mineral Wells Trail. The Zoo serves as one of many recreational attractions in Griffith Park. Most attractions within Griffith Park are maintained by RAP; the Zoo, however, is owned and managed by the City.

The Zoo serves as an important community recreational site as defined by the Public Facilities and Services Element of the City's General Plan through its location in a designated open space/recreational area and contribution of recreational opportunities available to Los Angeles residents. The Zoo is open to the public every day from 10:00 a.m. to 5:00 p.m., 364 days of the year (closed on December 25). Visitors of the Zoo can view over 1,400 mammals, birds, amphibians, and reptiles representing more than 270 different species from all over the world. Zoo guests can enjoy nearly 20 different weekly tours and shows, such as the elephant care demonstration. The 2017-2018 Fiscal year brought in a total of 1,802,387 Zoo visitors, although annual attendance rates have fluctuated in inclines and declines over the past 20 years. 89 percent of Zoo visitors are residents of Los Angeles County that reside within a 60-minute drive time from the Zoo, while the remaining 11 percent of visitors are tourists. The Zoo also serves the unique recreation needs of its membership, including families who visit the Zoo regularly with children to visit animals and play in the nature-based playground currently located in the upper western edge of the Project area.

In addition to regular hours of operation, the Zoo also hosts special events and educational programming (Table 3.2), including field trips for students of local schools, daytime children's camps during select days in winter and summer months when school is out, and overnight camping programs to families through Creature Camp Out and Wild Wonder Family Slumber programs. Zoopendous nights, an overnight weekend program is offered for Cub Scout, Brownie, Junior Girl Scout, or community/school groups with children aged 6-12. Groups can tour the Zoo after dark, camp within the Zoo overnight, and meet the Zoo's animal ambassadors in the morning. During winter months, the Zoo extends operating hours to 10:00 P.M. for its seasonal L.A. Zoo Lights program, where Zoo guests are invited to enter the Zoo after dark and browse exhibits and special light shows. Other seasonal events hosted at the Zoo include Big Bunny's Spring Fling, Boo at the L.A. Zoo, Photo Day, Reindeer Romp. The Zoo also provides 21-and-over events such as Sustainable Wine + Dinner Series, Brew at the L.A. Zoo, and Roaring Nights. The Zoo occasionally hosts private events such as birthday parties or corporate events.

Table 3.14-2. Seasonal Special Events at the Zoo

Special Event	Time of Year
Daytime Events	
Zoo Camp	January and Summer
Big Bunny's Spring Fling	April
Boo at the L.A. Zoo	October
Photo Day	November
Reindeer Romp	November – January
Evening Events	
Zoopendous Nights	January - May
Sustainable Wine + Dinner Series	March – September
Brew at the L.A. Zoo	August
Roaring Nights	June – September
Creature Camp Out	Summer
L.A. Zoo Lights	November – January

3.14.2 Impact Assessment Methodology

Significance Thresholds

According to Appendix G of the CEQA Guidelines, a project would have a significant impact related to recreational resources if:

a. The project would 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; or
b. The project would include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?

In addition to the thresholds identified in Appendix G of the State and CEQA Guidelines, the *2006 L.A. CEQA Thresholds Guide* states that determination of significance shall be made on a case-by-case basis after considering the following factors:

- The net population increase resulting from the proposed project;
- The demand for recreation and park services anticipated at the time of project buildout compared to the expected level of service available. Consider, as applicable, scheduled improvements to recreation and park services (renovation, expansion, or addition) and the project's proportional contribution to the demand; and
- Whether the project includes features that would reduce the demand for recreation and park services (e.g., on-site recreation facilities, land dedication or direct financial support to RAP).

Methodology

This section evaluates the adequacy of existing parks and recreational facilities to continue to serve existing and future residents and visitors of the City, including whether the Zoo itself can accommodate the projected growth in annual visitation of approximately 1.2 million. The analysis identifies Project-related effects on the accessibility of surrounding recreational facilities, increases in demand for such services, the adequacy of existing and planned facilities to meet additional demand potentially generated indirectly as a result of increases in Zoo visitation, and environmental effects of proposed Zoo recreational improvements. Finally, this section reviews whether Project increases in demand for recreational facilities would create a need for new or physically altered facilities, the construction of which could cause significant environmental impacts.

3.14.3 Environmental Impacts Analysis

REC-1:	Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Zoo Capacity

The Zoo provides a unique recreational amenity within the City and the Los Angeles region and is a major attraction within Griffith Park, the City's largest and most versatile recreational facility. The Project would increase the annual visitation and use of the Zoo incrementally over 20 years. Specifically, the proposed Vision Plan projects that by the time of its Project completion in 2040, annual visitation to the Zoo would increase to 3,000,000 guests. However, the proposed Project would simultaneously increase Zoo visitation and increase visitor-serving spaces within the Project area, as approximately 24 acres of existing undeveloped area within the Zoo would be developed overtime into exhibit and visitor-serving spaces, thereby increasing the physical capacity of the existing Zoo site to accommodate more guests. Development would add up to 73,800 sf of new visitor center space, including three new visitor centers, and up to 22,400 sf of new food service facilities. The Project would also increase the Zoo's capacity to host and accommodate existing and new special events, including after-hours events. These changes would accommodate and facilitate the growth in demand for the Zoo's amenities and provide additional unique recreational opportunities within the City. As such, the proposed Vision Plan would effectively

accommodate this increase in visitation through its proposed expansion of visitor-serving spaces and amenities, as well as guest programs and services.

The Nature Play Park included in the Project would provide retail and dining amenities, and a nature-based play space for children.

Loss of Recreational Lands

With the exception of the proposed parking and vehicle entry improvements, expansions, and improvements to Zoo facilities under the Vision Plan would be contained within existing Zoo boundaries. Thus, the Project would result in no net loss of recreational lands and would not cause direct impacts to recreational facilities within Griffith Park or elsewhere.

Accessibility to Recreational Resources

The Zoo parking lot is shared by visitors of the Zoo and the Autry Museum, but is also used by Griffith Park visitors. Park visitors, particularly joggers and trail users, take advantage of the free parking provided outside of the Zoo. An additional 1,850 parking spaces would be added over the life of the Project. Based on the growth in capacity, the parking demand model indicates that, in Phases 1 through 6, demand will exceed capacity on days when attendance is 12,600 or higher, and that, after construction of the parking structure in Phase 7, demand will exceed capacity when attendance is 19,200 or higher. Using the parking demand model, Zoo parking demand is expected to exceed supply for at least a portion of one hour on 15 days in 2025, 25 days in 2027, 51 days in 2030, and 5 days in 2040 (Appendix N). However, accessibility to the park and supported recreational facilities would still be provided through street parking and other parking facilities within Griffith Park, the nearest of which is located at Pecan Grove Picnic area. Therefore, the proposed Project would not adversely affect accessibility to recreational resources within Griffith Park.

As analyzed in Section 3.15, *Transportation*, the Project would upgrade the Zoo Drive/Western Heritage Way intersection with a new signal in Phase 1. The Vision Plan also contemplates long-term improvements to this intersection to address vehicular congestion, including a roundabout or grade-separation of the intersection in Phase 7 which could potentially increase vehicle speeds and subsequently affect pedestrian safety. Further, installation of these improvements could affect the configuration and alignment of the Main Trail, which currently crosses below Zoo Drive east of its intersection with Western Heritage Way. As such, implementation of these improvements included in the proposed Project has the potential to affect the mobility of pedestrians, bicyclists, and equestrians along the Main Trail and could affect their safety. **MM REC-1** would require Zoo Drive/Western Heritage

Way intersection improvements be considerate of pedestrian, bicyclist, and equestrian safety with regard to the Main Trail and that use of this important trail is not hindered by implementation of the improvement. With implementation of **MM REC-1**, impacts to mobility and safety along the Main Trail from the proposed Project would be *less than significant with mitigation*.

Recreational Resources within Griffith Park

As is currently the case, Zoo visitors may also visit other Griffith Park amenities, such as Shane's Inspiration playground or the Old Zoo picnic areas. However, the physical degradation of other existing recreational facilities within Griffith Park is not anticipated to occur or be accelerated by additional Zoo visitation. As previously described, the LACDP 2015 needs assessment calculated that Griffith Park experiences low park pressure within its community of North Hollywood and currently provides 6.91 acres of regional parkland per 1,000 people in a 25-mile radius. Demand for park and playground facilities by Zoo visitors would also be met by the Nature Play Park planning area, a proposed nature-based interactive playground for children and families, and a proposed 2-acre public park along Zoo Drive in the northern parking lot.

The existing children's playground within the Zoo, named the Papiano Play Park, is frequently visited by Zoo members and their families, whose membership status grants free admission to the Zoo. As such, members regularly enter the Zoo for the primary purpose of visiting the children's playground. The proposed Project would rename the playground as Nature Play Park, increase the playground size threefold to 18,300 square feet of a natural play area equipped with play structures and water features, and relocate the park nearby the main entrance. Comfortable seating would be provided and restrooms, and food and beverage concessions stands would be located nearby. As such, these improvements would allow for quick and easy access to the playground and fulfill some of the existing recreational needs for Zoo members.

The proposed public park would be located adjacent to the proposed parking structure in the northern parking lot (refer to Figure 2-5) and would be open to the public in addition to Zoo guests. These facilities would likely limit guest spillover into existing parks by providing the most commonly desired park services (e.g. Play area for kids, shady natural setting, and benches).

Growth Impacts on Recreation

The Project is not expected to facilitate indirect population or economic growth within the City or greater region that would place demand on recreation and park services compared to the existing level of service available. The proposed Project would involve the expansion of exhibits and service facilities within the Zoo grounds and is expected to result in approximately 438 new employees by completion. The majority of these jobs associated with the Project are anticipated to be supplied by the existing local or regional labor force within the City, surrounding cities, and surrounding Los Angeles region. Therefore, any net

population increase spurred by the proposed Project is anticipated to be nominal. New businesses may be attracted to the Project vicinity to support the Zoo's projected growth in attendance, but because the Project site is currently developed with the existing Zoo, is located in a designated open space area, and the urban area surrounding Griffith Park is already densely developed, there is limited space for additional commercial development and would not cause substantial expansion of commercial districts or additional economic growth in the local community and regional area. Further, given the Project is anticipated to result in only a nominal or no increase in population and given the surrounding communities experience low park pressure, no additional demand on existing recreational facilities or for new recreational amenities is anticipated as a result of Project implementation. Therefore, Project related impacts would be *less than significant*.

REC-2:	Would the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?

Currently, the Zoo serves as a unique recreational resource and attraction within the City that serves approximately 1.8 million residents and visitors of the City each year. Under the proposed Project, redevelopment and expansion of existing facilities and the construction of new facilities within the Zoo would improve the recreational value and opportunities provided by the Zoo. As proposed, this includes development of new overnight special event spaces, picnic spots, rock climbing, playgrounds (i.e., Nature Play Park), and a public park to be located within the Zoo's northern parking adjacent Zoo Drive. This public park would be separate from the Zoo and accessible at no cost to the public.

As described in previous sections, implementation of the proposed Project and the construction of these improvements would result in impacts to the environment. These impacts are discussed in further detail in within each resource analysis presented in Section 3, *Environmental Impact Analysis*. For instance, implementation of the Project has potential to adversely affect air quality, biological resources, cultural and tribal resources, energy, the City's urban forest, geology and soils, greenhouse gas (GHG) emissions, hazards and hazardous materials, hydrology and water quality, land use and planning, noise, public services, utilities, and wildfire. Please refer to those relevant sections for detailed analysis of potential impacts associated with Project implementation. In addition, a detailed analysis of consistency with existing policies and regulations governing or guiding recreational facilities and opportunities within the City is presented in Section 3.11, *Land Use and Planning*. Where potentially significant impacts are identified as they relate to the construction or expansion of recreational facilities, applicable existing regulations or appropriate mitigation is identified which would reduce associated Project impacts. For instance, the Project would expand into areas of the Zoo that are home to sensitive plant and wildlife species and protected trees that contribute to the City's urban canopy. Impacts to these resources would be reduced through implementation of **MM BIO-1** and **MM BIO-2**, which would require preparation and

implementation of a Biological Resources Mitigation and Monitoring Program and Construction Mitigation Plan, respectively. These plans would include biological resources surveys and requirements for preservation and restoration. Additionally, **MM UF-1** would require a Protected Tree Plan to identify measures for the protection, relocation, and/or replacement of protected and important significant trees and shrubs, and **MM UF-2** would require a Restoration Plan to ensure landscaping under the Vision Plan is planned to provide urban forest value. Development of the proposed multi-story parking structure in the northern parking lot would not be consistent with the visual character of the Zoo Drive gateway and existing Zoo entrance. However, **MM VIS-1** would ensure that improvements to the main Zoo entrance, Zoo parking lots, and road/intersection improvements are design to respect and respect and enhance the visual quality and natural character of Griffith Park (refer to Section 3.1, *Aesthetics and Visual Resources*). In addition, wildfire risks associated with construction and operation of the proposed Project would be reduced such that associated risk would be nominal, with implementation of **MM WF-1**, which would require preparation of a Wildfire Fuel Management Plan (WFMP), and **MM WF-2**, which would require preparation of a of an Evacuation and Fire Response Access Plan (EFRAP) prior to initiation of each phase of Project implementation. With implementation of the regulations and measures identified in those other sections of this EIR, impacts from the construction or expansion of recreational facilities would be *less than significant*.

3.14.4 Mitigation Measures

Mitigation measures required to reduce potentially significant environmental impacts from the construction of the proposed Project, including a new public park, are further discussed within each of the resource sections analyzed in this EIR. All mitigation measures discussed in this EIR shall apply.

MM REC-1 Consideration of the Main Trail in Intersection Designs

Should the Zoo pursue improvements to the intersection of Zoo Drive/Western Heritage Way to include a roundabout or grade-separated intersection, the design of the proposed improvements shall be considerate of pedestrian, bicyclist, and equestrian mobility and safety along the Main Trail and ensure that the use of this trail is not hindered. All proposed intersection improvements, including those for design for the mobility and safety of pedestrians, bicyclists, and equestrians shall be incorporated into final plans and reviewed and approved by the City of Los Angeles Bureau of Engineering and the City of Los Angeles Department of Transportation prior to the issuance of permits for these improvements.

3.14.5 Impacts Summary

There would be no unavoidable adverse impacts on park and recreation facilities associated with the proposed Project. The Project would expand visitation to the Zoo with some potential limited increased visitation to Griffith Park and surrounding communities. This increased

demand would be addressed with expanded amenities and services within the Zoo and a new public park on site and no significant impacts would occur from development of recreation resources with mitigation required for CEQA resources in the EIR. Therefore, recreation impacts would be less than significant.

3.15 TRANSPORTATION

As a regional attraction, the Los Angeles Zoo draws 1.8 million visitors a year and employs 570 staff, the majority of who use a private vehicle to travel to the Zoo daily. The widespread distribution of Zoo patrons and employees across the Los Angeles region, limited accessible transit within Griffith Park, and distance to surrounding communities limits the viability of using transit, biking, or walking by Zoo patrons and staff, presenting a challenge to reduce the length and total number of vehicle trips generated by the Zoo now and under the Los Angeles Zoo Vision Plan. Existing and projected vehicle miles traveled (VMT) would be greater than the City and regional averages and would exceed City transportation thresholds. However, a Transportation Demand Management (TDM) program would help the Zoo achieve at least a 10 percent reduction of existing employee VMT and a measurable reduction of projected visitor VMT to help achieve measurable GHG reductions consistent with the goals of the California Climate Change Scoping Plan and local GHG plans. Even with robust mitigation, VMT transportation impacts would be significant and unavoidable.

Transportation impact analysis under CEQA considers the Project's VMT compared to City thresholds and consistency with applicable policies and plans for multimodal accessibility throughout the City. Photo: Griffith Park Line Shuttle, ABC 2019

This section analyzes the potential environmental effects of the proposed Los Angeles Zoo (Zoo) Vision Plan (Project) related to transportation as defined under the California Environmental Quality Act (CEQA) and the consistency with the existing policy framework applicable in the City of Los Angeles (City). This analysis describes the existing transportation facilities in the Project area and the current travel trends of Zoo visitors and employees, including trip lengths, mode choice, and peak visitation days. Consistent with state law and local regulations, this analysis employs a new approach to assessing transportation impacts using vehicle miles traveled (VMT) as the numeric threshold, as well as evaluating the Project's effectiveness and accessibility for all modes of transportation to meet mobility needs of Zoo patrons and employees. This section also evaluates the consistency of the Project with applicable regional and local circulation goals, plans, programs, and policies, including state goals to reduce VMT by 15 percent by 2050. This analysis is informed by a Transportation Assessment prepared for the Project consistent with the City Department of Transportation (LADOT) Transportation Assessment Guidelines (TAG).

As discussed in detail below, changes in state law now require VMT analysis measuring vehicle trip distance rather than Level of Service (LOS) analysis measuring intersection congestion and roadway capacity. This reflects state policy goals to reduce vehicle energy use, particularly that associated with non-renewable fossil fuels, and associated greenhouse gas (GHG) emissions and their adverse effects on global climate change. VMT is a measure of the amount and distance that residents, employees, or visitors drive, determined by multiplying trip generation by the average length of the trips measured in miles. VMT per capita is calculated as the total annual miles of vehicle travel divided by the total population in the planning area. Many factors affect travel behavior, including density and diversity of land uses, design of the transportation network, access to regional destinations, distance to high quality transit and active transportation facilities, development scale, demographics, and transportation demand management (TDM). Typically, low density development at greater distances from other land uses, located in areas with poor access to non-private vehicular modes of travel, generate more automobile travel compared to development located in urban areas, where there is higher population density and a mix of land uses (e.g., commercial uses near housing), and travel options other than private vehicles are available.

3.15.1 Environmental Setting

Regulatory Setting

Federal Regulations

Americans with Disabilities Act of 1990

Titles I, II, III, and V of the ADA have been codified in Title 42 of the U.S. Code (USC), beginning at Section 12101. Title III prohibits discrimination on the basis of disability in places of public accommodation (i.e., businesses and non-profit agencies that serve the public) and commercial facilities (i.e., other businesses). This regulation includes Appendix A to Part 36, Standards for Accessible Design, which establishes minimum standards for ensuring accessibility when designing and constructing a new facility or altering an existing facility.

Examples of key guidelines include detectable warning for pedestrians entering traffic where there is no curb, a clear zone of 48 inches for the pedestrian travelway, and a vibration-free zone for pedestrians.

State Regulations

Statewide Transportation Improvement Program

The California Transportation Commission (CTC) administers transportation improvement programming. Transportation programming is the public decision-making process, that sets priorities and funds projects envisioned in long-range transportation plans. It commits expected revenues over a multi-year period to transportation projects. The State

Transportation Improvement Program (STIP) is a multi-year Capital Improvement Program of transportation projects on and off the State Highway System, funded with revenues from the State Highway Account and other funding sources. The California Department of Transportation (Caltrans) manages the operation of State Highways, including the freeways passing through the Los Angeles Region.

Assembly Bill (AB) 32, the Global Warming Solutions Act of 2006

Transportation is the largest single sector of the economy that generates GHGs, and changes in transportation are a focus of several statewide regulations to reduce VMT and increase access to non-vehicular modes of travel. The Global Warming Solutions Act (AB 32) commits the State of California to reduce statewide GHG emissions to 1990 levels by 2020. AB 32 acknowledges that such emissions cause significant adverse impacts to human health and the environment, and therefore must be identified and mitigated where appropriate. Achieving these goals requires a reduction of approximately 30 percent from projected state emission levels and 15 percent from 2006 state levels, with even more substantial reductions required in the future. Pursuant to AB 32, the California Air Resources Board (CARB) must adopt regulations to achieve the maximum technologically feasible and cost-effective GHG emission reductions.

Senate Bill (SB) 32, Executive Order B-30-15

In 2016, the California State Legislature adopted Senate Bill (SB) 32 to reduce statewide GHG emissions by 2020 to 1990 levels and by 2030 to 40 percent less than 1990 levels. SB 32 updates AB 32 and establishes an intermediate goal of achieving 80 percent reductions in GHG emissions by 2050. Such reductions will require major changes in the transportation sector. This intermediate target was codified into law by SB 32, which was signed into law by Governor Jerry Brown on September 8, 2016.

SB 375, California's Sustainable Communities and Climate Protection Act

The adoption of SB 375 on September 30, 2008 recognizes the connection between land use planning and reliance on vehicles as the primary mode of transportation, with the result being that emissions from vehicles account for 30 percent of GHG emissions in California. SB 375 aligns the goals of regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocations, and requires Metropolitan Planning Organizations (MPOs), such as the Southern California Association of Governments (SCAG), to adopt a Sustainable Communities Strategy (SCS) or Alternative Planning Strategy (APS) within their regional transportation plan to demonstrate achievement of GHG reduction targets. As discussed below, in compliance with SB 375, SCAG has adopted the 2016-2040 Regional Transportation/Sustainable Communities Strategy (RTP/SCS), which guides land use and transportation planning for the region and City to reduce transportation related GHG emissions. On September 3, 2020, SCAG's Regional Council unanimously voted to approve and fully adopt the 2020-2045 RTP/SCS (Connect SoCal).

SB 743

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

Pursuant to the mandate in SB 743, OPR adopted the revised CEQA Guidelines in December 2018, recommending the use of VMT for analyzing transportation impacts under CEQA. In turn, Section 15064.3 was added to CEQA Guidelines, which states "generally, vehicle miles traveled is the most appropriate measure of transportation impacts." The revised guidelines require that lead agencies remove automobile delay, as described solely by LOS or similar measures of vehicular capacity or traffic congestion, as a criterion for determining a significant impact on the environment pursuant to CEQA, except in locations specifically identified in the revised guidelines, if any. In accordance with this requirement, CEQA Guidelines Section 15064.3(a), adopted in December 2018, states "a project's effect on automobile delay does not constitute a significant environmental impact."

As noted below, on July 30, 2019, the City adopted VMT as part of its CEQA Transportation Thresholds as a criterion to determine transportation impacts, pursuant to SB 743 and the recent changes to CEQA Guidelines Section 15064.3.

California's 2017 Climate Change Scoping Plan

CARB is responsible for the coordination and administration of both federal and state air pollution control programs within California. CARB's 2017 Scoping Plan reflects the new statewide GHG emissions reduction goals called for in SB 32 of 40 percent below 1990 emissions levels by 2030.

In the transportation sector, GHG emissions reducing measures include low carbon fuels, cleaner vehicles, and strategies to promote sustainable communities and improved transportation choices that result in curbing the growth in VMT (CARB 2017). Relative to

transportation, the Scoping Plan includes measures to reduce VMT and vehicle GHGs, including, but not limited to:

- Pursue 15 percent reduction in light duty VMT from Business as Usual by 2050.
- Promote all feasible policies to reduce VMT, including land use and community design that reduce VMT such as transit-oriented development.
- Implement complete street design policies that prioritize transit, biking, and walking
- Increase low carbon mobility choices, including improved access to viable and affordable public transportation and active transportation opportunities.
- Developing pricing mechanisms such as road user/VMT-based pricing, congestion pricing, and parking pricing strategies,
- Reduce GHG emissions through commute trip reduction strategies, and programs to maximize the use of alternatives to single-occupant vehicles, including bicycling, walking, transit use, and shared mobility options.
- Accelerating equitable and affordable transit-oriented and infill development through new and enhanced financing and policy incentives and mechanisms.
- Increase the number, safety, connectivity, and attractiveness of biking and walking facilities to increase use.

AB 1358, the California Complete Streets Act of 2008

Governor Schwarzenegger signed AB 1358 into law on September 30, 2008. AB 1358 requires cities and counties to modify the circulation element to plan for a balanced, multimodal transportation network that meets the needs of all users, including bicyclists, pedestrians, transit riders, children, older people, and disabled people, as well as motorists.

Congestion Management Program (CMP)

The CMP was established statewide in 1990 to implement Proposition 111, tying appropriation of new gas tax revenues to congestion reduction efforts. The CMP is managed at the countywide level and primarily uses an LOS performance metric, which is inconsistent with more recent state efforts to transition to VMT-based performance metrics. California Government Code Section 65088.3 allows counties to opt out of CMP requirements without penalty, if a majority of local jurisdictions representing a majority of a county's population formally adopt resolutions requesting to opt out of the program.

On June 20, 2018, Los Angeles County Metropolitan Transportation Authority (Metro) initiated a process to gauge the interest of local jurisdictions in opting out of State CMP requirements. On July 30, 2019, the Los Angeles City Council passed a resolution to opt out of the CMP program, and on August 28, 2019, Metro announced that the thresholds had been reached and the County of Los Angeles had opted to be exempt from the CMP. As such, the provisions of the CMP no longer apply to any of the 89 local jurisdictions in Los Angeles County. Accordingly, CMP analysis is no longer included in City of Los Angeles environmental documents.

Parking Cash Out

Parking Cash Out, addressed by AB 2109, requires employers of 50 or more employees who lease their parking and subsidize any part of their employee parking to offer their employees the opportunity to give up their parking space and rideshare to work instead. In return for giving up their parking space, the employer pays the employee the cost of the parking space.

Regional Regulations

SCAG's Regional Transportation Plan/Sustainable Communities Strategy

SCAG is the designated MPO for six Southern California counties (Los Angeles, Ventura, Orange, San Bernardino, Riverside, and Imperial), and is federally mandated to develop plans for regional transportation, land use and growth management, and air quality. The City is one of many local and regional jurisdictions comprising SCAG.

SCAG updates its long-range (i.e., minimum 20 years) Regional Transportation Improvement Plan/Sustainable Communities Strategy (RTP/SCS) every four years, per federal law (23 U.S.C.A. §134 et seq) and state law (SB 375). The SCS is a required element of the RTP that provides a plan for meeting GHG emissions reduction targets set forth by the CARB. SCAG's 2016–2040 RTP/SCS provides growth forecasts that are used in the development of air quality-related land use and transportation control strategies by the South Coast Air Quality Management District (SCAQMD). CARB has determined SCAG's reduction target for per capita vehicular emissions to be 8 percent by 2020 and 13 percent by 2035 relative to the 2005 baseline.

In June 2016, CARB determined that SCAG's 2016–2040 RTP/SCS is consistent with their GHG reduction targets. Successfully meeting these targets will require substantial effort to reduce VMT. The 2016 RTP/SCS calls for investing $6.9 billion toward TDM strategies throughout the region. These strategies focus on reducing the number of drive-alone trips and overall VMT through ridesharing, which includes carpooling, vanpooling and supportive policies for ridesharing services such as Uber and Lyft; redistributing or eliminating vehicle trips from peak demand periods through incentives for telecommuting and alternative work schedules; and reducing the number of drive-alone trips through increased use of transit, rail, bicycling, walking and other alternative modes of travel.

Of the eight goals presented in the 2016–2040 RTP/SCS, four are applicable to transportation, including the following:

- Goal 2: Maximize mobility and accessibility for all people and goods in the region.
- Goal 3: Ensure travel safety and reliability for all people and goods in the region.
- Goal 5: Maximize the productivity of our transportation system.
- Goal 6: Protect the environment and health of our residents by improving air quality and encouraging active transportation (e.g., bicycling and walking).

On September 3, 2020, SCAG's Regional Council unanimously voted to approve and fully adopt the 2020-2045 RTP/SCS (Connect SoCal). The 2020-2045 RTP/SCS includes more than three years of consultation with stakeholders and the public to capture the goals and objectives of the people within the region and capture the most current available data for determining future demographic projections. The intent of the plan is to build upon and expand land use and transportation strategies established over several planning cycles to increase mobility options and achieve a more sustainable growth pattern.

Metro Long Range Transportation Plan (LRTP) & Congestion Management Program (CMP)

Metro's LRTP, adopted in 2009, provides a 30-year vision for Los Angeles County's transportation system to the year 2040. The LRTP identifies public transportation and highway projects, funding forecasts over a 30-year timeframe, multi-modal funding availability, sub-regional needs, and project performance measures. The current LRTP addresses regional public transit and highways and does not propose any transit improvements in Griffith Park or in proximity to the Zoo. The County and City of Los Angeles are now exempt from CMP. There are no outstanding planned LRTP improvements within the vicinity of the Zoo.

Local Regulations

City of Los Angeles General Plan

The City General Plan sets forth goals, objectives, and programs for land use and development to meet the existing and future needs and desires of the community while integrating a range of state-mandated elements. The City includes 35 geographic community plan areas with specific growth and development policies. The community plans are focused on specific geographic areas of the City, locally defining the General Plan's more general citywide policies and programs. The Project site is in the Hollywood Community Plan area.

In addition, LADOT is responsible for traffic operations in the City. As part of their responsibilities, LADOT establishes thresholds for determining when projects require traffic studies, established significance thresholds for evaluating traffic impacts, and reviews and authorizes work plans for construction that encroaches into public streets.

Air Quality Element

The Air Quality Element of the City's General Plan includes the following goals, objectives, and policies aimed to reduce vehicle trips and VMT to minimize the associated GHG emissions.

Goal 2. Less reliance on single-occupant vehicles with fewer commute and non-work trips.

Objective 2.1. *It is the objective of* the *City of Los Angeles to reduce work trips as a step towards attaining trip reduction objectives necessary to achieve regional air quality goals.*

Policy 2.1.1. Utilize compressed work weeks and flextime, telecommuting, carpooling, vanpooling, public transit, and improve walking/bicycling related facilities in order to reduce Vehicle Trips and/or VMT as an employer and encourage the private sector to do the same to reduce work trips and traffic congestion.

Objective 2.2. *It is the objective of the City of Los Angeles to increase vehicle occupancy for non-work trips by creating disincentives for single passenger vehicles, and incentives for high occupancy vehicles.*

Policy 2.2.1. Discourage single-occupant vehicle use through a variety of measures such as market incentive strategies, mode-shift incentives, trip reduction plans, and ridesharing subsidies.

Policy 2.2.2. Encourage multi-occupant vehicle travel and discourage single-occupant vehicle travel by instituting parking management practices.

Policy 2.2.3. Minimize the use of single-occupant vehicles associated with special events or in areas and times of high levels of pedestrian activities.

Goal 4. Minimal impact of existing land use patterns and future land use developments on air quality standards as a primary consideration in land use planning.

Objective 4.2. *It is the objective of the City of Los Angeles to reduce vehicle trips and VMT associated with land use patterns.*

Policy 4.2.3. Ensure that new development is compatible with pedestrians, bicycles, transit, and alternative fuel vehicles.

Policy 4.2.5. Emphasize trip reduction, alternative transit, and congestion management measures for discretionary projects.

Mobility Element - Mobility Plan 2035

Mobility Plan 2035, which was adopted by the City Council on January 20, 2016, is a comprehensive update of the City's Transportation Element and incorporates "complete streets" principles.

Mobility Plan 2035 includes goals that define the City's five main priorities: 1) Safety First; 2) World Class Infrastructure; 3) Access for All Angelenos; 4) Collaboration, Communication and Informed Choices; and 5) Clean Environmental & Healthy Communities. Mobility Plan 2035 serves to meet the goal in SCAG's 2016-2040 RTP/SCS to decrease the VMT per capita by 5 percent every five years, to 20 percent by 2035 and to meet a 9 percent per capita GHG reduction by 2020, and a 16 percent per capita reduction by 2035.

Mobility Plan 2035 includes roadway definitions and designations pursuant to updated policies and current transportation needs in the City, including the following:

- Freeways - High-volume, high-speed roadways with limited access provided by interchanges that carry regional traffic through and do not provide local access to adjacent land uses.
- Arterial Streets - Major streets that serve through traffic and provide access to major commercial activity centers. Arterials are divided into two categories:
    - Boulevards represent the widest streets that typically provide regional access to major destinations and include two categories:
        - Boulevard I provide up to four travel lanes in each direction with a target operating speed of 40 miles per hour (mph).
        - Boulevard II provide up to three travel lanes in each direction with a target operating speed of 35 mph.
    - Avenues pass through both residential and commercial areas and include three categories:
        - Avenue I provide up to two travel lanes in each direction with a target operating speed of 35 mph.
        - Avenue II provide up to two travel lanes in each direction with a target operating speed of 30 mph.
        - Avenue III provide up to two travel lanes in each direction with a target operating speed of 25 mph.
    - Collector Streets - Generally located in residential neighborhoods and provide access to and from arterial streets for local traffic and are not intended for cut-through traffic. Collector Streets provide one travel lane in each direction with a target operating speed of 25 mph.
    - Local Streets - Intended to accommodate lower volumes of vehicle traffic and provide parking on both sides of the street. Local Streets provide one travel lane in each direction with a target operating speed of 15 to 20 mph. Local Streets can be:
        - Continuous local streets that connect to other streets at both ends.
        - Non-Continuous local streets that lead to a dead-end.

In addition, Mobility Plan 2035 identifies corridors proposed to receive improved bicycle, pedestrian, transit, and vehicle infrastructure improvements. Each of the networks are defined as the following:

- The Neighborhood Enhanced Network (NEN) identifies a selection of streets that provide comfortable and safe routes for localized travel of slower-moving modes, such as walking, bicycling, or other slow speed motorized means of travel.
- The Transit Enhanced Network (TEN) identifies a network of arterial streets prioritized to improve existing and future bus service for transit riders.

- The Bicycle Enhanced Network (BEN) identifies a network of streets that will receive treatments that prioritize bicyclists. The bicycle network is described in Policy 2.6 of Mobility Plan 2035 and includes gap closures for the protected bicycle lane system, bicycle paths, and Tier 1 protected Bicycle Lanes, which are bicycle facilities on arterial roadways with physical separation.
- The Bicycle Lane Network (BLN) identifies a network of streets that will receive treatments that prioritize bicyclists, specifically Tier 2 and Tier 3 Bicycle Lanes. Tier 2 and Tier 3 Bicycle Lanes are facilities on roadways with striped separation. Tier 2 Bicycle Lanes are those more likely to be built by 2035.
- The Vehicle Enhanced Network (VEN) identifies streets that prioritize vehicular movement and offer safe, consistent travel speeds and reliable travel times.
- The Pedestrian Enhanced Districts (PEDs) identify where pedestrian improvements on arterial streets could be prioritized to provide better walking connections to and from the major destinations within communities.

The following policies from the Mobility Plan 2035 are applicable to the proposed Project:

Policy 1.2. Implement a balanced transportation system on all streets, tunnels, and bridges using complete streets principles to ensure the safety and mobility of all users.

Policy 1.3. Prioritize the safety of school children on all streets regardless of highway classifications.

Policy 2.1. Design, plan, and operate streets to serve multiple purposes and provide flexibility in design to adapt to future demands.

Policy 2.3. Recognize walking as a component of every trip and ensure high-quality pedestrian access in all site planning and public right-of-way modifications to provide a safe and comfortable walking environment.

Policy 2.4. Provide a slow speed network of locally serving streets.

Policy 2.5. Improve the performance and reliability of existing and future bus service.

Policy 2.6. Provide safe, convenient, and comfortable local and regional bicycling facilities* for people of all types and abilities.

Policy 3.1. Recognize all modes of travel, including pedestrian, bicycle, transit, and vehicular modes - including goods movement – as integral components of the City's transportation system.

Policy 3.2. Accommodate the needs of people with disabilities when modifying or installing infrastructure in the public right-of-way.

Policy 3.5. Support "first-mile, last-mile solutions" such as multi-modal transportation services, organizations, and activities in the areas around transit stations and major bus stops (transit stops) to maximize multi-modal connectivity and access for transit riders.

Policy 3.8. Provide bicyclists with convenient, secure, and well-maintained bicycle parking facilities.

Policy 5.2. Support ways to reduce VMT per capita.

Bicycle Plan

The 2010 Bicycle Plan, which is part of Mobility Plan 2035, guides the development of a Citywide bicycle transportation system and establishes standards for development of these facilities, as well as criteria for prioritization of development of designated routes. With a stated policy to reduce automobile trips and GHG emissions by making five percent of all daily trips and three percent of commute trips bicycle trips by 2020, the 2010 Bicycle Plan establishes a Backbone Bikeway Network and Neighborhood Bikeway Network linking Regional Centers to promote bicycle usage.

Hollywood Community Plan

The Project site is located within the boundaries of the Hollywood Community Plan. The Hollywood Community Plan provides a planning policy framework for the Hollywood and Los Feliz communities, as well as the larger 25-square-mile area, which lies south of the U.S. Highway 101 (Ventura Freeway) and west of the Interstate 5 (I-5) and which includes the Zoo. The Community Plan was initially adopted in 1988 and addresses land use within its boundaries through the year 2010. While an updated Community Plan is currently under development, the 1988 plan addresses City policy regarding transportation.

The 1988 Hollywood Community Plan includes the following transportation and circulation objectives and policies that are applicable to the Project:

Objective 6: To make provision for a circulation system coordinated with land uses and densities and adequate to accommodate traffic; and to encourage the expansion and improvement of public transportation service.

The Community Plan also includes a circulation policy section and a circulation public improvement program. The Hollywood Community Plan requires arterials and local streets to be developed with standards and criteria contained in the Mobility Plan 2035, and supports continued planning of and improvements to the public transportation system of the community, including people-mover systems in high intensity areas as well as the proposed Metro Rail System.

Vision Zero

Vision Zero: Eliminating Traffic Deaths in Los Angeles by 2025, is a traffic safety policy that promotes strategies to eliminate collisions that result in severe injury or death by 2025. In this regard, it promotes a culture of shared responsibility, where both designers and policymakers, not just the users (i.e., motorists, bicyclists, and pedestrian), are held accountable for deaths on streets.

Vision Zero programs typically address safety through coordinated engineering, enforcement, and education efforts. Traditional road design models tend to facilitate faster movement of cars, but the Vision Zero philosophy calls for reordering the priorities to make roads as safe as possible, particularly for more vulnerable street users like cyclists and pedestrians. Strategies to slow car traffic to speeds less likely to cause death and serious injury to pedestrians and bicyclists include wider sidewalks, reduced or narrowed car lanes, added bike lanes, bulb-outs of curb corners and improved signals. Traffic enforcement efforts focus on infractions most likely to cause death and serious injury, such as speeding, running red lights, and not yielding to pedestrians. Some places rely on automated speed and red-light enforcement cameras. Education campaigns aim to raise public awareness of the problem, reframe assumptions about traffic safety, and gain support for changes.

LADOT has collected data on traffic crashes in the City and identified a network of street segments with the highest share of serious and fatal crashes, which it calls the High Injury Network (HIN). The HIN, composed of only 6 percent of streets in the City, account for two-thirds of all serious and fatal crashes. Targeting improvements on these streets is a Vision Zero goal that could significantly reduce fatalities.

Sustainable City Plan – L.A.'s Green New Deal

The Green New Deal Plan (2019) is the first four-year update to the 2015 Sustainable City pLAn. Of the plan's 13 chapters, two are applicable to transportation: Mobility & Public Transit and Zero Emission Vehicles. The plan augments and expands the City's vision for a sustainable future and presents accelerated targets and new aggressive goals to address the climate emergency. The 2019 update includes four key principles, including: (1) a commitment to the Paris Climate Agreement and to act urgently with a scientifically-driven strategy for achieving a zero carbon grid, zero carbon transportation, zero carbon buildings, zero waste, and zero wasted water; (2) a responsibility to deliver environmental justice and equity through an inclusive economy, producing results at the community level, guided by communities themselves; (3) a duty to ensure that every Angeleno has the ability to join the green economy, creating pipelines to good paying, green jobs and a just transition in a changing work environment; and (4) a resolve to demonstrate the art of the possible and lead the way, walking the walk and using the City's resources - our people and our budget - to drive change.

Plan for a Healthy Los Angeles

Plan for a Healthy Los Angeles: A Health and Wellness Element of the General Plan (Plan for a Healthy Los Angeles) provides guidelines to enhance the City's position as a regional leader in health and equity, encourage healthy design and equitable access, and increase awareness of equity and environmental issues. The Plan for a Healthy Los Angeles addresses GHG emission reductions and social connectedness, which are affected by the land use pattern and transportation opportunities.

Griffith Park Circulation and Parking Enhancement Plan (CPEP)

In 2016, the City Department of Recreation and Parks (RAP) published the Griffith Park Circulation and Parking Enhancement Plan (CPEP). The CPEP includes roadway and parking lot improvements within the vicinity of Griffith Observatory to improve multi-modal circulation; implementation of paid parking at Griffith Observatory and along adjacent roadways; expansion of Metro and/or DASH transit services to the Griffith Park Observatory; and introduction of shuttle system to improve public access, paid for through parking revenue from implementation of the paid parking at the Observatory. Paid parking costs $10/hour between noon and 10:00 PM when the park closes. Despite these fees, RAP reports that parking around the Observatory remains in high demand. DASH implemented new shuttle service to the Observatory in 2017, which was combined with the DASH Los Feliz shuttle in 2019.

Mobility Hubs Reader's Guide

Mobility Hubs: A Reader's Guide (Mobility Hub Guide) provides guidance for enhancing transportation connections and multi-modal improvements in proximity to new or existing transit stations. The Mobility Hub Guide focuses on enhancing bicycle connections, providing vehicle sharing services, improving bus infrastructure, providing real-time transit and wayfinding information, and enhancing walkability and pedestrian connections.

Walkability Checklist

The Walkability Checklist – Guidance for Entitlement Review (Walkability Checklist) serves as a guide for enhancing pedestrian movement, access, comfort, and safety to contribute to the overall walkability of the City. Transportation-applicable topics include sidewalks, crosswalks/street crossings, on-street parking, building orientation, and off-street parking and driveways.

LADOT Manual of Policies and Procedures

The Manual of Policies and Procedures is LADOT's document containing design standards and guidelines for driveways, striping, channelization, special signing, and traffic signal timing and operation.

Comprehensive Strategies Report: Improving Access, Safety, and Mobility Around Griffith Park & the Hollywood Sign (CSR)

In 2018, Los Angeles Council District 4 released the CSR to assess strategies to improve access and reduce congestion in Griffith Park, including high visitation to view the Hollywood Sign. Goals of the report included reducing neighborhood congestion, enhancing pedestrian safety, improving access to Griffith Park and trailheads, expanding transit opportunities, improving traffic flow and reducing congestion, improving emergency vehicle access, increasing parking efficiency, and actively managing and providing visitor opportunities. Strategies which potentially relate to or impact the Zoo include development of a Griffith Park Transit Hub and Aerial Transit System (ATS). The ATS is currently undergoing a feasibility analysis. While a feasibility study is currently underway, and no site has been selected, sites under consideration for a Transit Hub and ATS include the north and south Zoo parking lots, Travel Town, and Universal Studios. The ATS as currently proposed would have a single destination to provide enhanced ease of access for viewing of the Hollywood Sign, which could become a major tourist attraction

1978 Griffith Park Master Plan (Non-adopted Local Plan)

Although not officially adopted, the 1978 Griffith Park Master Plan established an important informal policy framework that has helped to guide planning and facilities development actions within Griffith Park over the last few decades. The Plan presents two overarching goals. The first goal is that of creating greater visual coherence and visual quality and establishing park gateways to provide a sense of arrival and orientation to visitors. The second goal is the establishment of a balanced mobility system utilizing mass transit, automobile, pedestrian, and bicycle access to and within the Park, including better connections between the existing Park parking areas. Goal 4 specifies intention to improve the established civic function of Griffith Park. Goal 5 specifies intention to improve the parkwide transportation systems.

2013 Griffith Park Vision Plan

In 2013, RAP released the draft "Vision Plan for Griffith Park: An Urban Wilderness Identity." The Plan was originally conceived as a "Master Plan," then changed to a "Vision Plan" and finally adopted as "A Vision for Griffith Park" by the Los Angeles Recreation and Park Commission on January 8, 2014. The plan states that while it is not a Master Plan for Griffith Park, the Griffith Park Master Plan Working Group, the City, and RAP intended the Plan to guide decisions made for Griffith Park until a full Master Plan is developed and adopted.

The Griffith Park Vision Plan states that Griffith Park should retain an urban wilderness identity. The Griffith Park Vision Plan also acknowledges the unique developed portions of the park, including the Zoo and the Autry Museum of the West. The 2013 Griffith Park Vision Plan applies only to those areas of Griffith Park owned and managed by RAP and does not apply to the Zoo property.

The Griffith Park Vision Plan includes the following goals and objectives that are specific to transportation within the park:

- Work with the City and County to increase public transportation to and within the Park.
- Improve Park mobility, including making the Park universally accessible while protecting the natural environment, and developing a comprehensive transportation system that provides circulation within the Park.
- Establish additional, high-frequency, Metro Bus and DASH Bus routes to bring visitors to the Park.
- Extend existing DASH Bus lines serving the greater Los Feliz area to bring visitors to the Vermont Canyon and Western Canyon areas of the Park.
- Establish new DASH connections to link the Park to the Metro Red Line subway stops at Vermont/Sunset and Hollywood Western.
- Enable visitors to access the Park by a subway stop located near the Zoo and the Autry, in the long term. Such a stop would permit users to access the Park and simultaneously reduce traffic on surrounding streets as well as GHG emissions.
- Develop a park shuttle system.
- Alleviate parking shortages through a park-and-ride shuttle system utilizing contingency parking areas.
- Locate parking structures immediately outside the boundaries of the Park with a fully developed park and ride shuttle system available to transport Park users into and around the Park.
- Prioritize accessibility to the Park by means other than by private automobile, consistent with the City's planning for higher density and decreased use of the individual automobile.
- Eliminate speeding within the Park, which presents a safety hazard for Park visitors especially within the Zoo Drive/Crystal Springs Drive/Griffith Park Drive corridor.

City of Los Angeles Policies for Bicycle Parking Requirements

- **LAMC Section 12.21 A.16.(a)(4).** In all buildings or parking lots used by the City of Los Angeles for government purposes, including government office buildings, both short-term and long-term bicycle parking shall be provided at a rate of 10 percent of the required parking available on the site. However, short- and long-term bicycle parking shall be no less than five spaces each for the entire site.
- **LAMC Section 12.21 A.16.(a)(5).** In Neighborhood Recreation Sites, Community Recreation Sites, Regional Parks, and School Playgrounds, as defined in Section 1 of the Service Systems Element - Public Recreation Plan of the City's General Plan, short-term bicycle parking shall be provided at a rate of 10 percent of the required automobile parking with a minimum of five short-term bicycle parking spaces. In Neighborhood Recreation Sites, Community Recreation Sites, Regional Parks, and

School Playgrounds where no automobile parking is provided, at least five short-term bicycle parking spaces will be provided, except that in park space of less than two acres in which there are no recreational facilities requiring building permits, no short-term bicycle parking shall be required. Long-term bicycle parking shall be provided as required in the California Green Building Standards Code Section 5.106.4 as that section may be amended from time to time.

Existing Conditions

Statewide VMT and Mode Split

Statewide VMT is highly variable and is affected by population centers, density of development, and the mix of land uses within an area. Caltrans reports a total of 344.3 billion statewide annual VMT and 943.3 million daily VMT in 2017 (the most recent data available) (Caltrans 2019; see Table 3.15-1). According to the U.S. Census Bureau, the 2017 population for the state California was 39.36 million (U.S. Census Bureau 2017). Therefore, the 2017 statewide annual VMT per capita was approximately 8,747 miles (approximately 23.97 daily VMT per capita).

Table 3.15-1. Statewide Annual and Daily VMT in 2017

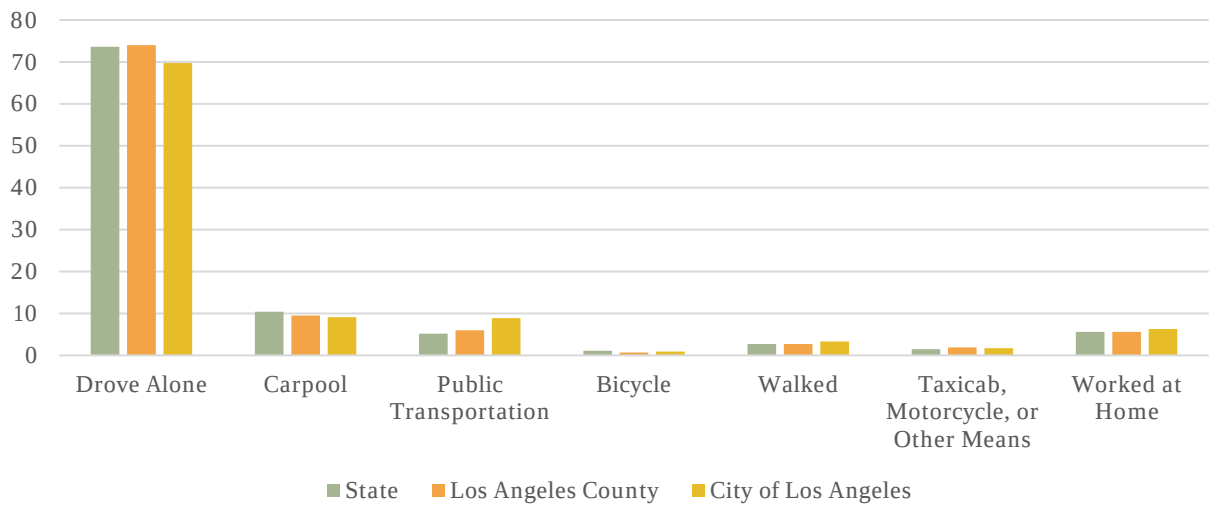
Public Roads	Annual VMT (in billions)	Daily VMT (in millions)
State Highways	187.1	512.6
Local Roads[1]	155.8	426.85
Other Agencies[2]	1.4	3.8
Total of All Public Roads[3]	**344.3**	**943.3**

Notes: Totals may not equal sum of components due to independent rounding.
[1] Includes city streets and county roads only
[2] Includes federal, other state and other local jurisdictions
[3] All public roads include those owned by cities, counties, and various state and federal agencies
Source: Caltrans 2019.

A majority (approximately 73.6 percent) of the employed population in California drove to work alone in 2017. A smaller portion of the population carpooled (10.4 percent) and took public transit (5.2 percent) to work. Approximately 2.7 percent of the state population walked to work, 1.1 percent biked, and 1.5 percent took a taxi, rode a motorcycle, or chose other means of transportation. Approximately 5.6 percent of the state population worked at home. The average vehicle occupancy (AVO) of workers who drove (alone or carpool) was 1.07 persons per vehicle (see Chart 3.15-1; U. S. Census Bureau 2017).[1]

[1] The 2020 COVID-19 pandemic has substantially affected travel behavior, with millions of Californians unemployed or working from home; it is unclear what the longer-term implications of this Pandemic on travel behavior will be.

Chart 3.15-1. Means of Transportation to Work for the State, Los Angeles County, and City of Los Angeles



Source: U.S. Census Bureau 2017
Note: Charted data does not reflect potent effects of COVID-19 pandemic and its effects on commuting.

Regional VMT and Mode Split

According to the SCAG Transportation Safety Regional Existing Conditions report, the SCAG region includes a population of 19 million and a total of 8,700 annual average of VMT per capita in 2017 (SCAG 2017). The SCAG's regional VMT equates to a daily VMT per capita of approximately 23.8 within the greater Los Angeles region.

The 2017 population for Los Angeles County was 10,163,507. The countywide annual VMT per capita in 2017 was 8,000 annual VMT per capita (approximately 21.9 daily VMT per capita) (SCAG 2017; County of Los Angeles 2019).

In Los Angeles County, 74 percent of the employed population drove to work alone in 2017. Less people carpooled to work (9.5 percent) and more people took public transportation (6 percent) than the state averages described above. Similar to the State of California, 2.7 percent of the County's population walked to work, 0.7 percent biked, and 1.9 percent of the population got to work by taxi, motorcycle, or other means. The remaining 5.6 percent of the County's population worked at home. The AVO of workers who drove (alone or carpool) was 1.07 persons per vehicle, identical to the state AVO (refer to Chart 3.15-1; U. S. Census Bureau 2017).

Citywide VMT and Mode Split

Within the City, the annual VMT per capita is 3,395 (9.3 daily VMT per capita). The annual VMT per employee is 4,709 (12.9 daily VMT per employee). Citywide average VMT is substantially lower than statewide or countywide averages. The average VMT per capita and per employee in the jurisdictions of the City's seven Area Planning Commissions (APCs) are

enumerated in Table 3.15-2 below. The Zoo lies within the Central APC, which has a relatively low daily VMT per capita compared to the other APCs in the City; only the South Los Angeles APC is similar (LADOT 2019).

Table 3.15-2. Average VMT per Capita by Area Planning Commission

Area Planning Commission	Daily VMT per Capita	Daily VMT per Employee
Central	7.1	8.9
East Los Angeles	8.5	14.9
Harbor	10.8	14.5
North Valley	10.8	17.6
South Los Angeles	7.1	13.6
South Valley	11.1	13.6
West Los Angeles	8.7	13.1

Notes: These values are scaled from the daily VMT data presented in the TAG, which represent a 15 percent reduction of the APC average daily VMT.
Source: LADOT 2019.

Within the City, a smaller portion of the population drove alone to work (69.7 percent) than the state and county averages in 2017. More of the population walked (3.3 percent) and took public transportation (8.9 percent). Similar to the state and county averages, 9.1 percent of the population carpooled, and 0.9 percent of the population biked to work. Approximately 1.7 percent of the population traveled to work via taxi, motorcycle, or other means. The remaining 6.3 percent worked at home. Similar to the state and county averages, the AVO for workers who drove (alone or carpooled) to work in the City was 1.07 persons per vehicle (refer to Chart 3.15-1; U. S. Census Bureau 2017).

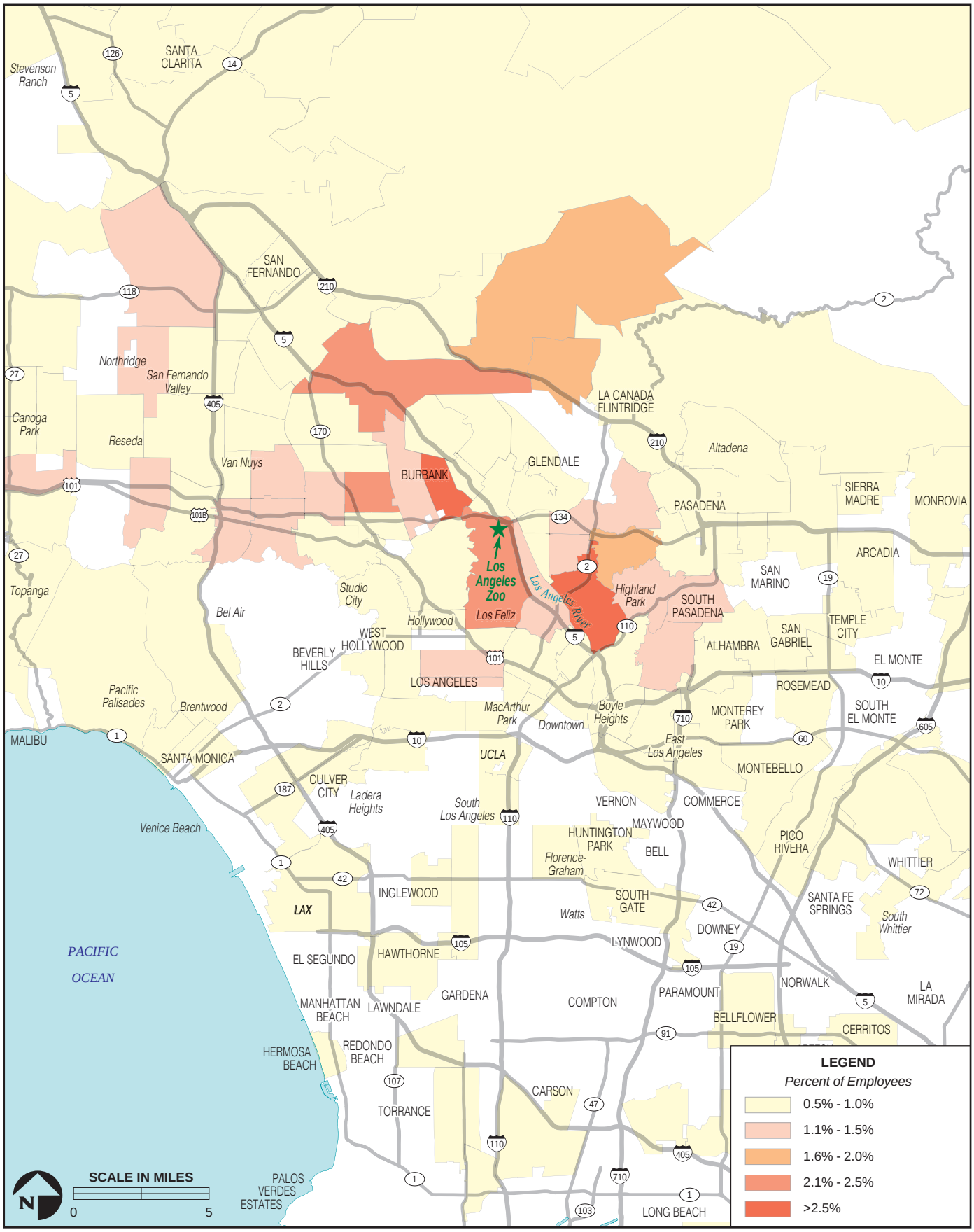
Zoo VMT and Mode Split

To assess existing and projected transportation conditions associated with the Project, a *Los Angeles Zoo Vision Plan Transportation Assessment* (Transportation Assessment) was prepared by Fehr & Peers (Fehr & Peers 2020; see Appendix N). The Transportation Assessment contains detailed analyses of local traffic circulation issues, with attention to VMT associated with the proposed Project consistent with the intent of SB 743 and the associated updates to the CEQA Guidelines. The Transportation Assessment determined daily VMT for Zoo visitors and employees by multiplying daily vehicle trips by average trip length. Over 650 surveys were collected from Zoo patrons and over 530 from Zoo employees to collect new information about travel trend, including average trip length estimates for visitors and employees for both weekday and weekend trips. Visitor trip length is derived from surveys that were administered at the Zoo entrance on Wednesday, May 15, 2019 and Sunday, May 19, 2019. Participants were asked their home origin zip code (i.e., hotel zip code for non-residents). Trip length is based on the distance from the Zoo to the center of the origin zip code area. Based on this analysis, visitor and employee home origins are broadly distributed across the region (Figure 3.15-1 and Figure 3.15-2).

wood.

Distribution of Zoo Visitor Origins – Sunday

FIGURE 3.15-1



wood.

Distribution of Zoo Employee Origins

FIGURE 3.15-2

Median trip lengths for visitors who drove in private vehicles are approximately 25 miles on both weekdays and weekends. For reference, the following four cities are approximately 25 miles from the Zoo in one of the cardinal directions: Santa Clarita (north), Covina (east), Carson (south), and Santa Monica (west). Mean visitor trip lengths are higher than the median overall, indicating that average trip lengths are skewed by those traveling longer distances and illustrative of the Zoo's ability to attract patrons from across the region. Mean weekend visitor trip lengths are almost 25 percent higher than mean weekday trip lengths, suggesting that people are willing to travel longer distances for weekend entertainment than they are during the week, when children are in school and many family members may be working. Weekday visitors may also comprise more local residents with Zoo membership who use the Zoo for regular recreation. During the week, 21 percent of visitors come from communities within 5 miles of the Zoo, including from neighborhoods in Los Feliz, Hollywood and North Hollywood, whereas on weekends, just 11 percent of visitors comes from within 5 miles.

Employee trip length was collected through an employee travel survey administered during the same time period as the visitor survey. Employees were asked their home zip code and travel mode. Employee travel is less variable by day of the week; therefore, a uniform trip length was developed for employees. Zoo employee work trips are also shorter, on average, than visitor trips, and less skewed by long distance trips. The Zoo employee median trip length for those who reported driving alone is 19 miles and the mean is 24 miles. For reference, the following four cities are approximately 19 miles from the Zoo in one of the cardinal directions: Newhall (north), Duarte (east), Gardena (south), and Santa Monica (west). For employees who car- or vanpool to work, the median trip length is 10 miles and the mean is 16 miles. Approximately 27 percent of employees live within 5 miles of the Zoo, particularly in communities in Burbank, Los Feliz, and Highland Park. Many of these employees are generally within the existing or projected bicycling distance (bike shed) of the Zoo.

The survey data was also used to determine a unique AVO rate for visitor and employee trips. Visitor AVO is substantially higher than employee AVO, with an average of 2.85 persons per vehicle on weekdays and up to 3.7 persons per vehicle on weekends, reflective of visitation by families or groups of Zoo patrons. The AVO for employees is 1.23 persons per vehicle, indicating that most drive alone, though this AVO is higher than the City average of 1.09. For the approximately 5 percent of Zoo survey participants arriving by transportation network companies (TNCs) such as Uber or Lyft, or taxis, AVO was lower than for visitors who arrived by private vehicle but higher than for employees. TNC/taxi AVO was calculated excluding the

driver, so it may only be lower than for private vehicles because they can accommodate one fewer Zoo patrons.

Comparison of Zoo and City Commuting Data

- ✓ 85 percent of Zoo employees commute alone and only 1 percent use transit
- ✓ 70 percent of employees in the City commute alone and 9 percent use transit.

This data indicates that the vast majority of Zoo patrons arrive by private automobile (greater than 94 percent), with minimal use of taxis and rideshare services and negligible use of public transit. Similarly, 85 percent of employees drive alone, a substantially higher percentage than citywide averages, 7 percent carpool, 5 percent are dropped off, and 1 percent each walk or bike, take TNCs or taxis, or ride transit to work. Compared to U.S. Census Bureau American Community Survey data on work trip mode for the City, Zoo employees drive alone more than average, walk and bike less, and ride transit less (see Table 3.15-3).

Table 3.15-3. Visitor and Employee Mode Split and Regional/ Statewide Averages

Respondent Type	Mode				
	Private Vehicle (%)	Walk/Bike (%)	Dropped Off/Taxi (%)	Transit (%)	School Bus (%)
Zoo Visitors	94	0	5	0	1
	Drove Alone (%)	Carpool (%)	Walk/Bike (%)	Dropped Off/TNC/Taxi/Other (%)	Transit (%)
Zoo Employees	85	7	1	6	1
City of Los Angeles	69.7	9.1	4.4	1.7	8.9
Los Angeles County	74	9.5	3.4	1.9	5.7
California	73.8	10	3.5	1.7	4.9

Source: Fehr & Peers 2020; U. S. Census Bureau 2017. See Appendix N.

The Transportation Assessment determined a site-specific trip generation rate for the Zoo utilizing the data from the visitor intercept survey and the employee travel survey, in combination with attendance data provided by the Zoo. Daily trip generation rates were based on visitor attendance data provided by the Zoo for the days on which the highest weekday and weekend driveway counts occurred. As visitation reflects person trips, rather than vehicle trips, the visitor attendance day was adjusted to account for visitor AVO (i.e., 2.85 to 3.70 persons per vehicle). Daily trip generation rates are equal to daily Zoo attendance divided by AVO and multiplied by two to account for both inbound and outbound trips. Zoo employee trip generation estimates were developed based on detailed employee staffing data provided by the Zoo identifying the number of employees working each day and when each employee's shift started and ended. Employee ins and outs were adjusted to account for AVO (i.e., 1.23 persons per vehicle).

Daily VMT for visitors and employees was determined by multiplying average trip length with daily vehicle trips to and from the Zoo. The Transportation Assessment included a detailed data collection effort based on a review of three years of Zoo daily attendance data (i.e., 2016 to 2018) to establish an understanding of baseline travel behavior to the Zoo, including busy attendance days of the week, holidays, and periods of the year. These records indicate that weekends are generally the busiest time of the week, with similar attendance on both Saturdays and Sundays. Average weekend attendance is almost double that of the busiest weekday (Friday). During the week, the bookend days (Mondays and Fridays) are approximately 30 percent busier than the midweek days (Tuesday through Thursday). Therefore, daily VMT for visitors and employees was determined for days of the week with similar attendance (see Table 3.15-4). Zoo employee VMT is approximately ranges from roughly 10% to almost 28% of average daily Zoo VMT.

Table 3.15-4. Existing Daily VMT per Total Visitors and Employees

Daily VMT	Visitors		Employees		Total	
	Total	Per Visitor	Total	Per Employee	Total	Per Capita
Monday & Friday	42,061	11.92	12,651	19.23	54,712	13.07
Tuesday, Wednesday, & Thursday	32,583	11.92	12,555	19.23	45,137	13.33
Saturday & Sunday	80,963	11.48	9,978	19.23	90,941	12.00

Source: Fehr & Peers 2020. See Appendix N.

Depending on the day of the week, Zoo VMT fluctuates between 54,712 VMT and 90,941 VMT. These totals reflect dramatic changes in daily visitor attendance on weekend days and, to a lesser degree, changes in employment levels on site on the weekend. Considering daily VMT per capita, the Zoo averages between 12 and 13.3 daily VMT per capita. This daily VMT per capita range is substantially lower than the state (23.97 daily VMT per capita) and the County (21.9 daily VMT per capita), but exceeds the City (9.3 daily VMT per capita) and the Central APC (7.1 daily VMT per capita), which reflects travel trends in the immediate vicinity of the Zoo and Griffith Park.

Roadway Network

Regional Highway and Street System

Regional vehicle access, including emergency access, to the Zoo is provided via Interstate (I) 5, located approximately 0.2 miles east of the Zoo entrance, as well as State Route (SR) 134, which is located approximately 0.35 miles north of the northern Zoo (refer to Figure 2-1). I-5 runs along the eastern edge of Griffith Park and provides access southeast to Anaheim and northeast to Santa Clara. SR-134 is located immediately north of Griffith Park and the Project

site and provides access to U.S. Highway 101 (U.S. 101) in Sherman Village and Pasadena to the east. Visitors arrive at the Zoo from the south and east via offramps from I-5 and SR-134, from the north via I-5, and from the west via SR-134. Additional descriptions of these highways and roadways are provided below.

The I-5 freeway provides regional access to the Downtown, creating a physical barrier between the City of Los Angeles and Griffith Park to the west and the City of Glendale to the east. Source: Curbed LA.

- **I-5 (Golden State Freeway)** is a major north-south route that spans the U.S. borders with Mexico and Canada, traversing through Seattle, Washington and Portland, Oregon and linking major California cities, including San Diego, Santa Ana, Los Angeles, Stockton, Sacramento, and Redding. In the Project vicinity, I-5 provides five lanes in each direction. Freeway access is provided via ramps at located at Western Avenue in the City of Glendale, and at Zoo Drive and Crystal Springs Drive in the City of Los Angeles, both of which provide direct access to Griffith Park. Vehicle access to the Zoo is provided from the I-5 by a northbound off-ramp and southbound on-ramp at Zoo Drive. Additional vehicle access from I-5 is provided via Crystal Springs Drive, which traverses Wilson & Harding Municipal Public Golf Course and provides a northbound off-ramp and a southbound on-ramp at I-5 south of the golf courses.
- **SR-134 (Ventura Freeway)** runs in an east-west direction north of the Project site and extends from the City of Pasadena in the east to the Toluca Lake area of Los Angeles in the west. In the Project vicinity, SR-134 provides five lanes in each direction. Freeway access is provided via ramps located at Riverside Drive and Buena Vista Street in the City of Burbank, and Riverside Drive and Zoo Drive in the City of Los Angeles. Vehicle access from the SR-134 is provided via an eastbound off-ramp and a westbound on-ramp at Riverside Drive, which supports a stop-controlled intersection at Zoo Drive.

Public roadways in the Project vicinity include the following:

- **Los Feliz Boulevard** (City of Los Angeles) is designated as a Modified Avenue I west of Riverside Drive and as an Avenue I east of Riverside Drive. Los Feliz Boulevard runs east-west south of Griffith Park and provides park access. In the Project vicinity, it provides two travel lanes in each direction. Parking is permitted on both sides of the street, except during the peak period when the parking lanes are utilized as travel

lanes. Left-turn channelization is provided at most intersections. Within the Project vicinity, Los Feliz Boulevard is identified in the Mobility Plan 2035 as a Comprehensive Transit Enhanced Street between Hillhurst Avenue and San Fernando Road, and is planned to provide a Tier 3 Bicycle Lane as part of the City of Los Angeles's Bicycle Network.

- **Riverside Drive south of Griffith Park** (City of Los Angeles) is designated as an Avenue I. It runs north-south south of Griffith Park and provides park access. In the Project vicinity, it provides two travel lanes in each direction. Parking is permitted on both sides of the street. Left-turn channelization is provided at most intersections. Within the Project vicinity, Riverside Drive is identified in the Mobility Plan 2035 as providing a Tier 2 Bicycle Lane as part of the City of Los Angeles's Bicycle Network.
- **Riverside Drive north of Griffith Park** (City of Los Angeles and City of Burbank) is designated a local street that extends into both the City of Los Angeles and the City of Burbank municipal boundaries. It runs north-south north of Griffith Park and provides park access. In the Project vicinity, it provides two travel lanes in each direction. On-street parking is not permitted. A Class II (i.e., striped) bicycle lane is provided on both sides of the street.
- **Zoo Drive** (City of Los Angeles) is designated a local street and runs directly north of the Project site. Zoo Drive provides one travel lane in each direction. Parking is not permitted on either side of the street. Zoo Drive is identified in the Mobility Plan 2035 as providing a Tier 2 Bicycle Lane as part of the City of Los Angeles's Bicycle Network and is closely paralleled by the Main Trail to the north.
- **Alameda Avenue** (City of Burbank) is a major arterial that provides two travel lanes in each direction. Left-turn channelization is provided at most intersections. On-street parking is generally allowed on both sides of the street in the Project vicinity. Alameda Avenue provides regional access to SR-134 and I-5.
- **Buena Vista Street** (City of Burbank) is a secondary arterial running in the north-south direction. It provides two travel lanes in each direction. On-street parking is generally allowed on both sides of the street north of Alameda Avenue. Left-turn channelization is provided at most intersections.
- **Main Street** (City of Burbank) is a neighborhood collector street that provides one travel lane in each direction. Left-turn channelization is provided at most intersections. A Class II bicycle lane is provided on both sides of the street.
- **Riverside Drive** (City of Burbank) is a secondary arterial west of Buena Vista Street and a neighborhood collector street east of Buena Vista Street that provides two travel lanes in each direction. On-street parking is generally allowed on both sides of the street in the Project vicinity. Left-turn channelization is provided at most intersections. Riverside Drives provides regional access to SR-134. A Class II bicycle lane is provided on both sides of the street.

- **Victory Boulevard** (City of Burbank) is a major arterial running in the north-south direction. It provides two travel lanes in each direction. On-street parking is generally allowed on both sides of the street. Left-turn channelization is provided at most intersections.
- **San Fernando Road** (City of Glendale) is a major arterial running north-south on the east side of the Los Angeles River. It provides two travel lanes in each direction and a shared center turn lane. On-street parking is permitted along both sides of the street.
- **Western Avenue** (City of Glendale) is an arterial street which runs east-west and provides regional access to I-5. East of Lake Avenue, two travel lanes in each direction are provided, as is left-turn channelization at most intersections. Parking is generally allowed on both sides of the street.

Local Access within Griffith Park

Local access to the Zoo entrance is provided by Zoo Drive from the north and west and via Crystal Springs Drive/Western Heritage Way from the south. Access into the Zoo for Zoo employees and emergency vehicles is also available at the employee and service entrance located south of the Zoo Entry from Crystal Springs Drive and at the Gottlieb Animal Health and Conservation building from Griffith Park Drive. Zoo Drive is a public roadway managed by LADOT. Crystal Springs Drive is a private roadway managed by City Recreation and Parks Department (RAP). Additionally, Griffith Park Drive provides vehicular access to the west end of the Zoo for employees and deliveries only.

Zoo Drive provides a 2-lane gateway to Griffith Park from the Zoo and is a popular road for cyclists. Zoo Drive also frequently experiences congestion at its intersection with Western Heritage Way fronting the Zoo.

- **Zoo Drive** (City of Los Angeles) runs primarily east-west along the northern perimeter of Griffith Park and provides direct access to the Zoo from the north and west. Parking is not permitted on Zoo Drive.
- **Crystal Springs Drive** (City of Los Angeles) runs north-south within Griffith Park and provides direct access to the Zoo. Crystal Springs Drive provides one travel lane and a Class II bicycle lane in each direction. Parking is not permitted on Crystal Springs Drive. Crystal Springs Drive is identified in the Mobility Plan 2035 as providing a Tier 2 Bicycle Lane as part of the City of Los Angeles's Bicycle Network.
- **Western Heritage Way** (City of Los Angeles) runs north-south within Griffith Park and provides direct access to the Zoo. Western Heritage Way provides one travel lane and a Class II bicycle lane in each direction. Parking is prohibited on both sides of the

street. Western Heritage Way is identified in the Mobility Plan 2035 as providing a Tier 2 Bicycle Lane as part of the City's Bicycle Network.

- **Griffith Park Drive** (City of Los Angeles) runs north-south within Griffith Park and provides direct access to the back-of-the-house facilities at the Zoo, including employee parking locations. Griffith Park Drive provides one travel lane in each direction. Parking is not permitted on Griffith Park Drive.

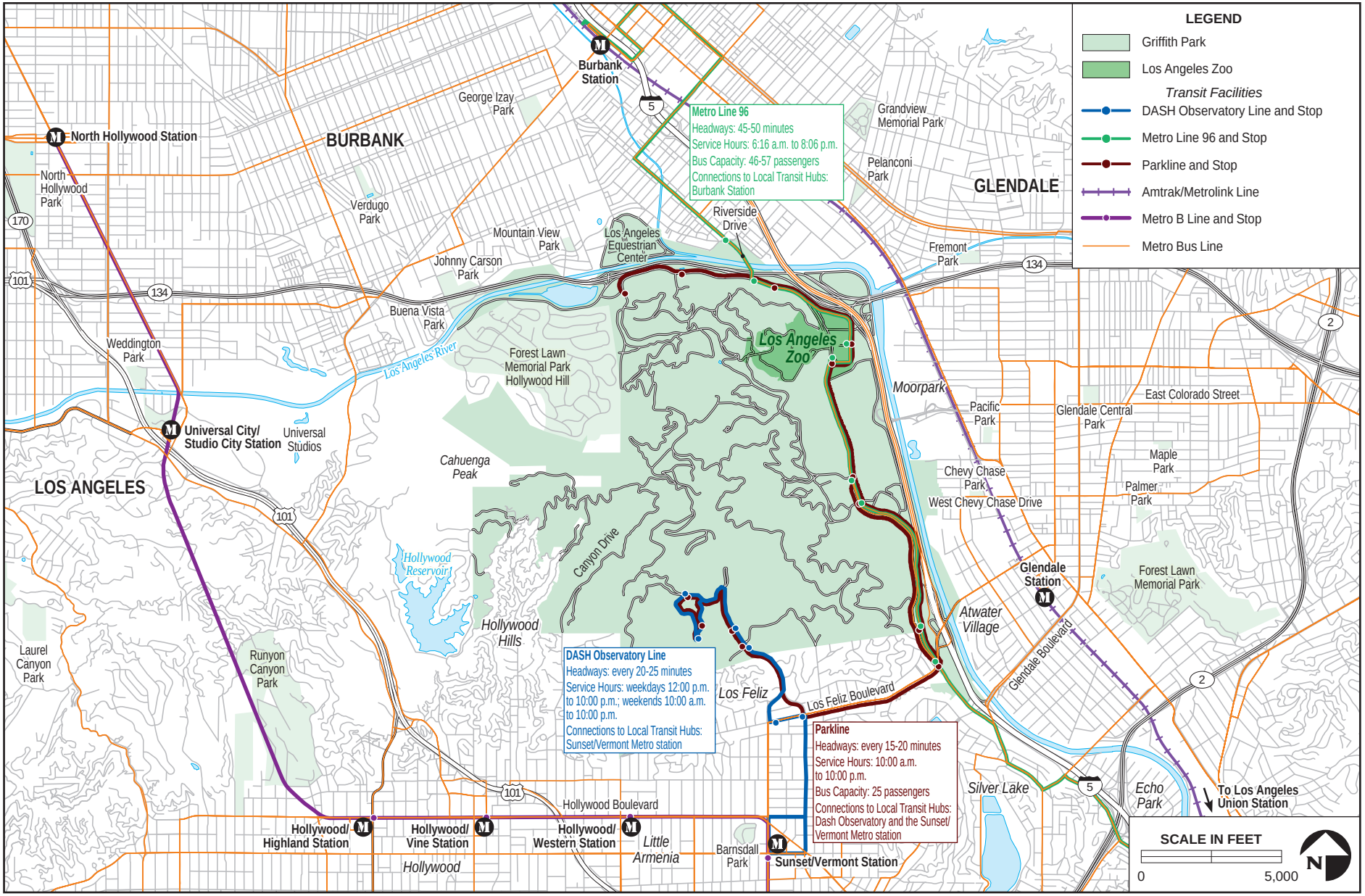
There are six existing driveways that provide access to the Zoo, including the following (Figure 2-3):

- Driveway 1 - On the south side of the Zoo parking lot where Crystal Springs Drive becomes Western Heritage Way, and currently serves Zoo employees and Metro Line 96.
- Driveway 2 - On the south side of the Zoo parking lot. The driveway is stop controlled, but traffic on Western Heritage Way is not required to stop.
- Driveway 3 - On the southeast corner of the Zoo parking lot. The driveway is stop-controlled, but traffic on Western Heritage Way is not required to stop.
- Driveway 4 - At the intersection of Zoo Drive and Western Heritage Way. This driveway is an all-way stop-controlled intersection and the primary access driveway for visitors entering and exiting the Zoo's main parking lot.
- Driveway 5 - On the north side of the Zoo parking lot. The driveway is stop-controlled, but traffic on Zoo Drive is not required to stop.
- Driveway 6 - On Zoo Drive west of the northern portion of the existing Zoo parking lot. This driveway exclusively serves Zoo employees.

Internal Zoo Circulation

The Zoo's internal circulation supports wide paths (up to 50 feet in width) to support pedestrians, the ground tram, and service vehicles.

The Zoo's internal circulation system supports walks and pathways accommodating both visitors and service personnel, and generally range between approximately 25- and 50-feet in width. The circulation system was established by the original 1966 site layout with focused modifications made between 2002 to 2016. Several pathways combine visitor and service traffic to commingle pedestrians and service vehicles (e.g., carts, trams). With a single entrance, the circulation system traverses the Zoo property in a meandering pattern, where pathways commonly are "one way in, one way out." Existing pedestrian paths are fragmented and include many smaller loops, barriers, and dead ends (refer to Figure 2-3).



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Existing Transit Services in the Project Vicinity

FIGURE 3.15-3

The Zoo's 40-foot-wide entrance supports a single entry and exit point for Zoo guests. A primary pathway runs from the Zoo entrance west towards the Zoo's exhibit areas, with several shorter loops splitting off from this pathway to individual exhibits. This pathway also connects to a main circulation system approximately 675 feet west of the Zoo entrance. In compliance with ADA, some pedestrian paths meet the requirements for wheelchair accessibility, primarily along the outer pathways and the central pathway connecting the entrance with the exhibits. ADA guests and families with strollers are often limited in available routes due to steep grades throughout Project area. Several fragmented, meandering routes through the Zoo's interior exhibits are not accessible for ADA visitors and may be challenging for families with strollers.

Several existing pedestrian roads within the Zoo are shared with the tram and service vehicles. Service circulation is provided via two portals, located to the southeast and southwest of the site (refer to Figure 2-3). Similar to Zoo pedestrian paths, service roads leading to exhibit areas and animal care facilities are short, fragmented routes.

Public Transit Services

Regional Transit and Shuttle Services

Several transit providers serve the Greater Los Angeles area, including Amtrak, Metro, and LADOT. Amtrak provides regional passenger train and bus services. Metro also provides both rail and bus service regionally. LADOT provides the DASH bus service within the City, including to Griffith Observatory, located 2.3 miles southwest across Griffith Park from the Zoo.

Metro provides nearly 150 bus lines and 8 light rail lines that serve to the Greater Los Angeles region, including Line 96, the only Metro transit service available within Griffith Park, running on the east side of the Park along Crystal Springs Drive and Zoo Drive with a stop at the Zoo. Source: Metro.

Amtrak Intercity Rail - Amtrak is the national rail operator, providing long-distance, intercity rail service throughout the U.S, including Union Station in the City, the Bob Hope Airport in Burbank, and the Glendale Station.

Metrolink - Metrolink operates Southern California's regional commuter rail system, which serves commuters in six counties, including Los Angeles, Orange, San Bernardino, Riverside, and Ventura Counties; as well as northern San Diego County. In the Project vicinity, Metrolink serves Union Station in the City, the Downtown Burbank, and Glendale Station.

Metro Rail - Metro operates the Metro Rail system, the high-capacity rail rapid transit service for Los Angeles County. Metro Rail is operated in dedicated rights-of-way (in contrast to Metrolink and Amtrak, which operate on tracks shared with freight operators), serves dedicated transit stations, and is powered by electricity. Service is provided using two technologies, subway, and light rail:

- Subway Metro Rail's heavy rail subway system includes the B Line (Red) and D Line (Purple). The lines operate exclusively below grade and are powered by an electrified third rail. The lines use 75-foot cars, and typically operate 4- to 6-car concurrently.
- Metro Rail Light Rail Transit (LRT) service uses shorter trains than heavy rail—typically operated with two- or three-car consists. LRT vehicles are powered by overhead catenary wires. Unlike heavy rail, Metro Rail LRT service runs on rights-of-way ranging from complete grade separation (above or below grade) to at-grade.

Metro Bus Service. Metro operates 165 bus routes with 13,978 stops within its 1,479 square-mile service area. Services range from expedited bus rapid transit that operates in an exclusive right of way on either arterials or freeways to local bus services serving neighborhoods and destinations throughout the City.

Public Transit and Shuttle Services in the Project Vicinity

The Zoo is served by one Metro local bus route (Route 96), which has a stop at the Zoo. Additionally, RAP launched free shuttle service throughout Griffith Park on the Parkline Shuttle in December 2019 with a stop at the Zoo. Given the limited public transit service that serves the Zoo, headways, or frequency of service, can be long. The State of California defines high-quality transit as service providing headways no longer than 15 minutes during peak commute periods; regional transit service to the Zoo does not currently meet this definition, with headways between 45 minutes and an hour on Line 96, the only transit service connecting employees and visitors with the regional transit system. The transit lines the Project vicinity are described below:

- **Metro Line 96** – Line 96 provides local service between Downtown Los Angeles, Glendale, and Burbank. In Downtown Los Angeles, Line 96 connects to Union Station and 7th Street Metro Center; in Burbank, it connects to the Metrolink Burbank Downtown Station. It is the only Metro transit service available within Griffith Park, running on the east side of the Park along Crystal Springs Drive and Zoo Drive. It stops at four locations within the Park, at the Pony Rides, adjacent to Shane's Inspiration/Merry-Go-Round, between the Zoo and Autry Museum, and at the intersection of Zoo Drive & Riverside Drive at the northern entrance to the park. Line 96 runs immediately east of the Project Site along Crystal Springs Drive, and north of the Project site along Zoo Drive and then Victory Boulevard.

  Headways, which are the average interval time between two transit vehicles moving in the same direction on the same route, average approximately 45 minutes during the

weekday evening peak period and 60 minutes during the weekend midday peak period. Ridership on Line 96 is very low. Average weekday ridership in 2019 was just over 1,300 riders; average weekend ridership was less than 650. Boardings and alightings at the Zoo stop average about 50 riders per day in both directions on both weekdays and weekends. Metro's NextGen bus reorganization plan, as presented to the Metro Board on January 16, 2020, proposes to consolidate Lines 96, 180, 181, and 780 into a single route serving Mid-City, Los Feliz, Eagle Rock, Pasadena, and San Marino. If implemented, the new route, Line 501, will begin service in 2021 or 2022 and will run every 7.5 minutes during the weekday peak period and every 15 minutes on the weekend (Metro 2020).

- **RAP Parkline Shuttle** –On December 7, 2019, the RAP began running the Parkline Shuttle service within Griffith Park. Branded shuttle buses, each seating 24 passengers with extra room for strollers and wheelchairs and a bike rack on the front for bicyclists, provide free circulator service to 13 major destinations within Griffith Park along a 14.2-mile round-trip route, connecting all existing Metro and DASH bus stops in and around the park. The current route provides connections to local bus services only: to Metro Line 96 at stops located at Los Feliz Boulevard & Riverside Drive, Griffith Park Pony Rides, Shane's Inspiration/Merry-Go-Round, Zoo/Autry, and Zoo Drive & Riverside Drive, to Metro Lines 180, 181, and 780 at Los Feliz Boulevard & Riverside Drive, and to the LADOT DASH Observatory shuttle at the Griffith Observatory. A Parkline Shuttle service expansion to the Metro B Line Universal City Station is currently being explored.

  Headways are 15 to 20 minutes. Current hours of operation are Saturdays and Sundays from noon (two hours after the Zoo opens to the public each day) to 10:00 PM. Service hours may be extended in the future. Based on informal surveys by RAP, the Parkline Shuttle carries approximately 480 to 900 riders per day that the shuttle operates, with peak ridership occurring on Sundays.

Shuttle Services within the Zoo

The Zoo operates an internal ground tram service for visitors for a fee. The tram, called the Safari Shuttle, has five stops along the Zoo perimeter. There is no tram service to the interior portions of the Zoo. While the shuttle is wheelchair accessible, the nearest shuttle station to the Zoo's entrance is located approximately 1,350 feet from the main entry. The remaining shuttle stops are located south of the Angela Collier World of Birds Theater, at the Neil Papiano Play Park, the lemur exhibit at the northwest end of the Zoo, and the Australia House.

Pedestrian and Bicycle Facilities

The immediate Project vicinity is well served by both bicycle and hiking facilities, which are heavily used by Griffith Park visitors. However, the Zoo is relatively isolated from surrounding communities in the cities of Glendale and Burbank by the Los Angeles River, I-

5, and SR-134. In addition, the widespread distribution of Zoo patrons and employees across the greater Los Angeles region and distance to surrounding communities limits the viability of biking or walking by Zoo patrons and staff.

Studies have identified the distance people are willing to walk as approximately 0.5 miles, and the distance people are willing to bicycle as approximately 3 miles (Schlossberg and Weinsteign Agrawal 2007). The Zoo's relatively isolated location is well outside the walkshed of any residential communities in the vicinity, although it is within the bikeshed of adjacent communities such as North Atwater and portions of Glendale and Burbank. Several pedestrian and bicycle connections to Griffith Park and the Zoo from surrounding communities are planned for operation by 2025, as described further below.

Pedestrian Facilities serving Griffith Park

The urbanized portions of the Project vicinity located in the cities of Burbank and Glendale provide a mature network of pedestrian facilities including sidewalks, crosswalks, and pedestrian safety features on most roadways. These areas are considerably more than 0.5 miles from the Zoo, a reasonable "walkshed" depicted on Figure 3.15-4. Pedestrian facilities in the northeast area of Griffith Park Griffith Park consist of a robust network of trails for pedestrian and equestrian use, often near main roads, but provide only limited pedestrian sidewalks alongside Park roadways.

A 20-foot wide promenade separates the north main parking lot and south main parking lot and provides a safe pedestrian path to the Zoo's entry. The path also connects the Zoo's entry to the crosswalk across Western Heritage Way and entrance to the Autry Museum.

There are currently no sidewalks along Zoo Drive or Western Heritage Way, except at existing bus stop and crosswalk locations. Crosswalks are provided along Western Heritage Way at two locations. The first crosswalk is located adjacent to the existing bus stop on the east side of the street in front of the Autry Museum. The crosswalk at the Autry Museum connects to the main Zoo entry promenade, an 18-foot-wide walkway that extends for 800 feet from the Zoo entry to the Autry Museum. The second crosswalk across Western Heritage Way is located adjacent to the south driveway, connecting the Zoo's main parking lot with the overflow parking lot and North Hollywood High School Zoo Magnet Center. The main Zoo parking lot has four additional pedestrian walkways to safely connect Zoo patrons parking in this lot to the Zoo entry. South

of the Project site along the east side of Crystal Springs Drive, there is a decomposed granite path available for shared use with bicycles.

Additionally, Griffith Park offers visitors hiking trails, including Skyline Trail, Condor Trail, and Mineral Wells Trail. The Main Trail hugs the northern and eastern perimeter of the park in areas adjacent to the Zoo from Travel Town and the Martinez Arena in the north to the Griffith Park & Southern Railroad and Pony Rides in the south. Near the Zoo, the Main Trail runs parallel to Zoo Drive and then passes through a below-grade undercrossing beneath North Zoo Drive as that street transitions toward I-5, and then continues behind the Autry Museum; access to the Main Trail is provided through the Autry Museum parking lot. The Main Trail provides a safe off-road option for pedestrians, runners, and equestrians. Approximately 1 to 1.5 miles west of the Zoo, the Main Trail connects with Riverside Drive, which crosses the Los Angeles River and SR-134 to provide pedestrian and bicycle linkages with Burbank (refer to Section 3.14, *Recreation*); Main Trail also provides access to equestrian trails and facilities within Griffith Park.

Bicycle Facilities in Griffith Park

The Caltrans Highway Design Manual establishes guidelines and design standards for bikeway facilities. There are three type of bikeway facilities, as described below (Caltrans 2015).

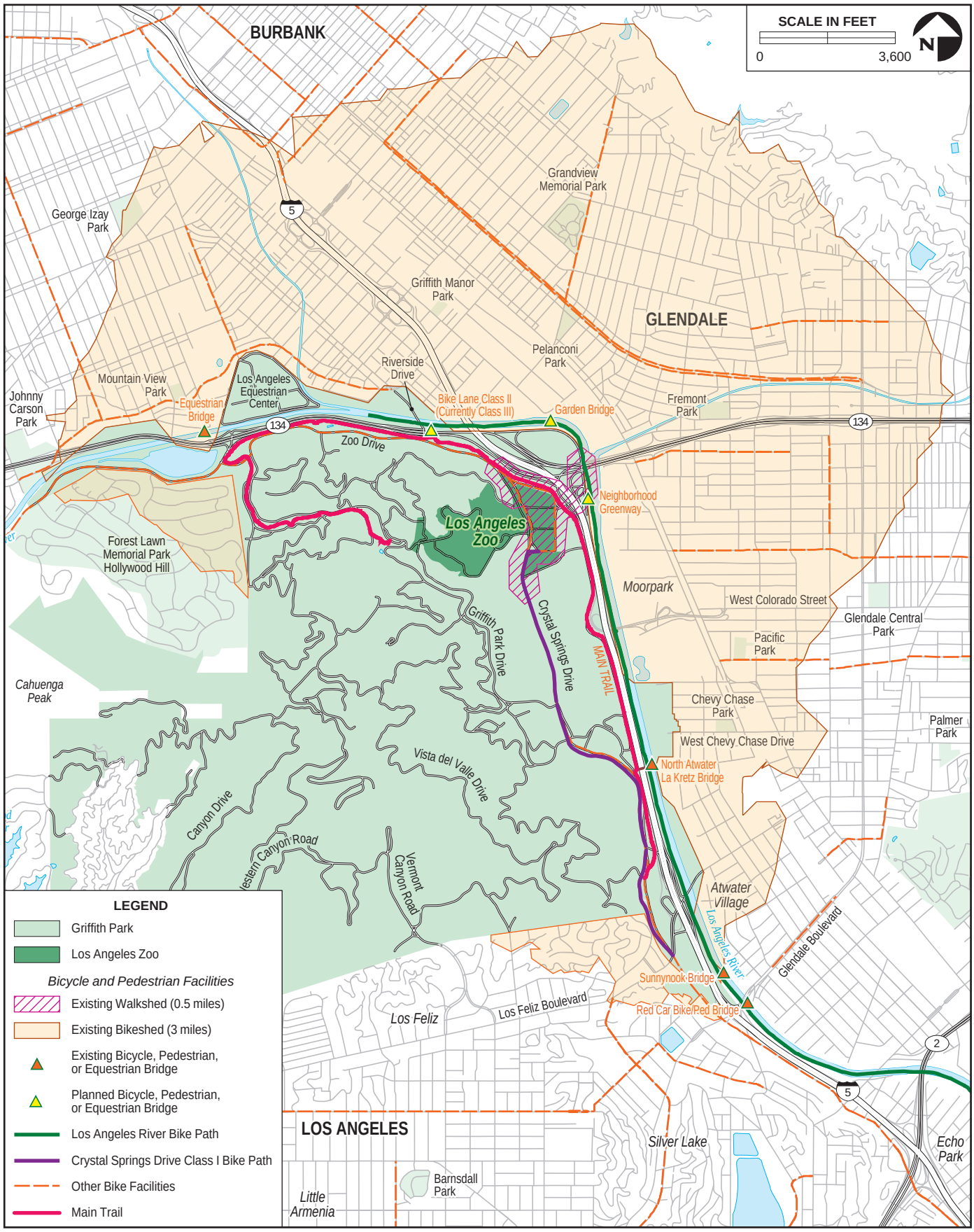
- **Class I Bikeways (Bike Paths)** provide a completely separated right-of-way path exclusively for the use of bicycles and with minimized crossflow by motorists and pedestrians. In general, bike paths serve corridors not served by streets and highways or where sufficient right-of-way exists to allow such facilities to be constructed away from the influence of parallel streets and vehicle conflicts.
- **Class II Bikeways (Bike Lanes)** are lanes for bicyclists generally adjacent to the outer vehicle travel lanes. These lanes have special lane markings, pavement legends, and signage. Bicycle lanes are generally 5 feet wide. Adjacent vehicle parking and vehicle/pedestrian crossflow are permitted. Bike lanes are established along streets in corridors where there is significant bicycle demand, and where there are distinct needs that can be served by them.
- **Class III Bikeways (Bike Routes)** are designated by signs or pavement markings for shared use with pedestrians or motor vehicles but have no separated bike right-of-way or lane striping. Bike routes serve either to a) provide continuity to other bicycle facilities, or b) designate preferred routes through high demand corridors.
- **Class IV Bikeways (Cycletracks or Protected Bike Lanes)** provide a right-of-way designated exclusively for bicycle travel within a roadway and which are protected from other vehicle traffic with devices, including, but not limited to, grade separation, flexible posts, inflexible physical barriers, or parked cars

The Los Angeles River Bike Path is a Class I Bike Path that provides amenities such as trash bins, educational kiosks, and solar lighting. Source: City of Los Angeles, lariver.org.

The Los Angeles River Bike Path is a Class I bikeway that extends along the west side of the Los Angeles River and along the east side of I-5 in the vicinity of Griffith Park. The Los Angeles River Bike Path begins at the historic Riverside Drive/Zoo Drive Bridge where it bends south at Ferraro Soccer fields and continues for 10 miles alongside the soft-bottom portion of the River channel known as the Glendale Narrows. This portion of the Los Angeles River Greenway terminates at Elysian Park. Another section of the Los Angeles River Greenway starts at South Atlantic Boulevard in Maywood and continues parallel to the River until its confluence with the Pacific Ocean at Ocean Boulevard in Long Beach (City of Los Angeles 2020).

Several recently completed and near-term future pedestrian and bicycle (and sometimes also for equestrians) bridges provide connections to the Los Angeles River Bike Path and across the Los Angeles River. The bridge over the Los Angeles River on Riverside Drive provides a bicycle connection to Zoo Drive and Griffith Park from the residential Riverside Rancho neighborhood in Burbank and the adjacent neighborhoods in Glendale. Recently completed bridges include from north to south, the North Atwater LaKretz Bridge (opened Spring 2020), the Red Car Bridge (opened Spring 2020) located adjacent to the Glendale Hyperion Bridge, and the Sunnynook Bridge located approximately 2.4 miles south of the Zoo's entrance. The Taylor Yard Bridge, which is currently being constructed at Rio de Los Angeles State Park in Cypress Park and is expected to open in Spring 2021. Additionally, the City of Glendale plans to construct a fourth bicycle and pedestrian bridge across the river within the next decade, called the Garden Bridge. The Garden Bridge will connect the Los Angeles River Bick Path, on the west bank of the river, and the Glendale Riverwalk, on the east bank of the river, adjacent to the terminus with Flower Street. The Garden Bridge would be located within approximately 0.5 miles of the Zoo's Entry. These bridges will connect communities on the north and east side of the Los Angeles River to the Los Angeles River Bike Path, which is currently being improved through implementation of the Los Angeles River Revitalization Master Plan.

There is an existing connection between the Los Angeles River Bike Path and the Griffith Park roadway network via a ramp from the path to Riverside Drive, where a Class III sharrowed facility is provided. The City plans to improve the existing Class III bicycle facility to a Class II bicycle lane.



wood.

Existing and Planned Bicycle and Pedestrian Facilities in the Project Vicinity

FIGURE 3.15-4

Additionally, the City is currently planning to build two connecting bicycle facilities from the Los Angeles River Bike Path to Griffith Park adjacent to the Zoo. One connection point is approximately 0.4 miles east of the Zoo entrance, south of the intersection of Zoo Drive & Western Heritage Way. This bridge connection would include a redesign of Zoo Drive along the perimeter of Ferraro Soccer Complex to include pedestrian crossings and landscaping. This connection is still conceptual and a precise location for it has not been identified. The City envisions this connection as a neighborhood greenway, alternatively called a bicycle boulevard. A neighborhood greenway is a facility on which vehicles are allowed but discouraged, volumes and speeds are low, and a comfortable environment is provided for bicycling, walking, skateboarding, etc. Neighborhood greenways often feature substantial plantings to enhance the feeling of comfort, often providing a linear park character to the facility. The other planned bicycle connection is near the intersection with Zoo Drive & Riverside Drive, approximately 0.8 miles north of the Zoo entrance. The planned neighborhood greenway and improvement of the existing bicycle facility on Riverside Drive will facilitate easy access between the Zoo, the bicycle path, and connections across the river into Glendale and Atwater Village. Considering a 3-mile "bikeshed" depicted in Figure 3.15-4, these existing and planned facilities would serve bicyclists traveling to the Zoo from the nearby neighborhoods and communities in Glendale and Burbank.

Within Griffith Park, an off-road Class I bicycle path is located parallel and adjacent on the east side of Crystal Springs Drive. It is designated as a Bicycle Path in the City's 2010 Bicycle Plan and designated as part of the Green Bikeway Network. Class II bicycle facilities are provided on Riverside Drive and on Main Street in the City of Burbank. Additionally, on-street Class II bicycle lanes are located along Los Feliz Boulevard and Crystal Springs Drive. These are designated as part of the backbone bikeway network for the City. Within the Project vicinity, Class II bicycle lanes are provided along both sides of Zoo Drive north of the Project site, Western Heritage Way, and Crystal Springs Drive.

Mobility Plan 2035 identifies roadway corridors proposed to receive improved bicycle, pedestrian, and vehicle infrastructure improvements. Tier 1 Protected Bicycle Lanes are bicycle facilities that are separated from vehicular traffic. Tier 2 and Tier 3 Bicycle Lanes are facilities on roadways with striped separation, and a bicycle path is a bicycle facility outside of the roadway.

- Existing Tier 2 facilities include Riverside Drive south of Griffith Park, Crystal Springs Drive, Western Heritage Way, and Zoo Drive.
- Planned Tier 3 facilities in the Project area include Los Feliz Boulevard located just under 3 miles south of the Project site.
- Mobility Plan 2035 identifies completion of a Class I bicycle path along the Los Angeles River, less than 0.5 miles east of the Project site.

Public Parking in the Project Vicinity

Parking in Griffith Park and Surrounding Areas

Per the Griffith Park Vision Plan, there are approximately 10,000 spaces for car parking within Griffith Park. Approximately 70 percent are in dedicated surface lots, 20 percent are curbside parking areas, and 10 percent are temporary spaces at special event venues such as the Greek Theatre. There are currently no parking garages within Griffith Park. Parking at Griffith Observatory and along Western Canyon road is fee-based, ranging from $8 to $10 per hour. Free parking is available at the Greek Theatre when no shows are in session. Additionally, several parking areas are located immediately south of the Wilson-Harding Golf Course, for the Griffith Park Merry-Go-Round, tennis courts, baseball field, and Crystal Springs Picnic Area.

Parking at the Project Site

Zoo parking spaces account for approximately 30 percent of all surface parking spaces located within Griffith Park. The Zoo provides a total of 2,144 surface parking spaces, including 2,081 regular spaces, 55 standard handicap spaces, and 8 handicap van spaces, in four distinct parking areas: the north main parking lot, the south main parking lot, the far north parking lot, and the far south parking lot. The main parking lot directly east of the Zoo campus provides parking for both guests and Zoo employees. An additional parking lot is located south of Crystal Springs Drive, adjacent to the North Hollywood High School Zoo Magnet Center (Figure 2-3). These lots are the only parking available for visitors; on peak days when the lots are full, visitors are either asked to wait or turned away. Several small parking areas are provided for Zoo staff along the internal perimeter roads, with a combined total of 100 parking spaces. Up to 66 spaces of additional parking are also available for Zoo employees in a secured lot with entry from Zoo Drive to the north of the Zoo entrance.

The visitor parking lots are also subject to a shared use agreement with the Autry Museum of the American West, which began on January 23, 1987 and is valid for 50 years unless extended by mutual agreement. Per the shared use agreement, the parking lots shall be kept open for general parking for visitors and employees of the Autry Museum of the American West from 5:00 a.m. to 10:30 p.m. daily in accordance with LAMC Section 63.44 B.14. These hours may be extended to 11:30 p.m. for special events conducted by the Museum. No charge shall be made to visitors or employees of the Museum for parking in the lot at any time.

Two portable bicycle racks, capable of securing 14 bicycles are located north of the Zoo's ticket booth along the southeastern corner of the Witherbee Auditorium. Approximately 40 additional bicycle parking spaces are provided in permanent bicycle racks south of the Zoo Entry. While existing bicycle parking is utilized on a weekly basis, the lack of current bicycle connections to the Zoo discourages daily ridership. As such, these 54 bicycle parking spaces are not currently utilized at capacity.

High-Injury Network and Collisions

The City's High Injury Network (HIN) comprises streets with a high concentration of traffic collisions that result in severe injuries and deaths, with an emphasis on those involving people walking and bicycling. No roadways in the Project vicinity have been identified by the City as part of the HIN.

A review of the Transportation Injury Mapping System (TIMS) indicates that there have been 11 vehicle collisions in the previous five years along the northern stretch of Zoo Drive west of the intersection with Western Heritage Way. There were two collisions involving bicycles, one of which resulted in a severe injury. Both bicycle-involved collisions occurred at the intersection of Zoo Drive & Riverside Drive. None of the other nine collisions along northern Zoo Drive resulted in serious injuries. There were no pedestrian-involved collisions. There were no collisions adjacent to the Zoo on Western Heritage Way or Crystal Springs Drive.

3.15.2 Impact Assessment Methodology

Significance Thresholds

According to Appendix G of the CEQA Guidelines, a project would have a significant impact related to transportation if it would:

a. Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities;
b. Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b);
c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
d. Result in inadequate emergency access.

Regarding VMT, CEQA Guidelines Section 15064.3 (b) provides *Criteria for Analyzing Transportation Impacts,* as follows

1. Land Use Projects. Vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact. Generally, projects within one-half mile of either an existing major transit stop or a stop along an existing high-quality transit corridor should be presumed to cause a less than significant transportation impact. Projects that decrease vehicle miles traveled in the project area compared to existing conditions should be presumed to have a less than significant transportation impact.

2. Transportation Projects. Transportation projects that reduce, or have no impact on, vehicle miles traveled should be presumed to cause a less than significant transportation impact. For roadway capacity projects, agencies have discretion to determine the appropriate measure of transportation impact consistent with CEQA and other applicable requirements. To the extent that such impacts have already been adequately addressed at a programmatic level, such as in a regional transportation plan EIR, a lead agency may tier from that analysis as provided in Section 15152.

3. Qualitative Analysis. If existing models or methods are not available to estimate the vehicle miles traveled for the particular project being considered, a lead agency may analyze the project's vehicle miles traveled qualitatively. Such a qualitative analysis would evaluate factors such as the availability of transit, proximity to other destinations, etc. For many projects, a qualitative analysis of construction traffic may be appropriate.
4. Methodology. A lead agency has discretion to choose the most appropriate methodology to evaluate a project's vehicle miles traveled, including whether to express the change in absolute terms, per capita, per household or in any other measure. A lead agency may use models to estimate a project's vehicle miles traveled and may revise those estimates to reflect professional judgment based on substantial evidence. Any assumptions used to estimate vehicle miles traveled and any revisions to model outputs should be documented and explained in the environmental document prepared for the project. The standard of adequacy in Section 15151 shall apply to the analysis described in this section.
5. The City's CEQA Transportation Thresholds, along with the TAG, supersede the guidance and factors included the City's 2006 L.A. CEQA Thresholds Guide. The impact criteria in the TAG are discussed below. Non-CEQA issues required by the TAG for analysis, including disclosure of LOS changes at affected intersections, are summarized below in Section 3.15-6, *Non-CEQA Transportation Planning Issues* and analyzed fully by the Transportation Assessment (Appendix N).

Regarding emergency access, neither the TAG nor the City's CEQA Transportation Thresholds include specific factors or thresholds for determining potentially significant impacts. The methodology discussed below describes the City's standard considerations when assessing emergency access impacts.

OPR's Recommendations for Transportation Impact Criteria

Authorized in September 2013, SB 743 directed OPR to revise the CEQA Guidelines (Title 14 of the California Code of Regulations) to establish new criteria for determining the significance of transportation impacts. In developing the criteria, OPR has proposed, and the California Natural Resources Agency has certified and adopted, changes to the CEQA Guidelines that identify VMT as the most appropriate metric to evaluate a project's transportation impacts. CEQA Section 15064.3 defines VMT as "the amount and distance of automobile travel attributable to a project" and notes that for determination of significance for transportation impacts, "Other relevant considerations may include the effects of the project on transit and non-motorized travel".

In January 2016, OPR published for public review and comment a *Revised Proposal on Updates to the CEQA Guidelines on Evaluating Transportation Impacts in CEQA* (Proposed Transportation Impact Guidelines) recommending that transportation impacts for projects

be measured using a VMT metric (refer to *Regulatory Setting*). The final Proposed Transportation Impact Guidelines were published in December 2018 (OPR 2018). VMT measures the amount and distance that a project might cause people to drive, accounting for the number of passengers within a vehicle. These proposed transportation impact guidelines provide substantial evidence that VMT is an appropriate standard to use in analyzing transportation impacts to protect environmental quality and a better indicator of greenhouse gas, air quality, and energy impacts than automobile delay. With the changes to the CEQA Guidelines, automobile delay, as measured by LOS and other similar metrics, no longer constitutes a significant environmental effect under CEQA (Pub. Resources Code §21099) These updated criteria for transportation impact assessment better align transportation analysis with state GHG reduction goals set by SB375 to encourage infill development and improve public health through increased active transportation.

VMT completely replaces as the CEQA metric of analysis of roadway capacity-based or automobile delay-based LOS, which measures a project's impact on the driving experience of other vehicle drivers (e.g., congestion, delay) and favors development in exurban areas where existing roadway traffic is light, often leading to longer vehicle trips, or resulting in road-widening projects, which result in adverse environmental and public health impacts through induced vehicle demand and degradation of the biking or walking experience. Conversely, evaluation of a project's impact on VMT evaluates the effect on the environment of project-generated vehicle trips, such as more and/or longer vehicle trips which emit more GHGs, or projects which generate fewer vehicle trips or shorten existing trips such as development of an infill site or facilities that improve bicycle access or walkability.

Pursuant to SB 743, OPR released draft CEQA Guidelines in November 2017, and adopted final guidelines in December 2018. The provisions of SB743 are now in effect, with agencies across the state having an opt-in period until July 1, 2020. The City of Los Angeles was among the first cities in California, almost a year ahead of the OPR deadline, to adopt their own, local VMT-based CEQA guidelines and thresholds for VMT. City of Los Angeles guidelines are prescribed in the TAG, as described below.

While OPR recognizes that lead agencies have the discretion to set or apply their own thresholds of significance, the Proposed Transportation Impact Guidelines include recommendations regarding significance thresholds residential, office, and retail projects. For residential and office projects, the Proposed Transportation Impact Guidelines recommend that a significant impact occurs when a project's VMT exceeds a level of 15 percent below the existing regional or city VMT per capita and per employee, respectively. This target reduction is consistent with the overall VMT reduction goals of the 2017 CARB Scoping Plan. For retail and redevelopment projects, the Guidelines recommend that a significant impact would occur with any net increase in total VMT. The guidelines also recommend significance thresholds for land use plans. A general plan, area plan, or community plan may have a significant impact on transportation if proposed new residential,

office, or retail land uses would in aggregate exceed the respective thresholds recommended above.

LADOT TAG Impact Criteria

On July 30, 2019, the City adopted the revised City of Los Angeles CEQA Transportation Thresholds to include new impact criteria from the LADOT's TAG. LADOT established the TAG in July 2019 to effectuate a review process that advances the City's vision of developing a safe, accessible, well-maintained, and well-connected multimodal transportation network. The TAG was developed to identify land use development and transportation projects that may impact the transportation system, to ensure proposed land use development projects achieve site access design requirements and on-site circulation best practices, to define whether off-site improvements are needed, and to provide step-by-step guidance for assessing impacts and preparing transportation studies.

Project applicants and consultants must follow the procedures and standards set forth in the TAG when preparing and submitting a transportation assessment to ensure a timely review by LADOT. However, the TAG requirements may differ in certain areas of the City where specific plans or similar area specific ordinances establish distinct guidelines.

The TAG includes guidelines, methods, and impact criteria for CEQA considerations that focus on VMT, geometric hazards, and policy conflicts. The TAG also establishes a framework for various issues it identifies as non-CEQA analyses including a pedestrian, bicycle, and transit access assessment, a project access, safety, and circulation assessment, project construction, and residential street cut-through analysis. Each area of analysis is described in the TAG with a discussion of screening criteria, the methodology for analysis, impact criteria, and potential mitigation options.

The thresholds include using VMT as a criterion to determine transportation impacts, pursuant to SB 743 and the recent changes to CEQA Guidelines Section 15064.3.9. LADOT revised the City's guidelines for evaluating project-level transportation issues to ensure that proposed development projects would be consistent with City and mobility objectives (e.g., Mobility Plan 2035).

TAG impact criteria are based upon OPR technical guidance, but also reflect local considerations, including a Mobility Element 2035 objective to decrease VMT per capita by 5 percent every 5 years through 2035. Per the TAG, any project estimated to generate a net increase of 250 or more daily vehicle trips and likely to induce additional VMT is required to complete a transportation assessment and an evaluation of the project's impact on VMT to determine whether it causes substantial VMT. In addition to VMT and other assessments required under CEQA, the TAG also establishes a framework for analyses of project pedestrian, bicycle, transit, and vehicular access, safety, and site circulation in addition to the elements required for analysis by CEQA. Each area of analysis is described in the TAG with a

discussion of screening criteria, the methodology for analysis, impact criteria, and potential mitigation options. TAG project screening criteria require evaluation of the following:

1. Would the project generate a net increase of 250 or more daily vehicle trips?
2. Is the project proposing to, or required to make any voluntary or required, modifications to the public right-of-way?
3. Is the project on a lot that is 0.5 acres or more in total gross area, or is the project's frontage along a street classified as an Avenue or Boulevard (as designated in the City's General Plan), 250 linear feet or more, or is the project's building frontage encompassing an entire block along a street classified as an Avenue or Boulevard by the City's General Plan?
4. Would the project generate a net increase in daily VMT?
5. If the project includes retail uses, does the portion of the project that contain retail uses exceed net 50,000 square feet?
6. Would the project or plan located within a one-half mile of a fixed-rail or fixed-guideway transit station replace an existing number of residential units with a smaller number of residential units?
7. For a transportation project, would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)(2)?
8. Would the project include the addition of through traffic lanes on existing or new highways, including general purpose lanes, high-occupancy vehicle (HOV) lanes, peak period lanes, auxiliary lanes, and lanes through grade-separated interchanges (except managed lanes, transit lanes, and auxiliary lanes of less than one mile in length designed to improve roadway safety)?
9. Is the project proposing new driveways, or introducing new vehicle access to the property from the public right-of-way?
10. Is the project proposing to, or required to make any voluntary or required, modifications to the public right-of-way (i.e., street dedications, reconfigurations of curb line, etc.)?

In addition, CEQA requires analysis of potentials conflicts with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities, where substantial conflicts may create significant impacts. As such, the TAG requires a detailed policy analysis to identify potential conflicts with adopted City plans, programs, ordinances, or policies (PPOP). If a conflict is identified, improvements which prioritize access for and improve the comfort of people walking, biking, and riding transit shall also be identified. Analysis of federal, state, regional, and local policies/plans is required by CEQA, and the TAG prescribes a specific set of 16 plans and policies that must review within the PPOP analysis. Analysis of state and regional programs and policies is particularly important as these are the source for a switch to VMT analysis with related goals to reduce VMT, energy consumption, and GHG generation. These include local, regional, or state

programs or policies related to vehicular circulation, pedestrian, bicycle, and transit access or operation.

Per the TAG, the proposed Project would have a significant impact if net VMT is greater than zero.

The City's VMT impact criteria for development projects was adopted from guidance from the OPR. Per the criteria, a development project would have a potential impact if the project meets the following:

- For event centers and regional-serving entertainment venues, such as the proposed Project, the project would result in a net increase in VMT (LADOT 2019; page 20).

Methodology

This analysis is conducted based on the proposed Project assumptions, as described in Section 3.0, *Introduction and Approach to Analysis*. This analysis considers proposed Project construction and operational components (e.g., events, tours, educational programs) that support the transformation of the Zoo (Appendix A). Impact analysis is directly informed by the Transportation Assessment prepared for the proposed Project (Appendix N).

The scope of work for the Transportation Assessment was determined in consultation with the BOE, the Zoo, and LADOT to inform the transportation impact analysis, consistent with CEQA. It was prepared in accordance with LADOT's TAG adopted in July 2019, and included outreach to and coordination with relevant regional and local transit providers, and the Los Angeles River Master Plan team, which included staff from the Los Angeles Department of City Planning (DCP), and RAP. Additional scoping sessions were held with staff at the City of Burbank and City of Glendale. The base assumptions are described through a Memorandum of Understanding (MOU), including study analysis methodology and ambient traffic growth forecasts that was submitted for review to City staff to confirm that the analysis parameters and inputs are consistent with City requirements, guidance, and industry standards.

Programs, Plans, Ordinance, and Plan Consistency

The state, SCAG, and City have adopted programs, plans, ordinances, and policies that establish the transportation planning framework for all travel modes. The overall goals of these policies are to achieve a safe, accessible, and sustainable transportation system for all users. The City's Mobility Plan 2035 offers a comprehensive vision and set of policies and programs the City aims to achieve to provide streets that are safe and convenient for all users. Vision Zero Los Angeles aims to reduce transportation fatalities to zero by using extensive crash data analysis to identify priority corridors and intersections and applying safety countermeasures. The TAG indicates that these and other relevant City plans and policies, including new and revised plans that may be adopted over time, be consulted to identify potential conflicts with projects and plans in the CEQA review process.

The threshold test is to assess whether a project would conflict with an adopted program, policy, plan, or ordinance addressing the circulation system (including transit, roadways,

bicycle, and pedestrian facilities as required under CEQA) that is adopted to protect the environment. In general, transportation policies or standards adopted to protect the environment are those that support multimodal transportation options and a reduction in VMT. A project that does not implement a program, plan, policy, or ordinance would not necessarily result in a conflict or an impact. Many of these programs must be implemented by the City itself over time and over a broad area, and it is the intention of this threshold test to ensure that proposed development projects and plans do not preclude the City from implementing adopted programs, plans, and policies.

This analysis of land use consistency considers whether the proposed Project would be consistent with applicable plans, policies, and regulations. Sources utilized in the development of this section include SCAG's RTP/SCS, the City's General Plan, Mobility Plan 2035, the Hollywood Community Plan, the Griffith Park Vision Plan, and LADOT's TAG. Plan and policy consistency are based on whether the Project would result in environmental impacts to transportation as outlined in the applicable plan.

Since VMT completely replaces as the CEQA metric of analysis of roadway capacity-based or automobile delay-based LOS, the Project's consistency with LOS thresholds from neighboring jurisdictions (i.e., City of Burbank and City of Glendale) are considered non-CEQA issues and are summarized below in Section 3.15.6 and in Appendix N.

VMT

The potential impacts Project VMT increases are assessed in the context of CEQA Section 15064.3 and CEQA Appendix G, as well as the City's TAG. The analysis also accounts for the goals or state, regional, and local plans regarding reduction targets for VMT and GHG emissions, including the 2017 CARB Scoping Plan target VMT reduction of 15 percent.

The Transportation Assessment determined future trip generation estimates for the Project by applying trip generation rates to the Zoo's visitor and employee growth projections by phase (see Appendix N). Trip generation was estimated for visitors and employees on weekdays and weekends. Trip lengths for both visitors and employees, as derived from the surveys discussed above, were combined with average daily attendance by day of the week based on the historic attendance data provided by the Zoo, to develop VMT estimates for the Zoo, both for existing (2019) conditions and future phases of Vision Plan implementation. See Table 3.15-3 and Table 3.15-4.

Geometric Design Feature or Incompatible Use Hazards & Emergency Access

Project access plans are reviewed in light of commonly accepted traffic engineering design standards to ascertain whether any deficiencies are apparent in the site access plans which would be considered significant. The determination of significance shall be on a case-by-case basis, considering the following factors:

- The relative amount of pedestrian activity at Project access points.

- Design features/physical configurations that affect the visibility of pedestrians and bicyclists to drivers entering and exiting the Project site, and the visibility of cars to pedestrians and bicyclists.

Emergency access is analyzed with consideration of the routes of ingress/egress to the Zoo, evaluating the potential limits to access for emergency personnel and site evacuation. Refer also to Section 3.9, *Hazards & Hazardous Materials* and Section 3.13, *Public Services*.

3.15.3 Environmental Impact Analysis

T-1:	Would the project cause a significant environmental impact due to conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?

Project Consistency with Applicable Transportation Plans, Policies, and Regulations

The CEQA guidelines state that a project would have a potentially significant impact if the project would conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. Per the City's TAG (July 2019), a project that generally conforms with, and does not obstruct the City's development policies and standards, will generally be consistent. The TAG requires review of specific City documents and ordinances for City plans, policies, programs, ordinances, and standards relevant to determining project consistency. The TAG also lists questions that shall be answered to help guide whether the project conflicts with City circulation system policies.

The City has adopted programs, plans, ordinances, and policies that establish the transportation planning framework for all travel modes. The overall goals of these policies are to achieve a safe, accessible, and sustainable transportation system for all users. Further, the State of California and regional agencies have adopted plans and programs addressing circulation systems that serve the City. To address Project consistency with circulation plans and programs per CEQA and the TAG, this analysis considers both City documents and applicable regional transportation and circulation documents that relate to the Zoo. As a Regional-Serving Entertainment Venue and Event Center, the Zoo's transportation impacts include regional transit services and bicycle and pedestrian facilities and services. In compliance with the TAG, this analysis adapts Table 2.1-2 in the TAG to review relevant City policies and programs corresponding to the questions to assess whether the proposed Project precludes the City's implementation of any adopted policy and/or program. In compliance with CEQA, this analysis also assesses consistency with applicable plans in the Project vicinity.

LADOT maintains the LADOT Manual of Policies and Procedure (MPP). As the proposed Project is a long-term Vision Plan for phased redevelopment of the Zoo, site plans and driveway/access design have not been developed yet. During Project implementation, each

phase of development would be subject to the LADOT MPP and transportation facilities would be designed to comply with the City's applicable requirements.

The following provides the analysis of: 1) the City TAG screening criteria; 2) applicability of City plans, policies, programs, and ordinances, consistent with the TAG; and 3) analysis of the Project's consistency with applicable plans, policies, programs, and ordinances, consistent with CEQA. Findings of consistency are either "consistent", "consistent with mitigation" or "inconsistent" if consistency issues exist. The analysis includes discussion of proposed Project mitigation measures where consistency may be improved or resolved. Table 3.15-5 was prepared to inform this EIR analysis of the proposed Project. Final policy consistency would be determined as part of Project review and approval process with the City.

Based upon this analysis, the Project, with implementation of required mitigation measures identified in this EIR and required consistency with existing regulations, would be consistent with the SCAG RTP/SCS, Los Angeles General Plan, Hollywood Community Plan, Griffith Park Vision Plan, and Plan for a Healthy Los Angeles. The Project would not cause significant environmental impacts due to conflicts with any transportation plan, policy, or regulation, and the Project would not preclude the City's implementation of any adopted policy and/or program. Therefore, impacts would be *less than significant with mitigation*.

T-2:	Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

Construction

Construction activities associated with development of the proposed Project would result in additional construction VMT in the Project vicinity and on the I-5 and SR-134 freeways. Construction-related traffic would include haul trucks, cement trucks, equipment delivery trucks, and construction worker vehicles. During excavation, heavy haul trucks would be required for import and export of materials. The majority of excavation and soil export would occur during the construction of the California (Phase 1) and Africa (Phase 3) Visitor Centers. The timing and frequency of heavy haul trucks would be dictated by the rate of excavation activities within the California and Africa hillside areas. It is assumed all construction and demolition (C&D) waste would be exported to a facility within the County. This phase would also involve vehicles trips and associated VMT to provide construction materials, support excavation, and transport construction workers. Construction worker vehicles, materials deliveries, and other construction-related trips are expected to add dozens of often heavy truck trips to area streets throughout the construction period. Construction-related increases in VMT would occur intermittently and would be lower in volume than the operational vehicle trips and VMT associated with the proposed Project. Therefore, it would not contribute significantly to long-term GHG effects from VMT.

Table 3.15-5. Regional Circulation Plans, Policies, and Programs Consistency Analysis

Policy	Relationship to Project
SCAG RTP/SCS	
Goal 2. Maximize mobility and accessibility for all people and goods in the region. Goal 3. Ensure travel safety and reliability for all people and goods in the region. Goal 5. Maximize the productivity of our transportation system.	Consistent with Mitigation. The Vision Plan proposes substantial redesign of the Zoo Entry and internal circulation system to provide more ADA-accessible and pedestrian friendly navigation for visitors. The proposed Phase 1 realignment of Crystal Spring Drive would also allow the Zoo's southbound bus stop to be moved to Western Heritage Way between the Zoo and Autry Museum of the American West, improving the efficiency of public transportation access to the North Hollywood High School Zoo Magnet Center, Autry Museum, and the Zoo. Improvements to the Zoo Drive/Western Heritage Way intersection would reduce vehicle queuing and increase safety for all modes, thereby facilitating multi-modal access to the Zoo and Griffith Park. Internal improvements to Zoo service area and access would also increase efficiency of Zoo operations related to deliveries of good and services. However, increased visitation would drive transportation impacts related to increased VMT. The Project does not include multi-modal improvements or expansion of active transportation facilities to ensure accessibility to the Zoo. Under the Project, visitors and employees would continue to mainly use passenger vehicles to travel to and from the Zoo, which presents a barrier to mobility and accessibility in the region. Lack of regional transit access and pedestrian/bicycle facilities at the Zoo reduces the productivity of the transportation system to serve Zoo visitors and employees using non-vehicular modes. **MM T-2** would require implementation of a comprehensive TDM Program which would include measures to incentivize rideshare/carpooling, parking management, and use of non-vehicular modes for both employees and visitors, including expansion of transit service connection to the Zoo. With implementation of **MM T-2**, the Project would be consistent with these regional policies.
Goal 6. Protect the environment and health of our residents by improving air quality and encouraging active transportation (e.g., bicycling and walking).	Consistent with Mitigation. The Zoo currently provides approximately 54 bicycle parking spaces and would continue to provide bicycle parking at the Zoo Entry to encourage active transportation to the Zoo. However, increased visitation and employment would drive transportation impacts related to increased VMT for the Zoo, which is a regionally serving attraction. Further, the Project does not include multi-modal improvements or expansion of active transportation facilities to reduce vehicle trips and trip lengths for visitors and employees. **MM T-2** would require implementation of a comprehensive TDM Program which would include measures to implement or expand non-vehicular transportation modes to the Zoo to reduce trips, VMT, and congestion, and improve air quality/reduce GHG emissions. With implementation of **MM T-2**, the Project would be consistent with this regional policy. See additional detailed analysis below for the Project's consistency with the Mobility Element 2035.
City of Los Angeles General Plan	
Air Quality Element	
Policy 2.1.1. Utilize compressed work weeks and flextime, telecommuting, carpooling,	Consistent with Mitigation. The Zoo currently provides and would continue to utilize compressed work weeks and flexible work schedules (refer to Section 2, *Project Description*). This is due to the

Table 3.15-5. Regional Circulation Plans, Policies, and Programs Consistency Analysis (Continued)

Policy	Relationship to Project
vanpooling, public transit, and improve walking/bicycling related facilities to reduce Vehicle Trips and/or VMT as an employer and encourage the private sector to do the same to reduce work trips and traffic congestion.	unique hours of operation, schedules, and employee shifts that align with non-peak hours, thereby reducing traffic congestion. As part of the TDM Program under **MM T-2**, the Zoo would consider allowing telecommuting for City employees (particularly for Greater Los Angeles Zoo Association [GLAZA], administrative, and marketing employees who are not required on-site) or alternative work schedules, such as the 9/80 or 4/10 schedule, at discretion of the Zoo General Manager. In addition, the Zoo currently provides and would continue to provide bicycle parking at the Zoo Entry. The proposed Phase 1 road realignment would also allow the Zoo's southbound bus stop to be moved to Western Heritage Way between the Zoo and Autry Museum of the American West, improving the efficiency of public transportation access to the Zoo and the North Hollywood High School Zoo Magnet Center, and Autry Museum. However, increased visitation and employment would drive transportation impacts related to increased VMT. The Project does not include multi-modal improvements or expansion of active transportation facilities to ensure accessibility to the Zoo. Under the Project, visitors and employees would continue to mainly use passenger vehicles to travel to and from the Zoo, which presents a barrier to mobility and accessibility in the region. As described in *Existing Conditions*, lack of regional transit access and pedestrian/bicycle facilities at the Zoo reduces the productivity of the transportation system to serve Zoo visitors and employees using non-vehicular modes. **MM T-2** would require implementation of a comprehensive TDM Program which would include measures to implement or expand non-vehicular transportation modes to the Zoo to reduce trips, VMT, and congestion, and improve air quality/reduce GHG emissions. With implementation of **MM T-2**, the Project would be consistent with this regional policy.
Policy 2.2.1. Discourage single-occupant vehicle use through a variety of measures such as market incentive strategies, mode-shift incentives, trip reduction plans, and ridesharing subsidies.	<u>Consistent with Mitigation.</u> Survey data collected for this analysis indicates that most employees (85 percent) drive to the Zoo, most commonly as single-occupant vehicles. Further, most visitors (95 percent) drive passenger vehicles and do not have ready access to transit, bicycle, or pedestrian facilities that allow reasonable transportation to the Zoo. Parking at the Zoo is generally free with limited parking fees during peak attendance for convenient "VIP" spaces. The Zoo currently provides approximately 54 bicycle parking spaces and would continue to provide bicycle parking at the Zoo Entry. The proposed Phase 1 road realignment would improve the efficiency of public transportation access to the Zoo and surrounding uses by relocating the Zoo's southbound bus stop to Western Heritage Way between the Zoo and Autry Museum of the American West. However, increased visitation and employment growth would drive transportation impacts related to increased VMT. The Project does not include multi-modal improvements or expansion of active transportation facilities to ensure accessibility to the Zoo. Under the Project, visitors and employees would continue to mainly use passenger vehicles to travel to and from the Zoo, which presents a barrier to mobility and accessibility in the region and generate air emissions and GHGs. Lack of regional transit access and pedestrian/bicycle facilities at the Zoo reduces the productivity of the
Policy 2.2.2. Encourage multi-occupant vehicle travel and discourage single-occupant vehicle travel by instituting parking management practices.	
Policy 2.2.3. Minimize the use of single-occupant vehicles associated with special events or in areas and times of high levels of pedestrian activities.	
Policy 4.2.3. Ensure that new development is compatible with pedestrians, bicycles, transit, and alternative fuel vehicles.	

Table 3.15-5. Regional Circulation Plans, Policies, and Programs Consistency Analysis (Continued)

Policy	Relationship to Project
Policy 4.2.5. Emphasize trip reduction, alternative transit, and congestion management measures for discretionary projects.	transportation system to serve Zoo visitors and employees using non-vehicular modes. **MM T-2** would require implementation of a comprehensive TDM Program which would include measures to incentivize rideshare/carpooling, parking management, and use of non-vehicular modes for both employees and visitors, including expansion of transit service connection to the Zoo. With implementation of **MM T-2**, the Project would be consistent with these regional policies.
Mobility Element (Mobility Plan 2035)	
Policy 1.2. Complete Streets: Implement a balanced transportation system on all streets, tunnels, and bridges using complete streets principles to ensure the safety and mobility of all users.	Consistent with Mitigation. Per the Mobility Plan, complete streets provide a space for people to recreate, exercise, conduct business, engage in community activities, interact with their neighbors, and beautify their surroundings. Complete streets offer safety, comfort, and convenience for all users regardless of age, ability or means of transportation. The transportation system near the Zoo currently reflects many complete street principles. The streets on the Project frontages (Zoo Drive and Western Heritage Way) are identified in the Mobility Plan 2035 as providing a Tier 2 Bicycle Lane as part of the City of Los Angeles's Bicycle Network. These facilities currently exist and would be maintained with development of the Project. The realignment of Western Heritage Way and reconfiguration of the Zoo south parking lot would be designed to all applicable City standards, including sidewalks and pedestrian crossings and a contiguous guest parking lot, which would comply with complete streets principles to ensure the safety and mobility of all users. Metro Bus Line 96 and the Parkline Shuttle provide services the Zoo and would continue under the Project. However, the Project does not include multi-modal improvements or expansion of active transportation facilities to ensure accessibility to the Zoo. Under the Project, visitors and employees would continue to mainly use passenger vehicles to travel to and from the Zoo, which presents a barrier to mobility and accessibility in the region and generate air emissions and GHGs. Lack of regional transit access and pedestrian/bicycle facilities at the Zoo reduces the productivity of the transportation system to serve Zoo visitors and employees using non-vehicular modes. **MM T-2** would require implementation of a comprehensive TDM Program which would include measures to incentivize rideshare/carpooling, parking management, and use of non-vehicular modes for both employees and visitors, including expansion of transit service connection to the Zoo. With implementation of **MM T-2**, the Project would be consistent with this regional policy.
Policy 1.3. Safe Routes to Schools. Prioritize the safety of school children on all streets regardless of highway classifications.	Consistent. Phase 1 of the Project would realign Western Heritage Way/Crystal Springs Drive to the southern perimeter of the Zoo parking lots to create a contiguous guest parking lot, reducing pedestrian street crossings (refer to Figure 2-4). This would more strongly link the North Hollywood High School Zoo Magnet Center to the main Zoo campus, eliminating the need for students and Zoo visitors to cross Crystal Springs Drive to reach the Zoo and parking areas.
Policy 1.9. Recreational Trail Safety: Balance user needs on	Consistent. The Zoo is located in Griffith Park where public recreational trails, such as Main Trail, Condor Trail, and Skyline

Table 3.15-5. Regional Circulation Plans, Policies, and Programs Consistency Analysis (Continued)

Policy	Relationship to Project
the City's public recreational trails	Trail, are popular and used daily by hikers, cyclists, and equestrians. The Project would not modify existing trails. The Project would improve the Zoo Drive/Western Heritage Way intersection with a signal and potentially a below-grade crossing to enhance accessibility and safety for all modes. The Project would also realign Crystal Springs Drive but maintain the adjacent public trail.
Policy 2.1. Adaptive Reuse of Streets: Design, plan, and operate streets to serve multiple purposes and provide flexibility in design to adapt to future demands.	Consistent. The Project would realign a segment of Western Heritage Drive/Crystal Springs Drive and upgrade the Zoo Drive/Western Heritage Way intersection with a new signal in Phase 1 and potentially a below-grade crossing in Phase 7. The designs of these improvements would be subject to applicable City requirements and in coordination with LADOT, RAP, and Caltrans to ensure alterations are completed in a manner that would not preclude future City demands.
Policy 2.3. Pedestrian Infrastructure: Recognize walking as a component of every trip and ensure high-quality pedestrian access in all site planning and public right of way modifications to provide a safe and comfortable walking environment.	Consistent with Mitigation. The Project would improve the Zoo Drive/Western Heritage Way intersection with a signal in Phase 1 and potentially a roundabout or below-grade crossing to enhance accessibility and safety for pedestrians in Phase 7. The Project would also realign Crystal Springs Drive and reconfigure the south parking lots in accordance with all applicable City standards, including sidewalks and pedestrian crossings and a contiguous guest parking lot, which would improve the safety and comfort for pedestrians. However, changes to operations and configurations of these roadways would potentially increase vehicle speeds. Pedestrian safety would need to be considered in the design and amenities provided in the final design/engineering of a proposed roundabout or below-grade crossing in Phase 7 of the Project. In addition, **MM REC-1** would require proposed Zoo Drive/Western Heritage Way intersection improvements be considerate of pedestrian, bicyclist, and equestrian safety with regard to the Main Trail and that use of this important trail is not hindered by implementation of the improvement. With consideration of pedestrian safety in the design of proposed improvements and implementation of **MM REC-1**, the Project would be consistent with this regional policy.
Policy 2.5. Transit Network: Improve the performance and reliability of existing and future bus service.	Consistent with Mitigation. Metro Bus Line 96 and the RAP Parkline Shuttle provide services to the Zoo and would continue under the Project. The Parkline Shuttle also provides shuttle service to the Zoo for riders traveling through Griffith Park. Ridership to the Zoo is generally low as convenient connections to regional transit services, such as Metro Light Rail, are not available. The Project does not include multi-modal improvements or expansion of transit facilities to improve transit performance at the Zoo. Under the Project, visitors and employees would continue to mainly use passenger vehicles to travel to and from the Zoo, which presents a barrier to mobility and accessibility in the region and generate air emissions and GHGs. Lack of regional transit access at the Zoo reduces the productivity of the transportation system to serve Zoo visitors and employees using non-vehicular modes. **MM T-2** would require implementation of a comprehensive TDM Program which would include measures to incentivize the use of non-vehicular modes, including transit, for both employees and visitors, and expansion of transit service connections

Table 3.15-5. Regional Circulation Plans, Policies, and Programs Consistency Analysis (Continued)

Policy	Relationship to Project
	to the Zoo. With implementation of **MM T-2**, the Project would be consistent with this regional policy.
Policy 2.6. Bicycle Networks: Provide safe, convenient, and comfortable local and regional bicycling facilities for people of all types and abilities.	Consistent with Mitigation. The streets on the Project frontages (Zoo Drive and Western Heritage Way) are identified in the Mobility Plan 2035 as providing a Tier 2 Bicycle Lane as part of the City of Los Angeles's Bicycle Network. These facilities currently exist and would be maintained with development of the Project. The realignment of Western Heritage Way/Crystal Springs Drive and reconfiguration of the south parking lots would be designed to all applicable City standards, including bicycle facilities. The Project would not modify existing multi-use trails in the vicinity, maintaining access for bicycles adjacent to the Zoo and regionally (i.e., Los Angeles River trail). However, changes to operations and configurations of these roadways would potentially increase vehicle speeds. **MM REC-1** would require the Zoo to consider pedestrian safety and amenities provided in the final design/engineering of a proposed roundabout or below-grade crossing in Phase 7 of the Project. With implementation of **MM REC-1**, the Project would be consistent with this regional policy.
Policy 2.7. Vehicle Network: Provide vehicular access to the regional freeway system.	Consistent. The circulation system around the Zoo currently provides and would continue to provide access to both I-5 and SR-134. Proposed Phase 1 offsite roadway improvements at the intersection of Zoo Drive and Western Heritage Way may employ grade changes, stoplights, and other circulation improvements to address peak backups and congestion on both I-5 and SR-134.
Policy 2.10. Loading Areas: Facilitate the provision of adequate on and off-street loading areas.	Consistent. Phase 3 of the Project would construct a new Zoo service center with improved driveway access and two new 160-degree radius turnaround locations for larger trucks to facilitate deliveries and improve loading efficiency, avoiding conflicts with internal Zoo circulation and operations of surrounding roadways.
Policy 3.1. Access for All: Recognize all modes of travel, including pedestrian, bicycle, transit, and vehicular modes - including goods movement – as integral components of the City's transportation system.	Consistent with Mitigation. The Project does not include multi-modal improvements or expansion of active transportation facilities to ensure accessibility to the Zoo. Under the Project, visitors and employees would continue to mainly use passenger vehicles to travel to and from the Zoo, which presents a barrier to mobility and accessibility in the region and generate air emissions and GHGs. Lack of regional transit access and pedestrian/bicycle facilities at the Zoo reduces the productivity of the transportation system to serve Zoo visitors and employees using non-vehicular modes. However, **MM T-2** would require implementation of a comprehensive TDM Program which would include measures to incentivize rideshare/carpooling, parking management, and use of non-vehicular modes for both employees and visitors, including expansion of transit service connection to the Zoo. With implementation of **MM T-2**, the Project would be consistent with this regional policy.
Policy 2.6. Bicycle Networks: Provide safe, convenient, and comfortable local and regional bicycling facilities for people of all types and abilities.	Consistent. The streets on the Project frontages (Zoo Drive and Western Heritage Way) are identified in the Mobility Plan 2035 as providing a Tier 2 Bicycle Lane as part of the City of Los Angeles's Bicycle Network. These facilities currently exist and would be maintained with development of the Project. The realignment of

Table 3.15-5. Regional Circulation Plans, Policies, and Programs Consistency Analysis (Continued)

Policy	Relationship to Project
Policy 3.5. Multi-Modal Features: Support "first-mile, last-mile solutions" such as multi-modal transportation services, organizations, and activities in the areas around transit stations and major bus stops (transit stops) to maximize multi-modal connectivity and access for transit riders.	Western Heritage Way/Crystal Springs Drive and reconfiguration of the south parking lots would be designed to all applicable City standards, including bicycle facilities. The Project would not modify existing multi-use trails in the vicinity, maintaining access for bicycles adjacent to the Zoo and regionally (i.e., Los Angeles River trail).
Policy 3.7. Regional Transit Connections: Improve transit access and service to major regional destinations, job centers, and inter-modal facilities.	
Policy 3.8. Provide bicyclists with convenient, secure, and well-maintained bicycle parking facilities.	Consistent. The Zoo currently provides approximately 54 bicycle parking spaces and would continue to provide bicycle parking at the Zoo Entry under the Project. The streets on the Project frontages (Zoo Drive and Western Heritage Way) are identified in the Mobility Plan 2035 as providing a Tier 2 Bicycle Lane as part of the City of Los Angeles's Bicycle Network. These facilities currently exist and would be maintained with development of the Project. Connections to the Los Angeles River bicycle path would remain under the Project to provide regional connectivity.
Policy 4.8. Transportation Demand Management Strategies: Encourage greater utilization of Transportation Demand Management (TDM) strategies to reduce dependence on single-occupancy vehicles.	Consistent with Mitigation. The Mobility Plan recommends several TDM Program Elements to consider, including telecommuting and flexible work hours, carpool/vanpool, transit pass subsidies, and bicycle facilities, among others. The Zoo currently provides and would continue to utilize compressed work weeks and flexible work schedules. This is due to the unique hours of operation, schedules, and employee shifts that align with non-peak hours, thereby reducing traffic congestion. As part of the TDM Program under **MM T-2**, the Zoo would consider allowing telecommuting for City employees (particularly for GLAZA, administrative, and marketing employees who are not required on-site) or alternative work schedules, such as the 9/80 or 4/10 schedule, at discretion of the Zoo General Manager. As a City department, Zoo employees are offered transit subsidies through the City's Transit Subsidy Reimbursement Program. In addition, the Zoo currently provides and would continue to provide bicycle parking at the Zoo Entry. The proposed Phase 1 road realignment would also allow the Zoo's southbound bus stop to be moved to Western Heritage Way between the Zoo and Autry Museum of the American West, improving the efficiency of public transportation access to the Zoo, the North Hollywood High School Zoo Magnet Center, and Autry Museum. However, increased visitation and employment would drive transportation impacts related to increased VMT. The Project does not include multi-modal improvements or expansion of active transportation facilities to ensure accessibility to the Zoo. Under the Project, visitors and

Table 3.15-5. Regional Circulation Plans, Policies, and Programs Consistency Analysis (Continued)

Policy	Relationship to Project
	employees would continue to mainly use passenger vehicles to travel to and from the Zoo, which presents a barrier to mobility and accessibility in the region. Lack of regional transit access and pedestrian/bicycle facilities at the Zoo reduces the productivity of the transportation system to serve Zoo visitors and employees using non-vehicular modes. **MM T-2** would require implementation of a comprehensive TDM Program which would include measures to meet the goal of reducing employee VMT by 10 percent and reducing visitor VMT below projected conditions by the maximum extent feasible. With implementation of **MM T-2**, the Project would be consistent with this regional policy.
Policy 4.13. Parking and Land Use Management: Balance on-street and off-street parking supply with other transportation and land use objectives.	Consistent with Mitigation. The Mobility Plan notes that an abundance of free parking has the effect of incentivizing automobile trips and making alternative modes of transportation less attractive. The Zoo currently provides free parking. Parking fees are only charged for priority spaces on peak attendance days. The parking lots are largely unmanaged and are available to Zoo visitors, Autry Museum visitors, Zoo Magnet Center staff, and other Griffith Park visitors, including hikers and cyclists. Survey data collected for this analysis indicates that most employees (85 percent) drive to the Zoo, most commonly as single-occupant vehicles. Further, most visitors (95 percent) drive passenger vehicles and do not have ready access to transit, bicycle, or pedestrian facilities that allow reasonable transportation to the Zoo. **MM T-2** would require implementation of a comprehensive TDM Program which would include measures to which would include measures to meet the goal of reducing projected visitor and employee VMT and incentives to reduce vehicle trips to the Zoo, particularly on peak days. Implementation of MM T-2 could be funded by revenue generated by a Paid Parking Program. With implementation of **MM T-2**, the Project would be consistent with this regional policy.
Policy 4.14. Wayfinding: Provide widespread, user-friendly information about mobility options and local destinations, delivered through a variety of channels including traditional signage and digital platforms.	Consistent. The Project involves several improvements to wayfinding both within the Zoo and on surrounding roadways and access points. Improved signage on Zoo Drive and realignment of Crystal Springs Drive would create a direct route for drivers, and pedestrians to reach the Zoo Entry through the parking lot. Relocation of the bus stop to a more convenient location between the Zoo and the Autry Museum of the American West would foster improved wayfinding using available transit services on Metro Bus Line 96 and the Parkline Shuttle.
Policy 5.1. Sustainable Transportation: Encourage the development of a sustainable transportation system that promotes environmental and public health.	Consistent with Mitigation. The Project would result in a net increase in daily VMT that would range from roughly 80,000 during the mid-week to 158,000 new daily weekend VMTs by 2040. Total VMT associated with development of Project Phases 1-3 would increase 65 percent over the existing baseline by 2030, and 78 percent by 2040. The Project does not include multi-modal improvements or expansion of active transportation facilities to ensure accessibility to the Zoo. Under the Project, visitors and employees would continue to mainly use passenger vehicles to travel to and from the Zoo, which presents a barrier to mobility and accessibility in the region. Lack of regional transit access and pedestrian/bicycle facilities at the Zoo reduces the productivity of the transportation system to serve Zoo visitors and employees using non-vehicular modes. **MM T-2** would
Policy 5.2. Support ways to reduce VMT per capita.	

Table 3.15-5. Regional Circulation Plans, Policies, and Programs Consistency Analysis (Continued)

Policy	Relationship to Project
	require implementation of a comprehensive TDM Program which would include measures to incentivize rideshare/carpooling, parking management, and use of non-vehicular modes for both employees and visitors, including expansion of transit service connection to the Zoo. With implementation of **MM T-2**, the Project would be consistent with these regional policies.
Policy 5.4. Continue to encourage the adoption of low and zero emission fuel sources, new mobility technologies, and supporting infrastructure.	Consistent. Consistent with LAMC Section 99.05.106.5.3.3, the Project would provide at least 20 percent of the total number of additional parking spaces as electric vehicle spaces. In addition, as described in Section 2.3.3, *Vision Plan Guiding Principles*, a minimum to two charging stations shall be provided for each designated parking area of Zoo vehicles.
Hollywood Community Plan	
Land Use Element: Circulation	
The Hollywood Community Plan incorporates the Mobility Plan 2035 and notes "To accommodate the transportation needs of the [Hollywood] Community, the circulation system proposed in the Plan must be supplemented by a greatly improved public transportation system and/or additional streets and freeways. Unless such additional modes of transportation are provided, acute traffic congestion will be further aggravated in most parts of the community."	Consistent with Mitigation. As the adopted Hollywood Community Plan references the Mobility Plan 2035, please also see above detailed policy consistency analysis. The Zoo is a major regional destination drawing visitors and employees from throughout the Los Angeles region and greater Southern California area. Currently, most trips are made by personal vehicle and nearly all employee trips are made via single-occupant vehicles. Survey data collected for this analysis indicates that most employees (85 percent) drive to the Zoo, most commonly as single-occupant vehicles. Further, most visitors (95 percent) drive passenger vehicles and do not have ready access to transit, bicycle, or pedestrian facilities that allow reasonable transportation to the Zoo. The proposed Phase 1 realignment of Crystal Spring Drive would also allow the Zoo's southbound bus stop to be moved to Western Heritage Way between the Zoo and Autry Museum of the American West, improving the efficiency of public transportation access to the North Hollywood High School Zoo Magnet Center, Autry Museum, and the Zoo. However, increased visitation would drive transportation impacts related to increased VMT and existing transit services would not adequately serve increased demand from employees and visitors due to lack of regional connections, diversity of transit services, and efficiency of transit. While the Zoo is not a transit provider and does not have responsibility for provision of transit services, the Zoo is served by Metro Bus Line 96 and the Parkline Shuttle and works collaboratively with these agencies to ensure affordable, efficient, convenient, and attractive transit services. The Project does not include multi-modal improvements or expansion of active transportation facilities to ensure accessibility to the Zoo for employees and visitors. Under the Project, visitors and employees would continue to mainly use passenger vehicles to travel to and from the Zoo, which presents a barrier to mobility and accessibility in the region. Lack of regional transit access and pedestrian/bicycle facilities at the Zoo reduces the productivity of the transportation system to serve Zoo visitors and employees using non-vehicular modes. **MM T-2** would require implementation of a comprehensive TDM Program which would include measures to incentivize rideshare/carpooling, parking management, and use of non-vehicular modes for both employees

Table 3.15-5. Regional Circulation Plans, Policies, and Programs Consistency Analysis (Continued)

Policy	Relationship to Project
	and visitors, including expansion of transit service connection to the Zoo. With implementation of **MM T-2**, the Project would be consistent with this local policy.
Griffith Park Vision Plan	
Parking Structures. No parking structures currently exist in the Park and, at this time, there is no identified need for new parking structures in the Park. Furthermore, parking structures are inconsistent with the Park's Urban Wilderness Identity and the increased automobile traffic that inevitably occurs in proximity to such structures materially damages the park-like nature of the picnic areas and recreational facilities that are adjacent to the lots. If, in the future, the need arises for parking structures, those parking structures should be located immediately outside the boundaries of the Park with a fully developed park and ride shuttle system available to transport Park users into and around the Park (Page 63). No new parking structures should be introduced within the boundaries of the Park (Page 64).	Consistent. The Griffith Park Vision Plan applies only to areas of the Park controlled by RAP, which excludes Zoo property. The Project would involve construction of a multi-story parking structure outside of RAP controlled property. The proposed parking structure would be up to five stories in height in Phase 7, the final phase of the Project, to accommodate 2,000 spaces within the northern parking lot. The proposed parking structure would lie entirely within Zoo property in the northern parking lot. The proposed parking structure has been identified as needed to accommodate the growth in visitation projected under the Project and meet the Zoo's goals for long-term development and programming. Without it, Zoo parking demand would exceed supply 15 days in 2025, 25 days in 2027, and 51 days in 2030 (Appendix N). The Griffith Park Vision Plan does not identify a need for new parking structure in Griffith Park, but notes that if a need arises, then the parking structure should be developed outside the Park and served by a shuttle. The Griffith Park Vision Plan applies only to areas of the park controlled by RAP, which excludes Zoo property. Since the Zoo was not included in the Griffith Park Vision Plan process, the Griffith Park Vision Plan does not apply to Zoo property, including the northern parking lot. As the Griffith Park Vision Plan does not apply to Zoo property, the proposed structure included in the Project would not conflict with this aspect from the Griffith Park Vision Plan.
Commuters often travel at speeds well in excess of the posted 25°mile per hour speed limit which presents a safety hazard for Park visitors who share and cross the Zoo Drive/Crystal Springs/Griffith Park Drive corridor... Measures are necessary to minimize the use of Park roads as an alternative route for commuters (Page 60)	Consistent with Mitigation. The Project would improve the Zoo Drive/Western Heritage Way intersection with a signal in Phase 1 and potentially a roundabout or below-grade crossing to enhance accessibility and safety for pedestrians in Phase 7. The Project would also realign Crystal Springs Drive and reconfigure the south parking lots in accordance with all applicable City standards, including sidewalks and pedestrian crossings and a contiguous guest parking lot, which would improve the safety and comfort for pedestrians. Changes to operations and configurations of these roadways would potentially increase vehicle speeds. **MM REC-1** would require the long-term Zoo Drive/Western Heritage Way intersection improvements be considerate of pedestrian, bicyclist, and equestrian safety with regard to the Main Trail and that use of this important trail is not hindered by implementation of the improvement. With implementation of **MM REC-1**, the Project would be consistent with this local policy.

Table 3.15-5. Regional Circulation Plans, Policies, and Programs Consistency Analysis (Continued)

Policy	Relationship to Project
As it has for more than 110 years, parking should remain free in Griffith Park (Page 64).	Consistent. The Project would expand parking capacity at the Zoo's existing lot by adding 300 spaces to the southern parking lot and construction a 2,000-space multi-level parking structure in the northern parking lot. The Zoo currently provides free parking. Parking fees are only charged for priority spaces on peak attendance days. The parking lots are largely unmanaged and are available to Zoo visitors, Autry Museum visitors, Zoo Magnet Center staff, and other Griffith Park visitors, including hikers and cyclists. While free parking supports equitable access to Griffith Park, the Mobility Plan notes that an abundance of free parking has the effect of incentivizing automobile trips and making alternative modes of transportation less attractive. Survey data collected for this analysis indicates that most employees (85 percent) drive to the Zoo, most commonly as single-occupant vehicles. Further, most visitors (95 percent) drive passenger vehicles and do not have ready access to transit, bicycle, or pedestrian facilities that allow reasonable transportation to the Zoo. A parking management plan that includes a fee structure paired with incentives to reduce vehicle trips to the Zoo, particularly on peak days, would increase the Project's consistency with City policies to reduce trips. A parking fee program, as included in MM T-2, would potentially charge fees for visitors that currently enjoy free parking to reach Griffith Park attractions and trails. However, parking fees are charged at other Griffith Park attractions, including Griffith Observatory. Parking fees are used to enhance multi-modal transportation to the park to increase accessibility, including the Parkline Shuttle, providing free shuttle service within the Park. Additionally, the Griffith Park Vision Plan applies only to areas of the Park controlled by RAP, which excludes Zoo property. Thus, since the Zoo was not included in the Griffith Park Vision Plan process, the Griffith Park Vision Plan does not apply to Zoo property, including the northern parking lot. Therefore, a parking fee program within Zoo property would be consistent with the Griffith Park Vision Plan.
Consider the impact on trail users' access, safety and tranquility prior to undertaking Park trail and road repairs and improvements (Page 66).	
At this time, there is no clearly identified need for new recreational rides, such as railroads, aerial tramways, or funiculars (Page 68).	Consistent. The Project proposes a funicular and an aerial tram to improve accessibility within the Zoo and the Zoo has identified these features as important to improving patron mobility. These facilities would only operate in the Zoo and would not extend into undeveloped areas of Griffith Park subject to the Griffith Park Vision Plan. The funicular would become operational in Phase 1 to climb a hillside in the California planning area to bring visitors to and from the proposed California Visitor Center. The aerial tram would become operational in Phase 3 to connect the Zoo Entry and orientation plaza with the Africa Visitor Center in the Africa planning area. These improvements would improve accessibility for Zoo visitors and are included in the Project specifically to address unmet needs for transportation within the Zoo. These facilities would only operate in the Zoo and would not extend into undeveloped areas of Griffith Park. It should be noted that the Griffith Park Vision Plan applies only to areas of the Park controlled by RAP, which excludes Zoo property. Therefore, the proposed funicular and aerial tram within Zoo property would be consistent with the Griffith Park Vision Plan.

Table 3.15-5. Regional Circulation Plans, Policies, and Programs Consistency Analysis (Continued)

Policy	Relationship to Project
Plan for a Healthy Los Angeles	
Policy 5.7 Land use planning for public health and GHG emission reduction: Promote land use policies that reduce per capita greenhouse gas emissions, result in improved air quality and decreased air pollution, especially for children, seniors, and others susceptible to respiratory diseases.	Consistent with Mitigation. The Plan for a Healthy Los Angeles notes that land use patterns - the location of housing, jobs, schools, shopping, and open space - often dictate transportation patterns. Creating land use patterns that make walking, cycling, and taking transit viable modes of transportation to multiple destinations reduces the need for driving, and therefore reduces pollution and greenhouse gas emissions. The Plan also notes that a "City Built for Health" also has an accessible and efficient multi-modal transit system and refers to the Mobility Element for City policies related to circulation (see detailed analysis of Mobility Element policies above). Under the Project, increased visitation and employment would drive GHG and air quality impacts related to increased VMT for the Zoo, which is a regionally serving attraction. Further, the Project does not include multi-modal improvements or expansion of active transportation facilities to reduce vehicle trips and trip lengths for visitors and employees. **MM T-2** would require implementation of a comprehensive TDM Program which would include measures to expand non-vehicular transportation modes to the Zoo to reduce trips, VMT, and congestion, and improve air quality/reduce GHG emissions. With implementation of **MM T-2**, the Project would be consistent with this regional policy.

Implementation of **MM T-1** would reduce this impact by requiring the preparation of a Construction Impact Mitigation Plan, which would include provisional measures to reduce construction traffic, maintain public safety and associated VMT.

Operational

As previously described, the Zoo's location is isolated from major transit hubs. The only public transit service that currently serve the Zoo are the Metro local bus route (Route 96) and the Parkline Shuttle (refer to *Existing* Conditions). Therefore, the vast majority of the Zoo's visitors and employees drive to the Zoo (refer to Table 3.15-3). Further, employee vehicular commute rates are 15 percent higher than those for the City.

Project implementation would substantially increase daily VMT due to the addition of new employees and an increase of approximately 1.2 million new annual visitors. The largest increases in visitor VMT would occur post-completion of the proposed new California, Africa, and Treetops Visitor Centers in Phases 1, 2, and 3 (2020 through 2030), when the greatest increase in Zoo attendance is anticipated to occur. As shown in Table 3.15-6, Zoo attendance growth anticipated to occur under the Project would increase daily visitor VMT by approximately 58,324 VMT on Saturdays and Sundays, for a total of 139,287 daily visitor VMT. Throughout all phases, visitor VMT is equal to approximately 75 percent of total daily VMT on weekdays and 90 percent of total daily VMT on weekends.

Table 3.15-6. Projected Daily VMT for Visitors

Days of the Week	Daily Visitor VMT		Net Change	Percent Change
	Total	Per Visitor		
Existing				
M/F	42,061	11.92	-	-
T/W/TH	32,583	11.92	-	-
S/S	80,963	11.48	-	-
2025				
M/F	53,499	11.92	11,438	27%
T/W/TH	41,444	11.92	8,861	27%
S/S	102,981	11.48	22,018	27%
2027				
M/F	58,677	11.92	16,616	40%
T/W/TH	45,454	11.92	12,872	40%
S/S	112,947	11.48	31,984	40%
2030				
M/F	67,733	11.92	25,672	61%
T/W/TH	52,470	11.92	19,887	61%
S/S	130,380	11.48	49,417	61%
2040				
M/F	72,361	11.92	30,300	72%
T/W/TH	56,055	11.92	23,472	72%
S/S	139,287	11.48	58,324	72%

Notes: M/F = Mondays and Fridays; T/W/TH = Tuesdays, Wednesdays, and Thursdays; S/S = Saturdays and Sundays

Source: Fehr & Peers 2020. See Appendix N.

The employee share of total VMT is anticipated to almost double from a high of 12,555 daily VMT during the mid-week period under existing (2019) conditions to 24,250 daily VMT in 2040. Daily employee VMT would increase 27 percent over existing conditions by 2025, 43 percent by 2027, 74 percent by 2030, and 93 percent by 2040 (Table 3.15-7). At Project buildout in 2040, daily employee VMT is projected to increase by up to 11,785 on Mondays and Fridays for a total of 24,436 daily employee VMT (Table 3.15-6).

Table 3.15-7. Projected Daily VMT for Employees

Days of the Week	Daily Employee VMT		Net Change	Percent Change
	Total	Per Visitor		
Existing				
M/F	12,651	19.23	-	-
T/W/TH	12,555	19.23	-	-
S/S	9,978	19.23	-	-
2025				
M/F	16,091	19.23	3,440	27
T/W/TH	15,969	19.23	3,414	27
S/S	12,692	19.23	2,713	27
2027				
M/F	18,066	19.23	5,415	43
T/W/TH	17,929	19.23	5,374	43
S/S	14,250	19.23	4,271	43
2030				
M/F	21,972	19.23	9,322	74
T/W/TH	21,805	19.23	9,251	74
S/S	17,331	19.23	7,352	74
2040				
M/F	24,436	19.23	11,785	93
T/W/TH	24,250	19.23	11,696	93
S/S	19,274	19.23	9,296	93

Notes: M/F = Mondays and Fridays; T/W/TH = Tuesdays, Wednesdays, and Thursdays; S/S = Saturdays and Sundays
Source: Fehr & Peers 2020. See Appendix N.

As described in Section 3.15.2, *Impact Assessment Methodology*, the TAG's established VMT threshold for event centers and regional-serving entertainment venues is a net zero increase in VMT. Given the nature of regional attractions, that typically attract visitors from a wide area this is a challenging standard to meet. Therefore, Project-related increases in VMT over the planning horizon of the Vision Plan would be considered potentially significant.

Table 3.15-8. Projected Daily VMT for Visitors

	Daily VMT Per Capita
2040 Zoo VMT Per Visitor	11.92
2040 Zoo VMT Per Employee	19.23
2017 State VMT Per Capita	23.97
2017 County VMT Per Capita	21.90
2017 City VMT Per Capita	9.30
2017 City VMT Per Employee	12.90

While the City's TAG requires VMT from event centers and regional-serving entertainment venue projects to be analyzed against a threshold of zero net increase in VMT, OPR's Guidelines recommend that a significant impact occurs when a residential or office project's VMT exceeds a level of 15 percent below the existing regional or city VMT per capita and per employee, respectively. Based on regional VMT data, 15 percent below the County's daily VMT per capita would be approximately 18.6. A 15 percent reduction in the City's daily VMT would be approximately 7.9 VMT per capita and approximately 11 VMT per employee. The Zoo's projected 2040 visitor VMT (11.92 VMT per capita) would be approximately 46 percent below the County's average daily VMT per capita and 28 percent above the City's average daily VMT per capita. Zoo employee daily VMT projected for 2040 (19.23 VMT per employee) would be 12 percent below the County's current average daily VMT per capita and 49 percent above the City' current average daily VMT per employee; as noted above, employee vehicular commuting also substantially exceeds City averages.

To provide perspective on available information on VMT for other regional attractions, the transportation assessment for the Inglewood Basketball and Entertainment Center Draft EIR determined that the average attendee vehicle trip length for Clippers games at the Staples Center is 18.7 miles, and average attendee vehicle trip length for concerts at The Forum is 20.3 miles. Therefore, existing and projected Zoo visitor and employee VMT per capita and per employee, respectively, are comparable to other regional event centers in the region.

As discussed under Impact T-1 above, this significant increase in VMT would be inconsistent with the adopted state, regional and local planning framework. For example, the City's Mobility Element 2035 has a goal of reducing citywide VMT by 5 percent every 5 years through 2035, the California 2017 Climate Change Scoping Plan calls for a 15 percent reduction in light duty VMT from Business as Usual by 2050, and SCAG's 2016 RTP/SCS has a goal to reduce per capita transportation emissions 18 percent by 2035. The Zoo's projected 61 percent increase in VMT by 2030 and 71 percent increase in VMT by 2040 would be inconsistent with the emissions and VMT reduction goals of state regional and City plans.

Because the Zoo is a regional destination located in a relatively transit poor area, with Zoo visitor mode share characterized by heavy reliance on vehicular travel, Zoo employee contributions to VMT are critical to potential mitigation efforts as the Zoo can work with employees to reduce trips and VMT more easily than with visitors. Implementation of **MM T-2** would require the Zoo to reduce employee VMT by 10 percent below existing conditions and reduce projected visitor VMT through implementation of a TDM Program, which would include measures to encourage and enhance active transportation, transit opportunities, ridesharing, and telecommuting. These TDM measures could be funded in part by revenue generated from a Paid Parking Program, as recommended under **MM T-2**.

Further, three bicycle and pedestrian bridges over the Los Angeles River and connecting to the Los Angeles River Bike Path were recently completed (in 2020) in the vicinity of Griffith Park. Three new pedestrian and bicycle connections to Griffith Park and the Project site are anticipated to be completed in advance of implementation of Phase 1 of the Zoo Vision Plan in 2025. These bridges will connect communities on the north and east side of the Los Angeles River to the Los Angeles River Bike Path (see Figure 3.15-3 and Figure 3.15-4). These would provide new opportunities for active transportation to Griffith Park and the Project site. The City is also currently planning to build two connecting bicycle facilities from the Los Angeles River Bike Path to Griffith Park adjacent to the Zoo. One connection point is approximately 0.4 miles east of the Zoo entrance, south of the intersection of Zoo Drive & Western Heritage Way. The other planned bicycle connection is near the intersection with Zoo Drive & Riverside Drive, approximately 0.8 miles north of the Zoo entrance. The planned neighborhood greenway and improvement of the existing bicycle facility on Riverside Drive will facilitate easy access between the Zoo, the bicycle path, and connections across the river into Glendale and Atwater Village. Continued growth of these networks will expand the Zoo's bikeshed (3 miles) to extend farther into residential communities in southern and western Glendale and encourage increased active transportation from surrounding neighborhoods to Griffith Park and the Project site, further reducing future VMT.

Mitigation to reduce Project VMT with a comprehensive, adaptive TDM program, along with active transportation improvements to ensure access to non-vehicular modes of travel, would substantially reduce the significance of this impact and would better align the Project with statewide and Citywide goals for VMT and GHG reduction. Nevertheless, based on the City's established net-zero VMT threshold, which stipulates that any net increase in VMT for event centers and regional-serving entertainment venues would be significant, the projected increase in Project VMT would be *significant and unavoidable*.

T-3:	Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Construction

As described in Section 2.4, *Vision Plan Implementation*, construction of the proposed Project would be implemented through a 20-year development program encompassing most of the Zoo campus in seven phases, including near-term Phases 1, 2, and 3 that would be completed by 2030 and long-term Phases 4, 5, 6, and 7 that would be implemented through the Vision Plan's horizon (2040). Each phase of the Project would generally entail the following stages: pre-construction design and permitting; demolition and grading; site preparation (including installation of utilities and stormwater infrastructure); construction; architectural coatings/finishing; and final landscaping. Building construction, paving, and architectural coating activities would occur within each phase, sequentially.

Construction traffic would include heavy haul trucks, cement trucks, equipment delivery trucks, and construction worker vehicles. Demolition would require the use of typical construction equipment, such as backhoes, to break up and remove existing asphalt, concrete, and building materials. Heavy equipment, such as bulldozers and excavators, and heavy trucks would be used to haul away large amounts of debris to a City-approved mixed C&D debris recycling facility. During excavation, heavy haul trucks would be needed for import and export of materials. The majority of excavation and soil export would occur during the construction of the Zoo Entry and California (Phase 1) and Africa (Phase 3) planning areas. The timing and frequency of heavy haul trucks would be dictated by the rate of excavation activities within the California and Africa hillside areas. This phase would also involve delivery trucks trips, construction worker vehicle trips, and other construction-related trips that would add dozens of additional trips per day to the surrounding street network and I-5 and SR-134 freeways throughout the construction period. However, construction-related increases in traffic would be intermittent across the Project's seven phases and lower in volume than the projected operational vehicle trips associated with the proposed Project. Therefore, it would not contribute significantly to long-term traffic safety hazards.

Increased construction traffic on freeways and streets, particularly large haul trucks and other heavy equipment (e.g., cement trucks and cranes), may disrupt traffic flows, reduce lane capacities, and generally slow traffic movement. In addition, such traffic could interfere with or delay transit operations and disrupt bicycle and pedestrian circulation. For example, construction activities associated with the proposed Project may require the temporary or extended closure of adjacent traffic lanes and sidewalks on surrounding streets (i.e., Zoo Drive and Western Heritage Way) and recreational trails (i.e., Main Trail) to accommodate road realignment, intersection improvements, excavation for utilities, operation of construction equipment, etc. With the exception of proposed road and intersection improvements in Phase 1 and construction of the parking structure in Phase 7, all

construction equipment would be staged within visitor-restricted areas of the Zoo campus. Nevertheless, frequent heavy truck traffic entering and exiting the intersection of Zoo Drive & Western Heritage Way could interfere with pedestrian and bicycle flows along both streets, particularly during periods of high pedestrian activity such as events and festivals within Griffith Park and at the Zoo. Other potential construction-related impacts include idling, parked, or queued heavy trucks that could potentially obstruct visibility. Specific construction access points and haul routes would be determined during the pre-construction design and permitting associated with each individual construction phase.

As a result, construction activities and potential conflicts between vehicles, bicycles, pedestrians, and equestrians within Griffith Park would be potentially significant. Implementation of **MM T-1** would require preparation of a Construction Traffic & Access Management Plan to address construction traffic routing and control, safety, construction parking, and vehicle, bicycle, and pedestrian safety. The Construction Traffic & Access Management Plan would require construction flaggers be present during all haul trips to maintain the flow of traffic and allow safe passage for pedestrians across crosswalks, along the Main Trail, and crossing towards the North Hollywood High School Magnet Center. The Construction Traffic & Access Management Plan would address temporary traffic impacts that could occur during each construction activity. With the implementation of **MM T-1**, construction-related hazards would be reduced to *less than significant with mitigation*.

Construction areas within the Zoo would be temporarily fenced and blocked off to Zoo visitors and general employees during construction activities. All construction equipment would be staged within the construction fencing. If construction equipment is moved between planning areas, this would occur in the early morning before the Zoo opens to the public. Therefore, construction activities within the Zoo would not result in safety hazards and impacts would be *less than significant*.

Operational

Intersection and Driveway Hazards in the Project Vicinity

The design of each Project phase would be required to undergo review by City agencies, including a review of roadway improvements and operations so that vehicle, bicycle, and pedestrian access are adequately accommodated without obstructing, hindering, or impairing drivers' reasonable and safe views of other vehicles, people walking, or people bicycling on the same street and/or restricting the ability of a driver to stop a motor vehicle without danger of an ensuing collision. Design features of individual development projects would need to be consistent with Mobility Plan 2035 policies, Walkability Checklist standards, and Vision Zero policies, which focus on eliminating existing hazards and designing the transportation network so as to enhance safety of all ways of travel. Although the Project would add vehicle trips to the surrounding roadways, this general increase in vehicle traffic volumes would be distributed among multiple streets in the Transportation Assessment area and would not be considered to substantially increase traffic hazards.

The Vision Plan proposes both onsite and offsite roadway improvements to provide for adequate internal parking lot circulation (refer to Section 2.3.6, *Proposed Circulation &* Transportation). For improved efficiency and safety, Western Heritage Way would be realigned to the southeastern perimeter of the south parking lot in Phase 1 of Vision Plan implementation. This would create a unified visitor parking lot and eliminate the need for pedestrians, whether Zoo visitors parking in the overflow parking lot, or North Hollywood High School Zoo Magnet Center students and staff, to cross this roadway to access these destinations. This proposed road realignment would also allow the Zoo's southbound bus stop, currently located at the southwestern corner of the main parking lot, to be relocated to Western Heritage Way between the Zoo and the Autry Museum of the American West. This bus stop would be relocated adjacent to the entrance to the Autry Museum and the crosswalk that leads to the Zoo Entry promenade. As such, the proposed relocation of the Metro bus stop would improve the efficiency of public transit access to both attractions. The existing main parking lot south driveway (Driveway 2) would be relocated to the southwestern edge of the reconfigured parking lot. The existing driveway serving the overflow parking lot and the North Hollywood High School Zoo Magnet Center would be eliminated, thereby reducing the potential vehicle and bicycle conflicts at that location. The realigned roadway and south driveway would be engineered to comply with LADOT standards and designed to intersect the roadway at a right angle to address line of sight, turning radii, spacing, etc. The roadway would also provide necessary sidewalks, crosswalks, and pedestrian movement controls to meet the City's requirements to protect vehicle, bicycle, and pedestrian safety. The roadway would also be designed to accommodate mobility services for TNCs (e.g., Uber, Lyft, etc.). The existing Class II bicycle facility would be maintained on Western Heritage Way/Crystal Springs Drive following the roadway and driveway realignments. The driveway would be designed and configured with sufficient sight-distance to avoid potential conflicts with transit services, bicycles, and pedestrian traffic, consistent with the Citywide Design Guidelines. Therefore, the Project would not substantially increase hazards or conflicts, and would contribute to overall vehicle, bicycle, and pedestrian safety. The proposed signalization of the Crystal Springs Drive & Zoo Drive intersection would also occur during Phase 1 of the Vision Plan. Signalization of the intersection would provide pedestrian crosswalks and walking signals to increase safety for bicycles, pedestrians, and equestrians crossing Zoo Drive.

The Vision Plan also contemplates long-term improvements to this intersection to address vehicular congestion, including a roundabout or grade separation of the intersection planned for Phase 7 of the Vision Plan, if needed. The roundabout option would reduce stopping at the intersection and would therefore facilitate speeding and cut-through traffic through Griffith Park, potentially increasing vehicle speeds and conflicts between bicycles and pedestrians. The grade separation option would place the north-south movements below the east-west movements with connections by ramps. Grade separation would also increase vehicle speeds and speeding, induce vehicle demand for use of Griffith Park as a cut-through facility for commuters, and decrease safety for all roadway users, all of which would be potentially inconsistent with the goals and policies outlined in the Griffith Park Vision Plan (refer to

Impact T-1). The Griffith Park Vision Plan emphasizes moderating vehicle speeds and discourages the use of Park roadways as cut-through facilities, travel behavior which presents a safety hazard for Park visitors who share and cross park roadways, and is disruptive to the tranquility of the Park. The implementation of the roundabout or grade separation options to the intersection of Zoo Drive & Western Heritage Way would have the potential to create safety hazards for bicycles, pedestrians, and equestrians due to increased speeds and speeding through Griffith Park. However, these designs are still conceptual and final designs for intersection improvements would be developed in consultation with LADOT and RAP to prioritize safe travel for people driving, walking, and bicycling within the Transportation Assessment area.

The roadway and intersection designs would undergo more detailed design and review prior to approval of a grading permit. The street designs would be subject to approval by LADOT, RAP, and the Los Angeles Fire Department (LAFD), along with other City agencies. Therefore, the changes to the transportation network would be consistent with City policies and design standards and would not result in significant driving hazards. Thus, with compliance with City standards and regulations and review and approval by various City agencies, the proposed Project would not create potentially hazardous conditions for people driving, and impacts related to driving hazards would be *less than significant*.

Internal Zoo Transportation Hazards

Proposed internal circulation changes would improve pedestrian and vehicle mobility and safety by simplifying travel through the Zoo campus. The proposed internal circulation system would separate all service traffic from pedestrian routes to improve the visitor safety and operational efficiencies. The proposed Primary Path Loop would provide a complete and intuitive circulation loop for visitors to enjoy all the Zoo's exhibits, rather than the current out-and-back path Zoo visitors use today. Clear guest pathways would streamline circulation and avoid confusion or "cutting through" landscaping and exhibit areas. These internal circulation improvements would also be graded at no more than 5 percent slope to provide more ADA-accessible and pedestrian-friendly navigation for visitors. The two proposed turnarounds for large delivery trucks at the Gottlieb Animal Health and Conservation Center and the Service Center would be accessed via dedicated service roads to avoid conflicts with visitor traffic.

As described in Section 3.9, *Hazards and Hazardous Materials*, development of the proposed ATS and funicular at the Zoo would increase the potential for safety hazards associated with engineering functions. The ATS would comply with the current applicable safety regulations, including Safety Requirements for Passenger Tramways (ANSI B77.1) as well as CCR Title 8, Subchapter 6.1, Article 8 Wire Rope and Strand Requirements. Similarly, design, construction, operation, and maintenance of the California planning area's funicular would comply with the current American National Standard for Funiculars–Safety Requirements (ANSI B77.2). Implementation of the current engineering design and

operational standards for the proposed ATS and funicular would ensure there are no near-term or long-term safety impacts associated with operation of these structures. Therefore, incorporation of the ATS and funicular at the Zoo under the proposed Project would result in no significant impacts to safety.

Proposed Project improvements to the Zoo's internal circulation would result in minor beneficial and *less than significant* operational impacts to transportation safety hazards.

T-4: Would the project result in inadequate emergency access?

Construction

Project implementation would involve demolition, excavation, and construction of roadways, pathways, and access routes both internal and external to the Zoo. Construction activities would result in temporary changes to roadways, access points, and staging areas that currently provide emergency access to the Zoo and nearby areas in Griffith Park.

As described in Section 3.13, *Public Services*, roads surrounding the Zoo provide direct emergency access to the western and southern sides of the Zoo and the southeastern area of Griffith Park. Temporary disturbance of these roadways during Phase 1 (2020-2025) has the potential to temporarily block emergency access due to realignment and repaving of roadways and staging of large construction equipment. Specifically, the collective effect of potential reconstructing the Zoo Drive/Western Heritage Drive intersection and realigning Crystal Springs Drive during the same phase would potentially cause congestion during peak hour conditions that would obstruct emergency access. Emergency vehicles may also be required to navigate detours and other temporary traffic controls that can often change regularly during construction. Dedicated emergency access points to the Zoo may change or be incidentally blocked by these temporary conditions.

Construction of internal Zoo improvements, including visitor-serving uses, pathways, and access roads, would occur over seven phases where each phase would be completed prior to groundbreaking on the next phase. During construction of each phase, the area affected would be closed and fenced off for regular access while the remainder of the Zoo would remain open and accessible. This proposed phasing plan would limit disruption or obstruction of access and evacuation routes within the Zoo during construction. However, during Phase 1, the Zoo Entry and California planning areas would be under construction concurrently and closed to the public, which would impair both access and evacuation through the front gates. Also, throughout construction, internal rerouting and temporary closures of the proposed planning areas may block evacuation routes or cause circuitous or inefficient evacuation, as well as limit emergency access to internal areas of the Zoo.

To ensure emergency access is maintained during Project construction, a construction-phase Zoo circulation and access plan would ensure that an alternate entrance and secondary access is available and clearly indicated and that emergency responders could proceed directly to the most efficient entrance without undue delay or confusion. LAFD would be notified of any

Project traffic control plans implemented during construction of external roadway improvements (e.g., Crystal Springs Drive/Western Heritage Way) to coordinate emergency response routing. With this coordination, the proposed Project would not interfere with emergency access to the site. Similarly, current Zoo access plans on file with LAFD would ensure that any temporary access routes delineated during construction would inform emergency responders of alternate primary and secondary entrances.

Implementation of **MM T-1**, requiring a Construction Traffic & Access Management Plan with measures for controlling and ensuring continued access to the Zoo and through the interior of the Zoo circulation system, would address impacts from construction of proposed improvements on emergency access. The Construction Traffic & Access Management Plan would also establish procedures for coordination with local emergency services, training for flagman for emergency vehicles traveling through the work zone, and other measures as necessary to facilitate emergency vehicle travel. Thus, the Construction Traffic & Access Management Plan would ensure the continued provision of emergency access during construction of the proposed Project. Implementation of **MM T-1** would ensure that construction impacts on emergency access would be *less than significant with mitigation*.

Operational

The proposed Project would include improvements to existing roadways and circulatory systems both within and surrounding the Zoo, which would improve direct emergency access to the Zoo. Emergency access to the Zoo is currently available via Crystal Springs Drive, Zoo Drive, and Griffith Park Drive. Access into the Zoo is available at the employee and service entrance located south of the Zoo Entry from Crystal Springs Drive and at the Gottlieb Animal Health and Conservation building from Griffith Park Drive. Under the Project, emergency vehicles would access the Project site through either:

- The Zoo's existing main service and administrative entrance on the east end;
- An improved delivery vehicle entry at the Gottlieb Animal Health and Conservation Center on the west end; or
- A new vehicle entrance proposed at the existing employee parking area at the north end of the Zoo within the California planning area.

As described in Section 3.13, *Public Services*, the proposed Project would include improvements to existing roadways and circulatory systems both within and surrounding the Zoo that would improve emergency access. Improved vehicle entry at the Gottlieb Animal Health and Conservation Center and a new vehicle entrance emergency vehicle access from Zoo Drive would expand and enhance emergency access to the interior of the Zoo and the perimeter fence line. In addition, proposed realignment of Crystal Springs Drive and improvement of the Crystal Springs Drive & Zoo Drive intersection would reduce congestion and improve emergency vehicle response to the Zoo. These external circulation improvements would occur in Phase 1 of the Project, which would provide improved access to the Zoo early in Project implementation. Proposed offsite improvements at the intersection

of Zoo Drive and Western Heritage Way would also reduce congestion on local roads and both I-5 and SR-134. Proposed parking improvements, including an additional 300 spaces at the east end of the Zoo Magnet Campus during Phase 1, the construction of a multi-story above ground parking structure on the north parking lot during Phase 7, and the addition of staff parking lots at the Gottlieb Animal Health and Conservation Center and proposed service center building, would expand parking availability, thereby reducing congested circulation as vehicles make multiple rounds in search of open parking spots. Such external improvements could reduce overall traffic congestion and increase site accessibility for emergency response vehicles as well.

Proposed improvements to internal service roads would occur phase by phase to allow for more efficient and direct emergency access to areas within the Zoo. Emergency vehicle access to the interior of the Zoo would be expanded and enhanced by the proposed improvements to the Project site's internal circulatory system, including the reconfiguration of internal pedestrian and non-pedestrian service roads lining the boundaries of the Zoo, leading either to the Gottlieb Animal Health and Conservation Center or the proposed Service Center Building. Installation of a perimeter tram road and improved service roads would provide improved emergency vehicle access to high fire hazard areas along the Zoo's perimeter. Service roads would be closed to visitors, allowing efficient and direct emergency response to areas within the Zoo. Further, proposed improvements to pedestrian paths would also expand site accessibility, given that proposed circulation improvements would be required to meet LAFD and California Fire Code standards. Improvement of existing Zoo perimeter roads and construction of new perimeter roads within the California planning area in Phase 1 would also improve emergency vehicular access to the Zoo's high fire hazard areas. These improvements would create more direct and efficient emergency response access to all areas within the Zoo and would not degrade or further exacerbate existing emergency access to the Zoo.

Proposed improvements to site circulation and access would maintain or improve emergency access to the site. Therefore, Project operational impacts to emergency access would be *less than significant*.

3.15.4 Mitigation Measures

MM REC-1 shall apply.

MM T-1 Construction Traffic & Access Management Plan

The Zoo shall prepare, implement, and maintain a Construction Traffic & Access Management Plan during the pre-construction design and permitting for each Project phase to address traffic management during construction. The Construction Traffic & Access Management Plan shall be subject to LADOT approval and designed to:

- Minimize traffic impacts on the surrounding street network within Griffith Park and surrounding areas to the maximum extent feasible during each construction phase;

- Minimize impacts to existing public recreational uses and parking to the greatest extent practicable;
- Ensure safety for both those constructing the proposed Project and the surrounding community;
- Minimize the impacts of truck traffic within Griffith Park;
- Avoid conflicts with planned events and festivals within Griffith Park to the greatest extent possible; and
- Provide for coordination with adjacent or nearby construction projects.

To achieve these outcomes, the Plan shall, at a minimum, include the following:

1. Ongoing Requirements throughout the Duration of Construction

- A detailed Construction Traffic & Access Management Plan for work zones shall be maintained. At a minimum, this shall include parking and travel lane configurations; warning, regulatory, guide, and directional signage; and area sidewalks, bicycle lanes, and parking lanes. The plan shall include specific information regarding the Project's construction activities that may disrupt normal pedestrian and traffic flow and the measures to address these disruptions.
- Work within the public right-of-way (i.e., road realignment, intersection improvements, construction of the proposed parking structure) that is performed before 9:00 AM and after 2:00 PM on weekdays during the school year shall require flaggers and traffic controls to avoid conflicts with pick-up and drop-off at the North Hollywood High School Magnet Center.
- Any requests for work before or after normal construction hours within the public right-of-way shall be subject to review and approval through the After-Hours Permit process administered by the Los Angeles Department of Building and Safety.
- A Zoo-funded on-site construction monitor shall be present to ensure safety when work occurs within the public right-of-way (i.e., road realignment, intersection improvements, construction of the proposed parking structure), or when more hazardous activities are occurring such as heavy-haul materials delivery or oversize transport. The Construction Traffic & Access Management Plan shall identify the activities that would prompt the presence of an on-site monitor.
- Trucks shall only travel on a City-approved construction route. Construction routes shall avoid Griffith Park roads to the maximum extent feasible. Truck queuing/staging shall not be allowed on City streets. Limited queuing may occur on the construction site itself.
- Staging areas for construction materials and equipment shall be limited to fenced-off areas within the Zoo campus (with the exception of the road realignment and intersection improvements during Phase 1 and construction of the parking structure during Phase 7).

- Materials and equipment shall be minimally visible to the public; the preferred location for materials is to be onsite, with a minimum amount of materials within a work area in the public right-of-way.
- Off-street parking shall be provided for construction workers, which may include the use of a remote location with shuttle transport to the site, if determined necessary by the City.
- At the discretion of the City, construction work shall not be permitted during City-approved or RAP-sponsored large events or festivals (e.g., Griffith Park Trail Race, Harvest Festival, concerts at the Greek Theatre) within Griffith Park.

2. Project Coordination Elements That Shall Be Implemented Prior to Commencement of Construction

- The Zoo shall advise the traveling public of impending construction activities through active outreach measures (e.g., information signs, portable message signs, media listing/notification, social media, and implementation of an approved Construction Traffic & Access Management Plan).
- The Zoo shall obtain needed City permits (e.g., Use of Public Property Permit, Oversize Load Permit), as well as any Caltrans permits required, for any construction work requiring encroachment into public rights-of-way, detours, or any other work within the public right-of-way.
- The Zoo shall provide timely notification of construction schedules to all affected agencies (e.g., Metro, RAP, LAFD, LAPD, Public Works Department, and BOE), as well as adjacent facilities (e.g., Autry Museum of the American West, Zoo Magnet School, Wilson-Harding Golf Course).
- The Zoo shall coordinate construction work with affected agencies in advance of start of work. Coordination with Metro regarding construction activities that may impact Metro bus lines (e.g., Metro Line 96) or result in closures lasting over 6 months shall be initiated at least 30 days in advance of construction activities.
- The Zoo shall obtain LADOT approval of any haul routes for earth, concrete, or construction materials and equipment hauling.

MM-T-2 Zoo Transportation Demand Management (TDM) Program

The Zoo shall prepare and implement a comprehensive TDM program to provide trip reduction strategies for Zoo visitors and employees. The TDM program shall be prepared by a qualified transportation planner and submitted by the Zoo to LADOT for review and approval prior construction activity. The goal of the TDM Program shall be to reduce Zoo employee VMT by 10 percent below existing conditions by 2040. The TDM Program shall also apply all feasible VMT reduction strategies for visitor vehicle trips to reduce visitor VMT below projected conditions to the maximum extent feasible. The TDM Program shall be developed and approved prior to operation of Phase 1 of the Project and shall be maintained and adjusted as needed continuously.

The TDM Program shall be overseen by a Zoo TDM Coordinator. The Zoo TDM Coordinator shall be qualified transportation planner and may be a City/Zoo employee or contractor. The Zoo TDM Coordinator shall monitor visitor and employee mode share with annual surveys, collect and analyze parking and transit use data, and develop annual reports for submittal to BOE and LADOT. The surveys shall capture trip origin data, travel mode, number of people in the party, and other key data and indicators for TDM program performance relative to VMT. The Zoo TDM Coordinator shall ensure that monitoring efforts capture all Zoo-related travel behavior. Annual monitoring reports shall include trip length surveys completed at least biannually by a sample of Zoo patrons and annually by Zoo employees (e.g., trip origin data collection). Monitoring results shall be used to determine the appropriate TDM measures to employ in the coming year to maximize reductions in VMT per capita, champion transit and alternative mode transportation to the Zoo for visitors and employees, develop appropriate incentives to increase the Zoo's transit mode share incrementally over time, and develop effective marketing tools to advertise transit and non-vehicular travel mode availability and incentives.

Each annual TDM Program monitoring report shall:

- Describe the TDM efforts in place at the time to reduce vehicular trips;
- Summarize collected survey data and results;
- Evaluate parking utilization and transit use, comparing trends and annual changes;
- Analyze the results of trip reduction measures in reducing VMT relative to projected VMT increases;
- Evaluate change in available transportation infrastructure and programs serving the Zoo,
- Report the effect on Zoo employee and visitor VMT per capita and compare to current Citywide VMT per capita; and
- Provide recommendations for adjustments to the TDM Program to adaptively manage VMT reductions for visitors and employees.

The TDM Coordinator shall oversee annual monitoring and reporting to evaluate the effectiveness of the TDM measures being implemented at the Zoo and recommend adjustments as needed to the TDM Program on an annual basis. The annual report shall be submitted to LADOT for review. The TDM measures shall be assessed and adapted as necessary based on the results of this review. Final annual reports and data (e.g., survey data) shall be shared with the City and made readily available for public review and use.

The TDM Program shall be prepared consistent with the Mobility Element and in consultation with LADOT, as well as RAP, if required for measures affecting Griffith Park. Information regarding the TDM program shall be distributed to all Zoo employees and shall be posted on the Zoo's website and other marketing materials for Zoo visitors and updated annually as needed based on the annual reports.

The TDM Coordinator shall consider a range of measures for the TDM Program to reduce employee and visitor VMT per capita, including, but not limited to, the following:

1. Measures to Reduce Zoo Employee VMT Per Capita

- Encourage employee participation in existing vanpool programs, including City employee and Metro vanpool programs, or develop/expand the Zoo vanpool program.
- Provide employee incentives to participate in a vanpool program and regularly advertise the opportunities to vanpool through a variety of employee communication formats.
- Implement a paid parking program to discourage employee vehicle trips to the Zoo and generate revenue that the Zoo may use to expand transit ridership for employee trips. Pricing options of onsite employee parking spaces include pay-per-use or weekly/monthly parking passes.
- Partner with rideshare companies such as Uber or Lyft to guarantee availability of an emergency ride home or provide access to City vehicles for this purpose.
- Offer employee TDM benefits for use of active transportation commuter modes, including ridesharing, transit, bicycling walking, carpool/vanpool, etc. Incentives for Zoo employees could include flexible scheduling or options for telecommuting.
- Maximize opportunities for Zoo employee to telecommute as part of regular scheduling.
- Provide a transportation information center and a commuter club to support a collaborative approach among employees to TDM.
- Provide onsite bicycle facilities (i.e., shower, racks, and lockers) for Zoo employees in an amount and location informed by annual employee surveys and monitoring reports.
- Encourage bicycles as a primary commute mode for employees and provide incentives for biking to work, including providing free or discounted equipment to employees such as helmets, locks, bicycle commuter gear, and bicycles (electric or non-electric).
- Coordinate with LARiverworks, RAP, and LADOT to identify and facilitate new bicycle and pedestrian linkages and bridges between the Zoo and neighboring communities, particularly linkages to Los Angeles River Bike Path. The Zoo, RAP, and LADOT in consultation with the City of Glendale shall consider development of a new bicycle and pedestrian bridge across Colorado Boulevard, linking neighborhoods within the City of Glendale to Griffith Park, south of the Project site. The Zoo, RAP, and LADOT shall ensure that all bicycle and pedestrian linkages and bridges to Griffith Park are well-signed and provide lighting, are regularly patrolled by law enforcement.
- Continue to seek grant funding to support expanded TDM measures to reduce employee VMT per capita.

2. Measures to Reduce Zoo Visitor VMT Per Capita

- Offer discounted Zoo entrance tickets for patrons using transit to visit the Zoo. Visitors must provide proof of arrival via transit to receive discounted rate. Advertise the availability of ticket discounts for transit through social media and in coordination with RAP, LADOT, and Metro.
- Coordinate with Metro to increase bus service frequency to the Zoo bus stop.
- Seek funding opportunities to provide proportional share funding in coordination with RAP to expand Parkline Shuttle service to increase access to Griffith Park and Zoo from nearby Metro light rail stations, as follows:
  - Expand Parkline Shuttle service to connect to the Metro B Line Vermont/Sunset station in the south and the Metro B/G (formerly, Orange) Line North Hollywood station in the north. Shuttle routes should be coordinated with LADOT and RAP.
  - Extend Parkline Shuttle service hours to begin at 9:30 AM, before the Zoo opens each day. This expanded service should first be targeted to occur during peak demand periods such as Easter, Memorial Day, and during Los Angeles Unified School District (LAUSD) holidays, such as the week of spring break.
  - Coordinate with RAP to monitor the success of the Parkline Shuttle during such peak periods and to fund expansion of the service over time, as needed, to facilitate and accommodate increased ridership. The program shall then be expanded to broaden the hours and days of operation as needed to meet demand.
  - Coordinate with RAP on how best to advertise and perform outreach to user groups regarding the availability of this transit service and methods to increase ridership (e.g., social media outreach).
- Seek funding opportunities to provide proportional share funding in coordination with Metro and LADOT to provide an express shuttle service to and from Los Angeles Union Station and the Zoo.
  - Provide Union Station shuttle during operating hours on weekends and legal holidays. This new service shall first be targeted as a pilot program to occur during peak demand periods such as Easter, Memorial Day, and during LAUSD holidays, such as spring break week. If successful, the program shall then be expanded to broaden hours and days of operation.
  - Coordinate with Metro and LADOT on how best to advertise and perform outreach to user groups regarding the availability of this transit service and methods to increase ridership (e.g., social media outreach).
- Maintain and expand onsite bicycle parking for Zoo visitors in an amount and location informed by visitor surveys and annual monitoring reports.
  - Maintain and expand short-term bicycle parking within the Zoo to meet changing demands evaluated in the TDM Program annual reports.

- Provide well-lit, clearly signed, bicycle parking that is convenient and in close proximity to the Zoo Entry to encourage bicycling by visitors.
- Provide secure short-term bicycle parking and/or a bicycle parking attendant, bicycle valet, or indoor bicycle parking facility to prevent theft and ensure parking availability for Zoo visitors.
- Design bicycle racks with space-efficient configurations, such as vertically staggered racks and two-tier racks.
- Provide a bike share station at the Zoo as a part of the Metro Bike Share, Ofo, or a new bike share program specific to Griffith Park. Funding shall be determined based on the area required for the bike station. The bike share station shall be well-lit and located at a safe and convenient location adjacent to the Zoo entrance.

- Develop and implement a paid parking program for Zoo visitors to discourage personal vehicle trips to the Zoo and provide a secure funding source to help subsidize TDM, transit improvement, and other trip reduction measures, considering the following options:

  - A Peak Period Parking Program would charge for preferred parking during the highest visitation periods, including all weekends (Saturdays and Sundays), holidays, the spring months (April and May), and December, collecting fees for preferred parking on approximately 170 days of the year (based on the 2020 calendar year).
  - An Everyday Parking Program would charge for preferred parking 364 days of the year (every day the Zoo is open).
  - Maintain at least 15 percent of parking spaces as free parking to meet the needs of disadvantaged households and ensure that low-income visitors may continue to visit the Zoo.
  - The Zoo's TDM Coordinator shall prepare a quarterly report on the effectiveness of the Paid Parking Program and monthly revenue generated.
  - Continue to seek grant funding to support expanded TDM measures to reduce visitor VMT per capita.

3.15.5 Impacts Summary

Project Consistency with Applicable Plans, Policies, and Ordinances

Implementation of **MM T-2**, which would require implementation of a comprehensive TDM Program, would ensure the Project reduces projected VMT in accordance with the California Climate Change Scoping Plan, SCAG's 2016 RTP/SCS, and Mobility Plan 2035. Therefore, the Project along with required mitigation measures would meet all VMT goals within these plans. Final policy consistency would be determined as part of Project review and approval process with the City. However, based upon this preliminary analysis, the Project, with implementation of required mitigation measures identified in this EIR and required

consistency with existing regulations, would be consistent with the SCAG RTP/SCS, Los Angeles General Plan, Hollywood Community Plan, Griffith Park Vision Plan, and Plan for a Healthy Los Angeles. The Project would not cause significant environmental impacts due to conflicts with any transportation plan, policy, or regulation, and impacts, and the Project would not preclude the City's implementation of any adopted policy and/or program. Therefore, impacts would be *less than significant with mitigation*.

VMT

Implementation of the TDM Program (**MM T-2**) would reduce Zoo employee VMT by 10 percent. With implementation of **MM T-2**, daily employee VMT would be reduced to approximately 19,775 on Mondays and Fridays (the highest employee VMT days of the week) in 2030 and 21,992 in 2040 on Mondays and Fridays. This would result in a net increase from existing (2019) conditions of approximately 7,124 in 2030 and 9,341 in 2040. The TDM Program would also reduce daily visitor VMT below the projected 139,287 VMT in 2040.

While **MM T-2** would substantially reduce Project VMT, based on the City's established VMT threshold, which stipulates that any net increase in VMT for event centers and regional-serving entertainment venues would be significant, the projected increase in Project VMT would be *significant and unavoidable*.

Transportation Hazards

Implementation of **MM T-1** would minimize impacts related to construction traffic that would occur during each phase of construction over the 20-year planning horizon. Additionally, public notices, designated detour routes, and Zoo-provided construction flaggers would ensure continued pedestrian, bicycle, and vehicle safety within the vicinity of the Project site throughout the during of construction. By requiring haul trips to be restricted between 9:00 AM and 4:00 PM, peak early morning and afternoon construction truck trips would be reduced, which would reduce impacts on the surrounding transportation network during morning and evening commutes. By developing parking and access plans, construction of the proposed Project would generate reduced impacts on public roadways, and with designated haul routes approved prior to the commencement of construction, **MM T-1** would prevent substantial truck traffic in residential neighborhoods. By requiring flaggers, Project construction would avoid pedestrian safety impacts associated with pick-up and drop-off at the North Hollywood High School Magnet Center. Implementation of **MM T-1** would reduce construction-related transportation impacts to less than significant with mitigation incorporated.

Coordination and required approval of final roadway designs would ensure less than significant operational impacts to pedestrian, bicycle, and vehicle safety associated with the short-term and long-term intersection improvements at the intersection of Zoo Drive & Western Heritage Way.

Emergency Access

Implementation of **MM T-1** would reduce construction-related impacts on the street network and allow for the continued emergency access to the Project site. By requiring haul trips to be restricted between 9:00 AM and 2:00 PM, impacts on the surrounding transportation network would be reduced during the AM and PM peak hours. Additionally, **MM T-1** would require coordination with all affected agencies (e.g., Metro, RAP, Police Department, Fire Department, and DCP) and all owners and tenants of property within a radius of 500 feet. With this coordination and the implementation of measures identified in the Construction Traffic & Access Management Plan (e.g., flaggers), potential effects on emergency access would be minimized. As such, implementation of **MM T-1** would reduce construction-related impacts to *less than significant with mitigation*.

Proposed improvements to site circulation and access would maintain or improve operational emergency access and operational impacts to emergency access would be *less than significant*. There would be no unavoidable adverse impacts on emergency access associated with implementation of the proposed Project.

3.16 UTILITIES

The Project would upgrade the Zoo's existing outdated water, wastewater, and solid waste facilities that are necessary to adequately meet future demands and needs under the Zoo's projected growth over the next 20 years. Additionally, the Vision Plan's objectives work towards the City's overarching sustainability objectives such as water self-sufficiency with the use of water-efficient plumbing and the expanded use of recycled water to reduce the Zoo's potable water demand. Mitigation required to offset the Zoo's anticipated increase in potable water demand and associated wastewater generation would reduce adverse impacts on water supplies and the capacity of the sewer system.

This section describes existing and planned utilities and evaluates the operation and service capacity of these utilities to serve the Los Angeles Zoo and Botanical Gardens (Zoo) under the proposed Project. Utilities addressed herein include potable and recycled water, wastewater (sewer) facilities, and solid waste disposal. The utilities analysis is organized in three subsections: (1) water infrastructure and supply; (2) wastewater collection, transmission, and treatment; and (3) solid waste management. This section identifies the existing capacity of these utilities and services provided by the City of Los Angeles (City) and utility companies and evaluates whether capacity exists to accommodate the Project demands.

Table 3.16-1 identifies the utilities and service providers currently serving the Project site. Other utilities include energy (e.g., electricity and natural gas) and stormwater management facilities, but these resources are addressed in other sections of this Environmental Impact Report (EIR). Energy services and demands are addressed in Section 3.5, *Energy*. Stormwater management facilities are addressed in Section 3.10, *Hydrology and Water Quality*.

Table 3.16-1. Utilities Serving the Project Site

Utility	Provider
Water Supply	City of Los Angeles, Department of Water and Power (LADWP)
Wastewater Disposal	City of Los Angeles, Bureau of Sanitation (LASAN)
Solid Waste	LASAN and Department of General Services

3.16.1 Environmental Setting

Regulatory Setting

State and local regulations address water supply and water infrastructure, wastewater services, and solid waste disposal. There are no applicable federal regulations that address utilities. For regulations pertaining to electricity and natural gas supplies and services, refer

to Section 3.5, *Energy*. For regulations pertaining to stormwater management and water quality, please refer to Section 3.10, *Hydrology and Water Quality*.

State Regulations

Safe Drinking Water Act

California enacted its own Safe Drinking Water Act in 1976. The California Department of Public Health (CDPH) is responsible enforcing for the Safe Water Drinking Act. Title 22 of the California Code of Regulations (CCR) establishes CDPH authority and stipulates drinking water quality and monitoring standards. These standards are equal to or more stringent than the federal standards.

California Governors Drought Declarations

California Governor Brown on January 17, 2014 proclaimed a State of Emergency and directed state officials to take all necessary actions to make water immediately available. On April 25, 2014, the Governor issued an executive order (EO) to speed up actions necessary to reduce harmful effects of the drought, and he called on all Californians to redouble their efforts to conserve water. On December 22, 2014 Governor Brown issued EO B-28-14 extending directives to the California Department of Water Resources (DWR) and the State Water Resources Control Board (SWRCB) to take actions necessary to make water immediately available through May 31, 2016 and to extend California Environmental Quality Act (CEQA) suspensions for certain water supply projects. On April 1, 2015, the governor issued EO B-29-15. Key provisions include ordering the SWRCB to impose restrictions to achieve a 25 percent reduction in potable urban water usage through February 28, 2016. On May 9, 2016, the governor issued EO B-37-16, establishing longer-term water conservation measures through the end of January 2017, which include monthly water use reporting, strengthened urban drought contingency plans, elimination of wasteful water use practices, and mandated adjustments to emergency water conservation regulations and restrictions during extended drought conditions. These extended water conservation measures recognize differing water supply conditions for many communities and require that communities develop water efficiency measures and conservations plans specific to the conditions of their respective water supply. The Governor's drought declaration also calls upon local urban water suppliers and municipalities to implement their local water shortage contingency plans immediately in order to avoid or forestall outright restrictions that could become necessary later in the drought season. EO B-40-17, signed on April 7, 2017 ended the drought state of emergency in all California counties except Fresno, Kings, Tulare, and Tuolumne, where emergency drinking water projects will continue to help address diminished groundwater supplies. However, the EO maintains water reporting requirements and prohibitions on wasteful practices. Further, EO B-37-16, and the associated water use efficiency framework, remains in effect (DWR 2017a).

Sustainable Groundwater Management Act

On September 16, 2014, Governor Jerry Brown signed into law a three-bill legislative package, composed of Assembly Bill (AB) 1739 (Dickinson), Senate Bill (SB) 1168 (Pavley), and SB 1319 (Pavley), collectively known as the Sustainable Groundwater Management Act (SGMA). The SGMA requires local governments and water agencies of high and medium priority basins to halt overdraft and bring groundwater basins into balanced levels of pumping and recharge. Under the SGMA, these basins should reach sustainability within 20 years of implementing the required sustainability plans. For critically over-drafted basins, that will be 2040. For the remaining high and medium priority basins, 2042 is the deadline.

SGMA empowers local agencies to form groundwater sustainability agencies (GSAs) to manage basins sustainably and requires those GSAs to adopt groundwater sustainability plans (GSPs) for crucial groundwater basins in California. According to the SGMA, GSAs have until January 21, 2022 to develop their GSPs. The Project site is partially located within the San Fernando Valley Groundwater Basin, which is designated as a Very Low Priority groundwater basin. As such, SGMA does not require preparation of a GSP for the basin.

California Water Plan: Update 2013

The California Water Plan: Update 2013 provides a framework for water managers, legislators, and the public to consider options and make decisions regarding California's water future. The plan outlines actions that together bring reliability, restoration, and resilience to California water resources, reinforcing the value of integrated water management, and examining policies that allow water managers to combine flood management, environmental stewardship, and surface water and groundwater supply.

Urban Water Management Planning Act

The Urban Water Management Planning Act (California Water Code Division 6, Part 2.6, Sections 10610 et seq.) was developed due to concerns over potential water supply shortages throughout California. It requires information on water supply reliability and water use efficiency measures. Urban water suppliers are required, as part of the Act, to develop and implement Urban Water Management Plans (UWMPs) to describe water supply, service area demand, population trends and efforts to promote efficient use and management of water resources. An UWMP is intended to serve as a water supply and demand planning document that is updated every 5 years to reflect changes in the water supplier's service area including water supply trends, and conservation and water use efficiency policies. Specifically, municipal water suppliers that serve more than 3,000 customers or provide more than 3,000 acre-feet per year (AFY) must adopt an UWMP.

Senate Bill (SB) 610 and California Water Code Sections 10910 et seq.

SB 610 was adopted in 2001 and amended the statutes of the Urban Water Management Planning Act, as well as the California Water Code (CWC) Sections 10910 et seq. SB 610

reflects the growing awareness of the need to incorporate water supply and demand analysis at the earliest possible stage in the land use planning process.

CWC Section 10910 requires that for specified projects subject to CEQA, the urban water supplier must prepare a Water Supply Assessment (WSA) that determines whether the projected water demand associated with a proposed project is included as part of the most recently adopted UWMP. Specifically, the WSA identifies adequate available water supplies necessary to meet the demand, as well as the cumulative demand for the general region over the next 20 years, under average, single dry, and multiple dry year water conditions. Under CWC Section 10910, a WSA need only be prepared if a project exceeds the following specific thresholds of development:

a) A proposed residential development of more than 500 dwelling units.

b) A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet (sf) of floor space.

c) A commercial building employing more than 1,000 persons or having more than 250,000 sf of floor space.

d) A hotel or motel with more than 500 rooms.

e) A proposed industrial, manufacturing, or processing plant, or industrial park, planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 sf of floor area.

f) A mixed-use project that includes one or more of these elements.

g) A project creating the equivalent water demand of 500 residential units.

The WSA must be approved by the public water system at a regular or special meeting and must be incorporated into the CEQA document. The Lead Agency must then make certain findings related to water supply based on the water supply assessment. In addition, under SB 610, an urban water supplier responsible for the preparation and periodic updating of an UWMP must describe the water supply projects and programs that may be undertaken to meet the total projected water use of the service area.

2009 Water Conservation Act (SB x7-7)

SB x7-7 was enacted in November 2009, requiring all water suppliers to increase water use efficiency. The legislation sets an overall goal of reducing per capita urban water use by December 31, 2020 through water use targets for urban water suppliers, water management plans, and best management practices. Urban retailers can achieve the SB x7-7 goal using one of four specified methods:

a) Option 1: 80 percent of baseline use (reduction of 20 percent).

b) Option 2: Sum of specified performance standards.

c) Option 3: 95 percent of California Department of Water Resources Hydrologic Region target from draft 20x2020 plan.

d) Option 4: A flexible alternative designed to adjust to local circumstances.

Urban retail water suppliers must monitor and report compliance on an individual or regional basis. Individual urban retail water suppliers are not required to achieve a reduction in urban per capita water use greater than 20 percent. Compliance with the water reduction target is required for continued State water grants and loan eligibility. After 2021, failure of urban retail water suppliers to meet their targets establishes a violation of law for administrative or judicial proceedings.

California Code of Regulations, Title 20

The CCR, Title 20, Sections 1605.1(h) and 1605.1(i) establishes efficiency standards (i.e., maximum flow rates) for all new federally regulated plumbing fittings and fixtures, including showerheads, lavatory faucets, and flush toilets. Amongst these standards, the maximum flow rate is 1.2 gallons per minute (gpm) at 60 pounds per square inch (psi) for residential lavatory faucets and aerators, 1.8 gpm with optional temporary flow of 2.2 gpm at 60 psi for kitchen faucets and aerators, 0.5 gpm at 60 psi for public lavatory faucets, and 1.8 gallons per flush for flush toilets, effective January 1, 2016. Additionally, Section 1605.3(h) establishes State efficiency standards for non-federally regulated plumbing fittings, including commercial pre-rinse spray valves.

California Code of Regulations, Title 22, Division 4, Chapter 3

The CCR, Title 22, Division 4, Chapter 3 establishes water recycling criteria for use of recycled water for irrigation, impoundments, cooling, agriculture, and other purposes. These criteria set the standards for treating water to a disinfected tertiary level.

California Green Building Code

The California Green Building Code (CALGreen) builds on standards established under CCR, Title 20 and sets forth water efficiency standards (i.e., maximum flow rates) for all new federally regulated plumbing fittings and fixtures. Updates to CALGreen were published July 1, 2019 and became effective January 1, 2020. Mandatory standards for water use are shown in Table 3.16-2.

Table 3.16-2. CALGreen Mandatory Maximum Flow Rates

Feature	Maximum Flow Rates
Showerheads	1.8 gpm at 80 psi
Lavatory Faucet in Common Areas	0.5 gpm at 60 psi
Kitchen Faucet	1.8 gpm at 60 psi
Water Closets	1.28 gallons per flush
Urinals	0.125 gallons per flush (wall-mounted) 0.5 gallons per flush (floor-mounted)
Metering Faucets	0.2 gallons per cycle
Wash Fountains	1.8 gpm at 60 psi

Note: gpm = gallons per minute
Source: California Department of General Services 2018.

Assembly Bill (AB) 939 California Integrated Waste Management Act

The California Integrated Waste Management Act of 1989 stablished an integrated waste management hierarchy to guide the California Integrated Waste Management Board and local agencies in implementation, in order of priority: 1) source reduction; 2) recycling and composting; and 3) environmentally safe transformation and land disposal. The Act required each county to establish a task force to coordinate the development of city Source Reduction and Recycling Elements (SRREs) and a countywide siting element. The Act also required each county to prepare, adopt, and submit to the Board an Integrated Waste Management Plan (IWMP).

Additionally, waste diversion mandates were set in AB 939. The law required each city or county plan to include an implementation schedule which shows: diversion of 25 percent of all solid waste from landfill or transformation facilities by January 1, 1995 through source reduction, recycling, and composting activities; and, diversion of 50 percent of all solid waste by January 1, 2000 through source reduction, recycling, and composting activities. A city or county may be deemed exempt from these goals or to reduce the requirements if the city or county demonstrates that attainment of the goals is not feasible due to the small geographic size of the jurisdiction and the small quantity of waste generated. After January 1, 1995, the Act authorized the Board to establish an alternative goal to the 50 percent requirement, if the Board finds that the local agency is effectively implementing all source reduction, recycling, and composting measures to the maximum extent feasible.

SB 1374 Construction and Demolition Waste Materials Diversion Requirements

Passed in 2002, the Construction and Demolition Waste Materials Diversion Requirements require jurisdictions to include a synopsis of the amount of construction and demolition (C&D) waste diverted in their annual AB 939 report. The legislation also required that the California Integrated Waste Management Board (e.g., California Department of Resources Recycling and Recovery [CalRecycle]) to adopt a model ordinance for diverting 50 to 75 percent of all C&D waste from landfills.

SB 1016

SB 1016 builds on AB 939 compliance requirements by implementing a simplified measure of jurisdictions' performance. SB 1016 accomplishes this by changing the measurement of waste reduction from a diversion rate to a disposal-based indicator – the per capita disposal rate. The purpose of the per capita disposal measurement system is to make the process of goal measurement as established by AB 939 simpler, timelier, and more accurate. Beginning with reporting year 2007 jurisdiction annual reports, diversion rates will no longer be measured. With the passage of SB 1016, only per capita disposal rates are measured. For 2007 and subsequent years, CalRecycle compares reported disposal tons to population to calculate per capita disposal expressed in pounds/person/day.

AB 1826 Mandatory Commercial Organics Recycling

AB 1826 (Chapter 727, Statutes of 2014 [Chesbro, AB 1826]) requires businesses that generate a specified amount of organic waste per week to arrange for recycling services for that waste, and for jurisdictions to implement a recycling program to divert organic waste from businesses subject to the law, as well as report to CalRecycle on their progress in implementing an organic waste recycling program.

Zero Waste California

Zero Waste California is a state-launched program that promotes a new vision of waste. The concept is premised on maximizing existing recycling and reuses efforts, while ensuring that products are designed for the environment and have the potential to be repaired, reused, or recycled. The Zero Waste California program promotes the goals of market development, recycled product procurement, and research and development of new and sustainable technologies.

AB 341

AB 341 established a State policy goal that no less than 75 percent of solid waste generated be source reduced, recycled, or composted by 2020, and requiring CalRecycle to provide a report to the Legislature that recommends strategies to achieve the policy goal by January 1, 2014. AB 341 mandates local jurisdictions to implement commercial recycling by July 1, 2012. AB 341 requires any business (including schools and government facilities) that generates 4 cubic yards (cy) or more of waste per week, and multifamily buildings with five or more units to arrange for recycling services.

Health and Safety Code Section 17921.3

Health and Safety Code Section 17921.3 requires low-flush toilets and urinals in all buildings, including commercial, residential, institutional, and industrial buildings.

Regional Regulations

Metropolitan Water District Water Supply Allocation Plan

On February 12, 2008, the Board of Directors of the Metropolitan Water District (MWD) approved a Water Supply Allocation Plan. The Plan was prepared to address a balanced water allocation in the event that there is a water shortage. The plan provides reduced allocations to all of Metropolitan's service area; encompassing all Southern California counties. The intent is to share the burden of reduced water deliveries. The plan incorporates a number of elements including past conservation efforts, local water supplies and penalty fees. The penalty fees, if collected, would be re-invested in that area for further conservation efforts and extended development of local supplies.

Under the plan, MWD's member agencies and their retailers would be allocated supplies partly based on their dependency on the district's imported supplies, while considering other local supply sources. Among the changes were an update to the base period to fiscal years (FY) ending 2013 and 2014, and revised credits for per capita water use reductions for agencies that have already put in place mandatory conservation ordinances and requirements. Other changes establish a separate allocation for drought-impacted groundwater basins and replace current penalty rates with an allocation surcharge based on MWD's current turf removal program cost. This plan is not in effect now and would have to be brought to the Board for action before implementation.

Los Angeles County Integrated Waste Management Plan

The California IWMP is updated annually, and the annual reports analyze solid waste disposal and estimated future remaining capacity at County landfills. The 2017 Annual Report, which was completed by the Los Angeles County Department of Public Works in April 2019, assessed future landfill disposal needs over a 15-year planning horizon based in part on forecasted waste generation and available landfill capacity. Several factors were used in the 2017 Annual Report to determine landfill capacity, including (1) the expiration of various landfill permits (e.g., land use permits, waste discharge requirement permits, solid waste facilities permits, and air quality permits); (2) restrictions on the processing of waste generated outside given landfills' jurisdictions and/or watershed boundaries; and (3) operational constraints.

As discussed in the 2017 Annual Report, reliance on existing permitted in-County landfill capacity alone would be insufficient in meeting the County's long-term disposal needs (i.e., through 2032). Similar to previous years, the 2017 Annual Report also considered six scenarios (e.g. maximization of waste reduction and recycling; expansion of existing landfills; development of alternative technologies; expansion of transfer and processing infrastructure, and the use of out-of-County disposal options) to assess the County's ability to meet the solid waste daily disposal demand. The analyses of the scenarios demonstrated that the County would be able to meet the disposal needs of all jurisdictions through 2032. However, the

County acknowledged in the 2017 Annual Report that there will be significant challenges in developing the processing capacity needed by the 2020 deadline of meeting the 75-percent statewide recycling goal as set forth by AB 341 (see discussion above). Accordingly, they concluded that maintaining adequate reserve (excess) capacity will be essential to ensuring that the disposal needs of the County are met through 2032.

Local Regulations

In October 2014, City Mayor Eric Garcetti issued Executive Directive No. 5, which set goals to reduce per capita water use by 20 percent by 2017, reduce purchases of imported potable water by 50 percent, and create an integrated water strategy to increase local supplies and improve water security considering climate change and seismic vulnerability. On February 2, 2017, the Mayor announced that the City's 20 percent water reduction target had been met.

City of Los Angeles Department of Water and Power (LADWP) 2015 UWMP

LADWP's 2015 UWMP, adopted in June 2016, serves two purposes: (i) achieve full compliance with the requirements of California's Urban Water Management Planning Act (described above) and (ii) serve as a master plan for water supply and resource management consistent with the City's goals and objectives.

The LADWP UWMP includes estimates of past, current, and projected potable and recycled water use identifies conservation and reclamation measures currently in practice, describes alternative conservation measures, and provides an urban water shortage contingency plan. The factors forecasting the LADWP's future water demand include population projections from the Southern California Association of Governments' (SCAG) 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy (2012-2035 RTP/SCS)[1], LADWP water billing date from each major customer class, weather, and water conservation. The LADWP 2015 UWMP uses a service area-wide method to develop its water demand projections. This methodology does not rely on individual development demands to determine area-wide growth. Rather, the growth in water use for the entire service area was considered in developing long-term water projections for the City through the year 2040. LADWP's 2015 UWMP incorporates the objectives of the Sustainable City pLAn (see below). Overall, LADWP's 2015 UWMP projects a 7-percent lower water demand trend than what was projected in the previous 2010 UWMP.

Sustainable City pLAn

In April 2015, the City's first Sustainable City pLAn (pLAn) was released. The pLAn includes a multi-faceted approach to developing a locally sustainable water supply to reduce reliance on imported water, reducing water use through conservation, and increasing local water supply and availability. The 2015 Sustainable City pLAn enhances ED 5's goals and

[1] Since the adoption of the 2015 UWMP, the SCAG has prepared a 2016-2040 RTP/SCS with updated population projections for the state.

incorporates water savings goals of reduction in per capita potable water by 20 percent by 2017, by 22.5 percent by 2025, and by 25 percent by 2035, using a 2014 baseline of 131 gallons per capita per day. The pLAn also includes a reduction in imported water purchases from MWD by 50 percent of the total supply by 2025 and a 50-percent increase in water supply from local sources by 2035. Specific strategies and desired outcomes for conservation, recycled water, and stormwater capture are included in the pLAn. These include investments in state-of-the art technology, rebates and incentives promoting water-efficient appliances, tiered water pricing, a technical assistance program for business and industry, and large landscaped irrigation and efficiency programs.

In April 2016, the Sustainable City pLAn's First Annual Report for 2015 to 2016 was released. It was reported that the City had reduced water use by 19 percent to nearly achieve the 20 percent water reduction goal, and that rebates for water efficient appliances have contributed to conservation. As discussed above, as of February 2017, the City has met its 20 percent water reduction target, which also meets the Sustainable City pLAn's goal. As the Sustainable City pLAn's Second Annual Report for 2016 to 2017 was released in March 2017, the City began working toward its next goal of reducing municipal water use by 22.5 percent by 2025.

The pLAn's Third Annual Report was released in April 2018, noting that on January 17, 2018, Mayor Garcetti broke ground on the North Hollywood West Wellhead Remediation Project (NHWWRP), a project to clean up and restore the use of groundwater for safe, high-quality drinking water in the San Fernando Valley and in the City at large. LADWP was awarded a $44.5 million Proposition 1 grant from the SWRCB in January 2018 to help fund the NHWWRP, which is slated to be complete in 2020. The NHWWRP, in combination with three other planned remediation projects in the San Fernando Valley, advances two key pLAn goals – reducing the purchase of imported water by 50 percent by 2025 and producing 50 percent of City's water locally by 2035. By facilitating the use of additional groundwater from the San Fernando Basin, this project also furthers the goals of increasing recycled water use and stormwater capture.

In 2019, Mayor Garcetti launched Los Angeles' Green New Deal, which serves as an ambitious update to the Sustainable City pLAn (Office of Los Angeles Mayor Eric Garcetti 2019). The Green New Deal pLAn sets aggressive goals for the city's sustainable future. The plan's goals for water conservation and sustainable reuse include the following:

- Source 70 percent of the City's water locally and capture 150,000 AFY of stormwater by 2035;
- Recycle 100 percent of wastewater for beneficial reuse by 2035;
- Build at least 10 new multi-benefit stormwater capture projects by 2025; 100 by 2035; and 200 by 2050; and
- Reduce potable water use per capita by 22.5 percent by 2025; and 25 percent by 2035; and maintain or reduce 2035 per capita water use through 2050.

City of Los Angeles Integrated Resources Plan

The City's Integrated Resources Plan (IRP) was developed by multiple departments in order to address the facility needs of the City's wastewater program, recycled water, and urban runoff/stormwater management through the year 2020. The Final IRP 5-Year Review was released in June 2012 and included 12 projects that were separated into two categories: (1) "Go Projects" for immediate implementation, and (2) "Go-If Triggered Projects" for implementation in the future once a trigger is reached. Triggers for these projects include wastewater flow, population, regulations, or operational efficiency. Based on the Final IRP 5-Year Review, the Go Projects consisted of six capital improvement projects for which triggers were considered to have been met at the time the IRP EIR was certified. The Go-If Triggered Projects consisted of six capital improvement projects for which triggers were not considered to have been met at the time the IRP EIR was certified. Go Projects for the Los Angeles-Glendale Water Reclamation Plant (LAGWRP), which serves the Project site, include construction of wastewater storage that will allow operations to be more efficient while increasing its ability to provide consistent recycled water flows to customers and construction of recycled water storage that will allow the Plant to deliver recycled water to customers at times when wastewater flows are low (i.e., during the night).

One Water LA

One Water LA 2040 Plan provides a strategic vision and a collaborative approach for integrated water management. The City's IRP (discussed above) was the start of a paradigm shift for the City and resulted in significant achievements in water management. Since then, the water landscape in the City has changed with increased demands, new regulations, and threats of climate change. In response to these changes and to help achieve water sustainability, the City initiated the One Water LA 2040 Plan. This plan builds upon the success of the IRP, which had a planning horizon to year 2020. The One Water LA 2040 Plan takes a holistic and collaborative approach, to consider all water resources from surface water, groundwater, potable water, wastewater, recycled water, dry-weather runoff, and stormwater as "One Water." The plan identifies multi-departmental and multi-agency integration opportunities to manage the City's watersheds, water resources, and water facilities in a more efficient, cost effective, and sustainable manner. As with the IRP, such efforts would be organized in phases. Phase I of the One Water Los Angeles 2040 Plan includes developing initial planning baselines and guiding principles for water management and citywide facilities planning in coordination with City departments, other agencies, and stakeholders. Phase II includes development of technical studies and an updated facilities plan for stormwater and wastewater. The One Water LA 2040 Plan represents the City's continued and improved commitment to proactively manage all its water resources and implement innovative solutions, driven by the Sustainable City pLAn. The Plan will guide the City with strategic decisions for water resource related projects, programs, and policies that will make Los Angeles a resilient and sustainable City.

City of Los Angeles Solid Waste Management Policy Plan and Source Reduction and Recycling Element

In 1993, the City adopted the City of Los Angeles Solid Waste Management Policy Plan that provides long-range policy direction for solid waste management and served as an umbrella document for the City's SRRE. The SRRE describes the Source Reduction and Recycling Program for waste collected by LASAN in conformance with the requirements of AB 939.

Specifically, Volume IV of the SRRE presents strategies for targeted waste generators such as hotels, restaurants, and hospitals; targeted materials such as construction and demolition debris, green waste, and direct mail; and government departments. Pursuant to AB 939, the objective of the City Solid Waste Management Policy Plan and the SRRE is to promote source reduction or recycling to achieve a minimum diversion of 50 percent of the City's waste by 2000 through the disposal of the remaining waste in local and possibly remote landfills. The City surpassed the state-mandated 50-percent diversion rate for the year 2000. In addition, in 1999, Mayor Richard Riordan directed City departments to develop strategies to achieve the citywide recycling goal of 70 percent by 2020. This goal has also been surpassed by the City, which achieved a diversion rate of 76.4 percent in 2013. The responsibility for documenting waste diversion efforts for the City lies with LASAN. As set forth below, more recent plans have been adopted by the City to further its waste reduction and recycling goals.

City of Los Angeles Solid Resources Infrastructure Strategy Facilities Plan

The City's Solid Resources Infrastructure Strategy Facilities Plan (Facilities Plan) was prepared in 2000 by LASAN in efforts to address the goals of AB 939 and the policies of the General Plan Framework Element. The following objectives are included in the Facilities Plan:

- Develop a transfer facility and/or recycling center in the Central Los Angeles Area;
- Continue to research and develop the use of Material Recovery Facilities to preprocess all residual waste prior to delivery to a disposal site; and
- Develop a comprehensive and continual public education and community outreach program designed to educate and inform the public about the City's solid resources programs and strategies.

Additionally, LASAN operates bulky item pick-ups, E-waste collection events, and curbside recycling. The Curbside Recycling Program offers recycling collection for all single-family homes in the City, but currently excludes service to multi-family buildings of four units or more.

City of Los Angeles RENEW LA Plan and Solid Waste Integrated Resources Plan

RENEW LA was adopted by the City Council in February 2006 for the purpose of facilitating a shift from solid waste disposal to resource recovery. The plan focuses on combining key elements of existing reduction and recycling programs and infrastructure with new systems and conversion technologies to achieve resource recovery (without combustion) in the form

of traditional recyclables; soil amendments; and renewable fuels, chemicals, and energy. Furthermore, the plan calls for reductions in the quantity of and environmental impacts associated with residual materials disposed in landfills. The goal of the plan was an overall diversion level of 90 percent by 2025 and becoming a "zero waste" city by 2030.

LASAN developed the Solid Waste Integrated Resources Plan (SWIRP) also known as the "Zero Waste Plan," in 2013. The SWIRP is a master plan to reduce solid waste, increase recycling, and manage trash in the City through the year 2030. The SWIRP is intended to provide an outline of the policies, programs, infrastructure, regulations, incentives, new green jobs, technology, and financial strategies necessary to achieve the City's goal of becoming a "zero waste" city by the year 2030.

The term "zero waste" refers to maximizing recycling, minimizing waste, reducing consumption, and encouraging the use of products with recycle/reused materials. As noted by the City, "zero waste" is a goal and not a categorical imperative; the City is seeking to come as close to "zero waste" as possible. The SWIRP is a programmatic plan to develop a series of policies, programs, and facilities required to reach the City's goal of 90 percent diversion by 2025 in the City. SWIRP has six components for full implementation of the project objectives. These six components will be expanded to improve solid waste management, increase landfill diversion, and accommodate growth. They include the following: (1) Expansion of Existing Residential and Commercial Programs; (2) Implementation of New Downstream Policies and Programs; (3) Implementation of Mandatory Participation Programs; (4) Adoption of Upstream Policies; (5) Development of Processing Facilities; and (6) Disposal of Remaining Residual Waste at Local or Remote Landfills.

Green LA Plan

Released in May 2007, the Green LA Plan is an action plan to lead the nation in addressing global warming. The overall goal of the Green LA Plan is to reduce greenhouse gas emissions to 35 percent below 1990 levels by 2030. To achieve this target, a number of goals and objectives have been established in various focus areas. One such focus area is solid waste, as landfills are a major source of methane, a greenhouse gas produced by decomposing trash. The goals of the Green LA Plan are to shift from solid waste disposal to resource recovery and to recycle 70 percent of solid waste generated within the City by 2015. In 2008, the Mayor accelerated that goal to 75 percent diversion by 2013. To meet this target by 2013, LASAN initiated several new programs, including multi-family recycling available to all buildings, construction and demolition recycling requirements, and a pilot residential food scrap program. The City's solid waste diversion rate for the FY 2013 was 76.4 percent. As previously described, the City's current goal is 90 percent diversion by 2025.

Citywide Exclusive Franchise System for Municipal Solid Waste Collection and Handling

Solid waste collection, management, and disposal in the City are handled both by LASAN crews and by various permitted private solid waste haulers. The City provides solid waste

collection, recycling, and green waste collection services primarily to single-family uses and multi-family uses with four units or less. Private solid waste haulers collect from most multi-family residential uses with more than four units and commercial uses based on an open permit system. Permitted waste haulers must obtain an annual permit, submit an annual report, and pay quarterly fees. However, unlike LASAN, private waste haulers are not required to provide recycling services, operate clean fuel vehicles, offer similar costs for similar services, or reduce vehicle miles traveled. Thus, the existing open permit system limits the ability of the City to address compliance with state environmental mandates and the City's waste diversion goals. Although the City has obtained a 76.4 percent solid waste diversion rate as identified in the 2013 Zero Waste Progress Report, nearly 3 million tons of solid waste from the City are still disposed in landfills annually, nearly 70 percent of which is comprised of waste collected by private waste haulers from multi-family residential and commercial customers.

In response to City Council directive, LASAN developed Zero Waste LA, a new public private partnership that establishes a new waste and recycling franchise systems for all businesses, commercial, industrial, and large multi-family customers in the City. In April 2014, the Mayor and City Council approved Ordinance 182,986 that allows the City to establish an exclusive franchise system with 11 zones. With a single-trash hauler responsible for each zone, the franchise system allows for the efficient collection and sustainable management of solid waste resources and recyclables. Among other requirements, the City mandates maximum annual disposal levels and specific diversion requirements for each franchise zone to promote solid waste diversion from landfills in an effort to meet the City's zero waste goals. This program began implementation on July 1, 2017.

City of Los Angeles General Plan Framework Element

The City's General Plan Framework Element (Framework Element), adopted in December 1996 and readopted in August 2001, guides the update of the community plans and Citywide elements, thereby providing a Citywide strategy for long-term growth. As such, the Framework Element addresses federal and state mandates to plan for the future. Chapter 9, Infrastructure and Public Services, of the City's General Plan Framework identifies goals, objectives, and policies for utilities in the City. Goal 9A of Chapter 9 provides for adequate wastewater collection and treatment capacity for the City and in basins tributary to City-owned wastewater treatment facilities.

The Framework Element also contains goals, policies, and objectives that address solid waste services. The Framework Element supports AB 939 and its goals by encouraging "an integrated solid waste management system that maximizes source reduction and materials recovery and minimizes the amount of waste requiring disposal." The Framework Element addresses many of the programs the City has implemented to divert waste from disposal facilities such as source reduction programs and recycling programs (e.g., Curbside Recycling Program and composting). Furthermore, the Framework Element states that for these

programs to succeed, the City should site businesses at appropriate locations where recyclables can be handled, processed, and/or manufactured to allow a full circle recycling system to develop. The continuing need for solid waste transfer and disposal facilities, as well as the limited disposal capacity of the landfills in Los Angeles, is further addressed by the General Plan Framework, which indicates that more transfer facilities will be needed to dispose of waste at remote landfill facilities. Several landfill disposal facilities that may be accessed by truck are identified in addition to waste-by-rail landfill disposal facilities that can be utilized by the City to meet its disposal needs.

City Ordinances

The City has adopted several ordinances, codified in the Los Angeles Municipal Code (LAMC), to reduce water consumption. A summary of the City's key regulations regarding water conservation is provided below.

Sections 64.11 and 64.12 of the LAMC require approval of a sewer permit prior to connection to the sewer system. New connections to the sewer system are assessed for a Sewerage Facilities Charge. The rate structure for the Sewerage Facilities Charge is based upon wastewater flow strength as well as volume. The determination of wastewater strength for each applicable project is based on City guidelines for the average wastewater concentrations of two parameters, biological oxygen demand and suspended solids, for each type of land use. Fees paid to the Sewerage Facilities Charge are deposited in the City's Sewer Construction and Maintenance Fund for sewer and sewage-related purposes, including, but not limited to, industrial waste control and water reclamation purposes.

Section 64.15 of the LAMC requires that the LASAN perform a Sewer Capacity Availability Review (SCAR) when: (1) a sewer permit is required to connect to the City's sewer collection system; (2) proposes additional discharge into an existing public sewer connection; or (3) a future sewer connection or future development that would generate 10,000 gallons or more of sewage per day. A SCAR determines if there is adequate capacity existing in the sewer collection system to safely convey the newly generated sewage from proposed development projects, construction projects, groundwater dewatering projects, and increases of sewage from existing facilities to the appropriate sewage treatment plant. The project applicant is required to pay a SCAR Fee to recover the cost, incurred by the City, in performing the review for any SCAR request that is expected to generate 10,000 gallons per day (gpd) of sewage.

The City's Bureau of Engineering (BOE) Special Order No. SO06-0691 sets forth design criteria for sewer systems requiring hat trunk, interceptor, outfall, and relief sewers (i.e. sewers that are 18 inches or greater in diameter) be designed for a planning period of 60 to 100 years, and lateral sewers (sewers that are less than 18 inches in diameter) be designed for a planning period of 100 years. The order also requires that sewers be designed so that the peak dry weather flow depth, during their planning period, shall not exceed 50 percent of the pipe diameter.

Ordinance No. 181,519 (Citywide Construction and Demolition Debris Recycling Ordinance) requires LASAN to ensure that all mixed C&D waste generated within City limits be taken to a City certified construction and demolition waste processor. The ordinance became effective in January 2011.

Ordinance No. 171687 (Space Allocation Ordinance) requires the provision of an adequate recycling area or room for collecting and loading recyclable materials for all new construction projects, multi-family residential projects of four or more units where the addition of floor area is 25 percent or more, and other development projects where the addition of floor area is 30 percent or more, pursuant to AB 1327.

Ordinance No. 180,822 (Water Efficiency Requirements) amended Chapter XII, Article 5, of the LAMC to establish water efficiency requirements for new development and renovation of existing buildings, and mandate installation of high efficiency plumbing fixtures in residential and commercial buildings.

Ordinance No. 181,480 (Los Angeles Green Building Code (LAGBC) amended Chapter IX, Article 9, of the LAMC to require newly constructed residential and non-residential buildings to reduce indoor water use by at least 20 percent by: (1) using water saving fixtures or flow restrictions; and/or (2) demonstrating a 20-percent reduction in baseline water use.

Ordinance No. 182,849 amended Chapter IX, Article 9, of the LAMC to mandate that for new water service or for additions or alterations requiring upgraded water service for landscaped areas of at least 1,000 square feet, separate sub-meters or metering devices shall be installed for outdoor potable water use. This ordinance also required that for new non-residential construction with at least 1,000 square feet of cumulative landscaped area, weather- or soil moisture-based irrigation controllers and sensors be installed.

Ordinance No. 184,248 amended Chapter IX, Articles 4 and 9, of the LAMC to establish citywide water efficiency standards and require water-saving systems and technologies in buildings and landscapes.

Ordinance Nos. 181,899 and 183,833 amended Section 64.72 of the LAMC regarding stormwater and urban runoff to include new requirements, including Low Impact Development (LID) requirements that promote water conservation.

Ordinance Nos. 184,691 and 184,692 amended Chapter IX (Green Building Code) of the LAMC to incorporate by reference certain portions of the 2015 International Building Code and the 2016 California Building Standards Code as required by law, and to make local administrative, climatic, geologic or topographical changes to the California Building Standards Code pursuant to California Health and Safety Code Sections 17958.5 and 17958.7. Projects filed on or after January 1, 2017 must comply with the provisions of the City's Green Building Code. Specific mandatory requirements and elective measures are provided for three categories: (1) low-rise residential buildings; (2) nonresidential and high-rise residential buildings; and (3) additions and alterations to nonresidential and high-rise residential

buildings. Article 9, Division 5 includes mandatory measures for newly constructed nonresidential and high-rise residential buildings.

Ordinance Nos. 166,080, 183,608, and 184,250 amended Chapter XII, Article 1, of the LAMC to clarify prohibited uses of water and modify certain water conservation requirements of the City's Emergency Water Conservation Plan. The City's Emergency Water Conservation Plan sets forth six different phases of water conservation, which shall be implemented based on water conditions. As part of these requirements, watering is limited to specific days and hours. In determining which phase of water conservation shall be implemented, LADWP monitors and evaluates the projected water supply and demand. In addition, the Emergency Water Conservation Plan includes penalties for those that violate its requirements.

Ordinance No. 184,130 (City Water Rate Ordinance) was approved in March 15, 2016 to establish tiered water rate schedules for single-dwelling unit customers; multi-dwelling unit customers; commercial, industrial, and governmental customers and temporary construction; recycled water service; private water service; publicly sponsored irrigation, recreational, agricultural, horticultural, and floricultural uses, community gardens and youth sports. The new water rate structure increases the number of tiers from two to four for single-dwelling unit customers. In addition, this ordinance intends to maintain cost-of-service principles, incremental tier pricing based on the cost of water supply and added pumping and storage costs. The goal of the ordinance is to incentivize water conservation while recovering the higher costs of providing water to high volume users and accelerating development of sustainable local water supply.

Section 64.30 of the LAMC is the Industrial Waste Control Ordinance, which states that industrial facilities and certain commercial facilities which plan to discharge industrial wastewater to the City's sewage collection and treatment system are required to first obtain an industrial wastewater permit for all clarifiers. A permit is required for each point of discharge to the City's sewer system. The permit protects the City's sewer collection and treatment systems and prevents regulated toxic wastewater constituents from passing through to receiving waters and recovered bio-solids.

Existing Conditions

Potable and Non-Potable Water Services

Water Infrastructure

LADWP is the retail water agency providing potable water service to over four million people in LADWP's 473-square-mile service area through 681,000 active service connections, including the Zoo. LADWP ensures the reliability and quality of its water supply through an extensive distribution system that includes 7,337 miles of pipeline, 119 storage tanks, 96 pump stations, and reservoirs within the City, and a total storage capacity of 315,245 acre-feet (AF) (LADWP 2018a).

Recycled water is provided for landscape irrigation and commercial uses by wastewater treatment plants in the City. Locally, the LAGWRP utilizes full tertiary treatment[2] and redistributes treated wastewater to several customers near the LAGWRP, including Griffith Park, Rio De Los Angeles State Park, Forest Lawn Memorial Park, Universal Studios, and the Zoo's main parking lot. The LAGWRP Recycled Water Fill Station houses five pumps with a capacity of 4,500 gpm each and pumps treated effluent through the Greenbelt Recycled Water Trunkline, constructed in 1993. The Greenbelt Trunkline crosses the Los Angeles River due west from the LAGWRP and once within Griffith Park, the Greenbelt Trunkline splits into two 30-inch force mains. One force main extends north along the route of the equestrian bridle trail along the eastern border of Griffith Park from LAGWRP parallel to Interstate (I-5) and then SR-134. At the Pecan Grove Picnic Area, the route then crosses Zoo Drive and continues on the south side of Zoo Drive all the way to where Zoo Drive ends at Forest Lawn Drive. The Greenbelt Trunkline then turns south and continues on Forest Lawn Drive ending at Barham Boulevard. The other force main continues west into Griffith Park from its split south of the Wilson-Harding Golf Course. At Crystal Springs Drive, the 30-inch force main travels northwest to the Greenbelt Water Tank (Tank 7-6), located southeast of the Griffith Park Boy Camp (LADWP and Los Angeles Department of Public Works 2012; LADWP 2020b). Each line was sized to provide 4,100 gpm of recycled water to Griffith Park and other customers (LADWP 1996) (Figure 3.16-1).

Griffith Park Water System

Water infrastructure in Griffith Park is maintained and operated by LADWP. The Griffith Park Water System is a network of pipeline, storage tanks, and pump stations located throughout the park. The water supply system is interconnected throughout Griffith Park and water can be redirected where needed based on the demand for water within Griffith Park, or if there is construction or maintenance on any leg of the system.

At the Project site, potable water is delivered to the 1-million-gallon capacity Zoo Water Tank from LADWP's River Supply Conduit, a 72-inch gravity line that parallels the Los Angeles River on the east side of Griffith Park and enters Griffith Park from the north. The Zoo Pump Station draws water from the River Supply Conduit and pumps water through a 12-inch force main into the Zoo Water Tank, located southwest of the Zoo in the Griffith Park hills at an elevation of 780 feet. LADWP's Zoo Pump Station is located on Crystal Springs Drive, between the Zoo Magnet Center and the Wilson-Harding Golf Course, at the intersection of Crystal Springs Drive and the maintenance road behind the high school. Both the Zoo Pump Station and Zoo Water Tank are named for their proximity to the Zoo, but are maintained and operated by LADWP (LADWP 2020b) (Figure 3.16-1).

[2] Tertiary treatment at the LAGWRP consists of barscreen removal of large solids, primary sedimentation, activated sludge biological treatment with nitrification and denitrification, secondary sedimentation with coagulation, dual media and deep bed sand filtration, chlorination, and dechlorination.

The Zoo Water Tank can also be filled from Tank 11-2, which has a 300,000-gallon capacity and is located at an elevation of 1,110 feet. Tank 11-2 is also supplied by the River Supply Conduit via the Crystal Springs Pump House, which is located upstream of the Zoo Pump Station. The Zoo Pump Station also supplies potable water to the Autry Museum of the American West via a 4-inch line, and the Zoo Magnet Center through a 12-inch line that connect to the 12-inch force main. The Zoo Pump Station contains three identical pumps rated for 500 gpm each (LADWP 1996).

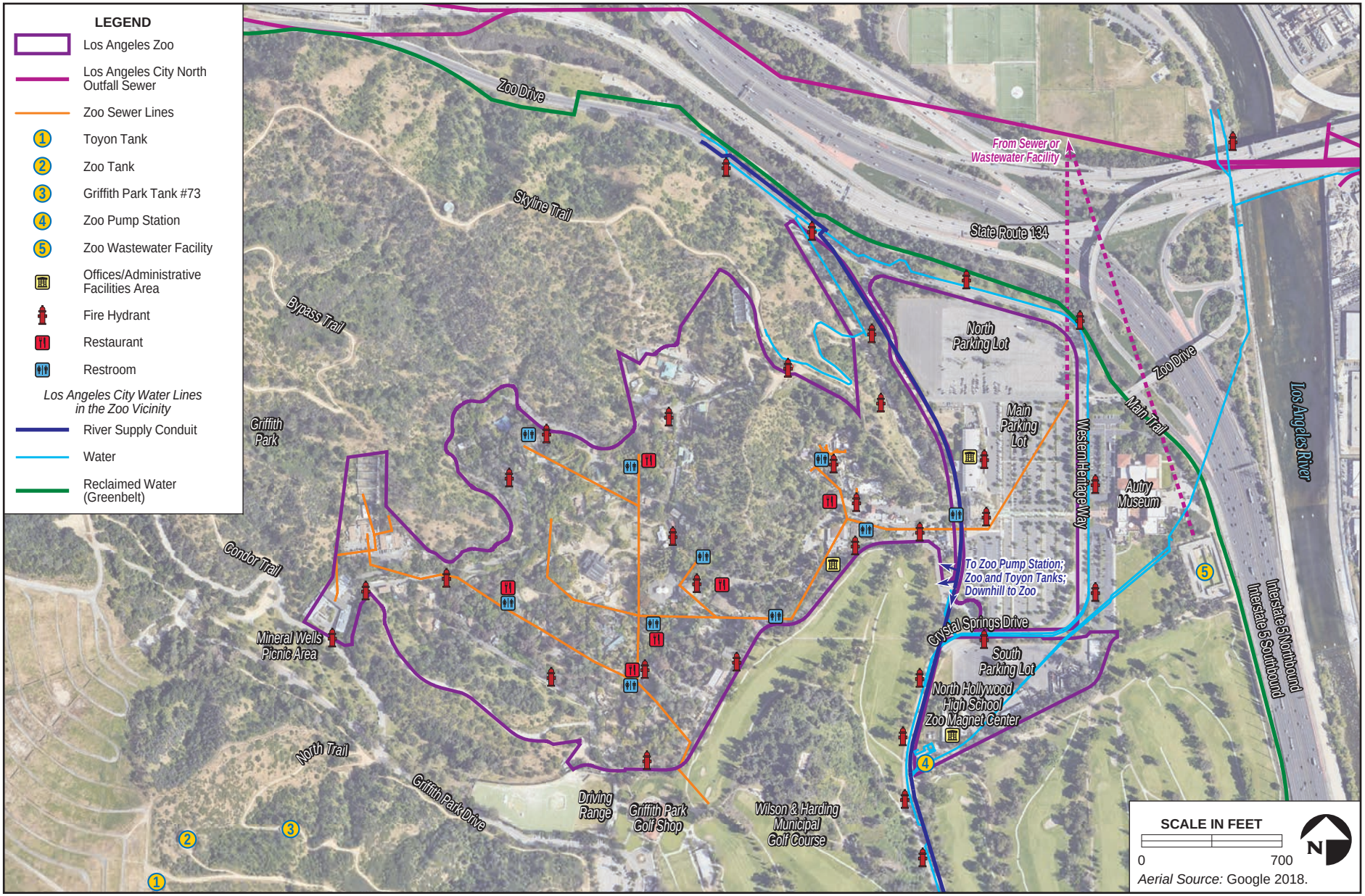
In 1982, the Toyon Tank was constructed adjacent to the Zoo Water Tank to back up the Zoo's potable water supply system. The Toyon Tank is not currently used for this purpose but is filled and drained periodically for maintenance purposes. The Toyon Tank is located at elevation 830 feet, has a capacity of 188,000 gallons, and is connected to the Zoo Water Tank by a 6-inch diameter aboveground line. The Toyon Tank can be filled from the Zoo Pump House (bypassing the Zoo Water Tank) or directly by the Crystal Springs Pump House (LADWP 1996).

Utilities Infrastructure at the Project Site

A majority of the Zoo's potable water demand is supplied from the LADWP's Zoo Water Tank. Water can also be delivered to the Zoo from other water tanks located within Griffith Park, such as the Toyon Tank. The point of connection from where the Zoo receives potable water is at a 12-inch compound domestic water service, Water Meter No. 90119346 and 90119348, located approximately 96 feet east of E. Crystal Springs Drive.

Water distribution lines within the Zoo are separated into two systems, domestic and irrigation systems, although the water source is the same. Eight backflow preventer valve boxes, located on the domestic water lines within the Zoo, lead to three separate irrigation system loops. Connections to the irrigation loops at some of the animal exhibits allow the keepers to washdown the animal exhibits and fill the pools. However, the animal pools' fill lines and hose connections are typically located directly on the potable system lines rather than the irrigation loops (LADWP 1996). The Zoo's fire hydrant system is tied into the domestic line and includes 12 fire hydrants located throughout the Zoo campus. A water pressure regulator located in an underground vault near the Zoo's natural gas meter regulates the water pressure of potable water from the Zoo Water Tank, providing a minimum 117 psi. The pressure is then regulated down to code requirements (i.e., less than 80 psi) at points-of-use within the Zoo (Figure 3.16-1).

The Zoo also receives non-potable (recycled) water from the LAGWRP for irrigation of landscaping within the Zoo's main parking lot. A 12-inch recycled water line connects to the 30-inch Greenbelt force main east of the intersection of Zoo Drive and Western Heritage Way (LADWP and Los Angeles Department of Public Works 2012). The Zoo's irrigation lines are 2-inch recycled water lines located at the west end of the Zoo parking lot.



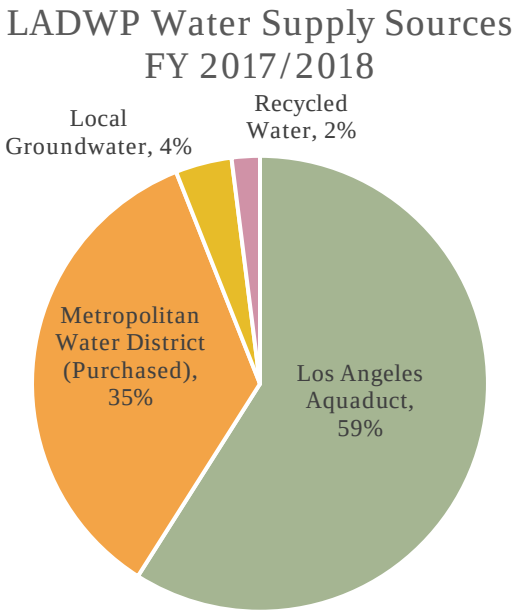
wood.

Los Angeles Zoo
Existing Water and Wastewater System

FIGURE 3.16-1

Per the draft Vision Plan, the Zoo's utility infrastructure is currently operating at capacity and are aging, including water lines. Several utilities were installed deep underground and covered with extensive fill between 50 and 70 years ago. This increases the difficulty of maintenance and requires relatively deep excavation for repair or replacement.

Water Supply



LADWP is responsible for providing water within the City limits and ensuring that the delivered water quality meets applicable California health standards for drinking water. As discussed further below, water supplies for the City are provided through a combination of the Los Angeles Aqueduct (LAA), local groundwater, Metropolitan Water District (MWD) (through both the State Water Project [SWP] and the Colorado River Aqueduct), and recycled water (LADWP 2018a). In FY 2017/2018, LADWP had an available water supply of 521,915 AF, including: 35 percent from purchased supplies from the MWD; 59 percent from the LAA; 4 percent from groundwater; and 2 from recycled water (LADWP 2018b).

Table 3.16-3. LADWP Water Supply from FY 2014/2015 to FY 2017/2018 (AF)

Water Supply Source	FY 2014/2015	FY 2015/2016	FY 2016/2017	FY 2017/2018
Metropolitan Water District	362,654	399,975	216,299	182,706
Los Angeles Aqueduct	57,716	57,853	224,724	307,671
Groundwater	90,438	79,056	50,439	21,760
Recycled Water	10,421	9,913	8,032	9,778
Total	521,229	486,797	499,494	521,915

Source: LADWP 2018.

Metropolitan Water District

Historically, the majority of the City's water demand is supplied by purchases from MWD. MWD is the largest water wholesaler for domestic and municipal uses in California, providing nearly 19 million people with on average 1.7 billion gallons of water per day to a service area of approximately 5,200 square miles. MWD supplies water to its service area through a

conveyance and distribution system that consists of the 242-mile-long Colorado River Aqueduct, five pumping plants, approximately 830 miles of pipeline, five water treatment plants, and nine reservoirs, plus a participation right in the SWP. By FY 2039/40, LADWP's reliance on MWD water supplies is projected to be reduced significantly from 35 percent of total demand to 11 percent under average weather conditions. The 2015 UWMP projects this reduction will be made possible through additional local supply development and conservation savings over the next 25 years (LADWP 2016).

MWD imports its water supplies from Northern California through the SWP's California Aqueduct and from the Colorado River by way of MWD's Colorado River Aqueduct. LADWP is one of 26 member agencies that have preferential rights to purchase water from the MWD. MWD purchased water has varied from 3.2 percent of the City's total water supply in FY 1978/79 to as much as 70.9 percent in FY 2008/09, with a five-year average of 58.46 percent between FY 2013/14 and FY 2017/18 (LADWP 2018b). LADWP has relied on MWD water supplies during dry years, and in recent years (FY 2016/2017 and FY 2017/2018), LADWP's reliance on MWD has dropped again with increased supply from the LAA (LADWP 2018b). Although the City plans to reduce its reliance on the MWD's water supplies through local supply development and conservation, it will continue to rely on the wholesaler to meet current and future supplemental water needs (LADWP 2016) .

The Colorado River

MWD owns and operates the Colorado River Aqueduct, which has delivered water from the Colorado River to Southern California since 1941. The Colorado River currently supplies approximately 17 percent of Southern California's water needs, and on average, makes up about 15 percent of LADWP's purchases from MWD. MWD has a legal entitlement to receive water from the Colorado River under a permanent service contract with the Secretary of the Interior. California is apportioned the use of 4.4 million AFY of water from the Colorado River plus one-half of any surplus that may be available for use collectively in Arizona, California, and Nevada. In addition, California has historically been allowed to use Colorado River water apportioned to, but not used by, Arizona or Nevada. Since 2003, due to increased consumption, no such unused apportioned water has been available to California. Historically, MWD has been able to claim most of its legal entitlement of Colorado River water and could divert over 1.2 million AF in any year, but persistent drought conditions have contributed to a decrease in these claims. MWD's supplies from the Colorado River have ranged from a low of nearly 633,000 AF in 2006 to a high of approximately 1,179,000 AF in 2015, and totaled over 996,000 AF in 2016 (LADWP 2018c).

State Water Project

In addition to the Colorado River Aqueduct, MWD imports water from the SWP, owned by the State of California and operated by the Department of Water Resources (DWR). The SWP is a water storage and delivery system of pump stations, reservoirs, aqueducts, tunnels, and power plants. The main purpose of the SWP is to divert and store surplus water during wet

periods and distribute it to areas throughout the state. Other purposes of the SWP include flood control, power generation, recreation, fish and wildlife protection, and water quality management in the Sacramento San Joaquin River Delta (Delta). The SWP transports Feather River water stored in and released from Oroville Dam and conveyed through the Delta, as well as unregulated flows diverted directly from the Delta south via the California Aqueduct to four delivery points near the northern and eastern boundaries of MWD's service area (LADWP 2013).

Under the original contract, the SWP approved MWD's initial request of 1,911,500 AF of water. However, due to varied weather conditions in FY 2017/18, MWD's operations have shifted to ensure continued water supply reliability. The final SWP allocation for calendar year (CY) 2017 was 85 percent of the initial request, or approximately 1.62 million AF, due to record breaking rainfall in the SWP watershed (DWR 2017b). The CY 2017 allocation reached a level that had not been attained for over a decade and provided as much SWP supply as the prior three years combined, which had allocations of 5, 20, and 60 percent, respectively. However, by the end of CY 2017 and for the first two months of CY 2018, conditions in Northern California began to turn dry. The final SWP allocation for CY 2018 was 35 percent, or approximately 669,000 AF, and would have been lower if not for a wet March 2018 that was 165 percent of average (MWD 2018).

Los Angeles Aqueduct

Approximately 59 percent of LADWP's water supplies come from the LAA (LADWP 2018a). The LAA collects and conveys snowpack runoff from the Owens River in the Eastern Sierra Nevada Mountain Range to the City. Recently, the LAA water supply has been historically low due to the recent drought and minimal snowfall in the Eastern Sierra Nevada. While the LAA water supplies are supplemented by groundwater pumping in the Eastern Sierra Nevada and upper Owens River watershed (which can fluctuate year-to-year due to varying hydrological conditions), the amount of water available to LADWP (via the LAA) is directly linked to the Eastern Sierra Nevada snowpack.

The Los Angeles Aqueduct conveys snowpack runoff from the Owens River in the Eastern Sierra Nevada Mountain Range to the City of Los Angeles.

Before it is distributed throughout LADWP's service area, water from the LAA undergoes treatment and disinfection at the Los Angeles Aqueduct Filtration Plant (LAAFP). The

LAAFP's maximum treatment capacity is 600 million gallons per day (mgd), or approximately 672,000 AFY. The LAAFP typically treats water from LAA and purchases from MWD, maintaining a current average annual flow of approximately 450 mgd during the non-summer months and 550 mgd during the summer months. Therefore, the LAAFP has the ability to treat an additional 50 to 150 mgd of water, depending on the season (City of Los Angeles Department of City Planning 2019).

As discussed in LADWP's 2015 UWMP, water supply from the LAA can vary substantially from year to year due to hydrology. In very wet years, LAA supply can exceed 500,000 AFY. The LAA historical average is based on the 50-year average hydrology from FY 1961/62 to 2010/11. During average year weather conditions, the LAA supply is projected to increase from 275,700 AFY in 2020 to 293,400 AFY in 2025, in response to water savings from Owens Lake Dust Mitigation after the implementation of the Master Project in 2024. However, over time the overall supply source is expected to decline as a result of climate change, resulting in a reduction of more than 10,000 AFY in the next 25 years. Critical dry year (defined as a repeat of FY 2014/15 drought) supplies can be as low as 32,000 AFY (LADWP 2016).

Local Groundwater

LADWP has access to several sources of local groundwater, which comprise approximately 4 percent of LADWP's water supplies in FY 2017/18 (LADWP 2018b). The Upper Los Angeles River Area (ULARA) watershed, made up of four groundwater basins, is the principal groundwater resource where the City produces local groundwater from the San Fernando Valley and Sylmar Basins. The San Fernando Valley Groundwater Basin (SFVGB) is the largest of these resources, accounting for approximately 80 percent of all local groundwater pumped by LADWP.

The City owns water rights in the San Fernando Valley, Sylmar, Eagle Rock, Central, and West Coast Basins, all of which are adjudicated by judicial decrees of the Superior Court of the State of California. The City's combined water rights in these basins are approximately 109,809 AFY (Table 3.16-4). The City's groundwater entitlements in these basins were established by judicial decree of the Superior Court of the State of California for the County of Los Angeles in Case No. 650079, *The City of Los Angeles, Plaintiff, vs. Cities of San Fernando, et. al., Defendants*, dated January 26, 1979 (ULARA Judgment) and the subsequent Sylmar Basin Stipulations (Sylmar Stipulation). In addition to the City's groundwater entitlements, the ULARA Judgment allows groundwater to be stored within the basin when the City pumps less than its annual water right, and stored water credits may be pumped in future years to supplement the City's water supply. The direct spreading of both imported surface water and recycled water by the City increases the water rights by an equal amount. The City has accumulated stored water credits in the Sylmar and Central Groundwater Basins (LADWP 2016).

However, various challenges have restricted the City's use of these local resources, primarily industrial contamination issues. Expanded basin remediation systems are under

development to remove contamination from the local groundwater basin for the betterment of the environment and to restore the beneficial uses of this important basin. The expanded remediation facilities are anticipated to be operational by 2021, which will allow LADWP to pump its full groundwater entitlement (LADWP 2016).

Table 3.16-4. LADWP Annual Groundwater Entitlement

Groundwater Basin	Annual Entitlement (AFY)	Percentage
San Fernando	87,000	79.23
Eagle Rock	500	0.45
Sylmar	3,570	3.25
Central	17,236	15.70
West Coast	1,503	1.37
Total	109,809	100

Source: LADWP 2016.

Historically, LADWP has operated its groundwater resources conjunctively with surface water supplies by reducing pumping during wet periods when more surface water can be used for municipal supply and increasing pumping during dry periods to compensate for reduced availability of surface water supplies. Taking into account all weather conditions, remediation activities in the SFVGB, and groundwater credits in the Sylmar and Central Basins, LADWP's projected groundwater supply is expected to increase from a total of 112,670 AFY in FY 2019/2020, and 114,070 AFY in FY 2039/2040 (LADWP 2016).

Water Conservation and Recycling

LADWP's 2015 UWMP details the City's efforts to promote the efficient use and management of its water resources and provides the basic policy principles that guide LADWP's decision-making process to secure a sustainable water supply for the City by 2040. To meet multiple water conservation goals established in ED 5, the Sustainable City pLAn, and the Water Conservation Act of 2009, LADWP's 2015 UWMP aims to reduce per capita potable water use by 22.5 percent by 2025, and by 25 percent by 2035, based on FY 2013/2014 levels. LADWP operates four wastewater treatment plants with a combined capacity to produce up to 649,600 AF of recycled water per year.

LADWP uses recycled water produced by four wastewater treatment plants:

- *Los Angeles-Glendale Water Reclamation Plant*
- *Donald C. Tillman Water Reclamation Plant,*
- *Terminal Island Treatment Plant, and*
- *Hyperion Water Reclamation Plant.*

The use of recycled water reduces the demand for potable water in the area. LADWP presently uses recycled water for industrial and irrigation purposes. LADWP restores wastewater to a level of quality specified by the California Department of Health Services and distributes it for landscaping and industrial uses. The sustainability of the City's water supplies is

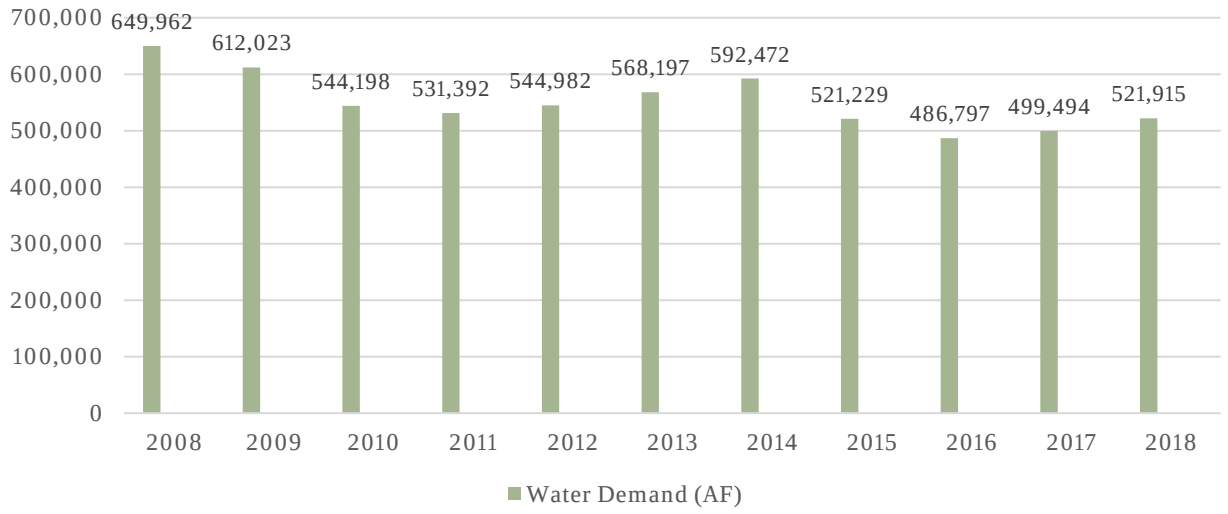
dependent on the City's ability to maximize water conservation and increase recycled water use. LADWP's Action Plan states that the City will develop significant additional water conservation and water recycling, as well as other water resources, to ensure a reliable water supply. In FY2014/2015, LADWP treated 335,400 AF of wastewater for non-potable reuse and distributed approximately 35,000 AF to customers within the City. LADWP is also currently engaged in an aggressive planning and outreach program to expand recycled water supplies and implement the use of recycled water for groundwater recharge. The City's Green New Deal pLAn sets the goal to recycle 100 percent of wastewater by 2035 (Office of Los Angeles Mayor Eric Garcetti 2019).

Water Demand

City Water Demand

Average water demand within urban areas can fluctuate based on weather, drought, available supply, growth and development, the economy, and effectiveness of conservation programs. While the extent of these effects may vary based on local conditions, there is a general increase in demands with increased economic activity and hotter, drier weather conditions. The demand for potable water in the City has fluctuated over time. As presented in Chart 3.16-1, the City's demand decreased from 649,962 AF in FY 2007/2008 to 531,392 AF in FY 2010/2011, and then gradually increased to 592,472 AF in FY 2013/2014 but did not return to the FY 2007/2008 demand level. Water demand dropped approximately 18 percent from 2014 to 486,797 AF in FY 2015/2016 due in large part to water conservation measures and mandatory drought restrictions. From FY 2015/2016 to FY 2017/2018, water demand slightly increased from 486,797 to 521,915 AF but has not returned to the FY 2013/2014 demand level (City of Los Angeles 2018; see Chart 3.16-1). This decline is generally attributable to ongoing and growing water conservation programs, such as the UWMP, Sustainable City pLAn, and One Water L.A., as part of the City's strategy to achieve water self-sufficiency. In FY 2017/2018, the demand for potable water throughout LADWP's service area was 521,915 AF.

Chart 3.16-1. Annual Citywide Water Demand



Source: LADWP 2018.

LADWP projects the City's water demand from 2020 to 2040 for average year, single dry year, and multi dry year hydrological conditions based on demographics, socioeconomics, conservation practices, and weather conditions. As presented in Table 3.16-5, water demand over the next 20 years is expected to range from 611,800 to 709,500 AFY depending on hydrological conditions. Demographic and population projections used for water demand projections in the 2015 UWMP were based on SCAG's 2012-2035 RTP/SCS. According to the 2012 RTP/SCS, the City's population is expected to continue to grow to approximately 4,320,000 in 2035. The more recent 2016-2040 RTP/SCS projects a City population of approximately 4,609,400 residents in 2040. Both the 2012-2035 and 2016-2040 RTP/SCS show projected future population growth in the region with very high growth in the Downtown Los Angeles area, in the vicinity of the Project site.

Table 3.16-5. LADWP Water Demand Projections from 2020 to 2040 (thousand AFY)

Hydrological Conditions[1]	Year					
	Existing (2018)	2020	2025	2030	2035	2040
Average Year	521.9	611.8	644.7	652.9	661.8	675.7
Single Dry Year	--	642.4	676.9	685.5	694.9	709.5
Multi-Dry Year	--	642.4	676.9	685.5	694.9	709.5

Note: 1 LADPW defines three hydrological conditions: 1) average year (50-year average hydrology from FY 1961/62 through FY 2010/11; 2) single dry year, such as a repeat of the FY 2014/15 drought; and 3) and multi-dry year, such as a repeat of FY 2012/13 through FY 2014/15.
Source: LADWP 2018; 2016.

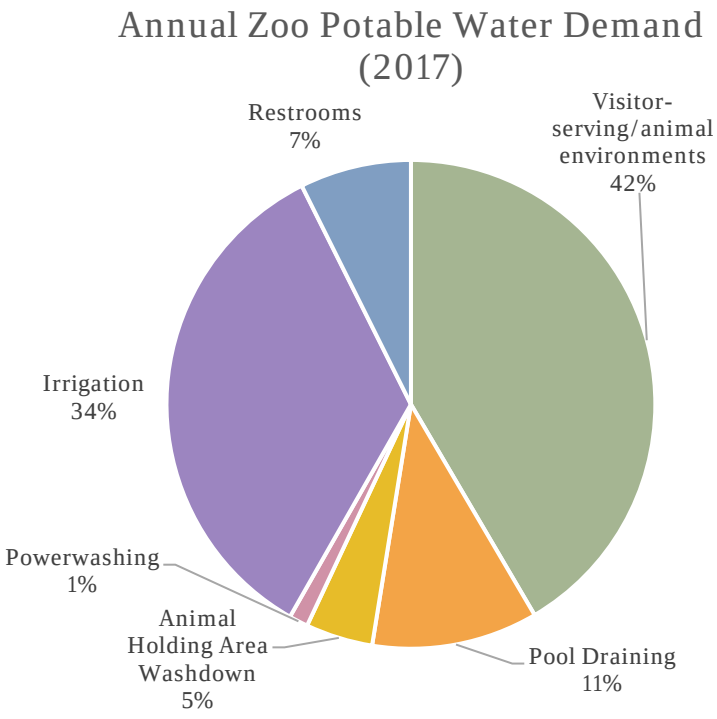
The LAGWRP provides recycled water to Griffith Park, the city of Glendale, Universal City, Forest Lawn Mortuary, Lakeside Country Club, and Mt. Sinai Cemetery. The recycled water provided to Griffith Park is used for irrigating the Wilson-Harding Gold Course, picnic areas, decorative landscaping, and native plant growth. In addition, recycled water provides fire protection for the park (LADWP 1996).

The type of water treatment system for the Zoo's Life Support Systems varies with each exhibit, as the treatment process is dependent on the animal's needs.

In general, the quantity of water necessary for fire protection varies with the type of development, life hazard, type and level of occupancy, general and specific access, and degree of fire hazard (based on such factors as building age or type of construction). Fire flow is normally measured in gallons per minute, as well as the duration of the fire flow. Fire flow requirements can range from 2,000 gallons per minute in low-density residential areas to 12,000 gallons per minute in high density commercial or industrial areas. A minimum residual water pressure of 20 pounds per square inch is required to remain in the water system while the required gallons per minute is flowing, to be considered adequate by the City Fire Code standards (2017 Los Angeles Fire Code Section 507.3.1).

Zoo Water Demand

At the Project site, potable water demand for the Zoo in 2017 was 107.508 million gallons (329.9 AF). This demand for potable water supplies at the Project is generated by animal exhibits and pools, washdown of animal holding areas, power washing, ancillary uses (e.g., restaurants/kitchens, drinking fountains), administration, restrooms, and irrigation of the interior portions of the Zoo (see Table 3.16-6). There are currently 12 exhibits that include a water feature as part of the exhibit (e.g., moat, pool, aesthetic purposes, etc.). The total water demand for these exhibits is approximately 13.354 million gallons



per year (40.9 AFY). Additionally, there are currently 15 exhibits at the Zoo using Life Support Systems (i.e., recirculating water treatment systems). The frequency to which the pond is drained and filled is dependent on the animal needs and how they might interact with the pond water, such as the hippos' tendency to defecate in the pond. All Life Support Systems use potable water from LADWP. The ponds range in capacity from 1,300 gallons (i.e., zebra pond) to 140,000 gallons (i.e., elephant pond). The total water demand for pool draining is approximately 11.818 million gallons per year (36.2 AFY) (Los Angeles Zoo Department 2018b).

Table 3.16-6. Annual Potable Water Consumption for Existing Uses at the Project Site

Existing Use	Estimated Annual Volume (million gal/year)
Exhibits (treatment systems, ponds, aesthetics, etc.), Zoo Administration, and Ancillary Uses (e.g., kitchens, drinking fountains)	44.670
Pool Draining	11.818
Washdown of Animal Holding Areas	4.777
Powerwashing (Walkways)	1.349
Irrigation	36.968
Zoo	36.089
Event Center	0.879
Restrooms	7.926
Zoo	2.362
Event Center	5.564
Total	107.508

Source: Los Angeles Zoo Department 2016; 2018; 2019.

Water from washing animal areas is minimized through sweeping, raking, and removing bedding, feces, and debris prior to hosing an area. The Zoo also reduces potable water use by using recycled water for irrigation of the main parking lot landscape. The Zoo receives recycled water from the Recycled Water Fill Station at the LAGWRP. The Zoo's recycled water demand was approximately 16.8 million gallons in 2017 (51.5 AF), approximately 12.9 million gallons in 2018 (39.5 AF), and approximately 11.5 million gallons in 2019 (35.3 AF) (from January to November). The average monthly consumption of recycled water from 2017 to

Irrigation within the Zoo account for over a third of the Zoo's overall potable water demand to sustain lush landscaping. Recycled water is available only in the main parking lot.

2019 was 1.18 million gallons (3.6 AF) per month (see Table 3.16-7). Recycled water is not available within the Zoo as recycled water lines (i.e., purple pipe) currently extend only to the parking lot areas from the Greenbelt (Figure 3.16-1)

Table 3.16-7. Estimated Annual Recycled Water Consumption

Year	Annual Consumption (million gal/year)
2017	16.8
2018	12.9
2019*	11.5
Total	**41.2**
Average Monthly Demand	**1.18**

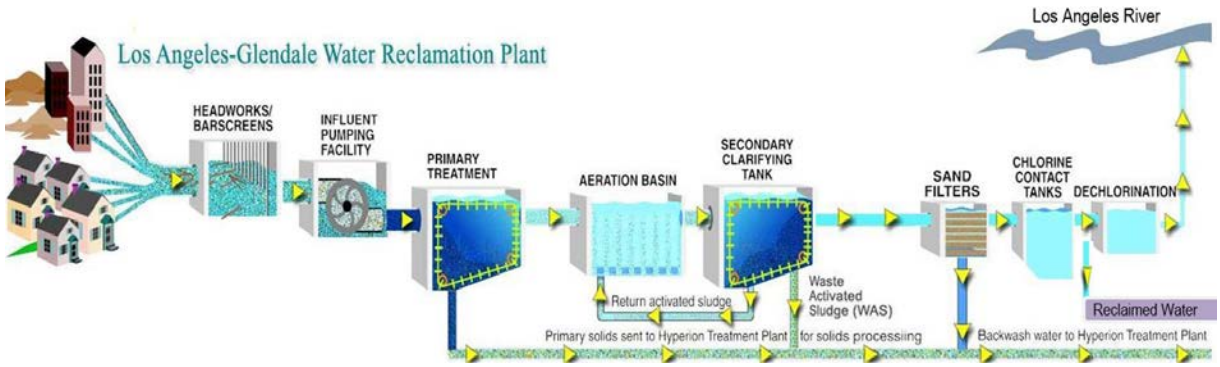
Note: * The Zoo's recycled water demand for the year 2019 was available for January through November only.
Source: David Clary 2020.

Water pressure within the vicinity of the Zoo ranges from a low pressure of 48 psi to a high pressure of 85 psi (LADWP 2020a). Due to the size and density of the Zoo during peak visitor days, the Zoo is considered a "High Density Industrial and Commercial" land use for the purposes of determining the Zoo's fire flow requirements. Therefore, the minimum fire flow requirement for the Zoo is 12,000 gpm available to any block (where local conditions indicate that consideration must be given to simultaneous fires, and additional 2,000 to 8,000 gpm will be required). The Zoo's water demand for fire protection is served by the 1-million-gallon water tank located southwest of the Zoo. The Zoo Pump Station pumps potable water from the Zoo Water Tank to the 12 fire hydrants located throughout the Zoo. Water pressure within the Zoo is fluctuates depending on the location. Water pressure at the regulator station is set between 117 psi and 120 psi and is then regulated to code requirements (i.e., 80 psi) at points-of-use, which is adequate for both domestic and firefighting use.

Wastewater Services

Wastewater Infrastructure

LASAN is responsible for all facilities that support the collection and conveyance of wastewater and stormwater runoff necessary to protect the community from system overflows, reduce local flooding, and promote overall water quality of the Los Angeles River and marine environments. The City's wastewater collection system consists of more than 6,700 miles of public sewers that convey about 400 mgd of flow from residences and businesses to the four wastewater treatment and water reclamation plants: the Hyperion Water Reclamation Plan; the Donald C. Tillman Water Reclamation Plant; the Terminal Island Water Reclamation Plant; and the LAGWRP. LASAN divides the wastewater treatment system into two major service areas: 1) the Hyperion Service area, which is served by the Hyperion Water Reclamation Plan, the Donald C. Tillman Water Reclamation Plant, and the LAGWRP, and; 2) the Terminal Island Service Area. The Project site is in the Hyperion Service Area but is directly served by the LAGWRP.



The treatment process for the LAGWRP includes Tertiary Treatment Nitrification/Denitrification, tertiary, disinfection, dechlorination. Source: LASAN, 2019b

LASAN manages existing sewer infrastructure in accordance with the Sewer System Management Plan, last updated in January 2019. This plan identifies specific deficiencies in the existing sewer system – primarily associated with aging infrastructure – and lays out a plan and budget for repairing or upgrading deficient areas over a period of 10 years, to ensure reliable conveyance of wastewater throughout the City (LASAN 2019b).

The existing wastewater treatment design capacity of the LAGWRP is approximately 20 mgd LASAN 2019a). In 2019, the LAGWRP treated an average of 17.2 mgd, with the ability to treat an additional 2.8 mgd (see Table 3.16-8). Treated water from the plant is chlorinated and distributed into the recycled water distribution system for irrigation, plumbing, and industrial uses. The remaining treated water that is not sold is discharged to the Los Angeles River. The solids generating processes at the LAGWRP are primarily grit collection, primary sedimentation, secondary sedimentation, and filtration. The LAGWRP does not have a solids handling facility, nor is solids processing currently planned. All solids generated from the various unit processes are discharged to the North Outfall Sewer and conveyed to the Hyperion Water Reclamation Plant for final treatment and reuse (LASAN and LADWP 2006).

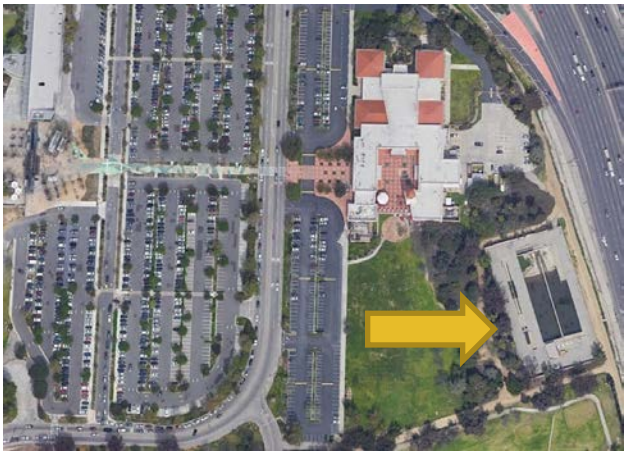
Table 3.16-8. 2019 Average Daily Flow at the LAGWRP

Month	Average Flow (mgd)
January	17.4
February	17.6
March	16.2
April	16.8
May	17.3
June	17.6
July	17.2
August	17.6
September	17.3
October	16.9
November	17.3
December	17.2

Source: David Clary 2020.

Wastewater Management at the Zoo

The Zoo currently generates wastewater in association with the restrooms, food and beverage facilities, animal exhibits, and animal night quarters. The Zoo's wastewater and runoff are collected and conveyed by three drainage systems – the sanitary sewer, pool drain, and storm drain systems – into the City's sewer system. The sanitary sewer system collects and conveys wastewater generated by the Zoo to the City's North Outfall Sewer directly northeast of the Zoo's parking lot. In the vicinity of the Project site, the North Outfall Sewer flows west and then south along the general alignment of I-5 south until it reaches the LAGWRP, located approximately 0.6 miles southeast of the Zoo. The existing sewer lines that currently serve the Project site are 6-inch lines that travel east beneath the Zoo's entrance and northeast beneath the Zoo's parking lot and I-5 to the North Outfall Sewer.



The Zoo Wastewater Facility, located southeast of the Autry Museum of the American West, removes grit and debris from the Zoo's animal pond water and stormwater before releasing water to the City's North Outfall Sewer, which leads to the LAGWRP.

A pool drain system conveys wastewater generated by 12 existing animal pools at the Zoo through a 21-inch vitrified clay pool drain line east, beneath the main parking lot, directly to the Zoo Wastewater Facility located at 4700 ½ Western Heritage Way, immediately southeast of the Autry Museum and west of I-5. The Zoo Wastewater Facility was constructed in 1994 to eliminate water pollution and maintain water quality in the Los Angeles River by pretreating surface runoff and pumping the Zoo's animal wastewater to the North Outfall Sewer and LAGWRP for treatment prior to discharge. The facility was designed to meet federal water quality standards and comply with the Los Angeles RWQCB National Pollutant Discharge Elimination System (NPDES) permits, and to provide relief of localized sewers in the surrounding area. The Zoo Wastewater Facility, maintained and operated by LASAN, temporarily stores pool drainage from the Zoo's animal ponds and washdown of animal yard areas. The facility also stores storm water runoff captured from the Zoo's storm drain system and conveyed east towards the wastewater facility via a 72-inch reinforced concrete pipe beneath the Zoo's main parking lot (refer also to Section 3.10, *Hydrology and Water Resources*). The Wastewater Facility then removes large debris and grit from storm drainage and retains the water until midnight. The stored water is then pumped northbound via an 18-inch iron pipe force main into the 48-inch North Outfall Sewer for treatment at the LAGWRP and eventual release to the Los Angeles River. With the exception of the Sea Life Cliffs pool, which drains directly into the

North Outfall Sewer, all animal pool wastewater is conveyed to the Zoo Wastewater Facility (LASAN 2017).

As shown in Table 3.16-9, the existing uses on the Project site generates approximately 25.55 million gallons per year approximately 70,000 gallons per day (gpd) of wastewater from restrooms, which are conveyed directly to the LAGWRP. In addition, approximately 32.85 million gallons per year (90,000 gpd) of water circulate through the Animal Pond Drain System (10.95 million gallons per year; 30,000 gpd) and the Storm Drain System (21.90 million gallons per year; 60,000 gpd), flow to the Zoo's Wastewater Facility, and are subsequently released to the City's North Outfall Sewer, which is then conveyed to the Hyperion Water Reclamation Plant. Overall, the Zoo generates approximately 58.4 million gallons per year (approximately 160,000 gpd) of wastewater.

Table 3.16-9. Estimated Annual Wastewater Generation for Existing Uses at the Project Site

Existing Use	Estimated Annual Volume (million gal/year)	Estimated Daily Volume (gpd)
Sanitary Sewer System (i.e., Restrooms)	25.55	70,000
Animal Pond Drain System	10.95	30,000
Storm Drain System	21.90	60,000
Total	**58.40**	**160,000**

Source: Los Angeles Zoo Department 2018a.

Solid Waste Disposal

Regional Solid Waste Management

Solid waste management in the City involves both public and private refuse collection services and public and private operation of solid waste transfer, resources recovery, and disposal facilities. LASAN is responsible for the collection and removal of all solid materials and waste in the City, as well as developing plans and strategies to manage and coordinate the City's solid waste system and to address the City's disposal needs. LASAN primarily collections solid waste generated by single-family and small multi-family residential developments and public facilities such as the Zoo. Private hauling companies primarily collect solid waste generated large multi-family residential developments, commercial, institutional, and industrial properties. Historically, the City owned and operated five landfill facilities; however, all of these facilities have been permanently closed and are no longer operational or have been transitioned to alternative uses. Instead, the majority of solid waste generate within the City and collected by LASAN is disposed of at Los Angeles County landfills.

Los Angeles County continually evaluates demand for landfill capacity through the preparation of the County Integrated Waste Management Plan Annual Reports. According to the County of Los Angeles Countywide Integrated Waste Management Plan 2018 Annual

Report, of the 10 Class III landfills that serve Los Angeles County, five landfills serve the City.[3] The Class III landfills that currently serve the City include the Antelope Valley, Calabasas, Chiquita Canyon, Lancaster, and Sunshine Canyon landfills. have a combined remaining intake capacity of approximately 160,103,935 tons (see Table 3.16-10; County of Los Angeles Department of Public Works 2019). Sunshine Canyon Landfill serves the City's waste disposal needs more than any other facility in Los Angeles County and has the largest remaining disposal capacity of approximately 59,752,250 tons.

Table 3.16-10. 2018 City Disposal and Estimated Remaining Disposal Capacity (tons)

Landfill	2018 City Disposal		Permitted Daily Capacity (Tons Per Day)	Additional Remaining Capacity (tons)	Remaining Life Expectancy (Years)
	Tons Per Day	Tons Per Year			
Antelope Valley Landfill	867	270,528	1,636	10,231,322	22
Calabasas Landfill	502	156,798	985	4,580,480	11
Chiquita Canyon Landfill	2,599	810,888	4,560	12,001,395	39
Lancaster Landfill	55	17,157	367	4,908,186	23
Sunshine Canyon Landfill	3,788	1,182,057	6,765	59,752,250	19
Commerce Refuse-to-Energy Facility[1]	25	7,768	124	--	--
Total	**7,836**	**2,445,196**	**14,437**	**91,473,633**	--

Notes:
[1] The Commerce Refuse-to-Energy Facility was permanently closed in June of 2018 due to insufficient operating costs.
Source: County of Los Angeles Department of Public Works 2019.

The Antelope Valley Landfill and Lancaster Landfill that serve the City are also recycling centers. The Antelope Valley Recycling and Disposal Facility has a permitted daily capacity of 3,600 tons or approximately 1,123,200 tons per year and a remaining permitted capacity of 12,001,395 tons. The Lancaster Landfill and Recycling Center has a permitted daily capacity of 3,000 tons or approximately 936,200 tons per year and a remaining permitted capacity of 10,231,322 tons.

The Griffith Park Composting Facility, which opened in 1996, composts organic matter produced in the park by blending animal waste and biosolids with chipped park greenery. Maintenance crews collect dropped leaves, lawn clippings, and trimmings from acres of landscaping. Zoo doo (collected from herbivores such as elephants and zebras) and biosolids are blended with chipped park greenery and composted. The facility currently processes around 7,000 cy of green waste per year. The final compost product (TOPGRO™) is donated

[3] Class III landfills are landfills that are permitted to accept non-hazardous municipal solid wastes.

to non-profit organizations and schools in the Los Angeles Unified School District. TOPGRO™ is also used in the Zoo's botanical gardens and in park landscaping projects in Griffith Park and throughout the City. It is also available for free to the City's residents for their own urban landscaping projects (LASAN 2019).

In accordance with the Construction and Demolition (C&D) Waste Recycling Ordinance, all mixed C&D waste generated within City limits is required to be delivered to City certified C&D waste processors (see Table 3.16-11). LASAN is responsible for the C&D waste recycling policy as well as the collection and removal of all solid materials and waste in the City. While Class III landfills are permitted to accept non-hazardous waste, unclassified landfills are permitted to accept C&D waste, certain green (landscaping) waste, and concrete, asphalt, and similar materials that are chemically and biologically inactive. As of 2017, Azusa Land Reclamation is the only permitted inert waste (e.g., sand, concrete) landfill in the County that has a full solid waste facility permit. The remaining capacity of this landfill is estimated at 55.71 million tons. Other inert debris facilities that process inert waste and other C&D waste (excluding Azusa Land Reclamation Co. Landfill) collectively handled nearly 2.6 million tons of material in the County in 2018 (County of Los Angeles Department of Public Works 2019).

Table 3.16-11. List of City Certified Processors for CY 2020

Processor	Mixed C&D Waste Recycling Rate (%)
American Industrial Services, Inc.	76.80
American Reclamation	--
California Waste Services	76.90
City Terrace Recycling	78.73
Construction & Demolition Recycling	78.74
Cordova Construction Services[1]	70.00
Crown Recycling Services, LLC.	89.49
Direct Disposal	75.38
Downtown Diversion	82.82
East Valley Diversion	80.30
Simi Valley Landfill and Recycling Center	80.06

Notes:
[1]Provisional certification.
Source: LASAN 2020.

According to the City's Zero Waste Progress Report (2013), the City has achieved a recycling rate of 76.4 percent, exceeding AB 939's State requirement of a 50 percent diversion rate by 2000 and AB 341's State policy goal of a 75 percent diversion rate by 2020. As previously described, the City's current goal is 90 percent diversion by 2025.

Solid Waste Management at the Zoo

The Zoo currently generates solid waste consisting of animal bedding and waste, green waste (e.g., landscaping trimmings, organic waste), and regular refuse from visitors and employees.

Animal waste and green waste is typically collected by Zoo personnel and disposed of in designated bins throughout the Zoo in back-of-house areas. For instance, the bins for animal bedding and waste from the Zoo's resident herbivore species (e.g., hoofed stock, elephants, and zebras) are short, 4-foot by 6-foot "low-boys" that are made for easily dumping wheelbarrows into them. Green waste from fallen leaves, lawn clippings, landscape trimmings, and shredded paper are also deposited in these bins. The waste disposed of in these "low-boys" can be safely composted as organic material. Since primate and carnivore bedding and waste can contain zoonotic organisms, this waste cannot be used as compost and must be disposed of in a landfill along with typical commercial wastes generated by Zoo operations, including non-organic or non-compostable wastes generated by food and beverage facilities, and trash disposed of by Zoo guests.

The Zoo sends green waste to the Griffith Park Composting Facility, including landscape materials and shredded paper/herbivore bedding, to reduce solid waste demands at area landfills. Photo: LASAN

Solid waste is collected and disposed of by a crew of Zoo custodians consisting of two truck operators and one fork-lift operator. Recyclable materials are collected by Zoo custodians and disposed of by the City's Department of General Services. Solid waste collection generally occurs outside of the Zoo's hours of operation (before the Zoo opens to the public) at around 3:30 a.m. A fork-lift operator transports the waste bins to the Zoo's Perimeter Road, where the truck will collect the trash. The fork-lift operator then returns the bins to their respective locations within back-of-house areas. Trash is transported to Sunshine Canyon Landfill, located approximately 17.15 miles northwest of the Project site. Approximately 1,310 tons of trash were transported from the Zoo to Sunshine Canyon Landfill in the 2019 fiscal year (approximately 3.6 tons per day) (Darryl Pon, Los Angeles Zoo Planning and Development Director, personal communication, March 2, 2020), which accepts an average of 8,300 tons of disposal per day. Thus, solid waste generated at the Zoo makes up far less than one percent of the daily intake capacity at the Sunshine Canyon Landfill.

Herbivore animal waste, bedding, and green waste are collected from the low-boy bins and are taken to the Griffith Park Composting Facility, located approximately 0.3 miles west of the Zoo. At the Griffith Park Composting Facility, the organic waste is mixed with mulch to create composted material as a part of the "Zoo Doo" project. This is generally done every day; however, Zoo staff may wait one to two days until the bins are full before disposing of the material. According to the City's 2013 SWIRP (the most recent data available), a total of 17,213 tons of "Zoo Doo" and biosolids were disposed of at the Griffith Park Compost Facility in

2006. Griffith Park Composting Facility's total permitted capacity is 156 tons per day (City of Los Angeles 2013).

To reduce the amount of non-recyclable solid waste generated at the Zoo, the Zoo is currently in the process of eliminating the use of plastic straws and replacing plastic utensils and bottles with recyclable cans and compostable materials, in accordance with the City's "Zero Waste" goal. Separate trash and recycling bins are provided at each of the Zoo's food and beverage facilities and throughout the Zoo campus.

LASAN does not currently report specific diversion amounts for the Zoo's solid waste. Based on the calculation methodology adopted by the State, LASAN has achieved a landfill diversion rate of 76.4 percent. LASAN collects the Zoo's recycling and transports the waste to one or both of the recycling centers within the County that serve the City. The trash transportation process may be taken over by LASAN in the future to develop a "greener" process and increase waste diversion. LASAN collects the Zoo's recyclable materials from Perimeter Road and transports the material to one of several recycling centers within the City twice per week.

The Zoo also implements a program that helps the City achieve their waste diversion goal by feeding the Zoo's animals with expired produce donations from the World Harvest Food Bank. Between January 2019 and January 2020, the Zoo used approximately 4 tons and 6.4 tons of donated produce to feed the Zoo's resident animals. This use equated to between 59 percent and 85 percent of the food donated to the World Harvest Food Bank (Los Angeles Zoo Department 2020).

Hazardous materials and wastes (e.g., old paint, cleaner bottles) are kept in barrels in a covered wooden shed at the Hazardous Materials Waste Storage Area within the visitor-restricted Construction Shop and Support area of the Zoo. Refer to Section 3.9, *Hazardous Materials and Wastes*, for further information on the collection and disposal of hazardous materials at the Zoo.

3.16.2 Impact Assessment Methodology

Significance Thresholds

According to Appendix G of the CEQA Guidelines, a project would have a significant impact related to utilities if it would:

Water Infrastructure and Supply

a. Require or result in the construction of new water facilities or expansion of existing facilities, the construction of which could cause significant environmental effects; or

b. Have insufficient water supplies available to serve the project from existing entitlements and resources, requiring new or expanded entitlements.

Wastewater Services

a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board;

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

c. 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.

Solid Waste Disposal

a. Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs; or

b. Fail to comply with federal, state, and local statutes and regulations related to solid waste.

Methodology

This analysis evaluates the adequacy of existing and planned utility infrastructure to serve the proposed Project. Existing and forecasted capacities of utility service providers were obtained from the MWD Annual Report for the Fiscal Year July 1, 2017 to June 30, 2018 (2018), 2015 UWMP (2016), One Water L.A. Technical Memorandum No. 3.2 (2017), City of Los Angeles Integrated Resources Plan (2006), Sewer System Management Plan Update (2019), and Countywide Integrated Waste Management Plan 2017 Annual Report.

The environmental impacts of the Project with respect to water are determined based on the proposed increase in water demand and the capacity of existing and proposed infrastructure. Based on existing water consumption data and Project growth and development, this analysis projects future water demand and potential offsets from Project features such as the proposed stormwater management system with underground cisterns. Water demand generated by the Project was calculated by scaling the existing Zoo water demands to the growth and changes in land use that would occur under the Vision Plan. To develop the scaling increase in water demand, assumptions regarding the source and nature of the categories for water demand identified in Table 3.16-12 and the most appropriate land use served by those water demands were developed. Estimate water demands for the proposed Project site were then compared to water available for allocation within the City to determine availability of water supply to serve the demands of the Project.

The environmental impacts of the Project with respect to wastewater are determined based on the proposed increase in wastewater generation and the capacity of existing and proposed wastewater infrastructure. The existing sewer capacity and wastewater generation is compared to the Project's wastewater generation and future sewer capacity, including utility

upgrades associated with the Project. Changes in wastewater generation under the Project were compared to available capacity at the LAGWRP and supporting infrastructure such as sewer mains and lift stations to determine the available capacity of the wastewater system to serve the Project.

The environmental impacts of the Project with respect to solid waste are determined based on the proposed increase in solid waste generation and the capacity of existing and proposed solid waste infrastructure. The existing landfill capacities and solid waste generation is compared to the Project's solid waste generation and future landfill capacities. Based on this analysis, a determination is made as to whether the existing solid waste facilities could accommodate the Project's solid waste disposal needs.

Energy providers and demand estimations for natural gas and electricity are discussed fully in Section 3.5, *Energy;* therefore, energy utilities are not addressed further in this section. Impacts related to stormwater management infrastructure, site hydrology, and drainage/storage capacity are fully addressed in Section 3.10, *Hydrology and Water Resources* based on the Project-specific Hydrology and Water Quality Technical Memorandum prepared by Watearth (Appendix L); however, focused analysis potential environmental impacts from proposed stormwater infrastructure upgrades are analyzed herein. .

As described in Section 3.0, *Introduction to the Environmental Impact Analysis*, the Vision Plan represents a programmatic plan for redevelopment of the Zoo over the next 20 years. Though more detail is provided for near-term improvements, such as those anticipated to occur in the near-term Phases 1 through 3, sufficient detail necessary to perform a detailed assessment of utility demands does not exist. Given the lack of detail regarding specific improvements and their associated utility service demands, the following analysis of Project impacts on utility services and supplies reflects a programmatic approach based on growth projections and new development areas.

3.16.3 Environmental Impact Analysis

UT-1: Would the project result in the construction of new water facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? Would the project have sufficient water supplies available to serve the project from existing entitlements and resources, or would new or expanded entitlements be needed?

Construction

As described in Section 2.4.2, *Construction Activities* and Section 3.10, *Hydrology and Water Quality* (refer to Impact HYD-1) construction of the proposed Project would require water for dust control, equipment cleaning, soil excavation and export, and re-compaction and grading activities. Water use is conservatively estimated at 2,000 gpd during construction, depending

on the phase (e.g., demolition, excavation, building construction, etc.). Temporary construction-related water use would be substantially less than existing water consumption at the Project site, which is estimated to be approximately 107,508,000 gallons per year (refer to Table 3.16-5) and could be accommodated by the existing water infrastructure onsite. Further, during construction, designated areas would be closed and would see a substantial reduction in potable water demand. Therefore, temporary construction-related impacts associated with water demand and water infrastructure would be *less than significant*.

As described in Section 2.3.7, *Proposed Utility Infrastructure*, the Project would require installation of new water lines to replace existing lines and expand to undeveloped areas of the Zoo in the California and Africa planning areas. Water would continue to be supplied by the LADWP from existing City water mains, including the LADWP 72-inch River Supply Conduit that parallels the Los Angeles River on the east side of Griffith Park and enters Griffith Park from the north. The proposed Project would connect to the City's water supply system with new laterals installed within the Project site. The existing outdated water mains within the Project site would remain protected, capped, and abandoned in place during construction.

Construction impacts associated with the installation of laterals, and installation of a new recycled water connection would primarily involve minor trenching onsite. Prior to ground disturbance, all proposed work associated with the water laterals shall be subject to review and approval by the City Department of Public Works. All appropriate permits (e.g., public right-of-way permits) would be obtained, as necessary. The construction contractor would be required to notify the City Public Works Department in advance of ground disturbance activities to existing avoid water lines and/or disruption of water service to offsite properties. Therefore, impacts on water infrastructure from construction activities would be *less than significant.*

Operation

Potable Water Demand

Project implementation over the 20-year planning horizon would result in increased water demand at the Zoo associated with visitation growth, expansion of visitor-serving facilities (e.g., food and beverage stalls, drinking fountains, restrooms), additional animal residents and exhibits, new pathways and structures, and expanded landscaped areas. Based on the anticipated amount of growth to occur under the Vision Plan, primarily as a result of expansion of visitor-serving and animal exhibit areas into existing undeveloped areas and increases in annual visitation, implementation of the Project is expected to increase annual demand for potable water to 144,967,997 gallons per year (444.9 AFY), a 35 percent increase. Currently, 34 percent of the Zoo's water demand is for irrigation, amounting to approximately 36 million gallons per year.

To substantially offset the increased water demand and virtually eliminate the Zoo's irrigation water demand, the Project includes a stormwater management system to capture surface runoff for onsite reuse as landscaping water. As described in Section 3.10, *Hydrology and Water Quality*, the Project would include installation of five stormwater cisterns throughout the Zoo in the near-term phases of Project implementation to capture and retain stormwater runoff generated within the existing drainage area. As proposed, the system would be designed to retain 100 percent of flows generated under a 2-year, 24-hour storm event (equivalent to 2.44 inches of rainfall) or approximately 6.8 million gallons (20.9 AF). Based on historic precipitation data for the Los Angeles area, in a year when rainfall totals are normal (approximately 10.12 inches per year), the proposed stormwater system once completed in Phase 3 of Vision Plan implementation would be capable of capturing and retaining 35,000,000 gallons per year (107 AFY). As proposed in Section 2.3.7, *Proposed Utility Infrastructure*, this captured stormwater would be utilized by the Zoo for irrigation of landscaping and exhibit areas. With this offset in annual irrigation water demands afforded by the Project's proposed stormwater capture system, the Project is anticipated to increase annual potable water demand by 2,459,997 gallons per year (7.5 AFY), a 2.2 percent increase over existing water demands.

As described in Section 3.16.1, *Environmental Setting* (refer to Table 3.16-4), the City expects to meet all water demand in 2040, which is expected to range from 675,700 to 709,500 AFY depending on hydrological conditions. These water demand projections in the UWMP account for development and associated population growth. Following the completion of Project construction in 2040, the operational water demand associated with the proposed Project (144,967,997 gallons per year or 444.9 AFY) would constitute less than 1 percent of the City's total water supply. Therefore, the City would be able to serve the proposed Project without additional unplanned new or expanded entitlements. Further, implementation of the proposed Project would not adversely affect the ability of the City to meet its goal to source 70 percent of water locally by 2035 under the Green New Deal pLAn.

Table 3.16-12. Existing and Projected Annual Potable Water Consumption at the Project Site

Source and Use	Existing Annual Demand (gal/year)	Existing Water User	Unit	Demand per Unit	Demand Factor	Future Water Use Area	Future Annual Demand (gal/year)	Change in Annual Demand (gal/year)
Potable Water								
Visitor-serving/animal environments (treatment systems, ponds, aesthetics, etc.), Zoo BOH, Condors[1]	44,670,000	73	acres	611,918	gal/year/acre	99	60,579,863	15,909,863
Pool Draining[2]	11,818,000	12	pools	984,833	gal/year/pool	12	11,818,000	0
Washdown of Animal Holding Areas[3]	4,777,000	55	acres	86,855	gal/year/acre	79	6,861,509	2,084,509
Powerwashing (Walkways)[3]	1,349,000	55	acres	24,527	gal/year/acre	79	1,937,655	588,655
Irrigation[4]	36,968,000	73	acres	506,411	gal/year/acre	99	50,134,685	13,166,685
Restrooms[5]	7,926,000	1,744,370	persons	5	gal/year/visitor	3,001,101	13,636,285	5,710,285
Total Project Potable Water Demand	**107,508,000**						**144,967,997**	**37,459,997**
Demand Reduction from Proposed Stormwater Reuse								
Proposed Onsite Stormwater Capture/Treatment System6							-35,000,000	-35,000,000
Total Project Potable Water Demand with Onsite Stormwater Reuse							**109,967,997**	**2,459,997**

Note: 1. Estimated by scaling proportionally to the proposed increase in land area for visitor-serving/animal environments, administration, service & storage, Condor conservation program (refer to Figure 2-2).
2. The Vision Plan proposes no increase in the number of "pump and dump" pools. If additional pools are included in individual projects, they would be installed with life support systems.
3. Estimated by scaling proportionally to the proposed increase in land area for visitor-serving areas and exhibits (refer to Figure 2-2).
4. Estimated by scaling proportionally to the proposed increase in land area for visitor-serving/animal environments, administration, service & storage, and Condor conservation program; assumes parking areas are irrigated by City reclaimed water (refer to Figure 2-2).
5. Estimated by scaling proportional to the proposed increase in annual visitation and employment (refer to Table 2-21).
6. Projected annual water reuse onsite from the proposed stormwater collection/treatment system is estimated to be 35,000,000 gallons per year.
Source: Los Angeles Zoo Department 2016; 2018.

The proposed Project would be required to comply with the City's Water Efficiency Requirements and Green Building Code, which requires the use of highly efficient plumbing fixtures, irrigation, and landscaping for new construction (LAMC Chapter XII, Article 5 and Chapter IX, Article 9). Under implementation of **MM UT-1**, recycled water lines would be extended within the Zoo would be used to further reduce overall water demand associated with operational landscaping irrigation, washdown of the animal holding areas, powerwashing walkways, flushing toilets, and some habitat pools, depending on the species. These options would be explored as plans are further developed to maximize water conservation. Further, implementation of **MM HYD-7** would require the City to install efficient irrigation systems for all existing and proposed new landscaped areas within the Zoo (refer to Section 3.10, *Hydrology and Water Quality*). Efficient irrigation systems would further reduce the water demand for irrigation at the Zoo. The proposed water conservation and sustainable reuse of stormwater captured onsite is consistent with the water conservation goals of the City's Green New Deal pLAn and One Water L.A. plan. Therefore, with implementation of this mitigation, Project impacts on the City's potable water supplies would be *less than significant with mitigation*.

While not required to further reduce impacts from the Zoo's water demand, it is recommended that Vision Plan implementation include all recommended civil engineering and water efficiency measures recommended in the Appendix (*New Infrastructure: Plumbing)* of the Vision Plan. Therefore, **MM UT-2** is recommended to further reduce impacts on the Zoo's potable water demand.

Recycled or Reclaimed Water Demand

The One Water L.A. Plan analyzes the potential for and identifies the necessary steps to implement municipal recycled water use within the Zoo (for areas outside of the parking lot irrigation use) in an effort to reduce the City's potable water demand, as established in the 2017 Technical Memorandum (LASAN 2017). As previously mentioned, the Zoo received approximately 11,500,000 gallons (35.3 AF) of non-potable (recycled) water from the LAGWRP in 2019; however, recycled water use is currently limited to irrigation of landscaping in the Zoo's main parking lot.

Under the Project, the Zoo would redesign the northern parking lot and southern parking lot (parking lot adjacent to the Zoo Magnet Center) to accommodate additional parking spaces and would install landscaping and stormwater LID features. In addition, the Project proposes the development of an approximately 2-acre public park. These new landscaped areas and public park would require irrigation and the Zoo would utilize recycled water for irrigation of these areas with direct connections to existing recycled water lines connecting to the Greenbelt immediately east of the Project site. Installation of new recycled water lines would occur within the proposed area of disturbance and would not extend offsite or exacerbate construction impacts discussed above.

As presented in Table 3.16-13, based on the existing demand for recycled water supplies for irrigation of the Zoo's main parking lot, the proposed increase in landscaped parking area under the Project, and water demand factors for public parks, implementation of the Project would increase demand for recycled water supplies by 14,362,057 gallons per year (44.08 AFY). The non-potable water demand associated with the proposed Project would be less than 1 percent of the City's current recycled water production capacity of 649,600 AFY. Therefore, the City would be able to serve the proposed Project without additional unplanned new or expanded wastewater treatment facilities. Further, implementation of the proposed Project would not affect the ability of the City to meet its goal to recycle 100 percent of wastewater by 2035 under the Green New Deal pLAn.

Though the City's recycled water system has adequate capacity to serve the increase in Zoo recycled water use for irrigation of the parking lot areas and proposed public park, in accordance with the One Water L.A. Plan, **MM UT-1** would require the Zoo to extend recycled water lines throughout the interior areas of the Zoo to provide recycled water for washdown of the animal holding areas, irrigation, and power washers, in the Zoo's exhibits (e.g., treatment systems, ponds, aesthetics/water features, etc.) where feasible, as well as for fire suppression where feasible. Based on the City's current recycled water production capacity of 649,600 AFY and objectives for expanding opportunities for use of recycled water supplies, the City recycled water system has available capacity to adequately serve the recycled water demands of the Project. Additionally, the Los Angeles Zoo Recycled Water Feasibility Study (1996) analyzed the existing recycled water storage and distribution system and determined the existing system would be adequate to meet a conservative recycled water demand of 1 mgd.

A network of municipal recycled water mains provide access to non-potable water for irrigation use within Griffith Park. As previously described, the LAGWRP Recycled Water Fill Station pumps recycled water through two 30-inch force mains, one of which terminates at Tank 7-6 located south of the Zoo beneath the Wilson-Harding Golf Course in Griffith Park. An existing 8-inch recycled water main located at the west end of the Zoo parking lot pumps water from Tank 7-6 to the Zoo for irrigation of the Zoo's parking lot. Expansion of the Zoo's non-potable water use as required by **MM UT-1** would require an additional connection to the City's water recycling system at the existing 8-inch recycled water main at the west end of the Zoo parking lot. Therefore, implementation of the proposed Project and **MM UT-1** would not require expansion of the City's recycled water system or major construction activities. The expanded use of recycled water for Zoo operations that do not require potable water quality would further reduce the Zoo's dependence on potable water supplies and implement the Green New Deal pLAn and One Water L.A. Plan. Impacts on the City's non-potable (recycled or reclaimed) water supplies would be reduced to *less than significant with mitigation*.

Table 3.16-13. Existing and Projected Annual Recycled Water Consumption at the Project Site

Source and Use	Existing Annual Demand (gal/year)	Existing Water User	Unit	Demand per Unit	Demand Factor	Future Water Use Area	Future Annual Demand (gal/year)	Change in Annual Demand (gal/year)
Non-Potable Water								
Zoo Main Parking Lot Irrigation	11,500,000[1]	11.5	acres	1,000,000	gal/year/acre	24.5[2]	24,500,000	13,000,0000
Public Park	0	0	acres	681,028.5[3]	gal/year/acre	2	1,362,057	1,362,057
Total Non-Potable Water Demand	**11,500,000**						**25,862,057**	**14,362,057**

Notes:
[1] The Zoo's recycled water demand for the year 2019 was available for January through November only.
[2] Future area for non-potable water irrigation use based on conceptual Zoo landscaped parking area.
[3] According to the U.S. Geological Survey, national average application rate for 2015 was 681,028.5 gallons (2.09 AFY) per acre (U.S. Geological Survey 2018).
Source: David Clary 2020.

UT-2: Would the project result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

The Vision Plan proposes the construction and operation of a new stormwater collection system to capture, treat, retain, and reuse stormwater runoff at the Zoo. Under the proposed Project, five new subsurface cisterns (i.e., underground reservoirs) would be constructed within five different drainage areas encompassing the Project site and surrounding hillsides, while the Zoo's existing stormwater collection and conveyance system would be closed and either abandoned in place or removed through redevelopment of each Project phase. Stormwater water collection lines would branch from each underground cistern to collect stormwater from drains throughout each watershed (refer to Section 3.10, *Hydrology and Water Resources*). The proposed underground stormwater infrastructure would result in environmental impacts associated with excavation and trenching of underlying soils, emissions from construction equipment and fugitive dust, construction vehicle traffic, construction stormwater runoff, potential disturbance of archaeological and paleontological resources, and construction related noise. Detailed analysis of the potential impacts associated with installation of the Project's proposed stormwater system are analyzed in each of the respective resources sections of Section 3, *Environmental Impact Analysis and Mitigation* in this EIR. As discussed therein, Project implementation, along with installation of the stormwater collection system would also result in or contribute to construction-related impacts to those resources. Mitigation measures necessary to reduce Project impacts associated with installation of the new stormwater collection system are also identified therein and would be capable of reducing impacts to *less than significant with mitigation*. With regard to impacts from hydrology and water quality, the stormwater collection system would result in beneficial drainage impacts associated with stormwater reuse. Refer to Section 3.10, *Hydrology and Water Resources*, for a complete discussion of stormwater management and infrastructure under the proposed Project.

Located in five separate drainage zones, the Vision Plan proposes five subsurface cisterns to capture stormwater throughout the Zoo campus.

UT-3: Would the project require or result in the construction of new wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? Would the project 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? Would the project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

Due to the dilapidated nature of the existing 50-year old sanitary sewer system within the Project site, the Vision Plan proposes the installation of new sewer utility lines within the Project site, as necessary. Under Vision Plan implementation, sewer water from the Zoo and the Gene Autry Museum would be conveyed via the proposed sanitary sewer lines to the North Outfall Sewer via the existing 6-inch sewer force main that runs across the Zoo's north parking lot to the point of connection with the North Outfall Sewer located northeast of the parking lot. From the City's North Outfall Sewer, wastewater would be directed to the LAGWRP, treated, and discharged to the Los Angeles River similar to existing conditions for all sewer water within the Zoo.

Animal pools at the Zoo would continue to be drained by the animal pond water system, which conveys pond water to the Zoo's Wastewater Facility for desilting and grit removal. Similar to existing conditions, pool water from the Zoo's Wastewater Facility would be discharged to the North Outfall Sewer and conveyed to the LAGWRP for treatment. There is no proposed increase in the total number of pools requiring periodic draining and refilling, requiring water demand and treatment at the Zoo Wastewater Facility.

As previously described, the proposed stormwater collection system would capture, convey, and store rainfall from the Zoo and the 79.7-acre hillside area adjacent to the Zoo for reuse onsite as irrigation water. This system would be designed to capture a total capacity of 6.8 million gallons, which is equivalent to the 2-year, 24-hour storm event (refer to Section 3.10, *Hydrology and Water Quality*). Flows greater than a 2-year, 24-hour storm event would be directed to the Zoo Wastewater Facility via an overflow line that would run beneath the Zoo's parking lot. Following desilting and grit removal at the Zoo Wastewater Facility, stormwater would be discharged to the North Outfall Sewer, which would direct water to the LAGWRP for treatment, similar to existing conditions for all stormwater within the Zoo.

Project impacts associated with generation of wastewater, animal pond water, and stormwater, and the demand on existing wastewater facilities, such as the Zoo Wastewater Facility, North Outfall Sewer, and LAGWRP, are discussed in detail below.

Table 3.16-14. Existing and Projected Annual Wastewater Generation at the Project Site

Source and Use	Existing Daily Generation (gpd)	Existing Use Factor	Unit	Demand per unit	Future Use Area	Future Wastewater Generation	Change in Wastewater Generation
Sanitary Sewer System	70,000	10,427[1]	persons	6.7	14,986	100,606	30,606
Animal Pond Drain System	30,000	55	acres	545.45	79	43,091	13,091
Total	**100,000**					**182,493**	**43,697**

Notes:
[1] Existing Use Factor for the sanitary sewer system is based upon peak daily attendance.
Water use for irrigation and powerwashing generate stormwater. All stormwater would flow through the stormwater collection system for stormwater reuse (refer to Section 3.10, *Hydrology and Water Quality*) rather than to the Zoo Wastewater Facility and North Outfall Sewer.

Zoo Wastewater Facility

Vision Plan implementation would generate increased stormwater within the Zoo property due to the addition of impervious (i.e., paved) surfaces (refer to Section 3.10, *Hydrology and Water Quality*). However, implementation of the proposed stormwater collection system would substantially reduce flow to the Zoo Wastewater Facility by capturing and storing rainfall from the Zoo and adjacent hillside area for reuse onsite as irrigation water. Since the Zoo Wastewater Facility would receive only overflow stormwater from flows greater than the 2-year, 24-hour storm event, the volume of water directed to the Zoo Wastewater Facility would be reduced by up to 35 million gallons per year and up to 6.8 million gallons in one day.

Implementation of **MM HYD-6** would require the installation of pre-treatment and filtering devices within the stormwater collection system to ensure that captured water reused for irrigation does not unnecessarily contribute pollutants back into the Zoo's drainage system. Therefore, additional stormwater within the Zoo would not exceed the capacity of the Zoo's Wastewater Facility and the proposed stormwater collection system would adequately treat and filter stormwater onsite.

Following completion of the proposed stormwater collection system, the majority of flows to the Zoo Wastewater Facility would be comprised of animal pond water from the Zoo's exhibits. Any additional animal pools and other water features that would be constructed under the Vision Plan would be installed with Life Support Systems. Life Support Systems are recirculating water treatment systems, which require a much lower frequency of draining and filling. Therefore, Vision Plan implementation would result in an incremental increase in wastewater generation and associated impact on wastewater facilities related to animal pool water. Due to the substantial reduction in stormwater flows that would be conveyed to the Zoo Wastewater Facility, an incremental increase in generation of animal pond water would not exceed the 1.8-million-gallon maximum capacity of the Zoo Wastewater Facility.

North Outfall Sewer and Advanced System

Vision Plan implementation would generate increased sewage flows within the Zoo's sewer system and the City's North Outfall Sewer due to the addition of a new employees and an annual increase of approximately 1.2 million new visitors. The largest increases in wastewater generation would occur post-completion of the proposed new California, Africa, and Treetops Visitor Centers in Phases 1, 2, and 3 (2020 through 2030), when the greatest increase in Zoo attendance is anticipated to occur. As shown in Table 3.16-14, Zoo attendance growth anticipated to occur under the proposed Vision Plan would increase wastewater flow within the Zoo's system and North Outfall Sewer by approximately 30,606 gpd, for a total of 100,606 gpd (Table 3.16-14). Additionally, proposed expansion of the animal exhibits would increase generation of animal pond water within the North Outfall Sewer by approximately 13,091 gpd, for a total of 43,091 gpd.

The Vision Plan also proposes a new plumbing system within the Zoo to replace the existing outdated sewer pipes and connect to new restrooms. The proposed new plumbing systems at the Zoo would be installed in accordance with the current California Building Code and Plumbing Code (CCR Title 24), as well as Green Building Code (CCR Title 24, Part 11). All new fixtures would comply with State Water Conservation Guidelines and Green Building Standards.

LASAN is not currently aware of any capacity issues in the 6-inch sewer force main that conveys wastewater from the Zoo and Autry Museum of the American West to the North Outfall Sewer. However, the projected increase in wastewater could trigger the need for expansion or replacement of individual sewer line segments within the North Outfall Sewer. According to the City's 2019 Sewer System Management Plan, the City conducts ongoing maintenance and replacement of North Outfall Sewer segments to address condition and capacity issues (LASAN 2019b). The Sewer System Management Plan identifies future projects to maintain and enhance the capacity of the North Outfall Sewer and budgets approximately $50 million per year in the Wastewater Capital Improvement Program (WCIP) to address condition and capacity issues for the North Outfall Sewer (LASAN 2019b).

The City requires that, as part of the normal construction/building permit process, the Applicant or its successor confirms with the City that the capacity of the local and trunk lines are sufficient to accommodate a project's sewer flows during the construction and operation phases. Furthermore, a project shall implement any upgrades to the sewer system serving the project that could be needed to accommodate the project's wastewater generation. In accordance with Section 64.15 of the LAMC, the Zoo would be required to submit a SCAR request to the BOE and pay a SCAR Fee prior to building plan approval to evaluate the capacity of the existing North Outfall Sewer to convey the projected wastewater generation from the Zoo through 2040. If deemed necessary, replacement of several sewer mains in the North Outfall Sewer could also create secondary short-term periodic construction impacts. Construction of new sewer mains would require excavation, removal of older mains, removal of existing manholes, and installation of the new manholes and lines located within existing paved roads and public rights of way. This would involve typical short-term construction impacts, such as air emissions, noise, and disruption of traffic flows. However, with assurance of adequate planning-level surveys of the existing North Outfall Sewer per existing City regulations, impacts to the North Outfall Sewer associated with sanitary sewer water would be reduced to *less than significant*.

Table 3.16-15. Volume of Stormwater Discharge to the North Outfall Sewer

SWMM Results	Existing	Near-Term	Long-Term	Long-Term Net Change	Long-Term Net Change (%)
2-Year	235,515	23,099	367,776	132,261	56
100-Year	507,058	50,706	223,106	-283,952	-56
Annual	36,260,282	3,556,301	15,897,134	-20,363,148	-56

Source: Watearth 2020. See Appendix L.

Implementation of the proposed stormwater collection system would reduce the volume of discharge from the Zoo Wastewater Facility to the City's North Outfall Sewer by 56 percent during and following storm events (Table 3.16-15). Additionally, the Zoo Wastewater Facility would continue to hold animal pond water and overflow stormwater from the Zoo until periods of low flow (i.e., nighttime) in order to avoid overloading the North Outfall Sewer. Therefore, implementation of the stormwater collection system would result in beneficial and *less than significant* impacts to the North Outfall Sewer.

Los Angeles – Glendale Water Reclamation Plant

The Zoo's wastewater would continue to be treated at the LAGWRP, which has a capacity of approximately 20 mgd processed through full tertiary treatment. Currently this facility receives and treats an average of 17.2 mgd of wastewater, approximately 160,00 gpd (0.93 percent) of which is wastewater and pond water generated from the Zoo. The proposed Vision Plan would increase wastewater generation at the Project site by up to 43,697 gpd (Table 3.16-14). This increase in wastewater generation would be less than 1 percent of the LAGWRP's approximately 2.8 mgd of additional full tertiary treatment capacity. Given that the increased wastewater flow from implementation of the proposed Vision Plan would be a *de minimus* incremental increase, the LAGWRP would have sufficient capacity to serve the Vision Plan's projected demand in addition to the provider's existing commitments and no new or expanded water or wastewater treatment facilities would be required to serve the proposed Project. Therefore, Project impacts to the LAGWRP would be *less than significant*.

Treated wastewater from the LAGWRP would continue to be discharged to the Los Angeles. River. The LAGWRP operates under a RWQCB permit, and meets the CCR Title 22, Division 4, Chapter 3 reclamation criteria for "irrigation of parks, playground, schoolyards, and other areas where the public has similar access or exposure" as well as "non-restricted recreational impoundments." The RWQCB, in connection with the implementation of the NPDES program, has imposed requirements on the treatment of wastewater and its discharge into local water bodies, including the Los Angeles River. Wastewater produced by the Zoo would meet these requirements through treatment at the LAGWRP. This treatment plant utilizes full tertiary treatment and sends wastewater solids to the Hyperion Water Reclamation Plant. Industrial Wastewater Permits must be obtained from the LASAN Industrial Waste Management Division, in accordance with the Los Angeles Industrial Waste Control Ordinance (Section 64.30 of the LAMC) for all clarifiers. In addition, the implementation of

Section 64.15 of the LAMC and BOE Special Order No. SO06-0691 would also help meet wastewater quality treatment standards. Therefore, RWQCB wastewater treatment requirements would not be exceeded, and potential impacts related to the proposed Vision Plan would be *less than significant*.

UT-4: Would the project be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs? Would the project comply with federal, state, and local statutes and regulations related to solid waste?

Construction of the proposed Project would generate C&D waste during demolition, excavation, and trenching activities occurring during each phase of Vision Plan implementation. In accordance with the City's C&D Waste Recycling Ordinance, all mixed C&D waste generated during Project construction and not reused onsite (e.g., recycled concrete aggregate) would be hauled to one of the City-certified C&D waste processors listed in Table 3.16-11. Therefore, solid waste impacts from C&D waste would be *less than significant*.

Expansion of the Zoo's animal exhibits under Vision Plan implementation would increase operational solid waste generation at the Zoo associated with animal bedding and waste. The most recent data available shows that the Zoo disposed a total of 17,213 tons of "Zoo Doo" and biosolids at the Griffith Park Compost Facility in 2006, which equates to approximately 47.16 tons per day. Based on the proposed increase in Zoo Animal Space, Vision Plan implementation would increase disposal of animal bedding and waste at the Griffith Park Compost Facility by up to 81.39 tons per day (Table 3.16-16). Therefore, future solid waste generation would remain below the Griffith Park Compost Facility's total permitted capacity of 156 tons per day.

Vision Plan implementation would also increase operational solid waste generation at the Zoo, including trash and recycling, due to projected growth in visitor attendance, employment, and additional animal residents. The resulting increased demand for waste disposal has the potential to result in the need for additional landfill capacity to meet solid waste disposal needs. To determine if there is sufficient landfill capacity to accommodate waste generated under the proposed Vision Plan, the projected waste generated by the Vision Plan was estimated based on the Zoo's existing solid waste generation and projected visitor growth. Based on the projected annual visitation growth, the estimated increased solid waste generation under the Vision Plan is 6.19 tons per day (approximately 2,260 tons per year) (refer to Table 3.16-16). Assuming the existing diversion rate of 76.4 percent, this would result in up to 1.46 tons per day (approximately 533 tons per year).

As previously described, Sunshine Canyon Landfill currently serves the Zoo's solid waste disposal needs. The remaining capacity of Sunshine Canyon Landfill is 59,752,250 tons and the landfill has an estimated remaining life of 19 years. The average solid waste accepted daily throughput of Sunshine Canyon Landfill is 8,300 tons of solid waste per day. The additional 1.46 tons of solid waste per day that is anticipated to be generated by Vision Plan implementation in 2040 would comprise less than1 percent of the total daily permitted

capacity of Sunshine Canyon Landfill. Therefore, this additional waste would have a less than significant impact on landfill capacity.

A total of five solid waste disposal facilities currently serve the City, including one composting facility. The combined remaining capacity of these facilities is 91,473,633 tons. The combined average daily amount of solid waste disposed in 2018 at the six solid waste facilities is 14,437 tons of solid waste per day. The available combined remaining capacity at the five County landfills that currently have a remaining life over 20 years is nearly 31.5 million tons (County of Los Angeles Department of Public Works 2019). Therefore, this additional waste would have a negligible impact on landfill capacity.

In addition, the City has achieved significant waste reduction targets and continues to strive for additional reductions in solid waste. The City met and exceeded its goals for waste diversion, as defined in the City's Solid Resources Infrastructure Strategy Facilities Plan, RENEW LA Plan, SWIRP, and Green LA Plan, and attained a diversion rate of 76.4 percent by 2013. The City is also currently implementing the Citywide Exclusive Franchise System for Municipal Solid Waste Collection and Handling that will enable the City to reach its zero-waste goal of 90 percent diversion by 2025. The Zoo's operations help the City achieve these waste diversions and zero waste goals with its programs, such as the "Zoo Do" project and use of the World Harvest Food Bank donations. These efforts will further reduce per capita waste generation, thereby reducing existing waste generation in the City and expected waste generation from the Project. Given the existing sufficient capacity of solid waste facilities combined with the City's efforts to reduce waste generation, this impact would be *less than significant*.

State law requires a 50 percent diversion of solid waste from landfills. The City has achieved a diversion rate of 76.4 percent in 2013 through the City's Solid Resources Infrastructure Strategy Facilities Plan, RENEW LA Plan, SWIRP, Green LA Plan and Citywide Exclusive Franchise System for Municipal Solid Waste Collection and Handling and the use of refuse-to-energy facilities. The City remains committed to continuing its existing waste reduction programs and minimization efforts, with a current goal of 90 percent diversion by 2025. Additionally, Vision Plan implementation would be required to comply with all applicable solid waste regulations in effect at the time of construction and operation, including the City's Space Allocation Ordinance, which requires the provision of an adequate recycling area or room for collecting and loading recyclable materials for all new development projects, pursuant to AB 1327.

The Vision Plan includes provisions for new enclosures for trash, recycling, and food waste materials to serve visitor and employee uses. The Zoo would manage trash and recycling generated by animal care, dining facilities, restrooms, and other visitor-serving facilities within the Zoo campus in accordance with all applicable state and local requirements. Therefore, the Zoo is in compliance with state and local solid waste law and implementation of the proposed Vision Plan would not conflict with federal, state, or local statues and regulations related to solid waste disposal. Therefore, *no impact* would occur.

Table 3.16-16. Existing and Projected Annual Solid Waste Disposal at the Project Site

Source	Existing Daily Generation (tons per day)	Existing Use Factor	Unit	Demand per unit	Future Use Area	Future Solid Waste Generation	Change in Solid Waste Generation
Animal Bedding and Waste	47.16	21.5	acres	2.19	58.7	128.55	81.39
Trash	3.6	1,744,370	persons	2.06×10^{-6}	3,001,101	6.19	2.59

Notes:
Source: City of Los Angeles 2013; Darryl Pon, Los Angeles Zoo Planning and Development Director, personal communication, March 2, 2020.

3.16.4 Mitigation Measures

MM HYD-6 and **MM HYD-7** shall apply.

MM UT-1 Recycled Water Use

In accordance with the Green New Deal pLAn and One Water L.A. Plan, the Zoo shall work with LADPW and LASAN to expand recycled water lines (purple pipe) to interior portions of the Zoo. Recycled water shall be used to the maximum extent available for washdown of the animal holding areas, powerwashing walkways and plazas, and flushing toilets, and in the Zoo's exhibits (e.g., treatment systems, ponds, aesthetics, water features, etc.) if the recycled water is dechlorinated before use, and for fire suppression where feasible. Additionally, all irrigation water demand not covered by stormwater captured in the proposed stormwater collection system (i.e., during dry years), shall be covered by recycled water. The point of connection to the City's water recycling system would be at the existing 8-inch recycled water main at the west end of the Zoo parking lot in Griffith Park, subject to review and approval of LADPW, LASAN, and BOE. LASAN staff shall ensure the recycled water main connections are incorporated into the final building plans prior grading. City staff shall ensure measures are on all Project plans to ensure that these requirements are implemented.

Recommended Mitigation Measures

As previously described, the Vision Plan Appendix (New Infrastructure: Plumbing) includes recommendations not specifically outlined in the Vision Plan. Implementation of recommended **MM UT-2** would further reduce impacts on the Zoo's potable water demand and would align with the goals and measures of the Green New Deal pLAn and One Water L.A. Plan.

MM UT-2 Vision Plan Recommendations

Project components designed and engineered to implement the Vision Plan shall follow all recommendations and guidelines for water, wastewater, and stormwater utilities provided in the Appendix of the Vision Plan. As recommended in the Vision Plan Appendix (New Infrastructure: Plumbing), the Project must provide the following features to reduce maintenance and conserve water:

- Restrooms
  - Shut-off valve for all fixtures in each restroom, located above the upper terminal water closet and behind a locked access panel.
  - Water-saving battery-operated infrared-sensored flush valves, with manual override on all water closets.
  - Push-button, ADA-metered, self-closing faucets on lavatories.
  - Hose-bibb with vacuum breaker in recessed box with locking cover.
  - Floor drains with trap primers with floors sloped to drain.

- Clean-outs above all urinals, lavatories, and water closets.

- Public Restrooms
  - Shut-off valve for all fixtures located above the upper terminal water closet and behind a locked access panel.
  - Floor drains with trap primers sloped to drain.
  - Clean-outs above all urinals, lavatories, and water closets.
  - ADA compliant floor-mounted water closet and countertop lavatory.

- Sewer Lines
  - Cast iron soil pipe at all following locations:
    - Within the building and 5 feet outside the building line.
    - Running parallel to and within 2 feet of any building or structure.
    - 6-inch sewer lateral to fire station.
  - Provide clean-outs above all urinals, lavatories, upper terminal water closets, and sinks.
  - Provide uniform slope of 0.25-inch fall per foot whenever possible, but never less than 0.125-inch per foot.
  - Indicate invert elevations of new sewer lines at buildings, changes in direction, locations where sewer lines join and at property lines.
  - Review existing sewer pipe's capacities, conditions, and materials.

- Floor Drains, Area Drains and Floor Sinks
  - Where drains or sinks are required, slope floor to drain at 0.125 inch per foot.
  - Floor drains with trap primers are required at restrooms. One floor drain shall be provided front and center for two or more urinals. One floor drain is required for water closets in all restrooms with an additional floor drain when a total of four or more water closets are provided. One floor drain shall be provided for a combination of one water closet and one urinal.

- Utility/Service Sink Room
  - Provide wall-mounted stainless-steel mop sink, with floor drain.
  - Floor sinks with trap primers are required at:
    - Utility/Service sink room.
    - Kitchens, and where preparation sinks have an indirect waste drain rather than a direct connection.
    - Trench drain.
    - Wherever required by the California Plumbing Code or the City Plumbing Code.

- Water Systems
  - Use Type L hard copper pipe inside buildings.
  - Do not run water lines under slab if at all possible.
  - Provide a shut-off valve to isolate all fixtures in each restroom, kitchens, and any other room with multiple fixtures.
  - Slope pipes up in direction of water flow to air-elimination devices, or up to a nearby expansion tank, to provide for air elimination from water lines.
  - Water hammer arrestors are required for lavatories, sinks, fountains, water closets, urinal headers, and other fixtures.
- Water Valves and Other Devices
  - Uninterrupted Service:
    - All domestic water supply mains shall be designed in an above-ground valve station with a minimum of two parallel branch lines – a primary and secondary – to provide for uninterrupted service to the site during maintenance of a backflow preventer or a pressure regulating valve. Each branch shall include a backflow preventer with strainer and when the street pressure exceeds 80 psi, a pressure regulator with strainer.
    - A separate service shall be provided for landscape irrigation, with an above-ground valve station that includes a backflow preventer and a pressure regulator with strainer when the street pressure exceeds manufacturer's or design suggested range.
  - Shut-off Valves:
    - All shut-off valves shall be accessible from the room in which fixtures are installed, and shall be located at approximately 3 feet, but not more than 7 feet, from the floor. These valves shall control only fixtures in the room in which they are installed.
  - Provide shut-off valves for:
    - Each group of fixtures.
    - Each restroom.

The City is required to include the above standard recommended measures from the Vision Plan's Appendix in the final building plans prior to approval. City staff shall ensure measures are on all Project plans to ensure that these requirements are implemented.

3.16.5 Impacts Summary

Implementation of the mitigation measures identified above would reduce all potentially significant impacts on potable water demand and wastewater generation to less than

significant with mitigation. Recommended mitigation measure **MM UT-2** would further reduce the Project's impacts on potable water demand. Therefore, no unavoidable adverse utilities impacts would occur from Project implementation and impacts would be *less than significant*.

3.17 WILDFIRE

Implementation of the proposed Project would introduce new potential ignition sources and a greater density of people within a high fire hazard area. With mitigation for adaptive wildfire response, the Project would have beneficial changes, including improved emergency vehicle access, improved evacuation routes and wayfinding, and emergency management plans that address Project implementation phase by phase..

This section describes wildfire risks and hazards that would be exacerbated by the Los Angeles Zoo Vision Plan (Vision Plan) in the City of Los Angeles (City). A wildfire, also known as a wildland fire, is an uncontrolled and destructive fire in a forest, grassland, or brushland. Wildfires can be both naturally occurring and manmade and typically ignite during droughts and periods of hot, dry weather when vegetation becomes dry and more highly flammable. Lightning, vehicle or equipment operation, landscape maintenance, burning campfires, cigarettes, arson, downed power lines, and even the sun can ignite wildfires. This analysis describes the physical setting for wildfire and the regulations that apply to wildfire management, emergency response and access. Impact analysis assesses the risk of exposure to wildfire or post-fire hazards.

3.17.1 Environmental Setting

Regulatory Setting

State and local regulations have been enacted to address wildfire risks and hazards in the wildfire-prone areas of the City. There are no federal regulations that pertain to wildfire hazards or response. Federal regulations that apply to fire protection services is provided in Section 3.13, *Public Services*.

State Regulations

State Department of Forestry and Fire Protection (CAL FIRE)

The California Department of Forestry and Fire Protection (CAL FIRE) serves and safeguards the people and protects the property and resources of over 31 million acres of California's privately-owned wildlands within the State Responsibility Area (SRA). CAL FIRE foresters and fire personnel work closely with other agencies to encourage and implement fuels management projects to reduce the threat of uncontrolled wildfires. CAL FIRE provides varied emergency services in 36 of the State's 58 counties via contracts with local governments. CAL FIRE's Fire Prevention Program consists of multiple activities including wildland pre-fire engineering, vegetation management, fire planning, education and law enforcement. Typical fire prevention projects include brush clearance, prescribed fire, defensible space inspections, emergency evacuation planning, fire prevention education, fire

hazard severity mapping, and fire-related law enforcement activities. CAL FIRE's mission emphasizes the management and protection of California's natural resources; a goal that is accomplished through ongoing assessment and study of the state's natural resources and an extensive CAL FIRE Resource Management Program (FRAP). FRAP publishes several maps to inform planning and emergency response programs at state and local levels, including statewide maps of:

- **Fire Hazard Severity Zones** – indicates the entirety of the Project site and Griffith Park lies within a Very High FHSZ in an LRA that extends from Griffith Park west and southeast from the Project site, generally aligning with the Santa Monica Mountain range. FHSZ are defined per Government Code Sections 51175 - 51189.
- **Fire Threat** – identifies the Project site and vicinity with a range of moderate, high, and very high fire threat. Fire threat provides a measure of fuel conditions and fire potential in the ecosystem, representing the relative likelihood of "damaging" or difficult to control wildfire occurring for a given area.
- **Wildland-Urban Interface (WUI)** – identifies portions of the Project site and Griffith Park as a WUI Influence Zone, where vegetation is susceptible to wildfire, and Interface Zone, where dense housing adjacent to vegetation can burn in a wildfire.
- **Communities at Risk from Wildfire** – generally identifies the cities of Glendale and Burbank to the east of the Zoo across the Los Angeles River and I-5 corridor and the Los Feliz neighborhood to the south of Griffith Park as Communities at Risk from Wildfire. Communities at Risk are communities which are identified as having some lands at high risk of house/structure damage from wildfire. These high-risk communities are within the WUI, the area where homes are close enough to wildland vegetation to be within fire's reach, defined here as within 0.5 to 1.5 miles of areas of High or Very High wildfire threat.

California Fire Code

The *California Fire Code* (CFC) is Part 9 of thirteen parts of the official building regulations to the *California Code of Regulations*. This code is also referred to as Title 24, or the *California Building Standards Code*. The Code establishes the minimum requirements consistent with nationally recognized good practices to safeguard public health, safety and general welfare from fire and other hazards in new and existing buildings, structures and premises, and to provide safety and assistance to firefighters and emergency responders during emergency operations. The CFC applies to the construction – including presence of fire service features and fire apparaturus access roads – alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, means of egress, evacuation plans, location, maintenance, removal and demolition of every building or structure or any appurtenances connected or attached to such building structures throughout the state.

California Fire Plan

The California Fire Plan is a cooperative effort between the State Board of Forestry and Fire Protection and CAL FIRE. The plan serves as the state's road map for reducing the risk of wildfire by placing the emphasis on preventive action before a fire starts, the Fire Plan looks

to reduce firefighting costs and property losses, increase firefighter safety, and to contribute to ecosystem health. Eight goals outlined by the fire plan include:

1. Identify and evaluate wildland fire hazards and facilitate the collaborative development and sharing of such analyses and data collection.
2. Promote and support local land use planning processes as they relate to protection from wildfire and land owner responsibility.
3. Support and participate in the collaborative development and implementation of local, county and regional plans that address fire protection and landowner objectives.
4. Increase fire prevention awareness, knowledge and actions implemented by individuals and communities to reduce human loss, property damage and impacts to natural resources from wildland fires.
5. Integrate fire and fuels management practices with landowner/land manager priorities across jurisdictions.
6. Determine the level of resources necessary to effectively identify, plan and implement fire prevention using adaptive management strategies.
7. Determine the level of fire suppression resources necessary to protect the values and assets at risk identified during planning processes.
8. Implement post-fire assessments and programs for the protection of life, property, and natural resource recovery.

Government Code (GC) Section 51175 - 51189

Government Code Section 51175-51189 designates responsibility to local agencies to identify areas in the state as Very High Fire Hazard Severity Zones (FHSZ) falling under local protection with the Local Responsibility Area (LRA). Classification of Very High FHSZ must be consistent with statewide criteria. Designation of Very High FHSZ is based on fuel loading, slope, fire weather, and other relevant factors, including winds identified as causing wildfire spread. Once identified, information on Very High FHSZ is mapped and made available to the public. The CAL FIRE director periodically reviews the LRA, and as necessary, makes recommendations relative to the designated of Very High FHSZ. This section also outlines brush clearance and defensible space maintenance for buildings in the FHSZ, as well as the necessary permit process for building construction and reconstruction. CAL FIRE provides guidance on fuels management and defensible space requirements.

Public Resources Code (PRC) Sections 4201-4204

This section directs CAL FIRE to map areas of significant fire hazards, known as fire hazard severity zones, within state responsibility areas. Classification is based on fuels, terrain, weather, and other relevant factors. The director of CAL FIRE shall designate, and review and revise as necessary, fire hazard severity zones and assign to each zone a rating reflecting the degree of fire hazard severity expected to prevail in the zone.

Public Resources Code (PRC) Section 4290

This section requires adoption of minimum fire safety standards related to defensible space that are applicable to SRA lands under the authority of CAL FIRE, and to lands classified and designated as Very High FHSZ, as defined in subdivision (i) of Section 51177 of the Government Code. These regulations apply to the perimeters and access to all residential, commercial, and industrial building construction within SRAs approved after January 1, 1991, and within lands classified and designated as Very High FHSZ, as defined in subdivision (i) of Section 51177 of the Government Code after July 1, 2021. The regulations shall include all of the following:

1. Road standards for fire equipment access.
2. Standards for signs identifying streets, roads, and buildings.
3. Minimum private water supply reserves for emergency fire use.
4. Fuel breaks and greenbelts.

On and after July 1, 2021, regulations for fuel breaks and greenbelts near communities shall be updated to provide greater fire safety for the perimeters to all residential, commercial, and industrial building construction within SRA and lands classified and designated as Very High FHSZ, as defined in subdivision (i) of Section 51177 of the *Government Code*, after July 1, 2021. These regulations shall include measures to preserve undeveloped ridgelines to reduce fire risk and improve fire protection.

Public Resources Code (PRC) Section 4291

This section requires a person who owns, leases, controls, operates, or maintains a building or structure in, upon, or adjoining a mountainous area, forest-covered lands, brush-covered lands, grass-covered lands, or land that is covered with flammable material shall maintain defensible space of 100 feet from each side and from the front and rear of the structure. Fuels shall be maintained in a condition so that a wildfire burning under average weather conditions would be unlikely to ignite the structure. The intensity of fuels management may vary within the 100-foot perimeter of the structure, the most intense being within the first 30 feet around the structure. A greater distance may be required by state law, local ordinance, rule, or regulation. Clearance beyond the property line may only be required if the state law, local ordinance, rule, or regulation includes findings that the clearing is necessary to significantly reduce the risk of transmission of flame or heat sufficient to ignite the structure, and there is no other feasible mitigation measure possible to reduce the risk of ignition or spread of wildfire to the structure. Clearance on adjacent property shall only be conducted following written consent by the adjacent landowner. Here, "fuel" means any combustible material, including petroleum-based products and wildland fuels. This section does not apply to single specimens of trees or other vegetation that are well-pruned and maintained so as to effectively manage fuels and not form a means of rapidly transmitting fire from other nearby vegetation to a structure or from a structure to other nearby vegetation.

Public Resource Code (PRC) Section 4119

PRC Section 4119 authorizes the U.S. Forest Service (USFS), the U.S. Department of the Interior Bureau of Land Management (BLM), and CAL FIRE to inspect properties to determine whether they comply with state forest and fire laws, regulations, or use permits. The inspector should note all violations in writing and provide a reasonable time limit for compliance considerate of time estimates for work required.

Public Resources Code (PRC) Section 4292

PRC Section 4292 requires that a firebreak of at least 10 feet be maintained in the circumference area of a pole or tower that supports switch, fuse, transformer, lightning arrester, line junction, or dead end or corner pole.

Public Resource Code (PRC) Section 4427

PRC Section 4427 limits the use of any motor, engine, boiler, stationary equipment, welding equipment, cutting torches, tar pots, or grinding devices from which a spark, fire, or flame may originate, when the equipment is located on or near land covered by forest, brush, or grass. Before such equipment may be used, all flammable material, including snags, must be cleared away from the area around such operation for a distance of 10 feet. A serviceable round point shovel with an overall length of not less than 46 inches and a backpack pump water-type fire extinguisher, fully equipped and ready for use, must be maintained in the immediate area during the operation.

Public Resource Code (PRC) Section 4428

PRC Section 4428 limits industrial operations powered by an internal combustion engine operated on hydrocarbon fuels on or near any land covered by forest, brush, or grass between April 1 and December 1, or other times when ground litter and vegetation would sustain spread of fire. Such operations must provide and maintain, for firefighting purposes only, suitable and serviceable tools in the following amounts, manner, and locations:

- A sealed fire toolbox must be located in the operating area, at a point accessible in the event of fire. The fire toolbox must contain a backpack pump-type fire extinguisher filled with water, two axes, two McLeod fire tools, and enough shovels for each employee at the operation to be equipped to fight fire.
- One or more serviceable chainsaws must be immediately available in the operating area, or in the alternative, a full set of timber-felling tools must be located in the fire toolbox.
- Each passenger vehicle used must be equipped with a shovel and an ax, and any other vehicle used must be equipped with a shovel. Each tractor used must also be equipped with a shovel.

Public Resource Code (PRC) Section 4431

PRC Section 4431 limits use of a portable saw, auger, drill, tamper, or other portable tool powered by a gasoline-fueled internal combustion engine on or near any forest-covered land, brush-covered land, or grass-covered land. Such operations must maintain a clearance zone of at least 25 feet from flammable material. A serviceable round point shovel or fire extinguisher must be present within 25 feet of the tool in use.

Government Code Section 66474.02

In 2012, Senate Bill 1241 added Section 66474.02 to Title 7 Division 2 of the Government Code, commonly known as the Subdivision Map Act. The statute prohibits subdivision of parcels designated within Very High FHSZ, or that are in the SRA, unless certain findings are made prior to approval of the tentative map. The statute requires that a city or county planning commission make three new findings regarding fire hazard safety before approving a subdivision proposal. The three findings are, in brief: (1) the design and location of the subdivision and its lots are consistent with defensible space regulations found in the California Public Resources Code (PRC) Section 4290-91, (2) structural fire protection services will be available for the subdivision through a publicly funded entity, and (3) ingress and egress road standards for fire equipment are met per any applicable local ordinance and PRC Section 4290.

Local Regulations

City of Los Angeles Fire Code

The *City of Los Angeles Fire Code* constitutes Article 7, Chapter 5 of the *Los Angeles Municipal Code* (LAMC). The Fire Code establishes regulations affecting or relating to structures, processes, premises and safeguards regarding fire safety.

Section 503 defines standards for the provision, maintenance, installation, dimensions, and other specifications of fire apparatus access roads. Fire apparatus access roads shall extend to within 150 feet of all portions of a facility and have an unobstructed width of at least 20 feet. Access roads shall be designed and maintained to support the imposed loads of fire apparatus under all weather conditions.

Section 3301-3317 outlines fire safety guidelines regarding construction and demolition. During construction the project site must provide or maintain vehicle access for firefighting, water supply, standpipes, portable fire extinguishers, and maintain of existing stairways. The section also provides safeguards regarding the storage and handling of flammable and combustible liquids, flammable gases, explosive materials roofing operations, motorized construction equipment, temporary heating equipment, and combustible debris, rubbish and waste.

Section 4908 establishes Very High FHSZ and codes regulating and prohibiting certain activities within designated FHSZ.

Section 57.322 states owners of property located within a Very High FHSZ must maintain all native brush, weeds, grass, trees and hazardous vegetation within 200 feet of any structures/buildings and within 10 feet of any combustible fence or roadway/driveway used for vehicular travel. Maintenance requirements specify acceptable height and/or volume of grasses, brush, trees and shrubs, acceptable clearance distance requirements between vegetation and roofs and chimneys, and general tree maintenance. Dead trees, shrubs, undergrowth, palm fronds, and branches must be removed from the clearance zone.

Los Angeles Fire Department Strategic Plan

The City of Los Angeles Fire Department's (LAFD) Strategic Plan outlines goals and strategies to improve fire protection throughout the City. Goals and relating strategies relevant of wildfire include:

- Goal 1: Provide Exceptional Public Safety and Emergency Service
  - Strategy 3: Improve fire suppression services.
  - Strategy 5: Prepare for large scale disasters.
  - Strategy 6: Ensure and optimal state of readiness focusing on terrorism and disaster preparedness.

City of Los Angeles Emergency Operations Plan

The City's Emergency Management Department maintains and leads the citywide emergency plans, revises and distributes the Emergency Operations Plan and Master Procedures and Annexes and updates and disseminates guidelines for the emergency response and recovery plans. The Emergency Management Department also reviews and tests departmental emergency plans to ensure City departments are ready to fulfill their respective emergency missions. These annexes identify roles, responsibilities and required actions for various City departments, particularly LAFD, the Los Angeles Police Department and in some cases, the Zoo Department. Annexes that are particularly relevant to the Zoo and wildfire hazards include the Brushfire Annex, the Early Warnings and Notifications Annex, the Evacuations Annex, and the Mass Care and Sheltering Annex - Large Animal Support Appendix. These annexes address brush fire emergency response, notifications and warnings, evacuation guidelines and care or sheltering of large animals, including those from the Zoo. Every other year, the Emergency Management Department – Planning Division leads a formal review of the Emergency Operations Plan departments and agencies that are identified within each Annex, as well as any other departments or agencies that may need to be part of the review process. If, at any time, a department, agency, or stakeholder to the Emergency Operations Plan changes, develops, or amends any policy, procedure, or operation that will change or affect the contents, that entity is to immediately notify the Emergency Management Department––Planning Division.

Los Angeles Zoo Fire Preparedness, Response, and Emergency Evacuation Plans

The Zoo Safety and Administrations Offices maintain the *Los Angeles Zoo Procedure Manual*. This document includes the Zoo's Fire Preparedness and Response Plan and Zoo Staff and Volunteer Evacuation Plan, most recently updated in April 2017. Together, these plans described procedures for the Zoo to implement in preparation for a fire or in response to a fire incident. These plans address or outline the following procedures:

- Lines of command and communication;
- Notification of a fire incident;
- Identification of Zoo and LAFD incident commanders;
- Responsibilities of Zoo departments;
- Zoo employee and visitor evacuation instructions;
- Staff evacuation meeting location in the Zoo's southern parking lot; and
- Animal collection, immobilization, crating, relocation, and evacuation, including California Condor Evacuation Procedures. If it is necessary to relocate animals off Zoo grounds, they shall be transported to the Magnet School parking lot.

Zoo Security Division has primary responsibility for carrying out an evacuation under the direction of the Zoo Incident Commander with assistance as needed from other divisions (e.g., Animal Care Division, Admissions, Visitor Services).

City and County of Los Angeles Disaster Route Maps

Disaster Routes are freeway, highway or arterial routes pre-identified for use during times of crisis. These routes are utilized to bring in emergency personnel, equipment, and supplies to impacted areas in order to save lives, protect property and minimize impact to the environment. During a disaster, these routes have priority for clearing, repairing and restoration over all other roads. Disaster Routes are not evacuation routes. Although an emergency may warrant a road be used as both a disaster and evacuation route, they are completely different. An evacuation route is used to move the affected population out of an impacted area. The County of Los Angeles (County) has designated disaster routes that are used to bring emergency personnel, equipment, and supplies to impacted areas. These include the Interstate 5 (I-5) and State Route 134 (SR-134) in the Project vicinity, which are designated primary disaster routes (Los Angeles County Department of Public Works 2012). San Fernando Road located 0.53 miles east of Project site, is designated a secondary disaster route by the County. The City of Los Angeles (City) also designates these same roads as disaster routes.

Draft Department of Recreation and Parks Standard Operating Procedure Griffith Park Emergency Operations

This Standard Operating Procedure (SOP) provides guidance and procedures for the coordination of the Department response during emergency operations in Griffith Park. The

SOP identifies RAP sections of Griffith Park, including the Zoo. The SOP establishes that the RAP Operations Section Chief shall be a park ranger and shall communicate with sections if necessary, including emergency notifications and how and where a Mobile Command Post (MCP), shall be set up. Under direction of RAP OSC, Operations Section will coordinate traffic control, evacuation routes, information distribution, wayfinding and other objectives as directed by the RAP OSC. These procedures have not been adopted and are subject to change.

Existing Conditions

Regional Setting

Los Angeles County encompasses a land area of 4,000 square miles. Nearly 47 percent of this area is mountainous, while the remainder consists of alluvial valleys, coastal plains, and high desert. The mountain ranges within the County generally run from east to west. These areas are referred to as "fire corridors" due to the high frequency and risk of fires. Prominent fire corridors in Los Angeles County include Malibu, Arroyo Seco, and San Gabriel Canyons (County of Los Angeles Fire Department 2019).

Wildfire season in California historically occurs in the late summer and autumn months, after summer climate has dried vegetation into flammable and combustible fuel and seasonal inland winds blow towards the coast (e.g. Diablo and Santa Ana winds). The seasonal Santa Ana winds cross Los Angeles County between October and March annually. Originating as cool/drier air masses over the Great Basin between the Sierra Nevada and Rocky Mountains, the Santa Ana winds develop as the air masses descend, compress and heat up adiabatically through the mountain passes ,towards coastal areas and the Pacific Ocean. The San Gabriel Mountains serve as a barrier between the Mojave Desert and coastal regions. The main canyon drainages flow north and south, with a limited number of mountain passes to channel air flow. This natural topography controls airflow patterns linking the western Mojave Desert with the Pacific Ocean which the Santa Ana winds develop (County of Los Angeles Fire Department 2019). As the winds flow downslope through the passes, the air becomes compressed and warmer and wind speeds dramatically increase. By the time the winds reach coastal Southern California, they have become hotter, drier, and faster moving with the potential to dry out dormant and dead vegetation and will quickly spread wildfire flames.

Recent trends indicate fire season in California is starting earlier and ending later, with the length of fire season increasing by 75 days across the Sierras. A primary driver of expanded fire seasons appears to be climate change. Warmer temperatures, reduced snowpack, and earlier spring snowmelt create longer and more intense dry seasons that make vegetated areas more susceptible to severe wildfire (CAL FIRE 2019a). Other factors exacerbating wildfire risk in California include a widespread tree mortality epidemic due to insect infestations and drought as a result of climate change, and structural development expanding into areas bordering wildlands, locations referred to WUIs. California experienced the deadliest and most destructive wildfires in its history in 2017 and 2018 (CAL FIRE 2019a), including the Thomas Fire in Ventura and Santa Barbara Counties, the Tubbs Fire in Napa County, and the

Camp Fire in Butte County. As of November 2019, CAL FIRE has reported 6,190 fire incidents occurring in 2019, an estimated 198,392 acres burned, damage to 732 structures, and 3 confirmed fatalities (CAL FIRE 2019a).

Historic Wildland Fires in City of Los Angeles

Los Angeles County, including portions of the City, supports large areas of undeveloped wildlands such as those within the San Gabriel and Santa Monica Mountains, including Griffith Park, which also include WUI areas. These wildlands have a history of periodic wildfires, including more than 48 recorded major wildfires in the County over the last century. Wildland fires are a naturally recurring event in Southern California and the City. However, recent decades have witnessed greater impacts and severity of damage from wildfires, and this trend is only expected to increase further with climate change, population growth, and expanding development (Safford & Van de Water 2014; Yufang 2015). In 2017, LAFD responded to the La Tuna Canyon Fire, the largest brush fire within the City in 50 years, burning 7,194 acres through the Verdugo Mountains and destroying five homes. Three months later, the Creek Fire in Kagel Canyon and the Skirball Fire along the I-405 Freeway burned simultaneously. Combined damage from these two fires included 78 homes destroyed or damaged (LAFD 2018).

Historic Wildfires in Griffith Park

Since 2012, the LAFD has responded to 18 brush and grass fires in the Project vicinity (see Table 3.17-1). Historically, the first recorded wildfire was the Griffith Park Fire of 1933. On October 3, 1933, a fire began near the Mineral Wells area, located immediately west of the Project site. The 1933 fire burned 47 acres and killed 29 people, making it the second deadliest wildfire in the City's history (Collins Sullivan 2007). Nearly 30 years later on May 12, 1961, a fire in the southern area of Griffith Park burned 814 acres. More recently, on May 8, 2007, a fire burned 817 acres in the southeastern quadrant of Griffith Park. The 2007 fire required over 200 firefighters, multiple helicopters, and two fixed-wing aircrafts to aerial drop water, and resulted in the overnight evacuation of approximately 300 people in the nearby Los Feliz neighborhood (Archibold 2007; Neuman 2007). Several trails throughout Griffith Park and in the proximity of the Zoo were severely damaged by the fire. No Zoo animals were harmed but the proximity of the fire to the Zoo resulted in most animals being safely moved into their holding quarters.

The Zoo closed when the Griffith Park brush fire of November 2018 came in close proximity to the Zoo. Firefighters were able to extinguish the flames before they reached the Zoo.
Photo Source: Joseph Serna, Los Angeles Times

Table 3.17-1. Recent Fires in the Project Vicinity

Date	Fire Type	Location	Distance from Project Site
7/12/2013	Brush	4700 W Zoo Drive	> 0.1 miles N
4/30/2014	Brush	5600 W Zoo Drive/ N Griffith Park Drive	>0.1 miles NW
3/30/2015	Brush	6000 W Riverside Drive/ W Zoo Drive	--
10/25/2015	Grass	NB I-5/ Zoo Drive	0.14 miles E
10/29/2015	Grass	I-5, Zoo Drive	0.14 miles E
12/01/2015	Brush	05202 W Zoo Drive	0.6 miles NW
7/01/2016	Grass	5638 W Forest Lawn Drive/ W Zoo Drive	1.06 miles NW
7/25/2018	Brush	5638 W Forest Lawn Drive/ W Zoo Drive	1.06 miles NW
11/11/2016	Brush	5336 N Crystal Springs Drive/ W Zoo Drive	0.21 miles SE
11/18/2016	Grass	I-5/ Zoo Drive	0.14 miles E
3/16/2017	Grass	5217 W Zoo Drive	0.61 miles NW
9/02/2017	Grass	I- 5/ Zoo Drive	0.14 miles E
11/20/2017	Brush	5333 W Zoo Drive	>0.1 miles W
11/09/2018	Brush	194 Griffith Park Drive	0.1 miles W
11/12/2018	Brush	5400 W Zoo Drive/ W Riverside Drive	0.1 miles N

Source: LAFD 2019a, 2019b.

Most recently, the November 9, 2018 brush fire was the fourth major (i.e., greater than 10 acres) wildfire in Griffith Park (Cooper & Mathewson 2009). This brush fire occurred immediately adjacent to the Zoo, approximately half a mile behind western end of the Zoo (LAFD 2019a). The fire was reported at approximately 7:10 AM. Due to the surrounding terrain, fire response teams were initially unable to see the fire to provide an acreage estimate and had to hike to the fire location. Fire engines were unable to reach the fire location due to the steep terrain and lack of access roads, and fire helicopters and air support were deployed. Shortly after, the Zoo closed operations, although no animal evacuations were initiated. Firefighting personnel were able to utilize the Zoo and its perimeter roads as staging areas and points of access to the surrounding areas to suppress the fire and monitor for hot spots or flare ups. The fire was fully extinguished by a crew of over 120 firefighters in the late afternoon after reaching a size of approximately 30- acres. Heavy brush, steep slopes, and difficult-to-navigate terrain contributed to the fire's growth and the difficulty of extinguishing the fire early on.

In response to the November 9, 2018 wildfire, Zoo staff began evacuation or relocation of some animals, including crating some small primates and moving birds from the Bird Show

exhibit into an indoor classroom and the Zoo parking areas to protect their sensitive lungs from the smoke of the nearby wildfire. Because of the difficulty of moving large animals such as elephants, these were sheltered in place inside existing exhibits or structures. Zoo staff were able to assist firefighting personnel by activating the existing perimeter sprinkler system to soak potentially flammable vegetation along the Zoo's fence line. Evacuation of Zoo patrons was not required as the Zoo had net yet opened and remained closed when the potential wildfire threat was imminent. The fire caused no damage to Zoo facilities or exhibit animals and animals were returned to their cages/exhibits the following day.

Wildland Fire Management and Firefighting Strategies

When a wildfire occurs, an important factor for life, property, and the environment comes from passive protection measures, such as defensible space, fire-resistive landscaping, and fire-resistive construction. The sum effect of passive protection measures substantially increases the effectiveness of fire suppression activities. Inadequate water supply, ingress and egress, structural safeguards, or vegetation management are key factors that lead to major structural-related fire losses in areas adjacent to wildlands (Cohen 1999). In addition, the inability of residents to shelter-in-place can also create evacuation and fire department access problems in these areas (U.S. Forest Service 2000).

Typical strategies for managing wildland fire hazards involve three parts: ongoing fuel management, fuel reduction near structures, and suppression of active fires. Fuel management includes removal of dried vegetation, creation of fuel breaks where vegetation is managed to slow or control a fire, and conducting prescribed burns. Fuel modification reduces the radiant and convective heat generated by wildfire and provides valuable defensible space for firefighters to take an effective stand against an approaching wildfire front and firebrands (i.e., ember showers).

The City of Los Angeles Department of Recreation and Parks (RAP) provides fuel modification services within Griffith Park. This includes brush clearance activities around access roads and trails maintained by RAP, including the Condor and Skyline trails surrounding the Zoo, to maintain a minimum 10-foot fire buffer. While these strategies may be effective in slowing or preventing the spread of large fires and reducing risk to life and structures, they may also fragment and damage ecosystems and cause visual changes in the process (Los Angeles County Fire Department, 2012).

Project Site and Vicinity

Fire Hazard Severity Zones (FHSZ)

The Zoo lies within and adjacent to wildland areas of Griffith Park that are exposed to potential wildfire hazards. CAL FIRE has mapped areas of significant fire hazards in the state through its Fire and Resources Assessment Program (FRAP). These maps classify FHSZ based on a hazard scoring system. This system considers criteria for fuels, fire history, terrain influences, housing density, and occurrence of severe fire weather where an urban

conflagration could result in catastrophic losses. As part of this mapping system, land where CAL FIRE is responsible for wildland fire protection and generally located in unincorporated areas is classified as a SRA. Where local fire protection agencies are responsible for wildfire protection, the land is classified as an LRA. CAL FIRE currently identifies the Project site as a LRA and designates the majority of Griffith Park and all of the Project site as a Very High FHS zone (CAL FIRE 2011).

Slope & Topography

Topography strongly influences wildfire behavior and slope conditions can become a critical wildfire risk factor. Conditions such as the length and steepness of slopes, direction of exposure, and ruggedness of terrain influence potential wildland fire intensity, behavior, the rates at which such fires may spread, and firefighter access.

Steepness of slopes within the Zoo can reach up to 45 percent, which could exacerbate the spread of wildfire.

The most important factors are the influences of slope steepness and prevailing wind direction on the speed at which a fire may spread (Barros et al. 2013). As slope gradients increase, hand crews are less likely to be able to establish fire-containment lines due to the lack of accessibility and safety concerns. The development of spot fires ahead of fire-lines and the hazards of rolling and blowing ember showers become progressively more serious as slope increases. Flat terrain may still experience intense fire patterns depending on vegetation cover, structure, and other factors. For example, the 2017 Thomas Fire in Ventura traveled from rugged terrain north of Santa Paula to flatlands over within the City of Ventura, destroying over 1,063structures in the process, many of them located within developed areas of Ventura's downtown.

The Project site is located in the northeastern portion of Griffith Park, at the base of the foothills of the eastern Santa Monica Mountains. Griffith Park and portions of the Zoo includes terrain consisting of rocky hills, canyons, and gullies. The Project site encompasses areas of steep hillsides and canyons bordered by steep topography in the neighboring wildlands of Griffith Park with elevations ranging from approximately 384 to 1,625 feet above mean sea level (msl). The Project site is located along the border of and within steep hillsides and canyons in Griffith Park, with existing structures primarily occupying level canyon bottoms or lower elevation slopes within the Zoo's interior.

The Project site includes moderate to steep slopes (i.e., 9 to 45 percent), especially in northern and southern undeveloped hillsides of the Zoo and along the western perimeter of the Project site. The steep slopes with chaparral vegetation that comprise portions of the Project site and

surrounding wildlands in Griffith Park contribute to the area's designation as a Very High FHZS. In addition, prevailing west and northwest winds average speeds of 9.5 miles per hour (mph) (Western Regional Climate Center 2018). Thus, prevailing winds, steep slopes, and the presence of dense, highly flammable vegetation within portions of the Project site and surrounding Griffith Park present a substantial wildland fire hazard.

There are no delineated water features (i.e., blue line creeks, rivers, lakes) within the site or immediate vicinity, but the Project site is located at the base of an approximately 80-acre watershed that drains into the Zoo along the northern perimeter. Runoff from this watershed is captured and conveyed through the Zoo's existing stormwater management system (see Section 3.10, *Hydrology and Water Quality*).

Firefighting Access

Firefighting access to the Zoo and bordering areas of Griffith Park is available via Zoo Drive, Western Heritage Way, and Griffith Park Drive, which are all paved two- to four-lane roads. Within the Zoo, an approximately 16-foot-wide paved road runs along the Zoo's perimeter with adjacent wildlands of Griffith Park. This road provides access to areas of dense vegetation within the Zoo and serves as a fire break and line of defense for firefighters. Outside the Zoo, access to steep, heavily vegetated wildlands adjacent to the Zoo is limited to the Skyline and Condor trails, which are unpaved roads. Steep grades in places along these access routes may limit vehicular access for larger firefighting vehicles.

Onsite paved roads provide firefighting access to the Zoo's perimeter with wildland areas in Griffith Park but the chain-link security fence around the Zoo prevents direct access to these wildland areas.

The Zoo supports firefighter access, patrol, and management for the LAFD with existing access roads within the Zoo and staging areas for first responders. In response to recent Griffith Park wildfires, LAFD used the Zoo parking lot for staging of command operations and equipment. Brush patrols have been dispatched within the Zoo and have been capable of monitoring wildfire movement, flare ups, or hot spots, while firefighting crews have been able to establish fire breaks or defense lines and lay hoses around the Zoo's perimeter. (Deputy Chief Hogan, Commander of the LAFD West Bureau, personal communication, January 14, 2020). Simultaneously, limits to firefighting access is demonstrated by the November 9, 2018 brush fire that occurred within hillsides and canyons adjacent to the Zoo. Vehicular access was limited by slope and hand crews and aerial support were required for fire suppression.

Vegetation Biomass and Fuel

The Zoo contains flammable landscapes in undeveloped hillsides in California and Africa planning areas, and lies adjacent to dense vegetation in Griffith Park.

The Zoo is immediately bordered to the north, west, and east by several hundred acres of chaparral, oak woodland, and coastal sage scrub habitats located within the surrounding hillsides, ridges, and canyons of Griffith Park (refer to Section 3.3, *Biological Resources*). Chaparral vegetation has flammable characteristics, including broad-leaved evergreen and schlerophyllic (i.e., small fine) leaves, forming dense thickets with lots of leaf litter, peeling bark, and volatile oils, all resulting in high intensity (i.e., long flame length) burn potential. Fire can spread rapidly through older growth chaparral, particularly when wind-driven (Borel, Valerie T., et al. 2009). In Southern California, chaparral fires have the potential to be large and devastating (County of Los Angeles Fire Department 2019). Coastal sage scrub and non-native annual grasslands are generally of shorter stature, and more open than chaparral and burns easily, fast, and more frequently. Oak woodlands are generally less flammable due to large spreading canopies that provide shade inhibiting the growth of more flammable species and making the understory area below, shady, cooler and more mesic (i.e., moist) (Borel, Valerie T., et al. SAFE, 2009). However, fallen dead oak leaves left on the ground can be a highly flammable fuel source for wildfires. These fire-prone plant communities exist in undeveloped areas of the Zoo and are also dense and widespread in adjacent hillside and canyons throughout Griffith Park.

Native vegetation within the Zoo primarily consists of coast live oak woodland, eucalyptus/mixed woodland, and laurel sumac shrubland (refer to Section 3.3, *Biological Resources*). Approximately 19 acres of undeveloped hillsides in the California and Africa planning areas within the Zoo support flammable non-native annual grassland, coastal sage scrub, chaparral, and oak woodland plant communities, as well as invasive and flammable, non-native eucalyptus trees distributed throughout. Approximately 13 acres of chaparral grows in a continuous strand of dense vegetation on Project site hillsides, creating a flammable landscape when ignited. There are almost 7 acres of oak woodlands within the Zoo. The Project site also supports over 13 acres of highly flammable eucalyptus groves. Eucalyptus trees are also scattered within the canyons and hillsides of

The Zoo's existing service areas along the southwestern perimeter with Griffith Park include non-vegetation fuels such as a gas and diesel fueling station.

adjacent areas of Griffith Park. Additional trees within the Zoo that may present biofuels for wildfires include other tree species such as cypress, pine, acacia, and the Mexican fan palm – especially if unmaintained (County of San Diego, Department of Planning and Land Use 2004; FireSafe MARIN, 2019). For description of area and extent of vegetation within the Zoo, please refer to Section 3.3, *Biological Resources*.

Zoo operations and development include potential sources of other non-vegetation fuels that may contribute to wildfire spread if ignited. Most Zoo buildings constructed recently have fire suppression systems (i.e., sprinklers), but older buildings such as service centers and storage buildings on the southwestern perimeter of the Zoo may not (see *Zoo Fire Management and Evacuation Planning* below). The Zoo also stores and uses flammable materials, including lumber, hay, and fuels such as the fueling station located at southwestern service area adjacent to the Zoo perimeter with Griffith Park. Additional information related to hazards and hazardous materials is available in Section 3.9, *Hazards and Hazardous Materials*, and details related to structural fire suppression and response is available in Section 3.13, *Public Services*.

Zoo Fire Management and Evacuation Planning

The Zoo maintains a vegetation fuel break along its approximately 1.5-mile long perimeter with the wildlands and flammable vegetation communities within Griffith Park. Maintenance for this fuel break and other brush clearance activities within the Zoo is carried out by Zoo groundskeeper staff in coordination with the LAFD. In the spring of each year, LAFD personnel walk the site with Zoo staff to identify areas of required maintenance or clearance along the perimeter and in undeveloped areas of the Zoo with any improvements necessary to ensure compliance with CFC and LAFD regulations. Zoo groundskeeper staff, with assistance from approved third-party landscaping contractors, conduct vegetation clearance around the entirety of the Zoo's perimeter and interior undeveloped areas based on the requirements identified by LAFD, which involves the mowing, trimming, limbing, or chipping of grasses, shrubs, and trees within the fuel break and clearance areas. Due to steep terrain, the width of this buffer appears to range from 50 to 100 feet, although management of non-native annual grasses and understory may extend to a wider area.

The Zoo maintains perimeter sprinkler systems and water line available for fire suppression along the ridgeline of the California planning area capable of wetting down this perimeter during a wildfire event, as occurred during the November 9, 2018 wildfire (Tom LoVullo, Zoo Director of Construction and Maintenance, personal communication, January 8, 2020). Within the interior developed areas, the Zoo maintains a full network of fire hydrants throughout the Zoo along internal roads and pedestrian paths. All Zoo buildings are equipped with fire alarm systems, while newer structures are also equipped with fire sprinkler systems (Tom LoVullo, Zoo Director of Construction and Maintenance, personal communication, January 8, 2020). Smoking is also banned within the interior of the Zoo and permitted only in the parking lot.

In addition to these procedures, the Association of Zoos and Aquariums (AZA) requires its accredited members, including the Zoo, to have a written procedure for fire and environmental emergencies specific to the Zoo's region, such as wildfires. In addition, staff at accredited zoos must run through at least one live-action emergency drill—a pre-planned simulation—each year for each category of emergency. These procedures and training address staff care or evacuation of animals and management and potential evacuation of zoo patrons. In compliance, the Zoo conducts live-action emergency and evacuation drills annually and maintains the *Los Angeles Zoo Procedure Manual*, which includes the Zoo's Fire Preparedness and Response Plan and Zoo Staff and Volunteer Evacuation Plan.

The Zoo maintains communication with the LAFD regarding wildfire risks and response due to the number of visitors and animals that may be adversely affected. LAFD also communicates with the Zoo when new projects or development is occurring. Close coordination with the Zoo and other operators within Griffith Park and LAFD is also implemented to assess risks associated with high Griffith Park visitation, special events, construction, and other hazards. To maximize preparedness for wildfire incidents, LAFD strategically manages staff and resources at fire stations where fire risks may be exacerbated on high risk days. LAFD currently engages in pre-deployment on greater threat days (i.e., strong winds, red flag days) to move resources to stations around areas of concerns to better response to any incidents if they should occur.

3.17.2 Impact Assessment Methodology

Significance Thresholds

According to Appendix G of the CEQA Guidelines, if located in or near SRA or lands classified as Very High FHSZ, would the project:

a. Substantially impair an adopted emergency response plan or emergency evacuation plan;
b. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire;
c. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment; or
d. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.

In addition to the thresholds identified in Appendix G of the CEQA Guidelines, the *2006 L.A. CEQA Thresholds Guide* states that determination of significance shall be made on a case-by-case basis after considering:

- If the Project impairs implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; and
- If the Project exposes 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.

Methodology

This analysis is supported by review of existing adopted plans, public databases, and recent studies, to assess potential impacts of wildfires to occur within the Project site and vicinity, including the *Los Angeles Zoo Procedure Manual*, which includes the Zoo's Fire Preparedness and Response Plan and Zoo Staff and Volunteer Evacuation Plan. Additionally, information was gathered from the LAFD *Strategic Plan*, academic studies, Project site and vicinity information on file with the Zoo and RAP, and several personal communications with LAFD and Zoo staff regarding past wildfire incidents and LAFD response. Risk associated with wildfire is assessed based on CAL FIRE FHSZ mapping, assessment of the fuel biomass within and adjacent to the Project site, historic wildland fires in the vicinity, slope, winds, vegetation age and composition, and changes that may result after implementation of the Project.

To evaluate potential for post-fire impacts, such as debris flows, flooding, or slope instability, this section assesses impacts of the Project from its hydrologic setting and potential for landslide as a result of runoff, post-fire slope instability, or drainage changes, as evaluated also in Section 3.8, *Hydrology and Water Quality*.

3.17.3 Environmental Impact Analysis

WF-1:	Would the project impair an adopted emergency response plan or emergency evacuation plan?

The Project involves expansion of visitor-serving and exhibit space into approximately 22 acres of undeveloped areas within the existing Zoo, including into hillside areas in the California and Africa planning areas that currently support flammable vegetation communities such as chaparral, coastal sage scrub, and grasslands. Over the phased implementation of the Project, annual visitation to the Zoo would increase by up to 1,265,200 guests and increase the maximum occupancy at any one time inside the Zoo to between 5,500 and 10,000 people (refer to Section 3.0, *Environmental Impact Analysis and Mitigation*). In the event of wildfire in Griffith Park, it is reasonable to assume that Zoo visitors and employees would evacuate the premises, mainly through the main entrance to the parking lot and consistent with the *Los Angeles Zoo Procedure Manual*. This would also generally be the case for any Zoo animals that are relocated either within the Zoo or to offsite locations, though alternate routes may be available from proposed service roads at the Gottlieb Animal Health Center or northeast of the proposed Condor Canyon accessway.

The Project involves redesign of internal access roads to separate visitor pathways from service and access roads (refer to Figure 2-14 and Figure 2-15). This redesign would change the existing evacuation routes and plans for visitors, employees, and Zoo animals and the options for firefighter access routes within the Zoo. The Project would also realign Crystal Springs Drive as an eastern perimeter road following the Zoo's parking lots with improved access to the Zoo and through the Zoo to connect to Griffith Park Drive, which is an existing important access point for emergency response in Griffith Park. These changes would require updates to the *Los Angeles Zoo Procedures Manual* and the City's Emergency Operations Plan and Annexes. Accordingly, the Project would potentially impair existing adopted emergency response and evacuation plans during phased construction and long-term operation, as discussed below.

Construction

The Project would involve demolition, excavation, and construction of roadways, pathways, and access routes both internal and external to the Zoo. In Phase 1, the Zoo's southern parking lot would be redesigned to accommodate 300 additional spaces and would potentially not be accessible during construction, which would reduce the surface parking area available for wildfire response and staging on the Project site. The northern and main parking lots would remain available and provide area and accessibility for firefighting equipment and personnel similar to current conditions. Also in Phase 1, a portion of Crystal Springs Drive connecting to Griffith Park Drive would be excavated and realigned. Since these local roads provide direct firefighting access to the western and southern sides of the Zoo and the southeastern area of Griffith Park, construction has the potential to block or hinder emergency responders due to roadway condition and equipment. A construction traffic management plan would ensure uninterrupted access on external roads to avoid emergency response and evacuation impairment. The Project would not disrupt access to primary or secondary designated Disaster Routes along I-5, SR-134 and San Fernando Road as mapped by the County, retaining regional access for evacuation and emergency response.

Construction of internal improvements, including visitor-serving uses and internal circulation and access roads, would occur over seven phases where each phase would be completed prior to groundbreaking on the next phase. This proposed phasing plan would limit disruption or obstruction of access and evacuation routes within the Zoo. However, during Phase 1, the Zoo Entry and California planning areas would be under construction concurrently and closed to the public, which would impair both access and evacuation through the front gates. Also, throughout construction, internal rerouting and temporary closures of the proposed planning areas may block evacuation routes or cause circuitous or inefficient evacuation, as well as limit firefighter access to internal areas of the Zoo. To ensure visitors and employees are able to evacuate the Zoo during Project construction, a construction-phase Zoo circulation and access plan would ensure that an alternate entrance is available and clearly indicated and that visitors could proceed directly to the most efficient exit without undue delay and confusion.

Implementation of **MM T-1,** requiring a Construction Traffic & Access Management Plan with measures for controlling and ensuring continued access to the Zoo and through the interior of the Zoo circulation system, would address impacts from construction of proposed improvements on emergency access and evacuation of the Zoo in response to a wildfire. Impacts associated with increased risk of wildfire during Project construction would be *less than significant with mitigation.*

Operation

Emergency Response and Access

The Project would improve access to Very High FHSZ areas in Griffith Park with a realignment of Crystal Springs Drive and vehicle entry at the Gottlieb Animal Health and Conservation Center.
Photo: CBS Los Angeles on Twitter

The Project would not directly impair adopted County or City mapped Disaster Routes along I-5, SR-134 and San Fernando Road, as all development would be contained within the Zoo and bordering areas of Griffith Park. As discussed in Section 3.13, *Public Services*, the proposed Project would include improvements to existing roadways and circulatory systems both within and surrounding the Zoo that would improve emergency response and access. Improved vehicle entry at the Gottlieb Animal Health and Conservation Center and a new vehicle entrance emergency vehicle access from Zoo Drive would expand and enhance emergency access to the interior of the Zoo and the perimeter fence line. In addition, proposed realignment of Crystal Springs Drive and improvement of the Crystal Springs Drive/Griffith Park Drive intersection would reduce congestion and improve emergency vehicle response to the Zoo (refer also to Section 3.15, *Transportation and Circulation*). These external circulation improvements would occur in Phase 1 of the Project, which would provide improved access to the Zoo early in Project implementation.

Proposed improvements to internal service roads would occur phase by phase to allow for more efficient and direct emergency response to areas within the Zoo. Installation of a perimeter tram road and improved service roads would provide improved firefighter and vehicle access to high fire hazard areas along the Zoo's perimeter. Service roads would be closed to visitors, allowing efficient and direct emergency response to areas within the Zoo. Further, proposed improvements to pedestrian paths would also expand site accessibility, given that proposed circulation improvements would be required to meet LAFD and CFC standards. Improvement of existing Zoo perimeter roads and construction of new perimeter roads within the California planning area in Phase 1 would also improve firefighting vehicular access to the Zoo's WUI and LAFD's ability to defend the Zoo. As such, the Project would not

impair emergency response and access, and associated impacts would be *less than significant.*

Emergency Evacuation and Sheltering in Place

The Project would substantially increase overall annual visitation and employment at the Zoo and maximum occupancy would increase with expanded visitor-serving uses. Zoo occupancy fluctuates throughout the day, with peak occupancy at a given time estimated between 5,500 and 10,000 under the Project. Increased visitation and capacity at the Zoo would potentially result in greater totals and densities of people within a Very High FHSZ that may evacuate during a Griffith Park wildfire. Increases in after-hours special events during peak wildfire season such as Brews at the Zoo, may pose unique challenges for evacuation due to lower visibility, amplified music, alcohol use, and fewer staff members to assist with implementation of the Zoo's evacuation plans.

Proposed circulation improvements would enhance emergency evacuation routes by creating direct routes and permitting some degree of widening of internal service roads. Currently pedestrian paths composing the Zoo's internal circulation systems are fragmented and include many smaller loops, barriers, dead-ends, and are characterized by one-way-in-one-way-out paths, creating confusion and backtracking. Proposed circulation, including a primary path looping around the Zoo's central exhibits and improved directional signage, would improve easy and direct wayfinding and streamline pedestrian travel in the event of an emergency evacuation. The Zoo's entrance walkway would also be substantially widened easing evacuation through this potential chokepoint. The Zoo capacity increase projected under the Project would be paired with substantially improved internal circulation and wayfinding to ensure visitors can efficiently exit the Zoo during a wildfire evacuation.

In an evacuation, Zoo employees would implement visitor, employee, and animal evacuation at the direction of the Incident Commander and consistent with the Los Angeles Zoo Procedures Manual. Photo: CNN.com

Expanded exhibit space would potentially increase total number of animals housed within the Zoo, as well as placing some animals closer to the WUI in the California and Africa planning areas following implementation of Phases 1, 2, and 3. During emergency conditions when a wildland fire is imminent, it may prove difficult to evacuate panicked individuals on the Zoo site as well as the hundreds of individual animals under Zoo care. For example, in response to the November 9, 2018 wildfire, Zoo staff began evacuation or relocation of some animals, including some small primates and moving birds from the bird show exhibit into an indoor classroom to protect their sensitive lungs from the smoke of the nearby wildfire. Evacuation

of Zoo patrons was not required as the Zoo had net yet opened and did not open as the potential wildfire threat was imminent.

The Zoo maintains and implements the Los Angeles Zoo Procedures Manual, which includes the Fire Preparedness and Response Plan and Zoo Staff and Volunteer Evacuation Plan addressing procedures and protocols for evacuation of Zoo staff, visitors, and animals or the shelter of certain species in place. With implementation of **MM WF-2**, updates to the Los Angeles Zoo Procedures Manual and the City Emergency Operations Plan would reflect changes made to the internal circulation system with each phase of Project implementation and integrate requirements for wayfinding and evacuation assistance for visitors, as well as refreshed requirements for Zoo animal protection and evacuation, during a wildfire in Griffith Park. Operational impacts on emergency evacuation and shelter of select species in place would be *less than significant with mitigation.*

WF-2:	Would the project exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire due to slope, prevailing winds, and other factors?

The Project site is located within a Very High FHSZ at the base of steep vegetated slopes within Griffith Park, with onsite and adjacent fire-prone vegetation, steep slopes, limited perimeter access, and annual Santa Ana Winds. Wildfire ignition sources are predominantly human-caused, including power utilities or equipment sparking (12 percent) vehicle and equipment operation (19 percent), and campfires and smoking (4 percent) (CAL FIRE, 2019). Construction and operation of the Zoo would potentially entail several of these activities that are among the leading known causes of wildfire in California. Implementation of the Project would also involve a phased construction period, construction of facilities along the Zoo's WUI, and increased visitation. When combined, these conditions could exacerbate wildfire risks, expose visitors, employees, and Zoo animals to wildfire hazards, and potentially contribute to the uncontrolled spread of wildfire.

Construction

Project construction would introduce new potential ignition sources in a Very High FHSZ such as the use of heavy machinery and fuels, which create the potential for sparking. Sparking within a heavily-vegetated Very High FHSZ would exacerbate wildfire risk. Proposed construction would extend over up to 20 years, potentially extending through drought periods where wildfire risk may be greater. Major construction of the new California and Africa planning areas in Phases 1 and 3 would occur within areas that currently support flammable native and non-native vegetation, and are located on steep slopes adjacent to wildlands in Griffith Park. Vegetation clearing, grubbing, grading, and facility construction, for the planned tram road, service facilities, and the California and Africa exhibits along Zoo's perimeter would similarly occur within and adjacent to areas that support flammable vegetation. Major excavation, including potential blasting, for Condor Canyon in the California planning area, could also add to construction-related fire ignition risks. Although

all construction would be performed in a fire-safe manner consistent with existing regulations, potential for accidental ignition of onsite or adjacent wildland vegetation would remain.

Each Project phase would involve tree and vegetation removal, including hundreds of highly-flammable eucalyptus trees over the 20 year construction period, as well as over 13 acres of flammable native chaparral and up to 7 acres of oak woodland. Construction in these areas would remove unmaintained flammable native and nonnative vegetation and replace it with irrigated native and ornamental vegetation, potentially reducing the extent of onsite flammable vegetation. This is especially significant in the Africa and California planning areas located on undeveloped hillsides of the Zoo bordering wildlands to the southwest and east of the Project site, respectively. However, construction activities proximate to chaparral and other fire-prone plant communities within Griffith Park would continue to present risk associated with spread of wildfire.

The undeveloped planning sites of the proposed Africa and California exhibits consists of steep slopes and densely growing vegetation, making them susceptible to wildfire spread. The proposed Project would replace vegetation with maintained landscaping and new structures.

Chapter 33 of the City's Fire Code outlines the requirements and measures to be implemented during construction, alteration, or demolition of any structures to reduce risk of fire ignition. These measures include, but are not limited to, prohibition of smoking except in areas approved by the LAFD, refueling of equipment within appropriate locations, preparation of a fire prevention program, and designation of fire watch personnel during occurrence of hazardous construction activities. In addition, all construction would be required to comply with NFPA 241 *Standards for Safeguarding Construction, Alternation, and Demolition Operations.* With implementation of existing regulations, risks association with construction of the Project over the Vision Plan implementation period would be reduced such that associated wildfire risk would be nominal. Impacts associated with increased risk of wildfire during Project construction would be *less than significant.*

Operation

While changes in the interior of the Zoo may reduce risk of onsite vegetation ignition, increased visitation and new exhibits may provide new ignition sources which could also incrementally increase the risk of wildfire impacting Griffith Park. As discussed, the proposed Project would increase annual Zoo visitation increasing the total and density of people in a designated Very High FHSZ. The Zoo's WUI of almost 1.5 miles in length with the flammable wildlands of Griffith Park would continue to expose the Zoo to wildfire threats, which may

increase with the increase in visitation. For instance, the Project would expand night time activities, including campouts in the Africa and California planning areas, and additional special events throughout the year. These new activities may involve potential ignition sources ranging from regulated campfires, cooking/BBQ, electric wiring, and unpermitted smoking.

The construction of new exhibits along the Zoo's perimeter and substantial increases in visitation may incrementally exacerbate wildfire risks, and expose visitors to increased risk of wildfires or fire-created pollutant emissions. A large wildland fire, particularly during periods of high winds, could advance into the Zoo or send ember showers to ignite flammable vegetation within the Zoo. This threat would be exacerbated in the event a wildfire incident were to occur during operation of the Zoo on a peak attendance day or during special events, when several thousand Zoo visitors, staff, and animals would be forced to evacuate. In the event of wildfire when the Zoo is open, visitors would be exposed to increased concentrations of pollutants (smoke) during a wildfire for short durations; Zoo animals that are not evacuated would be subject to smoke pollution through the duration of the wildfire.

To manage and reduce wildfire risks, the Zoo would continue to implement several procedures for managing fuels, ensuring adequate evacuation of the Zoo, and providing appropriate forms of access to the Zoo and surrounding WUI. These measures include the management of vegetation on an annual basis, as required in the City's Fire Code and by LAFD, and preparation and application of emergency management and evacuation plans per both City and AZA regulations. In addition, all development proposed under the Vision Plan would undergo plan review by the LAFD to ensure appropriate designs for access and fire flow as required under Chapter 5 of the City Fire Code. Per **MM WF-2**, the Zoo would be required to update these plans as appropriate based on proposed improvements and changes in site access and circulation through Project implementation. Therefore, with the application of existing regulations and requirements to update wildfire management and evacuation plans, the Project would not significantly exacerbate wildfire risks resulting in the exposure of Zoo staff and visitors to wildfire hazards, and impacts would be *less than significant with mitigation*.

WF-3:	Would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

The proposed Vision Plan would include the installation and maintenance of new or improved/realigned roads, emergency water sources, power lines or other utilities throughout the Zoo within existing developed/disturbed areas. The risks associated with installation, operation, and maintenance of these facilities is discussed in detail under Impact WF-2 above. However, as also discussed in Section 3.3, *Biological Resources,* Project implementation would develop hillside areas within the Zoo that currently acts as fuel breaks

between the Zoo and wildland areas. Expansion or reestablishment of these fuel breaks elsewhere around these proposed areas of development would potentially result in loss of sensitive natural communities, species, and protected trees. Undeveloped hillsides in the California and Africa planning areas are proposed for substantial new development in Phases 1 and 3, including construction of visitor and special-event centers, various animal exhibits, pedestrian pathways, and service roads. Vegetation within portions of these undeveloped hillsides are currently managed through clearing, mowing, or trimming by the Zoo and LAFD as a fuel breaks between the Zoo and surrounding Griffith Park and WUI. It is likely new fuel breaks would be located along the perimeter of the California and Africa planning areas in compliance with existing City Fire Code and LAFD regulations.

In the Project vicinity in Griffith Park, vegetation is dominated by native chaparral and oak woodland habitats, as well as nonnative grasses and scattered invasive species (e.g., eucalyptus). The installation and maintenance of new or expanded fire buffer and fuel breaks would require mowing, substantial trimming, or complete removal of almost all vegetation within up to a 100-foot buffer area around the Zoo perimeter. Precise measurements of habitat loss are difficult to calculate due to the conceptual nature of Project plans and are also contingent upon LAFD direction, which is provided annually based on site inspections. However, in total, installation and maintenance of this fuel buffer could result in up to 6 acres of disturbance or loss of native chaparral and oak woodland habitat within Griffith Park. With implementation of **MM BIO-2** and **MM WF-1**, adverse impacts to biological resources as a result of installation and maintenance of these fuel breaks would be reduced through maximum avoidance of native vegetation and appropriate restoration offsite. Therefore, impacts would be *less than significant with mitigation.*

WF-4:	Would the project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

Development of the Project would occur downslope or downstream of steep hillsides and three small drainages within Griffith Park. There are no creeks or rivers mapped within the Project site, but stormwater flows from the hillsides into the Zoo's stormwater management system, where stormwater is treated before it flows to the Los Angeles River. If a wildfire burned large areas within Griffith Park adjacent to the Zoo, post-fire runoff from a major storm event, slope instability, mudflows, landslides, drainage changes, and limited flooding or sedimentation could occur within the Zoo. The relatively small size of the watershed draining into the Zoo (~80-acres) would potentially limit problems. However, the sandy erosion-prone soils of these hillsides, areas of very steep slopes and very steep cuts, and embankments show signs of slumping and collapse (refer also to Section 3.7, *Geology and Soils*). High intensity heat from wildfires can make soils hydrophobic (i.e., repel or fail to mix with water), reducing infiltration and increasing runoff potential. If wildfire-denuded surrounding hillsides were subjected to a high intensity rain event, new development within

the Zoo has limited potential to face damage from flooding and sedimentation. Sediment and debris could plug existing and planned drainage improvements, including the proposed cistern system (refer to Section 3.10, *Hydrology and Water Quality*). Post-fire conditions on hillsides and slopes within the Zoo could cause similar effects to lower-lying facilities.

Two of the proposed subsurface cisterns serving the Condor Canyon, Bird Show and Animal Programs amphitheater, and the Nature Play Park planning area, are located on high elevation sites relative to the flat interior or the Zoo. These new cisterns would capture all runoff, debris, and sediments conveyed through the watershed, resulting in the potential accumulation of sediment or debris within the system. This would be exacerbated in the event of high rainfall closely following burn of the watershed. However, the small size of the existing watersheds would not create significant runoff, debris flow, or landslides caused by post-fire slope instability that place Project occupants or structures at substantial risk. Therefore, impacts would be *less than significant*.

3.17.4 Mitigation Measures

The following measures are identified to address wildfire hazards and response, as well as biological impacts associated with creation of new fuel breaks around the Zoo's perimeter in Griffith Park.

MM BIO-2 shall apply.

MM T-1 shall apply.

MM WF-1 Wildfire Fuel Management Plan

The Zoo shall retain a City-qualified specialists (i.e., fire management professionals) and City-approved biologist to prepare a Wildfire Fuel Management Plan (WFMP) to design the creation and maintenance of required fire buffers and fuel management zones around the Project site while preserving the integrity of existing native oak woodland, chaparral and coastal sage scrub habitats to the maximum extent feasible. To the maximum extent feasible, native trees and shrubs, such as coast live oak, coastal scrub, and grassland shall be thinned and limbed up but left in place. The WFMP shall be prepared consistent with the requirements of PRC Section 4291 and also detail methods for achieving fire safety around new and existing structures. The WFMP shall incorporate management strategies in coordination with RAP and LAFD to address any needed future management actions in Griffith Park buffering the Project site. Vegetation and other fuels with the management zone(s) shall be maintained by the Zoo in a manner consistent with existing CFC and LAFD regulations to reduce fuel loading in vulnerable areas and to avoid the buildup of deadwood and leaf litter and/or inappropriate storage of flammable materials. Specifically, the WFMP shall describe at least the following elements:

- Vegetation coverage and type within and adjacent to the vegetation management zone(s);

- Sensitive species identification, mapping, and avoidance;
- Setbacks between structures, Project site boundaries, and access routes;
- Location and management procedure for flammable materials use and storage; and
- Development plan landscaping and planting standards within the setback areas.

The Zoo shall submit the WFMP to the City Bureau of Engineering, Emergency Management Department, RAP, LAFD, and California Department of Fish and Wildlife (CDFW) for review and approval prior to issuance of any grading and development plans for improvements under the Project.

MM WF-2 Zoo Evacuation and Fire Response Access Plan

Prior to initiation of each phase of Project implementation, the Zoo shall prepare and implement an Evacuation and Fire Response Access Plan (EFRAP), which shall address conditions and requirements for both construction and operation of the Zoo area affected by the Project. The EFRAP shall be prepared in coordination with the LAFD and RAP. The Zoo Department shall oversee implementation of the EFRAP, including updates of the Los Angeles Zoo Procedures Manual and coordination with the City Emergency Management Department – Planning Division for updates of the City Emergency Operations Plan. The EFRAP shall include, but not be limited to:

- Evacuation of Visitors and Employees
    - Designated evacuation routes and exits within the Zoo for Zoo visitors and employees;
    - Wayfinding and signage to assist with route, exits, and meeting area identification during evacuation;
    - Special considerations and requirements for nighttime evacuations;
    - Accommodations for special care or disabled guests or employees;
    - Specified egress points for transportation vehicles and traffic controls to help efficiently evacuate the Zoo's parking lot;
    - Contingency plans for changes to the construction schedule or phasing plan that would affect the primary evacuation plan and routes; and
    - Regular practice drills (e.g., one per year) for implementation of the EFRAP.
- Fire Response Access within the Zoo
    - Specified at least two dedicated ingress points for emergency responders;
    - Specified firefighter staging or command locations within the Zoo (e.g., northern parking lot or Gottlieb Animal Health Center); and
    - Traffic controls at gates and intersections to balance ingress/egress needs during evacuation.
- Zoo Animal Shelter in Place and Evacuation

- Shelter-in-place accommodations; and
- A relocation plan from the Project site to a secondary location or facility, with associated transportation.

3.17.5 Impacts Summary

With implementation of mitigation measures **MM BIO-2**, **MM T-1**, **MM WF-1** and **MM WF-2**, impacts associated with conflict with adopted emergency management or evacuation plans and loss of native habitat as a result of installation and maintenance of require fuel breaks would be less than significant. Significant unavoidable adverse impacts to wildfire risks would not occur.

3.18 CUMULATIVE IMPACTS

The proposed Project's contribution to cumulative effects would be less than significant or less than significant with mitigation for a majority of resource areas, including air quality, biological resources, cultural and tribal cultural resources, energy, urban forestry resources, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, land use and planning, noise, public services, recreation, utilities, and wildfire. However, similar to the direct effects of the proposed Project, cumulative effects would be significant and unavoidable with regard to aesthetics and visual resources as a result of inconsistency with applicable policies governing scenic quality within Griffith Park and the Zoo Drive gateway and with regard to transportation as a result of increases in vehicle miles traveled. These effects would be considered cumulatively considerable with implementation of nearby and regional development projects, including the Griffith Park Aerial Transit System.

3.18.1 INTRODUCTION

This section discusses the environmental impact analysis approach, methodology, and cumulative project scenario for the Los Angeles Zoo and Botanical Gardens (Zoo) Vision Plan (Vision Plan; Project) in the City of Los Angeles (City). The Environmental Impact Report (EIR) addresses potential impacts that could result from the construction and operation of future development anticipated to occur under the Vision Plan As described in Section 2.0, *Project Description*, the Vision Plan would guide future development at the Zoo for 20 years by establishing broad standards and guiding principles for future phased development. The Vision Plan would be implemented through three near-term phases within the next 10 years and four long-term phases through the Project's horizon. The cumulative impacts analysis considers long-term effects of the proposed Project over the 20-year horizon. Many of these impacts, particularly for the long-term phases, may not be apparent in the near-term, but they may evolve into beneficial or adverse cumulative impacts over time.

3.18.2 CUMULATIVE SETTING AND APPROACH TO CUMULATIVE IMPACT ANALYSIS

According to State of California Environmental Quality Act (CEQA) Guidelines Section 15130(a)(1), a "cumulative impact" consists of an impact that is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts. State CEQA Guidelines Section 15355 define cumulative impacts as "two or more individual effects that, when considered together, are considerable or which compound or increase other environmental impacts." Cumulative impacts can result from individually minor, but collectively significant, projects occurring over a period of time (Section 15355[b]). Section 15355 of the CEQA Guidelines further state that the individual effects can be various

changes related to a single project or the change involved in a number of other closely related past, present, and reasonably foreseeable future projects.

State CEQA Guidelines Section 15130(a) clarifies that an EIR shall "*discuss the cumulative impacts of a project when the project's incremental effect is cumulatively considerable*". In this context, "cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and/or the effects of probable future projects (as defined by Section 15130). The discussion of cumulative impacts must reflect the severity of the impacts as well as the likelihood of their occurrence. The standards for "significant" or "cumulatively considerable" are based on the established significance thresholds for each resource area. Per Sections 15130(b)(1)(B) and 15130(d), consistency with the projections or requirements of previously approved local, regional, statewide, or planning documents may also be a guide to determining whether a project's impact is cumulatively significant.

State CEQA Guidelines Section 15130(b) identifies the following elements as necessary for an adequate discussion of cumulative effects:

- Cumulative context in the form of a list of past, present, and probably future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency, or a summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document that has been adopted or certified and that described or evaluated regional or area-wide conditions contributing to the cumulative impact (see Section 3.18.3 below).
- The geographic scope of the area affected by the cumulative effect and a reasonable explanation for the geographic limitation used (see Table 3.18-1).
- A summary of the expected environmental effects to result from those projects with specific reference to additional information stating where that information is available.
- A reasonable analysis of the cumulative impacts of the relevant projects. An EIR shall examine reasonable, feasible options for mitigating or avoiding the project's contribution to any significant cumulative effects.

According to the State CEQA Guidelines, the discussion and evaluation of cumulative impacts need not be as detailed as the discussion of environmental impacts attributable to the proposed Project alone. Additionally, the discussion should remain practical and reasonable (i.e., not speculative) in considering other projects and related cumulative impacts. Beneficial impacts are also considered in this cumulative impact analysis. Furthermore, per State CEQA Guidelines Section 15130 (a)(1), an EIR should not discuss impacts which do not result in part from the project evaluated in the EIR, and that the EIR may determine that a project's contribution to a significant cumulative impact will be rendered less than cumulatively considerable and thus is not significant [Section 15130 (a)(3)]. Therefore, the Project would only have a significant cumulative impact is the Project's contribution to that impact is deemed to be cumulatively considerable in light of applicable thresholds of significance.

Table 3.18-1. Geographic Context for Cumulative Analysis by Topic Area

Environmental Topic Area	Geographic Context for Cumulative Analysis
Aesthetics and Visual Resources	Los Angeles Zoo, Griffith Park
Air Quality	South Coast Air Basin
Biological Resources	Los Angeles Zoo, Griffith Park, Los Angeles River, City of Los Angeles, Los Angeles County
Cultural and Tribal Resources	Los Angeles Zoo, Immediately Surrounding Areas, Los Angeles Basin, and Los Angeles County
Energy	City of Los Angeles, Los Angeles County, State of California
Urban Forestry Resources	Los Angeles Zoo, Griffith Park, City of Los Angeles
Geology and Soils	Los Angeles Zoo, Immediately Surrounding Areas, and Los Angeles Region
Greenhouse Gases and Climate Change	South Coast Air Basin, State of California, United States, Global
Hazards and Hazardous Materials	City of Los Angeles, City of Burbank, City of Glendale
Hydrology and Water Quality	City of Los Angeles, City of Burbank, City of Glendale, and Los Angeles River Watershed
Land Use and Planning	City of Los Angeles, City of Burbank, City of Glendale, Los Angeles County, and Southern California Association of Governments (SCAG) planning region, State of California
Noise	Los Angeles Zoo and Immediately Surrounding Areas
Public Services (e.g., Fire, Police, Schools, Libraries)	City of Los Angeles, City of Burbank, City of Glendale, and Los Angeles County
Recreation Resources	Los Angeles Zoo, Griffith Park, Los Angeles River
Transportation and Circulation	City of Los Angeles, City of Burbank, City of Glendale, Los Angeles County, and SCAG planning region
Utilities	City of Los Angeles
Wildfire	Los Angeles Zoo and Surrounding Areas within Griffith Park

The State CEQA Guidelines provide two different methods to determine the scope of projects for the cumulative impact analysis:

- **List Method** - A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency (CEQA Guidelines Section 15130).
- **General Plan Projection Method** - A summary of projections contained in an adopted General Plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area-wide conditions contributing to the cumulative impact (CEQA Guidelines Section 15130).

This EIR examines cumulative effects using a combination of the List and General Plan Projection methods. This approach allows for evaluation of the Project in context of near-term development impacts and longer-term regional growth projections from different programs, plans, or projects that have recently been adopted in the City and adjacent cities of

Burbank and Glendale. A list of cumulative projects and plans is used to assess the Project's cumulative impacts (Table 3.18-2; Figure 3.18-1).

CEQA Guidelines Section 15130(b)(2) further states that the EIR should define the geographic scope of the area affected by the cumulative effects and provide a reasonable explanation for the geographic limitation used. The geographic scope for the analysis of cumulative impacts in this EIR varies by each environmental impact topic (e.g., air basin, jurisdiction, service area, viewshed, watershed, etc.). For many of the impact topics analyzed in this EIR, the geographic scope was determined to be limited to the City. However, impact topics such as air quality, greenhouse gases and climate change, hydrology and water quality, land use and planning, population/housing, and transportation/traffic have a more regional geographic scope, as identified below.

3.18.3 PAST, PRESENT, AND REASONABLY FORESEEABLE RELATED ACTIONS

Table 3.18-2. Cumulative Projects List

#	Project	Location	Land Use	Size/Unit Intensity	Project Status
Los Angeles Zoo Projects					
1	Angela Collier Gardens	Los Angeles Zoo entry	Commercial Event Space	1.4-acre outdoor event center	Approved
2	Los Angeles Department of Water and Power (LADWP) Solar Panel Project	Los Angeles Zoo north parking lot and entry	Utilities - photovoltaic (PV) solar panels	163,000 sf of solar panels: 149,000 sf of solar panels for the north parking lot carports 14,000 sf of PV solar panels on the Zoo entry complex rooftops 3.35 megawatts (MW)	Approved
Projects within the City of Los Angeles					
3	Los Angeles River Revitalization Master Plan	Los Angeles River from the confluence of Bell Creek and Arroyo Calabasas to Washington Boulevard	Habitat Restoration Recreation (e.g., trails) Parks and Open Space Transportation	1-mile-wide and 32-mile-long river corridor Five opportunity areas along that corridor Potential for several new bicycle bridges over Los Angeles River	Under Construction
4	Los Angeles River Ecosystem Restoration Project	Los Angeles River from the northern edge of Griffith Park to Downtown Los Angeles near First Street; construction staging identified at the North Hollywood High School Zoo Magnet Center	Habitat Restoration Open Space Passive Recreation	Restoration of 11 miles of the Los Angeles River: Creation and reestablishment of historic riparian strand and freshwater marsh habitat Opportunity for compatible passive recreation	Approved
5	Bow Tie Yard Lofts Project	2750-2800 W. Casitas Avenue in South Atwater Village	Multi-Family Residential Restaurant Retail Urban Farm	5.7 acres: 419 units (423,872 square feet [sf]) 64,000 sf of commercial 42,000-sf urban farm 720-space parking garage	Pending

Table 3.18-2. Cumulative Projects List (Continued)

#	Project	Location	Land Use	Size/Unit Intensity	Project Status
6	Aliso Creek - Limekiln Creek Restoration Project	Confluence of Aliso and Limekiln Creek flood control channels	Habitat Restoration Open Space	11.8 acres	Approved
7	Bending the River Back into the City	Los Angeles River at 1796 N. Baker Street and 1745 N. Spring Street	Water Diversion for Irrigation	70-foot diameter water wheel 224-sf diversion structure 220-foot long, 16-foot wide diversion channel	Approved
8	Big Tujunga Wash at Oro Vista Avenue Maintenance Program	Big Tujunga Wash and Oro Vista Avenue	Maintenance Dredging Habitat Restoration	8.8 acres	Approved
9	Headworks Reservoir Project	6001 Forest Lawn Drive, Los Angeles	Water Storage and electric power generation	2 underground concrete reservoirs 110-million-gallon combined capacity 4-megawatt hydroelectric power generation facility, along with ground surface area habitat restoration and passive recreation overlying underground uses	Under Construction
10	2020 Floodplain Management Plan Update	City of Los Angeles	Flood Management	503 square miles (321,920 acres)	Pending
11	Northeast Los Angeles/ Eagle Rock/ Los Feliz/ Griffith Sewer Rehabilitation Project	Northeast Los Angeles, Eagle Rock, and Los Feliz	Public Utilities – sewer repairs	6 miles of pipeline	Approved
12	North Outfall Sewer (NOS) Unit 18 - Colorado Boulevard to Doran Street Phase 1 & 2 - Emergency Sewer Repair Project	NOS between Colorado Boulevard and Doran Street	Public Utilities – sewer repairs	5,000 linear feet	Under Construction
13	NOS Unit 13 Forney Street to Duvall Street	NOS on Blake Avenue between Forney Street and Barclay Street	Public Utilities – sewer repairs	4,500 linear feet	Under Construction

Table 3.18-2. Cumulative Projects List (Continued)

#	Project	Location	Land Use	Size/Unit Intensity	Project Status
	- Emergency Sewer Repair Project				
14	NOS Unit 12 - Avenue 19/Humboldt Street - Emergency Sewer Repair Project	NOS south of the Interstate (I) -110 between Avenue 19 and North San Fernando Road	Public Utilities – sewer repairs	2,500 linear feet	Under Construction
15	East West Valley Interceptor Sewer Project	Victory Boulevard between Vineland Avenue and Haskell Avenue in North Hollywood – Valley Village and Van Nuys – North Sherman Oaks	Public Utilities – sewer repairs	6 miles force main sewer 6 pump stations and connecting sewers	Pending
Projects within the City of Glendale					
16	South Glendale Community Plan	South Glendale Community Planning Area	Residential Commercial Industrial Transit-Oriented Development Mixed use	48,240 units 24,009,000 sf non-residential uses	Approved
17	Grayson Repowering Project	Grayson Power Plant 800 Air Way, Glendale	Public Utilities – plant repowering	12 acres	Pending
18	Biogas Renewable Generation Project	Between the Scholl Canyon Landfill and the Grayson Power Plant	Public Utilities	5 miles pipeline 60,000-gallon water tank for fire protection 10,000-gallon domestic water tank	Pending
19	Pipeline Management Program	City of Glendale	Public Utilities – water infrastructure repairs	12,886 linear feet water mains	Under Construction
20	Aliso Canyon Action Plan	Greater Los Angeles Area	Public Utilities – gas storage Utilities Conservation	18 actions to reduce the possibility of electrical service interruptions	Approved
21	Highland Avenue Rehabilitation Project	Highland Avenue, Burchett Street, Brand Park Access Road, Lawson	Public Utilities – sewer repairs	8,000 linear feet 3 vehicle detection cameras	Under Construction

Table 3.18-2. Cumulative Projects List (Continued)

#	Project	Location	Land Use	Size/Unit Intensity	Project Status
		Place, Cavanagh Road, and Vincent Way	Transportation – road rehabilitation, traffic signal improvements, ADA improvements	4 trees (removal) and 4 trees (to plant)	
22	San Fernando Road Rehabilitation Project (Phase 3), Public Works Yard Recycled Water Main Extension, and Adjacent Streets Improvement Project	San Fernando Road at Los Angeles Street to 548 W. Chevy Chase Drive, Glendale; Los Angeles Street between San Fernando Road and south of West Garfield Avenue, West Windsor Road between Los Angeles Street and San Fernando Road, and West Garfield Avenue between Los Angeles Street and San Fernando Road	Public Utilities - recycled water main extension Transportation - road rehabilitation	1,600 linear feet of recycled water pipeline	Under Construction
23	Emergency Sewer and Storm Drain Repair Project	City of Glendale	Public Utilities – sewer and storm drain system	238 linear feet of sewer repairs at 20 locations 3,570 linear feet of sewer pipe lining 21 sewer manhole repairs 3 storm drain structure repairs	Under Construction
24	Flower Street Widening Project	Flower Street between Fairmont Avenue and Sonora Avenue	Transportation – general purpose lanes (each direction)	3,605 linear feet	Pending
City of Burbank Projects					
25	Providence Saint Joseph Emergency Department and Urgent Care Project	Providence Saint Joseph Medical Center 501 S. Buena Vista Street, Burbank	Medical Center Transportation – pedestrian sidewalks and crossings	34,500-sf Emergency Department 8,500-sf Urgent Care	Approved
26	ALOFT and Residence Inn Hotels	2500 N. Hollywood Way, Burbank	Hotel	420 hotel rooms: 219 Aloft hotel rooms 201 Residence Inn hotel rooms	Pending

Table 3.18-2. Cumulative Projects List (Continued)

#	Project	Location	Land Use	Size/Unit Intensity	Project Status
27	777 Front Street	777 N. Front Street, Burbank	Multi-Family Residential Retail Hotel	7.08 acres: 573 residential units 307 hotel rooms 1,067 sf of commercial retail space 1,168 parking spaces	Approved
28	Burbank Town Center	600 N. San Fernando Boulevard, Burbank	Residential Office Restaurant and Retail Hotel	16.5 acres: 801 residential units 200-room hotel 47,560 sf of retail/restaurant 271-unit apartment building or a 148,735-sf office building with 5 live-work units and 5 townhome apartments 70-unit residential building or 101 micro-unit apartments	Approved
29	Premier on First Mixed Use Project	103 E. Verdugo Avenue, Burbank	Multi-Family Residential Restaurants and Retail Hotel or Office Transportation – parking	1.8 acres: 14-story mixed use building 154 residential units 7,968-sf retail space 1,727-sf restaurant space Option A: 12- to 13-story hotel (230 rooms), 18,544-sf conferencing center, 6,601 sf of conference rooms, 4,738 sf of restaurant space, 1,156 sf of retail, and subterranean parking. Option B: 11-story office building (158,011 sf), 12,822 sf of restaurant and retail, and subterranean and podium parking garages	Pending
30	AC Hotel	550 N. Third Street, Burbank	Hotel Restaurant Transportation – parking	38,803 sf: 196-room hotel with fitness center, lounge/library, pool/spa deck, outdoor courtyard, and rooftop viewing deck	Approved

Table 3.18-2. Cumulative Projects List (Continued)

#	Project	Location	Land Use	Size/Unit Intensity	Project Status
				3,800 sf of restaurant space 196 subterranean parking spaces	
31	Avion Project	3001 N. Hollywood Way, Burbank	Office Restaurant and Retail Hotel Utilities	60-acre business park: 1,014,887 sf of industrial/warehouse 142,250 sf of creative office use 15,154 sf of restaurant and retail 166 hotel rooms	Pending
32	Burbank Common	10 W. Magnolia Boulevard, Burbank	Entertainment – event space Restaurant and Retail Open space Parking	33,000 sf of event space 19,000 sf of restaurant, retail, and special event space 47,000 sf of outdoor eating/leisure and open space	Approved
33	First Street Village	227, 249, 315 & 333 N. First Street; 36, 42, 43, 52, 53, 57, 71, and 72 N. Palm Avenue; and 36, 52 & 60 E. Magnolia Boulevard	Residential Commercial	3 acres: three 6-story buildings 275 residential units 18, 976 sf of retail and commercial	Approved
34	Talaria	3401 W. Olive Avenue, Burbank	Residential Retail Transportation – parking	3.86 acres: 241 units 42,950-sf grocery store 760 parking spaces	Under Construction
35	Media Studios Ten-Year Development Agreement Extension Project	2255 N. Ontario Street, Burbank	Development Agreement Amendment Office Transportation – parking	160,447-sf office building	Approved
36	Golden State Specific Plan and High-Speed Rail	Burbank Bob Hope Airport vicinity	Industrial Commercial Residential Airport Transportation – high-speed rail station, two	600 acres Residential units and commercial and industrial square footage to be determined (TBD)	Pending

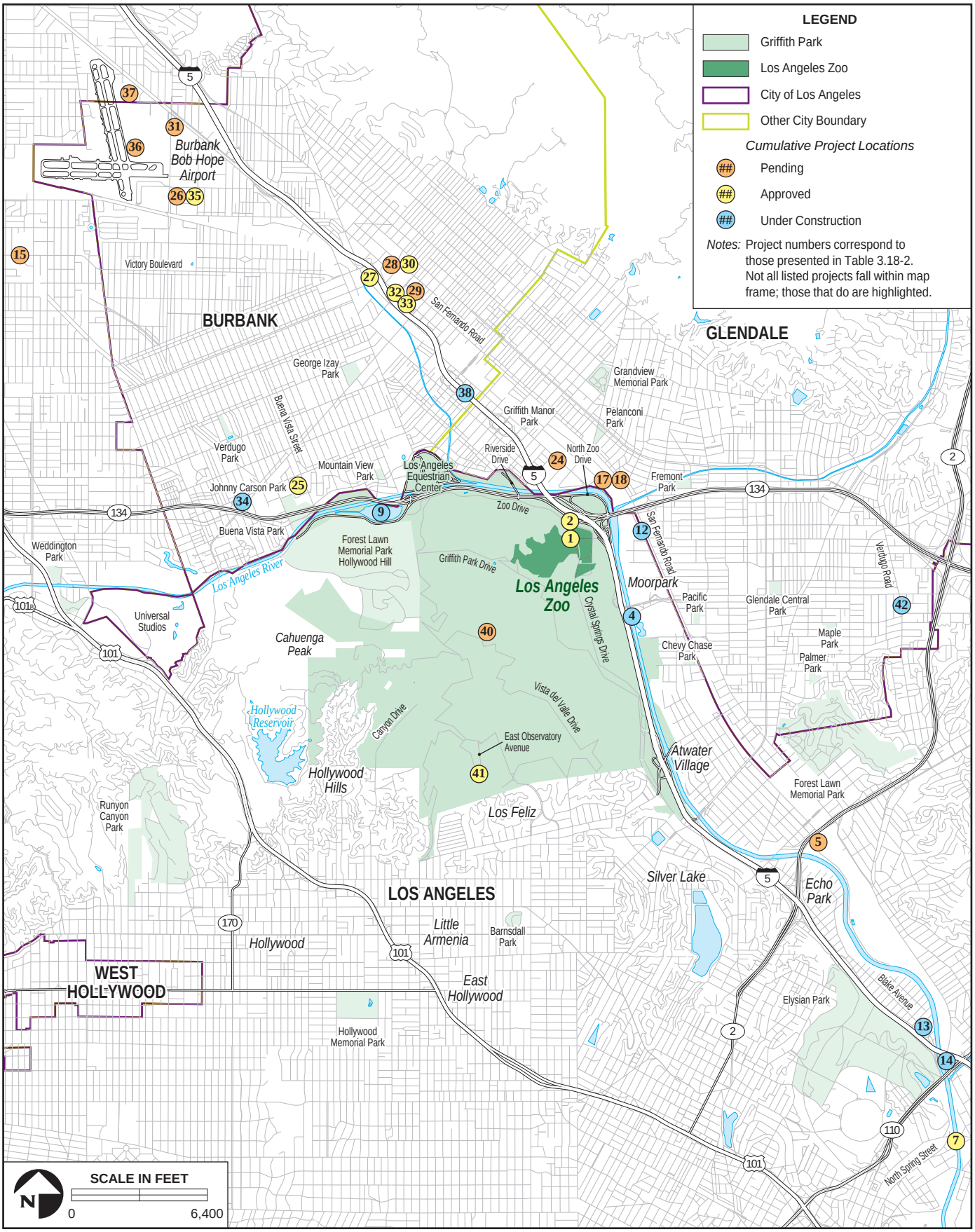
Table 3.18-2. Cumulative Projects List (Continued)

#	Project	Location	Land Use	Size/Unit Intensity	Project Status
			Metrolink stations, and the Regional Intermodal Transportation Center		
Caltrans District 7					
37	California High-Speed Rail – Burbank to Los Angeles Project Section	Burbank Bob Hope Airport vicinity generally following the existing railroad right-of-way (roughly parallel to Interstate [I-] 5) to Los Angeles Union Station	Transportation – high-speed rail and stations	12 miles	Pending
38	I-5 North Corridor Improvement Project	I-5 North Corridor, northern Los Angeles County between State Route (SR-) 134 and the Kern County line	Transportation – High-Occupancy Vehicle (HOV) lanes and connections, ramp improvements, bridge widening and reconstruction, and truck lanes	Approximately 7.5 miles	Under Construction
39	I-710 Pavement Rehabilitation and Bridge Widening Project	I-710 through the cities of Commerce, Vernon, Bell, and the unincorporated area of East Los Angeles from Slauson Ave to SR-60.	Transportation – highway rehabilitation and widening	3.5 miles	Under Construction
Projects within Griffith Park					
40	Griffith Park Aerial Transit System (ATS) Feasibility Study	Griffith Park	Transportation/ Visitor Attraction – three alternative routes for an ATS within Griffith Park to carry visitors from lower elevation base station to viewpoint for Hollywood Sign' bases stations proposed in Zoo	Visitor Amenities Museum Food Service Restrooms Transportation Transit hub Major parking garage Uber/Lyft drop-off/pick-up Maintenance facilities	Pending

Table 3.18-2. Cumulative Projects List (Continued)

#	Project	Location	Land Use	Size/Unit Intensity	Project Status
			north and south parking lots and at Travel Town		
41	Griffith Observatory Circulation Enhancement Plan	Griffith Park and the Los Feliz community, with Griffith Observatory in the center of the project area at 2800 East Observatory Road	Transportation – circulation and parking improvements, pay station, and shuttle	40-50 solar powered pay station terminals 3 parking lots 2 shuttle routes Minimum 4 shuttle buses	Completed
Southern California Association of Governments					
42	Verdugo Road Rehabilitation within City of Glendale	Verdugo Road from Colorado Street to the City of Glendale's eastern boundary	Transportation – street rehabilitation and traffic signal modification Public utilities – sewer upsizing	2,800 linear feet 2 traffic signal system improvements 1 new traffic signal system 68 new trees	Under Construction
43	Countywide Local Highway System Preservation	Los Angeles County	Transportation – highway preservation and rehabilitation	TBD	Approved
44	STP Local Force Account Resurfacing Project	City of Los Angeles	Transportation – street rehabilitation for ADA-compliant access ramps	TBD	Approved

Note: Cumulative projects located within the City and/or the vicinity of the Project site are shown in Figure 3.18-1. While cumulative projects are not located in the vicinity of the Project site, these projects are identified as having the potential to contribute towards cumulative effects.



wood.

Cumulative Project Locations

FIGURE 3.18-1

3.18.4 CUMULATIVE IMPACT ANALYSIS

Aesthetics and Visual Resources

Cumulative impacts related to aesthetics and visual resources would be related to potentially adverse changes to visual character and quality of scenic resource within the viewshed of public roads and tails surrounding the Zoo. There are more than 43 projects recently completed, approved, or pending in the Project vicinity (see Table 3.18-2; Figure 3.18-1); however, projects that could contribute to a cumulative visual impact are generally limited to those that would be visible from the Zoo or surrounding or nearby roadways and public trails in Griffith Park, where the visual changes associated with these projects could combine with those of the Zoo Vision Plan to potentially change the visual character or quality of the northeastern areas of Griffith Park. In particular, nearby projects such as Headworks Reservoir Project (#9), which is currently under construction, the proposed Griffith Park Aerial Transit System (ATS) and new transit hub with two options located in the north and south Zoo parking lots (#40), the Angela Collier Gardens Event Center near the Zoo entry (#1), the LADWP Solar Panel Project in the north and main Zoo parking lots (#2), and nearby elements of the Los Angeles River Revitalization Master Plan (#3) and Los Angeles River Ecosystem Restoration Plan (#4) could all combine with visual changes from the Project to contribute to cumulative aesthetic changes in the vicinity.

The approved Angela Collier Gardens Event Center would be entirely located within the interior of the Zoo campus, and therefore, would not be visible from surrounding or nearby roadways. Due to the event center's location on the eastern side of the Zoo and elevation, it would also either not be visible or have very limited visibility from public trails within Griffith Park. Views of future development in the interior of the Zoo from surrounding public viewing areas would be limited from most locations and are largely obstructed by existing vegetation, ridgelines, or the Zoo's existing tree canopy. Public views of Project development would be primarily limited to views of the Zoo's interior from nearby public trails within Griffith Park and views of the Zoo's parking lots and front entrance from Zoo Drive and Western Heritage Way, with more limited views available from Crystal Springs Road and Griffith Park Drive.

The Headworks Reservoir Project, located approximately 1.5 miles northwest of the Zoo off Forest Lawn Drive, while readily visible from nearby public roads, is separated from the Zoo by various peaks and ridgelines within Griffith Park, which obstruct views of this cumulative project from the public roads bordering the Zoo. Travelers using Forest Lawn Drive and Zoo Drive to access Griffith Park and the Zoo are able to observe major construction at Headworks; however, after major construction is completed, the Headworks site will be restored as open space and habitat, leaving a park or open space like setting during operation. In addition, trails within Griffith Park that potentially have public views of the Zoo and Headworks Reservoir site, (e.g., Skyline Trail) would be limited due to distance, topography, and vegetation within Griffith Park, limiting or minimizing adverse cumulative changes to views.

Considered together, the proposed Project's contribution to potential adverse impacts to views, in combination with the Headworks Reservoir and Angela Collier Gardens Event Center, are not anticipated to be a cumulatively considerable contribute to impacts to aesthetic and visual resources.

As described in Section 3.1, *Aesthetics and Visual Resources*, the proposed Project would involve construction activities using heavy equipment, including demolition, mass grading, tree removal, and vegetation clearing, which may be visible from the existing public trails in some locations overlooking the Zoo due to the loss of tree canopy that currently blocks views of the Zoo's interior. While views of the construction activities and impacts to views from the removal of vegetation and tree cover are considered adverse, these impacts would be temporary and intermittent over the 20- year construction horizon. However, pending developments in proximity to the Zoo such as the Griffith Park ATS and other nearby projects (e.g., LADWP Solar Panel Project) would also involve use of heavy construction equipment and vegetation clearing that would likely overlap with Zoo facility construction due to the long-term (i.e., 20-year) schedule of the proposed Project. Impacts to scenic views from large construction equipment, vegetation clearing, roadway realignments and improvements throughout this area of Griffith Park could substantially disrupt views from portions of public roads and trails. Cumulative construction impacts would be temporary and intermittent (i.e., there would be periods of months or years with little or no visible construction) over the 20-year Project horizon and would not result in substantial permanent changes to visual resources. Therefore, cumulative impacts would be less than significant given the limited visibility of most Zoo projects and with application of standard best management practices (BMPs) such as construction fencing, siting mobilization and storage areas away from key view corridors and cleanup of construction debris after each day's activities.

Following construction, most proposed improvements would not be visible from outside the Zoo and would not combine with visual changes from cumulative projects in the vicinity. However, views of the Project's proposed taller features (e.g., Treetops Visitor Center, aerial tram, and California Visitor Center) would be distantly visible from segments of nearby trails. Further, exterior elements of the Project such as the realignment of Western Heritage Way, changes to the Zoo entrance and signage, and parking improvements, especially the proposed multi-story parking structure, would be highly visible from surrounding roads and trails. These changes could combine with pending projects such as the Griffith Park ATS, LADWP Solar Panel Project, and nearby elements of the Los Angeles River Revitalization Master Plan (e.g., bicycle and pedestrian bridges) and Los Angeles River Ecosystem Restoration Plan to substantially change the visual character of the area. Some of these changes could be beneficial (e.g., habitat restoration along the Los Angeles River) while others could be could be considered adverse such as the high towers of Griffith Park ATS which would also be highly visible from public trails proximate to the Zoo. Additionally, light and glare from nearby cumulative projects such as the proposed Griffith Park ATS and LADWP Solar Panel Project in combination with lighting used for the Zoo's proposed aerial tram and nighttime events may cause cumulative impacts associated with glare for vehicles and pedestrians in the

Project vicinity. However, implementation of **MM VIS-3**, which would require matte-finishing and non- or low-reflective glass or film covers on the aerial tram support structures and gondolas, would ensure the Project's contribution to light and glare effects would not be cumulatively considerable and would be reduced to *less than significant*.

As described in Section 3.1, *Aesthetics and Visual Resources*, the Project's proposed parking structure may not be consistent with the visual character and size, bulk, and scale of other existing development within the area of the Zoo Drive gateway within Griffith Park. Further, while the Vision Plan for Griffith Park discourages location of parking structures within Griffith Park, this plan does not apply to Zoo property (see Section 3.11, *Land Use and Planning* for complete discussion). If the Griffith Park ATS and transit hub are located within the northern or southern Zoo parking lots, an additional parking structure or a major expansion of the Zoo's proposed parking structure and substantial roadway and intersection improvements, such as a roundabout or sub-grade bypass contemplated by the Project, would likely be required, with combined substantial effects on the visual quality and character of the vicinity and potential inconsistency with the Griffith Park Vision Plan policies for the Zoo Drive gateway. **MM VIS-1**, requiring the parking structure be designed or shielded to reduce visibility of the structure, would help to maintain the visual aesthetic and viewer experience of Griffith Park from local roadways and trails. However, Project construction and operation, particularly the proposed parking structure and extensive intersection improvements, in conjunction with the Griffith Park ATS Project (particularly if located on Zoo property), the LADWP Solar Panel Project, and other cumulative projects would potentially lead to substantial changes to the visual character of the northeastern area of Griffith Park. The Project's contribution to these visual impacts would be cumulatively considerable and would be *significant and unavoidable.*

As with the proposed Project, the 43 cumulative projects identified in Table 3.18-2 are subject to applicable development standards and environmental review. Thus, each project would be assessed for its effect on the scenic views of or across the site. Additionally, each project would be required to comply with applicable policies and regulations of the respective jurisdiction [e.g., County of Los Angeles General Plan, Los Angeles Municipal Code (LAMC) Lighting Requirements]. Compliance with existing regulations would help reduce, but not eliminate cumulative impacts to aesthetics and visual resources identified above.

Air Quality

A cumulative impact related to air quality would result if the potential impacts associated with the proposed Project, when combined with other past, present, and future projects within the South Coast Air Basin (Basin), would cumulatively result in growth that would be inconsistent with the South Coast Air Quality Management District's (SCAQMD's) Air Quality Management Plan (AQMP). This growth could interfere with attainment of federal or state ambient air quality standards within the AQMP. As discussed in Section 3.2, *Air Quality*, the Basin is in nonattainment for ozone (O_3) and particulate matter ($PM_{2.5}$ and PM_{10}) and in partial nonattainment for lead. Per the SCAQMD's 2016 AQMP, the latest emissions

inventory and air quality modeling analysis indicate that significant reductions above and beyond those already achieved are still needed for meeting these standards. Therefore, any substantial increases in the amount of O_3 precursors, particulate matter, or lead in the region would contribute to potentially significant cumulative impacts, including those attributed to construction emissions. With regard to the contribution of the proposed Project, the SCAQMD recommends methods to determine the cumulative significance of new land use projects. These methods are based on performance standards and emission reduction targets necessary to attain federal and state air quality standards projected in the AQMP.

Without mitigation, construction of the proposed Project would generate emissions of nitrous oxides (NO_X), an O_3 precursor, in excess of the applicable SCAQMD regional mass daily threshold. Project construction in conjunction with construction of other large developments within the Basin, such as the Burbank Town Center (#28), Grayson Repowering Project (#17), and Front Street Project (#27), could result in cumulative considerable levels of NO_X emissions. Implementation of mitigation measure **MM AQ-1** would require the use of construction equipment with Tier 4 standard engines to ensure that maximum daily pollutant emissions generated by construction of the proposed Project would not result in a significant increase in emissions of O_3 precursors or particulate matter at either the regional or local assessment scale. As a result, mitigated Project construction emissions would not exceed project-level significance thresholds and therefore, impacts related to cumulative increases in nonattainment pollutants would be *less than significant with mitigation*.

Operational air pollutant emissions generated by the Project would increase daily air pollutant emissions within the Basin when combined with operations of cumulative development within the Basin. For example, Project operation, in conjunction with operation of other large development such as the Griffith Park ATS (#40), South Glendale Community Plan (#16), and Burbank Town Center (#28) would cumulatively increase the number vehicle trips (see *Transportation* discussion below) and associated air pollutant emissions generated within the Basin. The combined air pollutant emissions from the proposed Project in conjunction with the Griffith Park ATS, South Glendale Community Plan, and other cumulative projects could result in cumulatively considerable impacts to regional air quality. Although Project operation would increase daily vehicle trips and corresponding emissions, as well as emissions from sources located on the Project site, the incremental increases in daily air pollutant emissions, including operational emissions of O_3 precursors and particulate matter, would remain below applicable SCAQMD mass daily thresholds of significance during all stages of Project operations. Therefore, the Project operation's contribution to cumulative air quality impacts would be *less than significant*.

Biological Resources

A cumulative impact related to biological resources would result if the potential impacts associated with the proposed Project, when combined with other past, present, and future projects within Griffith Park, along the Los Angeles River, within the City, and within the County, would cumulatively increase the potential for loss of disturbance of a sensitive species

or its habitat, sensitive natural communities, or other resources protected under federal, state, or local regulations. The proposed Project in combination with cumulative development within the cities of Los Angeles, Glendale, and Burbank would result in the construction, demolition, or redevelopment of areas that may result in the direct or indirect loss or disturbance of these resources. Of particular concern would be those projects that could affect habitats within Griffith Park in the vicinity of the Zoo as impacts to such habitats could combine with those of the proposed Project on biological resources.

As discussed in Section 3.3, *Biological Resources,* the Project would result in the direct or indirect loss or disturbance of approximately 19 acres of native vegetation communities and hundreds of individual protected trees and shrubs. Of particular concern would be the loss of roughly 6 acres of coast live oak woodland and up to 144 mature coast live oak trees and 24 California black walnut, along with Nevin's barberry, a federally list endangered shrub. The loss of these resources under the Project would contribute incrementally to cumulative regional decline in California's live oak woodlands, as well as declines in California black walnut populations and those of the Nevin's barberry. These losses of habitat would also incrementally reduce foraging/nesting habitat for both common wildlife and several sensitive wildlife species in the region. Cumulative removal of habitat in the vicinity of the Project site could reduce the amount of foraging and breeding habitat for other non-sensitive mammals, birds, and reptiles. The majority of cumulative projects identified in Table 3.18-2 involve development within existing urbanized areas that do not contain natural or high-value biological resources, or potential for impact to biological resources is considered low. However, projects such as the Griffith Park ATS (#40) would likely involve removal of habitat for construction of system towers and other visitor-serving and maintenance features within Griffith Park, as well as incremental increases in disturbance to wildlife from operation of this new attraction. The Griffith Park ATS could combine with the Project to contribute localized adverse impacts on habitat adjacent to the Zoo or the movement of wildlife through the site or surrounding area.

Several cumulative projects such as the Los Angeles River Revitalization Master Plan (#3), Los Angeles River Ecosystem Restoration Plan (#4), and the Bending the River Back into the City project (#7) involve restoration or revitalization of the Los Angeles River to enhance or expand riparian and aquatic habitat and increase connectivity to the river from habitat fragments, patches, or ecological areas such as Griffith Park. While these projects may involve short term impacts to biological resources associated with construction of new facilities (e.g., bicycle and pedestrian bridges across the River) or due to removal of invasive nonnative species and other habitat restoration activities, these cumulative projects would ultimately have a net regional benefit to biological resources, including those within Griffith Park.

With incorporation of identified mitigation in Section 3.3, *Biological Resources*, the Project's contribution to regional cumulative impacts to biological resources would not be cumulatively considerable due to ability for the Project to avoid or successfully mitigate all impacts

associated with loss or disturbance of sensitive and regionally significant biological resources; therefore, cumulative impacts would be *less than significant with mitigation*.

Cultural and Tribal Cultural Resources

Historic Resources

Cumulative impacts to historic resources can result from the gradual negative effects of past, present, and future actions over a certain period of time. For the historic built environment, the cumulative impacts analysis encompasses the Zoo and immediately surrounding area, with emphasis placed upon the Griffith Park Historic Cultural Monument. Cumulative development within the vicinity, such as the LADWP Solar Panel Project (#2) and Griffith Park ATS (#40) may contribute to a cumulatively considerable impact on the designated or eligible historic resources. In particular, the Project's proposed multi-story parking structure in conjunction with the solar panels approved within the Zoo's northern parking lot, and the large system towers, moving gondolas, and large parking structure that would be needed to support the Griffith Park ATS may cumulatively impact the historic integrity of Griffith Park. However, the proposed Project would not result in any impacts to historic resources, as none exist within the Zoo. The Project would therefore have a less than cumulative considerable effect on cumulative impacts to historic resources, and impacts would be *less than significant*. Potential impacts of cumulative development would be addressed on a project-by-project basis, with project-specific studies and mitigation measures required to reduce potential project-specific impacts.

Cultural and Tribal Cultural Resources

For the proposed Project, the regional resource base for archaeological and tribal cultural resources is defined geographically and ethnographically. Thus, the geographic scope of the cumulative impact analysis takes in a broad region encompassing the entire Los Angeles Basin and Los Angeles County. The analysis also takes into consideration the cultural geography of the Gabrieleño/Tongva people who occupied the region prehistorically, considering the integrity of the entire suite of resources that make up the cultural patrimony of the group.

Trends that have led to degradation of the regional cultural and tribal cultural resource base, and are expected to continue in the future, include continuing urban development in the Los Angeles Basin, which can result in disturbance and loss of onsite archeological resources and change to cultural landscapes. As described in Section 3.4, *Cultural and Tribal Cultural Resources*, there is a very low likelihood of cultural and tribal cultural resource to remain within the Project site, and Project-specific mitigation measures would reduce these potential impacts to less than significant levels. Thus, the proposed Project's contribution to any cumulative impacts to archaeological or tribal cultural resources would not be cumulatively considerable, and impacts would be *less than significant with mitigation*. Cumulative development in the Project vicinity, such as the LADWP Solar Panel Project (#2) and Griffith Park ATS (#40) would result in ground disturbing activities (e.g., excavation for installation

of the footings for the Griffith Park ATS towers), which may uncover previously undisturbed archaeological resources and human remains and could potentially result in damage or loss of such resources. However, project-specific impacts on archaeological resources would be addressed on a project-by-project basis.

Energy

The Project's implementation schedule would overlap with that of many cumulative projects with corresponding potential for increases in cumulative energy demand. Cumulative impacts related to energy demand would include a project's contribution to wasteful, inefficient, or unnecessary consumption of energy in the City, region or state, particularly as it relates to potential, or where such demand may conflict with a state or local plan for renewable energy or energy efficiency, including the 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), policies of the City General Plan and Hollywood Community Plan, the Sustainable City pLAn, and the Green New Deal. Growth within the region is anticipated to increase the demand for electricity, natural gas, and transportation energy, as well as the need for energy infrastructure, such as new or expanded energy facilities.

Electricity

Buildout of the Project, cumulative projects, and additional forecasted growth in LADWP's service area would cumulatively increase the demand for electricity supplies and infrastructure capacity. Project implementation would generate a maximum potential annual increase in electricity use of approximately 2,555 megawatt-hours (MWh) in 2030 and 3,407 MWh in 2040. By comparison, the total electrical energy demand of the County was 68,486 GWh in 2018, so the Project's 2040 electrical energy demand would contribute a 0.00005 percent increase in the County's demand. This increase in electricity use would not place an undue burden on LADWP resources. Further, the Project involves several energy saving features such as the stormwater capture and treatment system, which would reduce electricity demand associated with water conveyance by approximately 24 percent. Additionally, the proposed Project's 70,000 sf of solar installations would reduce electricity consumption by up to 50 percent, which would exceed the City's goal to reduce building energy use 34 percent by 2035 and 44 percent by 2050, as established in LA's Green New Deal. Throughout all phases of the Project, new structures, infrastructures, utilities, and landscaping would meet the LEED Silver standards of design or better to ensure energy- and resource-efficient structures. All renovated and new structures would be outfitted with low flow plumbing fixtures and energy efficient appliances (i.e., restaurant facilities) and comply with all provisions of the Los Angeles Green Building Code. Therefore, although Project development would result in the use of renewable and non-renewable electricity resources during construction and operation, the use of such resources would not be wasteful or inefficient, would be reduced by energy efficiency measures, and would be consistent with growth expectations for LADWP's service area. Cumulative development projects within LADWP's service area, such as the Griffith Park ATS (#40), in combination with the Project would

contribute an increase in electrical energy demand. However, the Headworks Reservoir Project (#40) which is under construction, will operate a 4 MWh hydroelectric power generation facility, increasing LADWP's generation of renewable electrical energy. As with the Project, during construction and operation, other future development projects would be expected to incorporate energy conservation features, comply with applicable regulations, including the CALGreen Code and state energy standards under Title 24, and incorporate mitigation measures, as necessary. Additionally, the LADWP Solar Panel Project would provide up to 3.35 MW of solar energy to the LADWP grid and to the Zoo during periods of power outage further reduce cumulative demand for electric generated through use of non-renewable energy sources. This project would also reduce non-renewable electricity demand by installing electric vehicle (EV) charging stations in the Zoo's north parking lot. As such, the Project's contribution to cumulative impacts related to wasteful, inefficient, and unnecessary use of electricity would not be cumulatively considerable and thus, would be *less than significant*.

Natural Gas

Buildout of the Project, related projects, and additional forecasted growth in SoCalGas's service area would cumulatively increase the demand for natural gas supplies and infrastructure capacity. Project implementation would generate a maximum potential annual increase in natural gas use of approximately 2,500 million BTU (MBTU) in 2030 and 2,513 MBTU in 2040. The annual natural gas sale to SoCal Gas customers in the County in 2018 was approximately 292,074,550 MBTU; therefore, the Project's 2040 natural gas demand would contribute a 0.000009 percent increase in the County's demand. The increase in natural gas use would not be wasteful nor would it place an undue burden on SoCalGas resources. Although Project development would result in the use of natural gas resources, the use of such resources would be reduced by proposed measures rendering the Project more energy-efficient, and would be consistent with regional and local growth expectations for SoCalGas's service area. Furthermore, future development projects would be expected to incorporate energy conservation features, comply with applicable regulations, including the CALGreen Code and state energy standards under Title 24, and incorporate mitigation measures, as necessary. Additionally, all cumulative development, including the proposed Project, would be subject to the provisions of the LA Green Building Code, LEED Silver design standards and BMPs, and LA's Green New Deal (Sustainable City pLAn 2019) pertaining to energy efficiency for residential and non-residential buildings. As such, the Project's contribution to cumulative impacts related to wasteful, inefficient, and unnecessary use of natural gas would not be cumulatively considerable and thus, would be *less than significant*.

Transportation Energy

Buildout of the Project, related projects, and additional forecasted growth would cumulatively increase the demand for transportation-related fuel consumption in the state and region. Project implementation would generate a maximum potential annual increase in gasoline use

of approximately 565,554 gallons in 2030 and 659,598 gallons in 2040 (for all visitor and employee vehicle trips). The proposed Project gasoline consumption would increase Los Angeles County consumption by approximately 0.016 percent (in 2030) and 0.018 percent (in 2040) relative to the 2018 baseline. Additionally, Project implementation would generate a maximum potential annual increase in diesel fuel use of approximately 118,369 gallons in 2030 and 25,750 gallons in 2040 (for delivery trucks). The proposed Project diesel fuel consumption would increase Los Angeles County consumption by approximately 0.016 percent (in 2030) and 0.0001 percent (in 2040) relative to the 2018 baseline. However, over the last decade the state has implemented several policies, rules, and regulations to improve vehicle efficiency, increase the development and use of alternative fuels, reduce air pollutants and greenhouse gas (GHG) emissions from the transportation sector, and reduce vehicle miles traveled (VMT), which would reduce reliance on petroleum fuels. As with the Project, other future development projects would be expected to reduce VMT by encouraging the use of non-vehicular modes of transportation and other design features that promote VMT reductions. Additionally, the LADWP Solar Panel Project (#2) would incrementally reduce transportation non-renewable energy needs within the City and at the Zoo by installing EV charging stations in the Zoo's north parking lot, which would be powered by onsite solar panels.

Furthermore, as discussed previously, the Project would be consistent with the energy efficiency policies emphasized by the 2016-2040. Specifically, the Project with required mitigation measures (**MM T-2**) would include a Transportation Demand Management (TDM) Program to coordinate expansion of public transportation access, new bicycle and pedestrian linkages, and incentives for Zoo employees and visitors to use alternative modes of transportation to the Zoo. These mitigation features would reduce VMT and associated transportation fuel consumption.

By its very nature, the 2016-2040 RTP/SCS is a regional planning tool that addresses cumulative growth and resulting environmental effects. Since the Project with implementation of mitigation measures would be consistent with the 2016-2040 RTP/SCS, its contribution to cumulative impacts related to wasteful, inefficient, and unnecessary use of transportation fuel would not be cumulatively considerable and thus, would be *less than significant with mitigation*.

Based on the analysis provided above, the Project's contribution to cumulative impacts related to energy consumption (i.e., electricity, natural gas, and fuel) would not result in a cumulatively considerable effect related to the wasteful, inefficient, and unnecessary consumption of energy during construction or operation. As such, the Project's impacts would not be cumulatively considerable. Therefore, cumulative energy impacts would be *less than significant with mitigation*.

Urban Forestry Resources

A cumulative impact related to urban forestry resources within the City would result if the potential impacts associated with the proposed Project, when combined with other past,

present, and future projects, would cumulatively increase the potential for loss of trees and shrubs protected under the LAMC Tree Preservation Ordinance and proposed amendments and the loss of the City's urban tree canopy. The proposed Project in combination with cumulative development within the City and Griffith Park would result in development potentially requiring the removal of protected trees and shrubs, street trees, park trees, or other trees, thereby diminishing the health and value of the urban forest. The Project itself would likely require removal of hundreds of mature trees, particularly as the Zoo thins and removes large numbers of nonnative species (e.g., eucalyptus) to improve public safety and reduce fire danger, while introducing larger numbers of native trees.

Cumulative development occurring at the Zoo, in the City, or around Griffith Park has the potential to result in the loss of urban forest resources. For example, development of the Griffith Park ATS (#40) may lead to removal of parking lot or street trees in and around the Zoo, as well as potential impacts to oaks and other trees along the ATS lines or landing sites. Implementation of the Los Angeles River Revitalization Master Plan and Los Angeles River Ecosystem Restoration Plan could combine to require removal of some native trees and greater numbers of nonnative trees (e.g., eucalyptus or other invasive trees) that contribute to the urban forest. Urban redevelopment or infrastructure projects can often require removal of street trees or other ornamental landscape trees. Development in the City, however, would be required to comply with existing local policies and regulations pertaining to the preservation of urban trees and forest resources. Regulations such as the City's Tree Preservation Ordinance and proposed amendments, the City's Policies for the Installation and Preservation of Landscaping and Tree in Public Property, the Department of Recreation and Parks (RAP) Tree Preservation Policy, and RAP Urban Forestry Program would apply to proposed development occurring within the City and Griffith Park. These regulations include provisions for the preservation of certain trees, application for tree removal permits with the City, and/or the replacement of affected trees to maintain the City's urban forest and important tree resources. Given that all development would be held to the conditions of these existing regulations, the cumulative impacts from development on urban forestry resources would be not be significant. Implementation of Project mitigation measures in Section 3.6, *Urban Forestry Resources* would ensure that the Project's contribution to any cumulative impacts would be less than cumulatively considerable, and cumulative impacts would be *less than significant with mitigation*.

Geology and Soils

Geology and Soils

A cumulative impact related to geology and soils would result if the potential impacts associated with the proposed Project, when combined with other past, present, and future projects within the Los Angeles region, would cumulatively increase the potential for people to be exposed to geotechnical hazards. As described in Section 3.7, *Geology and Soils,* the occurrence probability of a large earthquake with high-frequency strong ground motions is moderate. However, any structure built in the seismically active region of Southern California

is inherently at risk of damage during major seismic events. The proposed Project in combination with cumulative residential development and large attractions such as the Griffith Park ATS (#40; 10,000 to 13,000 visitors per day), South Glendale Community Plan (#16; 48,240 new units), and Burbank Town Center (#28; 801 residential units and 200 hotel rooms) would contribute to an overall increase in the density of the Project area, as well as a corresponding increase in population exposed to potential seismic hazards.

Several cumulative projects in the Project vicinity would require excavation and trenching of native soils, including the Headworks Reservoir Project (#9), which would require excavation for 110 million-gallon capacity of underground water storage, and sewer repair projects, including but not limited to the NOS sewer repairs (Units 12, 13, and 18; #14, #13, and #12 in Table 3.18-2, respectively). Additionally, implementation of the Griffith Park ATS and transit hub (#40), if located on Zoo property, would excavate native and fill soils on and in the immediate vicinity of the Project site. Excavation activities required under the Project in combination with excavation and trenching for cumulative projects would increase the amount of soil erosion and loss of topsoil in the Project vicinity. Potential soil impacts from development within the City and the vicinity of the Project site are generally site-specific, resulting from the underlying geology and soil conditions that could adversely affect the individual structure or property. All cumulative development within the City would be required to prepare and submit site-specific geotechnical reports for review and approval by the City's Building and Safety Division prior to the issuance of grading or building permits. The geotechnical reports would include analysis of the underlying geology and soils associated with each site prior to construction, consistent with state and City regulations. This analysis would include investigations of native soils onsite and the structural stability of any proposed excavation or trenching to ensure each individual project is designed and engineered to withstand reasonably foreseeable seismic activity or unstable soil conditions.

The California Building Code (CBC) includes provisions such that when a building or other structure is constructed adjacent to or adjoining an existing building, it must not increase loading on other building foundations/basement walls or show that any increase is within the permitted design capacity of the other building. Cumulatively, as new buildings are designed and built to code, any potential detrimental effects for adjacent structures would be mitigated. Implementation of the CBC and Los Angeles Building Code's applicable regulations on development would be required in the event that the underlying geology or soil conditions posed a risk to safety. Therefore, since all development would be held to the individual analysis and safety restrictions, the Project's cumulative impacts from development on soils subject to instability, subsidence, collapse, and/or expansive soil would not be cumulatively considerable and cumulative impacts would be *less than significant*.

Paleontological Resources

A cumulative impact related to paleontological resources would result if the impacts associated with the proposed Project, when combined with other past, present, and future projects in the Los Angeles Region, would cumulatively increase the potential for loss of

paleontological resources. As described above, cumulative development within the vicinity of the Project site, such as the Griffith Park ATS (#40), sewer repair projects, and Headworks Reservoir Project (#9) would require extensive excavation and trenching. Cumulative excavation activities may uncover previously undisturbed paleontological resources and could potentially result in damage or loss of such resources. However, in most cases project-specific impacts would be addressed on a project-by-project basis.

The proposed Project would be required to comply with mitigation requiring monitoring of construction activities, ensuring proper identification, and treatment and preservation of any paleontological resources (see Section 3.7, *Geology and Soils*). To the extent impacts on paleontological resources from cumulative projects may occur, the proposed Project's impacts would not be cumulatively considerable, and impacts would be *less than significant*.

Greenhouse Gas Emissions

The Project, in combination with any approved, pending, and proposed development presented in Table 3.18-2, would contribute to the increase of GHG emissions that cumulatively contribute to global climate change. Analysis of GHG emissions and climate change are cumulative in nature because impacts are caused by cumulative global emissions and accumulation of GHGs in the atmosphere, with such analysis focusing on citywide, regional, and statewide emissions and their contribution to national or global trends. Additionally, climate change impacts related to GHG emissions do not necessarily occur in the same area as the Project is located. Such analysis typically accounts for statewide emissions and GHG generation reduction goals outlined in state, regional, and local plans and policies.

As described in Section 3.8, *Greenhouse Gas Emissions*, the Project would contribute incrementally to generation of GHGs in combination with other cumulative projects, particularly larger development or redevelopment projects such as the South Glendale Community Plan (#16; 48,240 new units), the Avion Project (#31; 60 acre business park), and the Griffith Park ATS (#40), which would likely generate similar levels of vehicle trips to the Project. The Project's unmitigated net increase in GHG emissions relative to existing (2019) conditions are estimated to be 7,783.5 metric tons of CO2 equivalent (MTCO2e) annually in the near-term and 9,716.4 MTCO2e annually in the long-term (refer to Section 3.8, *Greenhouse Gas Emissions*). However, the GHG emissions increases do not account for external factors that would reduce GHG emissions in future years relative to existing conditions such as mandated regulatory programs for enhancing energy and fuel efficiency standards. Additionally, the Project would include physical and operational sustainability features that would promote a reduction in GHG emissions. For example, the Project would utilize energy efficiency appliances and equipment, provide EV vehicle spaces, implement up to 70,000 square feet of solar panels for onsite renewable energy generation. The Project would also remove outdated building structures and facilities that would be replaced by buildings meeting LEED Silver or equivalent energy efficiency. All end uses within Zoo facilities would at a minimum comply with the most recent applicable Title 24 energy

efficiency standards, currently 2019. The degree to which GHG emissions would be reduced through these mechanisms cannot be reasonably quantified due to the complexity of the implementation schedule and the potential GHG emissions reductions associated with other cumulative projects, such as the LADWP Solar Project (#2) that would reduce the Zoo facilities' baseline electricity consumption in future years.

With implementation of the Project's sustainable design features and future more stringent energy and fuel efficiency standards, the Project would not interfere with statewide initiatives to reduce GHG emissions such as the GHG reduction goals of Health and Safety Code Division 25.5, and would not conflict with GHG reduction plans such as SCAG's RTP/SCS. Table 3.8-8 provides a topical overview of the statewide consistency analysis, organized by the applicable plan source category or strategy. Implementation of **MM T-2** would require the Zoo to expand non-vehicular transportation modes to the Zoo to reduce VMT and associated GHG emissions. In addition, implementation of **MM UT-1**, **MM UF-1**, and **MM UF-2** requiring use of recycled water and substantial native tree replacement on- or offsite, as well as substantial replanting of disturbed areas to maintain an urban tree canopy at the Zoo, would help to ensure compliance with policies of the Sustainable City pLAn and L.A.'s Green New Deal. **MM HYD-2**, requiring preparation of a Storm Water Pollution Prevention Plan to reduce or prevent discharge of pollutants during construction activities would achieve Project consistency with California Green Building Standards Code Requirements. With implementation of these measures, the Project would be consistent with all applicable goals of the 2016-2040 RTP/SCS intended to improve mobility and access to diverse destinations, promote smart growth, provide more transportation choices, and reduce VMT and associated GHG emissions, as well as those of other local plans adopted for the purpose of reducing GHG emissions. As such, the Project's contribution to cumulative GHG impacts would not be cumulatively considerable, and cumulative impacts would be *less than significant with mitigation*.

Hazards and Hazardous Materials

A cumulative impact related to hazards and hazardous materials would result if the potential impacts associated with the proposed Project, when combined with other past, present, and future projects within the cities of Los Angeles, Burbank, and Glendale, would cumulatively increase the potential for people to be exposed to hazardous materials, wastes, emissions, or physical conditions. Additionally, a cumulative impact would occur if the Project, in conjunction with cumulative projects, would interfere with an adopted emergency response plan or would expose people or structures to wildland fires.

Cumulative development within the Project vicinity would increase the potential to expose residents, employees, and visitors to hazardous materials through the use and transport of hazardous materials for construction and excavation of potentially contaminated soils. Cumulative projects in the vicinity such as the Grayson Repowering Project (#17) and the Griffith Park ATS (#40) are expected to transport, use, and store hazardous materials within the site vicinity during construction and/or operation. The Grayson Repowering Project

would also involve ground disturbing activities, including excavation on or in proximity to the Superfund cleanup site northeast of the Project site (refer to Section 3.9, *Hazards and Hazardous Materials*). Additionally, if implementation of the Griffith Park ATS (#40) would involve a transit hub on the north or south Zoo parking lots, excavation for this project could expose contaminated soils from the Superfund site and underground storage tanks (USTs) north of the Autry Museum and at the South Parking area. The potential for exposure to hazardous materials and contaminated soil from the Project in combination with the cumulative projects could result in cumulative impacts. If a lower terminal for the Griffith Park ATS is chosen on Zoo property, this construction would occur immediately adjacent to the North Hollywood High School Zoo Magnet Center where students would be considered potentially sensitive to construction emissions and wastes. Cumulative projects in the Project vicinity would be required to undergo individual environmental review, including review of potential impacts related to hazards and hazardous materials that are applicable to that particular development site and proposed use.

Cumulative projects within the Project site vicinity would also be required to comply with federal, state, and local regulations regarding the handling, use, transport, and disposal of potentially hazardous materials, as applicable. Implementation of **MM HAZ-1** and **MM HAZ-2**, which would require a Phase II Environmental Site Assessment (ESA) and remediation activities, as necessary, would ensure the Project's contribution to cumulative impacts from exposure to hazards or hazardous materials would not be considerable and cumulative impacts from hazards and hazardous materials would be *less than significant*.

The Zoo's proposed aerial tram would be engineered in conformance with the current Safety Requirements for Passenger Tramways (ANSI B77.1) as well as CCR Title 8, Subchapter 6.1, Article 8 Wire Rope and Strand Requirements. Therefore, the Project's contribution to cumulative impacts from safety hazards related to the aerial tram would not be cumulatively considerable, and cumulative impacts would be *less than significant*.

If a lower terminal for the Griffith Park ATS is chosen in the north Zoo parking lot, the ATS alignment would operate above the Zoo and the Zoo's proposed aerial tram, which would potentially increase safety hazards for Zoo and ATS visitors. It is unclear if there are state or federal safety standards that would permit an ATS operating overhead another ATS. The ATS in combination with the proposed Project internal ATS could result in cumulative safety hazards (e.g., dropping objects, engineering malfunctions, etc.) for both riders and pedestrians below the gondolas or due to inadequate spacing between systems and accidental malfunctions of adjacent overlapping ATSs. As the final engineering designs for the ATS are not currently available, the full extent of cumulative safety impacts is unknown.

Operation of the Griffith Park ATS in conjunction with Project operation could also interfere with the Zoo's emergency preparedness procedures and emergency evacuation of the Zoo. The proposed Project is estimated to generate up to 59,000 visitors per day and the ATS is estimated to generate an additional 10,000 to 13,000 visitors per day. Therefore, the Project's increase in visitation combined with the increase in visitation from the ATS would contribute

a substantial increase in the daytime population in the Project vicinity. While the exact location and design of the lower terminal, transit hub, and associated facilities (e.g., parking structure, restaurant, retail, restrooms, maintenance facilities, etc.) are unknown, the increase in visitors to the Griffith Park ATS in conjunction with the Project could affect safe and efficient evacuation of the Project area. However, Project construction and operation would maintain emergency access to the site and the proposed realignment of Western Heritage Way/Crystal Springs Drive would further reduce congestion and safety impacts associated with pedestrians crossing the street. As such, the Project's contribution to cumulative impacts from emergency response and evacuation would not be cumulatively considerable. Thus, cumulative impacts would be *less than significant*.

Hydrology and Water Quality

Cumulative impacts related to hydrology and water consider the Project's contribution to water quality, drainage and erosion, groundwater quality and recharge, and flooding potential within the cities of Los Angeles, Burbank, and Glendale and within the Los Angeles River watershed. The proposed Project, in combination with other new development projects, would contribute to increasing development of the City's urban environment. Mixed use infill development – including the Bow Tie Yard Lofts Project (#5), South Glendale Community Plan (#16), Burbank Town Center (#28) and Avion Project (#31) – would generate urban runoff that would be collected within the City's existing storm drain system and eventually discharged to the Los Angeles River. However, as with the proposed Project, some of these developments would include landscaping and open space that may reduce impervious surfaces.

The City manages and regulates drainage flows and water quality through plans, programs, and ordinances. The Construction General Permit and the City's Stormwater and Urban Runoff Control Pollution Ordinance require development and implementation of a SWPPP for all construction sites over 1 acre to address potential impacts to water quality from stormwater runoff, construction BMPs to reduce discharge of pollutants, and implementation of low-impact development (LID) features. The NPDES MS4 Permit requires that permittees, including the City, implement operational stormwater runoff controls for new development and redevelopment projects. Under the NPDES MS4 Permit, these projects must be designed to minimize the footprint of the impervious area and to use LID strategies to disconnect the runoff from impervious area. Compliance with existing regulations would prevent violation of water quality standards and minimize increases in urban runoff and the potential for contributing additional sources of polluted runoff. Further, the 2020 Floodplain Management Plan Update would identify and address impacts cause by flood hazards throughout the County.

While the proposed Project would incrementally increase impervious surfaces across the Zoo campus, all stormwater generated by the Project would be captured by the proposed stormwater management system for reuse onsite as irrigation. Therefore, the Project's

contribution to stormwater flows and associated impacts to flooding would not be cumulatively considerable and therefore would be *less than significant*.

Additionally, the proposed Project would result in long-term beneficial impacts to water quality with implementation of the proposed stormwater management system and require mitigation measures, such as **MM HYD-4** and **MM HYD-6**, which require an operations and maintenance manual to ensure LID features and the underground stormwater capture are maintained and pre-treatment and filtering in the stormwater management system to ensure that captured water reused for irrigation does not unnecessarily contribute pollutants back into the Zoo's drainage system. Therefore, cumulative impacts to surface water hydrology and surface water quality would be *less than significant*.

Land use changes across the City also have the potential to increase the demand for City groundwater supplies. For example, large developments such as the South Glendale Community Plan, Burbank Town Center, and Avion Project in combination with the Project would increase water demand, which would increase groundwater withdrawal from the San Fernando Valley Groundwater Basin (SFVGB). However, continued implementation of water conservation measures in accordance with the City's One Water LA Plan would ensure that the groundwater supply is managed such that the groundwater aquifer is not withdrawn beyond the safe yield. Therefore, cumulative impacts to groundwater levels would be *less than significant*. A complete discussion of City water demand and supply is included in Section 3.16, *Utilities*.

Land Use and Planning

Cumulative land use impacts could occur if the Project, when combined with any of the identified cumulative development projects (refer to Table 3.18-2), would result in incompatible land uses or result in land uses that are inconsistent with adopted land use plans. The geographic context for this cumulative analysis includes the City in terms of the goals and policies within the City's General Plan, the LAMC, the City's Hollywood Community Plan, and the greater Los Angeles region in terms of planning for regional transportation and growth in the SCAG Regional Comprehensive Plan (RCP) and 2016-2040 RTP/SCS.[1]

The Project would help to implement multiple local and regional goals and policies and would assist the City in achieving short- and long-term planning goals and objectives, such as energy efficiency and stormwater reuse. While much of the pending cumulative development presented in Table 3.18-2 would generally be consistent with SCAG, SCAQMD, and City policies for promoting more transit-oriented mixed use development within walking distance to local transit hubs, such as the South Glendale Community Plan (#16) and the Golden State

[1] Note that the Griffith Park Vision Plan does not apply to property under Zoo ownership and improvements on this property, but would apply to offsite improvements such as those at the intersection of North Zoo Drive with Western Heritage Way and the primary Zoo entrance.

Specific Plan and High-Speed Rail (#36), Project development would occur in an area with relatively poor transit service and outside of walking or easy biking distance from much of the surrounding communities. Implementation of **MM T-2** would require the Zoo to expand alternative transportation modes to the Zoo to reduce trips, VMT, and congestion, and improve safe and reliable transportation alternatives to the Zoo. With implementation of these measures, the Project would be consistent with all applicable goals of the 2016-2040 RTP/SCS intended to improve mobility and access to diverse destinations, promote smart growth, provide more transportation choices, and reduce vehicular demand and associated emissions.

The LADWP Solar Panel Project (#2) would further enhance the Zoo's consistency with VMT and emissions reduction policies by installing EV charging stations in the Zoo's northern parking lot, which would encourage the use of electric vehicles at the Zoo. These actions would improve Project consistency with applicable land use plans.

The Vision Plan for Griffith Park does not apply to projects within Zoo property (e.g., proposed parking structure), but would apply to offsite improvements such as those at the intersection of Zoo Drive with Western Heritage Way, where potential for tree removal, trail closure or realignment, and changes in aesthetics along these roadways could be adversely impacted by the Project in conjunction with the planned Griffith Park ATS (#40). Proposed Project changes to operations and configurations of these roadways would potentially increase vehicle speeds, impairing trail users' access, safety, and tranquility near this intersection and potentially conflicting with relevant policies of the Griffith Park Vision Plan. However, **MM REC-1** would require the long-term Zoo Drive/Western Heritage Way intersection improvements be considerate of pedestrian, bicyclist, and equestrian safety with regard to the Main Trail and that use of this important trail is not hindered by implementation of the improvement. With implementation of **MM REC-1**, the Project's individual impacts would be consistent with this local policy. With implementation of this mitigation measure, the Project's contribution to cumulative land use impacts would not be cumulatively considerable, and cumulative land use impacts would be *less than significant.*

All pending and future projects are required to be consistent with the City's General Plan, SCAG RTP/SCS, and applicable community plans. For cumulative impacts that result primarily from development outside of the City's jurisdiction (i.e., in the cities of Glendale and Burbank), the City cannot control land use policies or decisions outside of its boundaries; however, regional planning guidance provided by SCAG encourages municipalities to promote growth that would limit and reduce potential cumulative impacts, particularly related to transportation and transportation-related air pollutant emissions.

Noise

A cumulative noise impact would result if the potential impacts associated with the proposed Project, when combined with other cumulative projects, would cumulatively increase the ambient noise levels in the vicinity of the Project in excess of standards established in the City's General Plan and LAMC. Similarly, a cumulative vibration impact would result if the

potential impacts associated with the proposed Project, when combined with other cumulative projects, would cumulatively generate vibration levels in excess of Federal Transit Administration (FTA) and Caltrans Vibration Guidance.

Project construction activities in combination with other future developments that are built concurrently with the Project would temporarily increase ambient noise levels at nearby receptors, such as the Autry Museum of the America West, Mineral Wells Picnic Area, Griffith Park hiking trails, and the North Hollywood High School Zoo Magnet Center. Cumulative projects in the vicinity of the North Hollywood High School Zoo Magnet Center that would be constructed on a potentially overlapping timeframe include the Angela Collier Gardens Event Center (#1), LADWP Solar Panel Project (#2), I-5 North Corridor Improvement Project (#38), and the Griffith Park ATS (#40) if a lower terminal is implemented on Zoo property. In particular, the Griffith Park ATS may involve construction activities directly adjacent to the North Hollywood High School Zoo Magnet Center if the lower terminal in the Zoo's south parking lot is implemented. While the extent of noise impacts from construction and operation of the ATS is unknown, this project could affect noise receptors in the Project vicinity, in combination with Project construction noise over the 20-year intermittent construction period. Noise impacts associated with construction and operation of the Griffith Park ATS would be analyzed during the project's environmental review.

The Project itself would increase exterior noise levels at the North Hollywood High School Zoo Magnet Center by no more than 66.0 dBA Leq with the implementation of **MM NOI-1** through **MM NOI-6**, which would require equipment mufflers, coordination with neighboring properties, and noise barriers. As such, the Project's contribution to any potential cumulative construction noise impacts at this receptor would not be cumulatively considerable, and cumulative impacts to noise would be *less than significant with mitigation*.

As described in Section 3.12, *Noise and Vibration*, operational noise would occur under the Project due to increased attendance, vehicle idling, new Zoo facilities, and Zoo programming, including special events. The Project's projected increase in attendance and associated traffic noise could result in cumulative noise impacts when combined with future traffic from the other new cumulative developments in the Project vicinity, such as the Griffith Park ATS, which is anticipated to generate 10,000 to 13,000 visitors per day. However, as shown in Table 3.12-5 the Future Plus Project conditions noise level would not exceed 75 dB at any of the intersections in the Project vicinity and the increase in noise levels between existing conditions and the Future Plus Project conditions would not exceed 0.8 dB. Additionally, existing land uses along the freeways (i.e., I-5 and SR-134) are generally industrial or office land uses. As shown in the State's Noise and Land Use Compatibility Matrix, which has been adopted in the City's General Plan Noise Element, noise levels up to 75 dBA CNEL would be considered "Normally Acceptable" for these type of land uses. Therefore, the Project's contribution to cumulative operational noise would not be cumulatively considerable and impacts would be *less than significant*.

The vibration peak particle velocity (PPV) threshold of 0.3 inches per second would not be exceeded at any offsite structures during Project construction. However, construction of cumulative projects in the Project vicinity such as the Angeles Collier Gardens Event Center, LADWP Solar Panel Project, and the Griffith Park ATS would involve the use of heavy construction equipment and delivery trucks along Zoo Drive and Western Heritage Way/Crystal Springs Drive on a potentially overlapping timeframe as the Project. Additionally, if the Griffith Park ATS lower terminal is implemented on Zoo property, construction of this project would involve excavation activities and the use of helicopters immediately adjacent to the Autry Museum, Wilson & Harding Golf Course, and North Hollywood Highschool Magnet Center. Therefore, vibration impacts from the Project in combination with the Angeles Collier Gardens Event Center, LADWP Solar Panel Project, and the Griffith Park ATS could result in significant vibration impacts that could cause building damage and human annoyance. However, Project construction would not generate vibration levels in excess of the PPV threshold of 0.3 inches per second and onsite blasting activities would not exceed the 133-dB damage criterion or the 120-dB annoyance criterion at the Wilson and Harding Golf Courses, North Hollywood Highschool Zoo Magnet Center, and Autry Museum. Further, construction-related haul trucks, concrete deliveries, and other materials deliveries for the Project would follow approved haul routes and avoid residential neighborhood streets where lower ambient noise levels would make loud truck trips more perceptible and incompatible. Therefore, the Project's contribution to cumulative vibration impacts would not be cumulatively considerable and impacts would be *less than significant*.

Public Services

Cumulative impacts to public services could occur if the Project, when combined with any of the identified cumulative development projects (refer to Table 3.18-2), would result in 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. Public services within the Project vicinity are provided by the cities of Los Angeles, Burbank, Glendale, and the County of Los Angeles.

Cumulative impacts to public services are largely related to citywide population growth and changes in land use patterns. New residential development projects, such as the Bow Tie Yard Lofts Project (#5), South Glendale Community Plan (#16), Front Street Project (#27), and Burbank Town Center (#28), would result in the primary increase in regional population. However, new employment and visitation associated with commercial, retail, and recreational uses from the Project and other cumulative attractions, such as the Griffith Park ATS, would also increase daytime populations and visitation with associated demand for public services. These projects are expected to increase residences, jobs, and visitation in the City, thereby cumulatively increasing demand for the City's public services.

The Project, in conjunction with approved, pending, or proposed development projects in the cities of Los Angeles, Burbank, and Glendale, and associated population growth, would

incrementally increase overall demand for public services including fire protection, police protection, and emergency medical services. The Project would not directly result in increased demand for school, library, or other public services, or the increase in demand for such services would be negligible. Cumulative development projects with growth inducing impacts would be required to pay development impact fees to ensure impacts to schools, libraries, and other public services are less than significant. Therefore, the Project's contribution to cumulative effects on such services are not cumulatively considerable and impacts would be *less than significant*.

The Project's contribution to potential cumulative impacts to fire and police protection services is described below.

Fire Protection

Cumulative impacts related to fire protection would include a project's contribution to cumulative demand for Los Angeles Fire Department (LAFD) services. The proposed Project in conjunction with cumulative projects would increase demand for fire protection services based on an increase in residential population and daily employment. The Project does not include residential development and the approximately 660 new jobs that would be created under the Vision Plan are anticipated to be filled by the existing local workforce.

Implementation of large cumulative projects such as South Glendale Community Plan (#16), Front Street Project (#27), and Burbank Town Center (#28), in combination with the Project, would result in a net increase in the number of residents, households, and employees in the Project vicinity and could further increase the demand for fire protection services. In addition, the Griffith Park ATS (#40) would draw 10,000 to 13,000 visitors per day to the Project site if a lower terminal is chosen on Zoo property. On peak visitation days, this increase in visitors in combination with the Project's estimated increase in visitation could cumulatively affect vehicle congestion, emergency access, and emergency response times. LAFD may also need to acquire special equipment to evacuate gondola riders from the ATS. However, due to the relatively large geographic scope of the cumulative project locations, the demand for fire service would be spread out over several stations and district. Some would be served by LAFD stations other than the station that serves the Project site (i.e., Station No. 56 of Battalion 5 of the West Bureau). A majority of the cumulative developments in the vicinity of the Project would be located in the cities of Glendale and Burbank, and therefore, would not be served by the LAFD.

Cumulative development requires the LAFD to continually evaluate the need for new or physically altered facilities to maintain adequate service ratios. Similar to the Project, the cumulative projects would be subject to the requirements of the Los Angeles Fire Code, including Table 507.3.3, which mandates the installation of automatic fire sprinkler systems if a project is located at a distance to the nearest fire station that exceeds the LAFD required response distance. Each of the cumulative projects in the City would also be subject to consultation with LAFD and LADWP during their design phase to establish fire flow

requirements for the land uses proposed and to determine the adequacy of existing fire flow infrastructure serving their respective project sites. Any LAFD- or LADWP-required upgrades to the water distribution systems serving the cumulative projects would be addressed for each individual project in conjunction with their project approvals. Each of the cumulative projects in the City is also individually subject to LAFD review and would be required to comply with all applicable fire safety requirements of the LAFD and the City, including hydrant and access improvements, if necessary, in order to adequately mitigate fire protection impacts.

Some of the cumulative projects may be farther than the maximum response distance requirements from the nearest fire station and thus, would be required to incorporate fire sprinklers, as well as meet other requirements that may be stipulated by the LAFD on a project-by-project basis. If any of the cumulative projects creates demands on fire protection staffing, equipment, or facilities such that a new station would be required, potential environmental impacts would be addressed in conjunction with the environmental review for that project.

The LAFD obtains the necessary facilities and resources through the City's budget process. The cumulative projects would contribute to funding fire protection services in the area by generating annual revenue from property taxes that would be deposited into the City's General Fund, which could potentially be used to fund the construction of future fire protection facilities and support hiring more firefighters. This would further ensure that the Project's incremental effect on fire protection service would not be cumulatively considerable. Through this process, the ability of the LAFD to provide adequate facilities to accommodate future growth and maintain acceptable levels of service would be ensured. On this basis, it is anticipated that potential impacts to fire protection would not be cumulatively considerable. Furthermore, the increased demands for additional LAFD staffing, equipment, and facilities would be funded via existing mechanisms (e.g., property taxes and government funding) to which both the Project and the cumulative projects would contribute.

As described in Section 3.13, *Public Services*, the Project would not result in a need for new LAFD facilities that would have an adverse environmental impact. Because the Project would not create such demands, its contribution to these impacts is not cumulatively considerable. Through the City's regular budgeting efforts, LAFD's resource needs, including staffing, equipment, trucks and engines, ambulances, other special apparatuses, and possibly station expansions or new station construction, would be identified and allocated according to the priorities at the time. Therefore, a cumulative increase in fire protection services demand that would require a new fire station, or the expansion, consolidation, or relocation of an existing fire station, the construction of which could cause significant environmental impacts, is not anticipated from the development of the Project or the cumulative projects, and cumulative impacts related to fire protection services would be *less than significant*.

Police Protection

Cumulative impacts related to police protection would include a project's contribution to cumulative demand for Los Angeles Police Department (LAPD) services. Due to the relatively large geographic scope of the cumulative project locations, some would be served by other LAPD stations than the station that serves the Project site (i.e., Northeast Community Police Station [Northeast Division] of the Central Bureau). A majority of the cumulative developments in the vicinity of the Project would be located in the cities of Glendale and Burbank, and therefore, would not be served by the LAPD.

Increases in annual visitation at the Zoo, in conjunction with large development and other attractions, such as the Bow Tie Yard Lofts (#5) and Griffith Park ATS, would increase cumulative citywide demand for police protection services provided by the LAPD. As described in Section 3.13, *Public Services*, the Zoo currently experiences a relatively high number of vehicle theft/break ins, which is expected to increase with increased visitation and parking spaces under the Project, though the proposed parking structure and enhanced security would help assuage this existing issue. Since the Griffith Park ATS would draw even more visitors (i.e., 10,000 to 13,000 per day) and would require an additional parking structure, the ATS in combination with the Project could cumulatively increase demand for police protection.

Existing LAPD staffing levels of the Northeast Division exceed the officer per 1,000 resident ratio, providing ratio of 1 officer to 893 residents. Though the Project would not individually result in the demand for any new officers due to its associated incremental increase in demand for service and existing sufficiency of services, the Project, in addition to all cumulative development within the City, would contribute to the potential increase in demand for added police staffing. However, the City Council would address LAPD departmental budget, staffing, and equipment needs as part of the annual budgetary process. This review allows LAPD to determine whether any increases in police resources and equipment is needed. The LAPD is funded through general fund revenues generated by property, sales, and transient occupancy taxes, all of which are expected to increase in proportion to new development within the City. Such increases in revenues could be used to hire additional officers and purchase equipment to maintain or improve LAPD service levels over time to meet changing demands, if determined appropriate by the City Council. Additionally, Griffith Park is served by RAP park rangers and the Security Services Division (SECSD) of the LAPD is responsible for the safety and security of the Zoo. There is no foreseeable need for facilities expansions that would cause adverse environmental impacts due to Project or cumulative demand for LAPD services. Therefore, the Project's contribution to the demand for police services would not be cumulatively considerable, and cumulative impacts would be *less than significant* for police services.

Recreation

A cumulative impact would occur if the Project's demand on recreational resources, when combined with demand from other past, present, and future projects, would cumulatively 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. A cumulative recreation impact would also occur if the Project and other cumulative projects would include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment.

The proposed Project would not substantially increase the local population. The Project, in combination with large residential and mixed use projects such as the Bow Tie Yard Lofts (#5; 419 units) South Glendale Community Plan (#16; 48,240 new units), and Burbank Town Center (#28; 801 residential units and 200 hotel rooms) would increase population density in the vicinity of Griffith Park and the Project site. This cumulative increase in population would increase the demand for recreational resources at Griffith Park. In addition, the Project, in combination with the Griffith Park ATS (#40), would cumulatively increase the demand for recreational resources at Griffith Park by attracting visitors. The County's 2015 Park Needs Assessment calculated that Griffith Park experiences low park pressure within its community of North Hollywood and currently provides 6.91 acres of regional parkland per 1,000 people in a 25-mile radius.

While the proposed Project would expand existing annual visitation, the Project would also increase the Zoo's capacity to host and accommodate the growth in demand for the Zoo's amenities and provide additional unique recreational opportunities within the City. Demand for park and playground facilities by Zoo visitors would also be met by the proposed Nature Play Park, a proposed nature-based interactive playground for children and families, and a proposed public park along Zoo Drive in the northern parking lot. The physical degradation of other existing recreational facilities within Griffith Park is not anticipated to occur or be accelerated by additional Zoo visitation. The Project would result in no net loss of recreational lands and would not cause direct impacts to recreational facilities within Griffith Park or elsewhere. Therefore, the Project's contribution to cumulative effects on recreational facilities is not cumulatively considerable. Further, cumulative residential development projects with growth inducing impacts would be required to pay development impact fees pursuant to the City's Park Fee Ordinance (LAMC Section 19.17). Payment of required development impact fees would ensure that cumulative impacts to the demand for recreational facilities is *less than significant*.

Transportation

Cumulative transportation and circulation impacts would be related to the Project's contribution to potential conflicts with City, regional, and state circulation plans, policies, and programs, conflicts with CEQA Guidelines Section 15064.3(b) (i.e., local and regional increases in VMT), and hazards due to design features and conflicts with emergency access.

The geographical context for the analysis focuses on the northeastern portion of Griffith Park and adjacent urban communities of the City and the cities of Glendale and Burbank, and considers citywide, regional, and statewide VMT.

Consistency with Circulation Plans/Programs/Ordinances/Policies

The Project would raise potential conflicts with adopted programs, plans, ordinances, or policies addressing the circulation system, including transit, roadway, and bicycle and pedestrian facilities, incrementally contributing to cumulative impacts regarding this issue in combination with other pending projects. The Project's location in a transit poor area and separation from surrounding communities increases reliance on vehicular travel and associated increases in VMT that exceeds citywide averages. This increase in VMT would present a potential conflict with local, regional, and state goals for VMT reduction. The LADWP Solar Panel Project (#2) would install EV charging stations in the Zoo's northern parking lot, which would encourage the use of electric vehicles at the Zoo and enhance the Zoo's consistency with VMT reduction goals in all applicable plans and policies. As such, the proposed Project would not result in a substantial contribution to cumulatively considerable impacts related to transportation plans and policies. However, in combination with other pending projects such as the Griffith Park ATS, a regional attraction, that would likely generate a similar increase in VMT as the Project, regional growth would continue to increase VMT. However, with implementation of required mitigation measures identified in Section 3.15, *Transportation* and required consistency with existing regulations, the Project would be consistent with the SCAG 2016 RTP/SCS, Los Angeles General Plan, Hollywood Community Plan, and Plan for a Healthy Los Angeles. Implementation of **MM T-2**, which would require implementation of a comprehensive TDM Program, including several VMT reduction measures, and would align with VMT reduction goals in all applicable plans and policies.

However, Project-generated traffic in combination with that from the Griffith Park ATS (if located on Zoo property) and projected annual growth in vehicle trips could require installation of a roundabout or grade separation at the intersection of Zoo Drive & Western Heritage Way, rather than signalization as required to address Project traffic alone. While the design of such improvements is conceptual, a roundabout or grade separation could increase speeding and cut-through traffic in Griffith Park in potential conflict with the goals of the Vision Plan for Griffith Park to slow traffic speeds and minimize cut-through traffic. If such improvements are required, they could also create secondary impacts to safety for bicycles, pedestrians, and equestrians along Zoo Drive, Western Heritage Way, and the Main Trail through Griffith Park, and require removal of dozens of mature trees, which may conflict with the Vision Plan for Griffith Park.

Similar to the proposed Project, cumulative projects, including the Griffith Park ATS, would be analyzed for policy consistency during the environmental review process and final policy consistency would be determined as part of project review and approval process.

Conflict with CEQA Guidelines Section 15064.3, Subdivision (b)

The Project and cumulative projects such as the Griffith Park ATS would potentially conflict with CEQA Guidelines Section 15064.3(b) as Project-generated VMT would substantially exceed adopted City VMT thresholds for regional attractions (a net-zero VMT increase threshold), incrementally contributing to cumulative impacts of increases in regional VMT, especially in combination with other pending projects. In particular, the Project's location in a transit poor area and separation from surrounding communities increases reliance on vehicular travel and associated increases in VMT that exceeds citywide averages. In combination with other pending projects, particularly the Griffith Park ATS, which as a regional attraction would likely generate a similar increase in VMT in this transit poor area, regional growth could continue to increase VMT.

While some cumulative projects may substantially increase VMT, many are mixed use developments or are located in established mixed use communities with pedestrian and bicycle access to varied uses as well as high levels of transit service, potentially limiting increases in VMT for such projects. In contrast, similar to the Project, the Griffith Park ATS project would act as a major regional attraction to convey visitors to upper elevations in Griffith Park, particularly to view the Hollywood Sign. The Griffith Park ATS is expected to draw from 10,000 to 13,000 visitors per day and generate an increase of roughly daily VMT of 67,568 to 114,035. To the extent that this new attraction both reroutes existing trips from the west to the east side of Griffith Park and attracts new visitors, cumulative VMT could increase considerably.

As described in Section 3.15, *Transportation*, the proposed Project would result in significant and unavoidable impacts associated with increased VMT even with proposed mitigation measures when compared to the City's net zero VMT threshold for regional attractions. Construction of a single destination ATS, particularly on Zoo property, would create substantially more severe cumulative VMT impacts. Given the preliminary nature of the Griffith Park ATS design, it is not possible to identify precise mitigation measures to address cumulative VMT impacts. However, should the Griffith Park ATS be designed to serve as a multi-modal transportation network to convey Park users to destinations around Griffith Park and if it is designed to connect to existing and planned ground transit services, it may provide a valuable option to reduce overall Park congestion, while still meeting the objectives of the Vision Plan for Griffith Park and the proposed Project, and the RTP/SCS.

The Headworks Reservoir Project, located approximately 1.5 miles west of the Zoo, is under construction and will support underground concrete reservoirs, water treatment facilities, several trails, habitat restoration, and public parking. Future VMT associated with the recreational trails and public parking would contribute to cumulative VMT impacts associated with the Project. However, the recently implemented Parkline Shuttle serving Griffith Park and the Zoo would provide improved transit service that would help incrementally limit increases in VMT. Further, potential future changes in the hours of operation of this shuttle for longer service days (e.g., begin service at 8:00 am or 9:00 am)

and possible future extension to offsite major transit centers (e.g., Union Station) could better serve Zoo patrons and employees if funded and implemented providing improved transit options for Zoo patrons, further limiting growth in VMT. Zoo coordination with RAP on tools to expand this service could advance City goals for reducing VMT growth.

In addition, under the Los Angeles River Revitalization Master Plan, the City has recently completed and planned several bicycle and pedestrian improvements in the vicinity of Griffith Park. While these projects may act as attractions to draw visitors, they will greatly improve connectivity between Griffith Park and bordering communities that will encourage increased active transportation and potentially help incrementally reduce projected cumulative increases VMT. In particular, the Garden Bridge would be located within approximately 0.5 miles of the Zoo's Entry and the City is planning another two connecting bicycle facilities from the Los Angeles River Bike Path to Griffith Park adjacent to the Zoo. These bridges will connect communities on the north and east side of the Los Angeles River to the Los Angeles River Bike Path and Griffith Park, near the Project site, providing more travel options for visitors and the 27 percent of Zoo employees who live within 5 miles of the Zoo and potentially reducing projected increases in VMT. However, even with implementation of **MM T-2**, which would require implementation of a comprehensive TDM Program, pending new bike bridges and enhanced Parkline Shuttle service, the Project's contribution to increases in VMT would remain cumulatively considerable and cumulative VMT impacts would remain *unavoidable and significant*.

Substantially Increase Hazards Due to Design Features and Emergency Access

Potential cumulative impacts associated with design feature hazards relate primarily to internal Griffith Park roadways and intersections. Project construction could overlap with that of multiple other pending projects within the vicinity of the Zoo, including the Griffith Park ATS (#40), various pending bicycle bridges, the LADWP Solar Project (#2) and others, with emergency access potentially impeded as a result of the construction traffic. Heavy haul trucks and other construction equipment (e.g., cement trucks and cranes) may disrupt vehicle, bicycle, and pedestrian traffic flows, limit turn lane capacities, and generally slow traffic movement. Potential overlap of construction activities in the Project vicinity could result in a significant increase in daily construction vehicle trips in the vicinity. However, with the implementation of **MM T-1**, the Project's contribution to construction impacts related emergency access would be substantially reduced. As with the Project, cumulative projects would be subject to standard BMPs to manage construction activities that typically include traffic routing and control, vehicle, bicycle, and pedestrian safety, street closures, and construction parking management. Thus, implementation of the City-approved Construction Traffic & Access Management Plan for the Project would ensure the continued vehicle, bicycle, and pedestrian safety during construction. With the implementation of **MM T-1**, the proposed Project would not result in cumulatively considerable construction related impacts related to emergency access and impacts would be *less than significant with mitigation*.

With regard to operation, the Project contribution to cumulative geometric design feature hazards are related primarily to access to the Project site. All Project components and cumulative projects that would affect the public right-of-way (e.g., realigned roadway and intersection of Zoo Drive & Western Heritage Way) would be engineered to comply with LADOT standards and designed to intersect the roadway at a right angle to address line of sight, turning radii, spacing, etc. The roadway would also provide necessary sidewalks, crosswalks, and pedestrian movement controls to meet the City's requirements to protect vehicle, bicycle, and pedestrian safety. Further, as with the proposed Project, each of the cumulative projects would be subject to site plan review and would meet City street design and access requirements. However, while detailed information is not yet available regarding the size, scope and location of the Griffith Park ATS, if that project is located on Zoo property, or potentially even at Travel Town, substantial increases in vehicle trips at the intersection of Zoo Drive & Western Heritage Way may exceed the capacity of a signal to service and require installation of a roundabout or grade separation as conceptually described in the Vision Plan. While precise numbers are not yet available, assuming all ATS visitors drive through this intersection to the access the site, the potential exists for the Griffith Park ATS to add up to 4,561 daily vehicle trips to this intersection. If a roundabout or grade separation is installed, this could increase vehicle speeds and cut through traffic volumes along Zoo Drive and Western Heritage Way. These roads carry significant volumes of bicyclists and on-road runners as well as pedestrian crossing these streets. Greater traffic volumes and higher speeds could expose these users to increase hazards as vehicles merge. Therefore, should a roundabout or grade separation be necessary for operation of the Project in conjunction with the Griffith Park ATS, the roundabout or grade separation shall be designed in a manner that reduces vehicle speeds (e.g., speed bumps, rumble strips, stop signs). Therefore, the proposed Project in combination with other cumulative projects in the vicinity could result in cumulatively considerable impacts related to design features and safety. However, implementation of Project mitigation requiring coordination and approval of final roadway designs would ensure Project impacts are not cumulatively considerable and *less than significant with mitigation*.

Emergency Access

Construction and operation of the proposed Project in conjunction with construction and operation of the Griffith Park ATS would generate increases in construction traffic, vehicle traffic from employees and visitors, and associated congestion in the Project vicinity, if the Griffith Park ATS is implemented on Zoo property. The increased vehicle traffic and congestion resulting from the Project and Griffith Park ATS could affect emergency access to the site. However, with implementation of **MM T-1**, which would require preparation and implementation of a Construction Traffic & Access Management Plan to minimize traffic impacts during construction, the Project would maintain emergency vehicle access to the site during construction. Additionally, Project implementation would result in beneficial long-term impacts to emergency access due to the development of perimeter access roads

surrounding the Project site and dedicated service roads separate from pedestrian pathways within the Zoo (refer also to *Public Services*). Therefore, the Project's cumulative contribution would not be considerable and impacts to emergency access would be *less than significant with mitigation*.

Utilities

Cumulative impacts related to utilities would include a project's contribution to increased water demand and wastewater and solid waste disposal in the City, region, or state, particularly as it relates to utilities service provider's capacity to serve the project.

Water Infrastructure and Supply

A cumulative impact related to water infrastructure and supply would result if the potential impacts associated with the proposed Project, when combined with other past, present, and future projects, would cumulatively increase the demand for water such that new water facilities or expansion of existing facilities would be required, the construction of which would cause significant environmental effects, or there would be insufficient water supplies to serve the projects. The proposed Project with cumulative projects would increase the demand on the existing LADWP water distribution system. In particular, large residential developments, such as the Bow Tie Yard Lofts (#5) and visitor-serving amenities (e.g., food service, restrooms, etc.) of the Griffith Park ATS (#40), would substantially contribute to an increase in the City's potable water demand. Implementation of these projects may require new connections to existing LADWP water lines. However, as with the proposed Project, individual projects would be subject to City review to ensure that the existing water lines would be adequate to meet domestic water and fire flow demands.

Cumulative water supply impacts are considered on a City-wide and regional basis in accordance with the projections in the Urban Water Management Plan (UWMP). The City continues to conduct evaluations to ensure its water infrastructure system is adequate to meet service needs and infrastructure system improvements would be implemented as needed as part of the City's Capital Improvement Program. LADWP's 2015 UWMP forecasts adequate water supplies to meet all projected water demands in the City for normal, single-dry, and multi-dry years from 2020 to 2040. Furthermore, as outlined in the 2015 UWMP, LADWP is committed to providing a reliable water supply for the City. The 2015 UWMP considers climate change and the concerns of drought and dry weather and notes that the LADWP will meet all new demand for water supply associated with projected population growth through the combination of water conservation and recycling. The LADWP (through its UWMP) anticipates that its projected water supplies will meet demand through the Project implementation.

The proposed Project, along with other past, present, and future projects in the region would cumulatively increase the demand on the existing LADWP water distribution system. In particular, large residential developments, such as the Bow Tie Yard Lofts (#5) and visitor-serving amenities (e.g., food service, restrooms, etc.) of the Griffith Park ATS (#40), would

substantially contribute to an increase in the City's potable water demand. As described in Impact UT-1, while Project implementation may require new connections to existing LADWP potable and recycled water mains, the Project would not require expansion of the City's recycled water system or major construction activities. Therefore, the proposed Project would not result in a considerable contribution to cumulative water infrastructure impacts.

The Project's proposed stormwater collection system is projected to reduce the Zoo's potable water consumption by 35,000,000 gallons per year for sustainable reuse of stormwater captured onsite, consistent with the water conservation goals of the City's One Water L.A. plan. Additionally, implementation of **MM UT-1**, which would require extension of recycled water lines within the Zoo for operational landscaping irrigation, washdown of the animal holding areas, power-washing walkways, flushing toilets, and some habitat pools, depending on the species, would further reduce the Zoo's overall water demand. Therefore, the Project's contribution to cumulatively water supply impacts would not be cumulatively considerable.

In terms of the City's overall water supply condition, any cumulative project that is consistent with the City's General Plan has been considered in the planned growth of the water system. In addition, any cumulative project that conforms to the demographic projections from SCAG's RTP/SCS and is located in the service area is considered to have been included in LADWP's water supply planning efforts so that projected water supplies would meet projected demands. Similar to the Project, each cumulative project would be required to comply with City and State water code and conservation programs for both water supply and infrastructure. Cumulative projects that propose changing the zoning or other characteristics beyond what is within the General Plan would be required to evaluate the change under CEQA review process. Future development projects within the service area of the LADWP would be subject to the locally mandated water conservation programs, and citywide water conservation efforts would also be expected to partially offset the cumulative demand for water. LADWP undertakes expansion or modification of water service infrastructure to serve future growth in the City as required in the normal process of providing water service. As the Project would not cumulatively contribute to water supply or infrastructure impacts, cumulative impacts related to water infrastructure and supply would be *less than significant*.

Wastewater Services

A cumulative impact related to wastewater services would result if the potential impacts associated with the proposed Project, when combined with other past, present, and future projects, would cumulatively require or result in expansion of wastewater facilities, the construction of which would cause significant environmental effects, there would be insufficient capacity to serve the projects, or the projects would exceed wastewater treatment requirements of the Los Angeles Regional Water Quality Control Board (RWQCB).

As described in Section 3.16, *Utilities*, the Project would require installation of utility lines to replace the dilapidated, 50-year old sanitary sewer lines within the Project site. Excavation and trenching for installation of new utility lines within the Project site, in combination with

installation of new wastewater facilities for the Griffith Park ATS (#40), could cumulatively result in environmental impacts such as impacts to geology and soils, soil erosion and sedimentation, and water quality. Several other sewer projects within the City (projects #11 through #15 in Table 3.18-2) could also contribute to environmental effects in the Project vicinity, particular where wastewater is discharged to the Los Angeles River. However, cumulative sewer repairs would also ensure wastewater generated by the Project and other cumulative projects is adequately conveyed to the Los Angeles Glendale Water Reclamation Plant (LAGWRP) or other wastewater facility. The Project would result in less than significant impacts to geology and soils and water quality (refer to Section 3.7 *Geology and Soils*, and Section 3.10, *Hydrology and Water Quality*); therefore, the Project's contribution to significant environmental effects from construction of wastewater infrastructure would not be cumulatively considerable.

The Project in conjunction with cumulative development projects in the Project vicinity, such as the South Glendale Community Plan (#16), Front Street project (#27), and Burbank Town Center (#28), would increase demand for wastewater services provided by the North Outfall Sewer and the LAGWRP. The Project is projected to generate a total of 182,493 gpd of wastewater, which would contribute less than 1 percent of the LAGWRP's remaining daily capacity of 2.8 million gallons per day (mgd) (refer to Section 3.16.1, *Environmental Setting*). Therefore, the LAGWRP is expected to have adequate capacity to accommodate the proposed Project in addition to cumulative development and no new or expanded wastewater facilities would be required. The Project's less than 1 percent contribution to the LAGWRP's remaining capacity would not be cumulative considerable.

The Project and other cumulative projects in the vicinity would be served by the LAGWRP, which operates under a RWQCB permit, and meets the CCR Title 22, Division 4, Chapter 3 reclamation criteria for "irrigation of parks, playground, schoolyards, and other areas where the public has similar access or exposure" as well as "non-restricted recreational impoundments." Wastewater produced by the Zoo and other cumulative projects would meet RWQCB requirements through treatment at the LAGWRP. Therefore, RWQCB wastewater treatment requirements would not be exceeded, and the Project, in combination with other cumulative projects in the vicinity, would not result in cumulative considerable impacts to wastewater treatment requirements, and impacts would be *less than significant*.

Solid Waste Disposal

A cumulative impact related to solid waste disposal would result if the potential impacts associated with the proposed Project, when combined with other past, present, and future projects, would cumulatively increase the demand for solid waste disposal in excess of the landfill capacity within the County.

The Project in conjunction with other cumulative projects within the County would result in the cumulative generation of solid waste. As with the Project, cumulative projects would be required to comply with the Citywide Construction & Demolition (C&D) Waste Recycling

Ordinance, which requires all mixed C&D waste generated within City limits to be taken to a City-certified C&D waste processor for recycling, and with LAMC Section 66.32, which requires 70 percent of solid waste (including C&D debris) generated in the City to be recycled. With implementation of the City's C&D Waste Recycling Ordinance, cumulative generation of C&D waste would not require the need for new or expanded landfill capacity.

With the City's current diversion rate of 76.4, the Project would contribute approximately 1.46 tons of solid waste per day, which is less than 1 percent of the total daily permitted capacity of Sunshine Canyon Landfill, which serves the Project site. Therefore, the Project's contribution to solid waste disposal is not cumulative considerable. With the City's goal of 90 percent diversion by 2025, the Project and other cumulative projects within the City, such as the Bow Tie Yard Lofts (#5) and Griffith Park ATS (#40), would not contribute a cumulative considerable demand for solid waste disposal. Other large cumulative projects outside of the City, such as the South Glendale Community Plan (#16), Front Street project (#27), and Burbank Town Center (#28), would increase the demand for solid waste disposal in the County. However, the County's 2016 Annual Report assessed future landfill disposal needs over a 15-year planning horizon based in part on forecasted waste generation and available landfill capacity and concluded that the County would be able to meet the disposal needs of all jurisdictions through 2031. Therefore, cumulative solid waste is expected to be accommodated by existing landfills within the County, and cumulative impacts related to solid waste would not be cumulative considerable and thus, would be *less than significant*.

Wildfire

Cumulative impacts related to utilities would include a project's contribution to increased fire risk, potential for exposure to fire hazards or related risks (e.g., flooding, landslides, etc.), or conflicts with an adopted emergency response plan or emergency evacuation plan.

As previously described under cumulative impacts to *Hazards and Hazardous Materials*, *Public Services*, and *Transportation*, construction and operation of the Griffith Park ATS (#40) in conjunction with the Project could interfere with the Zoo's emergency preparedness procedures and emergency evacuation of the Zoo (if the Griffith Park ATS is located on Zoo property). The combined increase in visitation from the Project (i.e., up to 59,000 visitors per day) and the Griffith Park ATS (i.e., 10,000 to 13,000 visitors per day) would contribute a substantial increase in the daytime population of the Project site and a related increase in congestion and difficulty accessing and evacuating the Project site. Impacts would be further exacerbated by potential evacuation of gondola riders on the Griffith Park ATS. While the exact location and design of the lower terminal, transit hub, and associated facilities (e.g., parking structure, restaurant, retail, restrooms, maintenance facilities, etc.) are unknown, the increase in visitors from Griffith Park ATS in conjunction with the Project could adversely affect safe and efficient evacuation of the Project area and impacts could be cumulative considerable. However, Project construction and operation would maintain emergency access to the site and the proposed realignment of Western Heritage Way/Crystal Springs Drive would further reduce congestion and safety impacts associated with pedestrians crossing the

street. As such, the Project's contribution to cumulative impacts from emergency response and evacuation would not be cumulatively considerable.

Cumulative hazards from wildfire would be exacerbated by additional construction and operation of urban uses within the City and region along the wildland-urban interface. Construction of projects within the immediate vicinity of Griffith Park, such as the Griffith Park ATS (#40), would introduce additional fire hazard (e.g., ignition risks from construction equipment) that would place people and structures at risk of damage. Construction of the electrical lines for the Griffith Park ATS, in combination with the blasting required for the proposed Condor Canyon, would cumulatively increase the potential for fire risk. Similar to the Project, other Projects within Griffith Park would require tree and vegetation removal for accommodation of the projects, potentially reducing the extent of onsite flammable vegetation. However, construction activities proximate to chaparral and other fire-prone plant communities within Griffith Park would continue to present risk associated with spread of wildfire.

To manage and reduce wildfire risks, the Zoo and RAP would continue to implement several procedures for managing fuels, ensuring adequate evacuation of the Zoo, and providing appropriate forms of access to the Zoo and surrounding wildland urban interface (WUI). This would include annual vegetation management and plan review to ensure appropriate designs for access and fire flow. Adherence to the California Fire Code, LAMC, and review of discretionary projects by the LAFD would reduce cumulative impacts associated with potential wildfire risk or hazards. Implementation of **MM WF-1** and **MM WF-2,** which would require preparation and implementation of a Wildfire Fuel Management Plan and a Zoo Evacuation and Fire Response Access Plan, would reduce the Project's individual impact and ensure the Project's contribution to cumulative impacts from wildfire would not be cumulatively considerable. Thus, cumulative impacts wildfire would be *less than significant with mitigation*.

4.0 ALTERNATIVES

As analyzed in this EIR, the proposed Project would result in significant and unavoidable adverse impacts to Aesthetics and Transportation. The Reduced Project Alternative (Alternative 1) would substantially avoid developed within the existing undeveloped areas of the Zoo property where protected trees, native habitats, and other special status plant species are present. Alternative 1 would also generate a smaller increase in visitation, thereby reducing projected vehicle miles traveled and reducing the size of the parking structure or eliminating the need for it entirely. As such, Alternative 1 would reduce impacts to aesthetics, air quality, biological resources, urban forestry, noise, and transportation when compared to the Project. The Multi-Modal Transportation Alternative (Alternative 2) would implement the same Project improvements with additional measures to reduce vehicle miles traveled and increase multi-modal transportation. Alternative 2 would also reduce the size of the proposed parking structure commensurate to reduced demand for parking. Therefore, Alternative 2 would substantially reduce impacts to aesthetics, air quality, energy, greenhouse gas emissions, urban forestry, land use and planning, and transportation when compared to the proposed Project and would achieve all Project objectives. Alternative 1 is identified as the Environmentally Superior Alternative as it would generate the least adverse impacts compared to the Project and Alternative 2. However, Alternative 1 would not meet or only partially meet several Project objectives due to the decreased area available for utilization for improvements and decreased ability to maximize immersive experiences for visitors or expand visitor-serving features.

This section of the Environmental Impact Report (EIR) evaluates alternatives to the proposed Los Angeles Zoo and Botanical Gardens (Zoo) Vision Plan (Vision Plan; Project) and analyzes the comparative environmental impacts associated with each alternative.

Section 15126.6 of the CEQA Guidelines state that an "*EIR shall describe a range of reasonable alternatives to the proposed project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives*".

The CEQA Guidelines further state that "*the range of alternatives required in an EIR is governed by a rule of reason*" that requires the EIR to set forth only those alternatives necessary to permit fully informed decision making. The alternatives shall be limited to those that would avoid or substantially reduce any of the significant and unavoidable effects of the proposed Project. Of those alternatives, the EIR needs to examine in detail only the ones that the Lead Agency determines could feasibly attain most of the basic Project objectives (CEQA Guidelines Section 15126.6).

Not every conceivable alternative must be addressed, nor do infeasible alternatives need to be considered (CEQA Guidelines Section 15126.6[a]). In defining feasibility of alternatives, the CEQA Guidelines state that "*among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries, and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site*" (CEQA Guidelines Section 15126.6).

The alternatives selected for review must adequately represent the spectrum of environmental concerns to permit a reasonable choice of alternatives. The Lead Agency is responsible for selecting a range of alternatives to be evaluated and must disclose in the EIR its reasoning for selecting those alternatives as well as identify and explain why alternatives that may have been considered by the lead agency during the scoping process were rejected as infeasible. The EIR must also provide the rationale for selecting or defining the alternatives to be evaluated, including the identification of any alternatives that were considered by the Lead Agency, but rejected as infeasible during the scoping process. The lead agency may use the following factors to eliminate alternatives from detailed consideration: (i) failure to meet most of the basic project objectives, (ii) infeasibility, or (iii) inability to avoid significant environmental impacts. The CEQA Guidelines also require the analysis of a No Project Alternative. Based on the alternatives analyzed, the Lead Agency must identify an environmentally superior alternative.

4.1 PROJECT OBJECTIVES

Section 15124(b) of the CEQA Guidelines requires a statement of a project's objectives that includes the purpose of the Project. The objectives of the Project are described in Section 2.3.2, *Project Objectives* and include:

1. **Animal Welfare and Care**. Provide an environment for all the animals that call the Zoo home to thrive through development of state-of-the art exhibits and animal care facilities that meet or exceed Association of Zoos and Aquariums (AZA), U.S. Department of Agriculture (USDA), and state of the industry care standards, as well as upgraded Zoo service centers and veterinary facilities that ensure optimal animal welfare.
2. **Increase and Modernize Zoo Exhibit Space**. Increase and modernize Zoo exhibit space to maximize animal habitat areas, create infrastructure for innovative and proactive animal care and welfare practices, and represent ecosystems and lifecycles by transforming underutilized and underdeveloped areas of the Zoo.
3. **Conservation**. Advance conservation efforts by developing facilities and programs that will support conservation actions to protect and grow animal populations and habitats.

4. **Learning and Education.** Advance public engagement efforts by developing facilities and experiences that promote lasting relationships with nature, life-long learning, opportunities for outreach beyond the Zoo's campus, and a civic culture of conservation.
5. **Immersive Visitor Experience**. Design Zoo exhibits and visitor spaces to provide nature-based experiences that allow Zoo visitors to engage with environments and animals in seamless, immersive spaces.
6. **World Class Destination**. Enhance Zoo facilities and operations to increase Zoo visitation, create a sense of place that transports visitors to other parts of the world, and generate revenue to support operation of the Zoo, capital improvements, and conservation programs.
7. **Visitor-serving Amenities**. Provide a variety of visitor-serving amenities including food and retail establishments, a range of resting and gathering places, and special event centers that will attract visitors and support a range of special events within the Zoo.
8. **Efficient Circulation System**. Develop an efficient and accessible internal loop circulation system that maximizes access to Zoo exhibits for visitor comfort, operational efficiency, and safety, providing dedicated pathways for pedestrians, trams, and emergency and service vehicles.
9. **Accessibility**. Design the Zoo to serve the needs of a diverse population of all ages and abilities through incorporation of Americans with Disabilities Act (ADA) pathways, alternative travel options in the Zoo such as aerial or ground-based trams, and exhibit features and facilities for families and those with special needs, along with a cohesive approach to wayfinding.
10. **Multi-modal Access**. Improve multi-modal accessibility and regional transportation to the Zoo, including the provision of alternative transportation options to reduce congestion and improve the circulation of vehicle traffic.
11. **Visual Appearance**. Improve the visual characteristics of the Zoo through architectural design, landscaping, lighting, pedestrian-oriented improvements, and incorporation of symbolic design, and create features that reflect architecture of animal habitat theme areas and the Zoo history.
12. **Capital Improvements**. Identify and provide for implementation of capital improvements and investments that are needed to ensure that future demands on the Zoo's infrastructure will be successfully accommodated.
13. **Environmental Sustainability**. Incorporate sustainable design practices into Zoo facilities to ensure resource conservation consistent with City's Sustainable City pLAn, One Water L.A. Plan, and Resilient Los Angeles Plan.
14. **Operational Excellence**. Provide facilities and resources that allow Zoo staff and emergency responders to safely and efficiently support Zoo operations, including safe and quick vehicle access to all parts of the Zoo, as well as ensuring the Zoo is

clean, well-maintained, supportive of the organizational culture, and provides high quality customer service.

4.2 SUMMARY OF POTENTIALLY SIGNIFICANT AND UNAVOIDABLE IMPACTS

The proposed Project would result in significant and unavoidable impacts to aesthetics and visual resources (refer to Section 3.1, *Aesthetics and Visual Resources*) and transportation (refer to Section 3.15, *Transportation*).

Aesthetics and Visual Resources

As described further in Section 3.1, *Aesthetics and Visual Resources*, implementation of the Project would also result in major changes in the visual character and urban wilderness identity of the Griffith Park Zoo Drive gateway area due to construction of one potential design option for intersection improvements, a grade-change interchange the at Zoo Drive/Western Heritage Way intersection. These intersection improvements outside of the Zoo property would be inconsistent with Conservation Element, Framework Element, 1998 Hollywood Community Plan, and Griffith Park Vision Plan goals and policies to retain viewsheds of topography and natural resources (e.g., trees) and preserve the urban wilderness identity of Griffith Park.

Installation of the grade interchange improvements would require those accessing Zoo Drive or Western Heritage Way use an on- and off-ramp system with those proceeding along Zoo Drive and Western Heritage Way passing under a new bridge. This envisioned infrastructure project would dramatically change this travel corridor, from what currently feels visually like a "country road" with a 4-way stop to a concrete interchange with dramatic terrain modification. The improvement would increase travel speeds and separate travelers from view of the Zoo Drive gateway and the Zoo entrance, potentially diminishing the sense of arrival currently afforded by the local roadways, open sky views, and iconic Zoo entrance sign setback from the street.

The proposed multi-story parking structure would be highly visible from Zoo Drive, Western Heritage Way, and the main entrance to the Zoo (see Key Viewing Locations [KVLs] 3 and 4). This structure would substantially change the character of the area fronting the Zoo from an open, tree-lined surface parking lot with clear views of vegetated hillsides to a large parking structure dominating and blocking views of surrounding features. In combination with the proposed roadway improvements described above, this area's visual character would be significantly transformed.

Mitigation measure (MM) VIS-1 and **MM VIS-2** are required to ensure the Zoo Drive/Western Heritage Way intersection improvements and the multi-story parking structure would be designed to maximize visual compatibility with Griffith Park and the Zoo entrance and retain the visual character of the park. In addition, these measures would minimize the size, bulk, and scale of those improvements and ensure creativity in design and

landscaping. However, even with these required mitigation measures, the visual changes proposed would be substantial and would not be consistent with the visual character of the Zoo Drive gateway and existing Zoo entrance. Even with implementation of mitigation for the proposed parking structure, the mitigated structure would remain large and tall, conflicting with existing visual character. Similarly, intersection improvements such as a grade-change interchange or a roundabout would substantially alter the Zoo Drive gateway, creating a more urban, engineered intersection with increased speeds, which would continue to substantially change the visual character of the area. Therefore, with mitigation, impacts to visual character of the public realm outside the Zoo from the Project would be *significant and unavoidable*.

Transportation

As described in Section 3.15, *Transportation*, operation of the proposed Project would increase daily visitor VMT by approximately 58,324 VMT on Saturdays and Sundays, for a total of 139,287 daily visitor VMT by 2040. At buildout of the Vision Plan in 2040, daily employee VMT is projected to increase by up to 11,785 on Mondays and Fridays for a total of 24,436 daily employee VMT. Based on the City's established VMT threshold, which stipulates that any net increase in VMT for event centers and regional-serving entertainment venues would be significant, the projected increase in Project VMT would be *significant and unavoidable*.

Implementation of the Transportation Demand Management (TDM) Program (**MM T-2**) would reduce Zoo visitor and employee VMT. With implementation of **MM T-2**, employee VMT reductions would be measured against existing employee VMT. Implementation **MM T-2** would reduce Zoo employee VMT by a minimum of 10 percent. With implementation of **MM T-2**, daily employee VMT would be reduced to approximately 19,775 on Mondays and Fridays (the highest employee VMT days of the week) in 2030 and 21,992 in 2040 on Mondays and Fridays. This would result in a net increase from existing (2019) conditions of approximately 7,124 in 2030 and 9,341 in 2040. The TDM Program would also reduce daily visitor VMT below the projected 139,287 VMT in 2040. There would be no quantified reduction afforded in **MM T-2** for visitor VMT and instead, the TDM Program required under **MM T-2** includes a reasonable range of measures which the Zoo could feasibly implement and includes a VMT reduction performance monitoring and reporting element established with the goal of reducing visitor VMT to the maximum extent feasible. While **MM T-2** would substantially reduce Project VMT, based on the City's established VMT threshold, which stipulates that any net increase in VMT for event centers and regional-serving entertainment venues would be significant, the projected increase in Project VMT would be *significant and unavoidable*.

4.3 CEQA ALTERNATIVES CONSIDERED

State CEQA Guidelines Section 15126.6(f) notes that the range of alternatives evaluated in an EIR are governed by rule of reason and must include only those alternatives that are necessary

to permit a reasoned choice. Further, identified alternatives should avoid or substantially lessen the project's significant effects, and, of these, only the alternatives that the Lead Agency determines could feasibly attain most of the basic objectives of the project should be analyzed in detail.

4.3.1 No Project Alternative

In accordance with CEQA, the EIR includes a No Project Alternative. Under the No Project Alternative, the Vision Plan would not be adopted, comprehensive Zoo-wide expansion and redevelopment would not occur, and the Zoo would continue to operate as is, with maintenance, repair, and improvement of facilities occurring as needed. Improvements to Zoo Drive, the intersection of Zoo Drive/Western Heritage Way, realignment of Crystal Springs Drive, and the Zoo's parking lot would not occur. Similarly, resident animals would continue to live in some outdated animal spaces. The Angela Collier project, however, would continue to be implemented, which would expand the Zoo's capacity to support special events. As demonstrated by constant levels of annual visitation despite expansion of Zoo nighttime and special events, annual attendance at the Zoo would remain constant.

Under the No Project Alternative, the Zoo would continue existing operations, with continued maintenance and repair construction projects occurring on an as needed basis. The No Project Alternative does not mean "no future growth or land uses," but rather that targeted Zoo improvements or expansion would occur under the existing 1998 Zoo Master Plan. As stated in CEQA Guidelines Section 15126.6(e)(3)(A), "typically this is a situation where other projects initiated under the existing plan will continue while the new plan is developed. Thus, the projected impacts of the proposed plan or alternative plans would be compared to the impacts that would occur under the existing plan." The existing 1998 Master Plan, however, is nearly built out, with little room for growth or improvement available under the existing plan. Therefore, the No Project Alternative would not involve any major improvements or large-scale expansions.

In the absence of any new guidance plan, any development under the No Project Alternative would occur on an as-needed basis subject to existing regulations and permitting requirements. Development that may occur at the Zoo under the No Project Alternative would not increase the capacity of the Zoo or substantially affect annual visitation. For example, the existing Rainforest of the Americas was constructed in 2014 with construction activities limited to a central portion of the Zoo and operations continuing around the construction site. Annual visitation to the Zoo remained relatively constant following completion of Rainforest of the Americas.

Access to the Zoo entrance would continue to be provided by Zoo Drive from the north and west and via Crystal Springs Drive from the south. Parking would continue to be provided within the Zoo's parking lots for visitors and employees and no expansion in parking capacity would occur.

4.3.2 Vision Plan Alternatives Considered

During the preparation of this EIR, the City considered several alternatives for the Vision Plan. The goal for developing possible alternative scenarios under CEQA is to identify other means to attain the Project objectives (Section 2.3.2) while lessening or avoiding potentially significant environmental impacts caused by adopting the Vision Plan. Based on initial consideration, the following represent a reasonable range of alternatives to the proposed Project and have been identified by the City for consideration in this EIR.

1. **Reduced Project Alternative** – This alternative would include a major reconfiguration of the proposed Vision Plan land use plan to avoid development of the existing undeveloped hillsides that contain sensitive biological resources, including areas in the California and Africa planning areas. Reconfiguration of the Vision Plan land use plan to avoid these areas would emphasize redevelopment of the existing developed areas of the Zoo within the lower elevation areas of the canyon, resulting in a smaller development footprint (Figure 4-1). Similar to the Project, all Zoo development would occur within the existing Zoo property with offsite roadway improvements to Zoo Drive/Western Heritage Way. The proposed onsite parking structure would also be reduced in size, bulk, and scale, or eliminated altogether depending on the commensurate reduction in project visitation that would occur with a reduced physical capacity within the Zoo and fewer attractions and special events. In doing so, this alternative would reduce environmental impacts identified in the EIR associated with the development and loss of natural resources within these areas (e.g., visual resources, native habitat, sensitive plant species, protected trees). All other elements of the proposed Project not associated with development of these areas would continue to be implemented under this alternative.
2. **Multi-modal Transportation Alternative** – The Multi-modal Transportation Alternative would incorporate all the measures identified as part of the Zoo TDM Program (**MM T-2**) with additional measures necessary to achieve a goal of reducing employee and visitor VMT by 15 percent by 2040. These TDM measures would become elements or programs of the Vision Plan. In doing so, this alternative would reduce environmental impacts identified in the EIR associated with vehicle miles traveled (VMT) and policy consistency with regional and local transportation plans (see Section 3.15, *Transportation*). This alternative would retain all improvements proposed under the Project as they are described in Section 2.3, *Proposed Project* with the exception of the onsite parking structure, which would be reduced in size, bulk, and scale in response to increase multi-modal transportation options for Zoo visitors and employees, which would commensurately reduce parking demand. All proposed Zoo improvements would be implemented on the same 20-year timeframe.
3. **Alternative Use (Reuse/Conservation Center)** – Under this alternative, the Zoo would be redeveloped to function more as a conservation/research facility that would expand upon and emphasize animal conservation, recovery, education, and research.

This may include redevelopment of the Zoo property to provide animal conservation or species recovery programs, like the California Condor and Southern Mountain Yellow-legged Frog recovery programs currently established at the Zoo, as opposed to a visitor-serving uses. The Zoo would no longer function primarily as a visitor-serving attraction and would no longer be open to the public. Visitation would be limited to support the conservation program, which would substantially reduce visitors and employee trips and demands for utilities and public services. Visitor-serving uses (e.g., attractions, restaurants, retail shops) would either be transitioned to accommodate animal conservation programs or be demolished, and many resident animals would likely be moved to other zoos.

4. **Relocated Zoo** – Under this alternative, the Zoo would be relocated and developed under a revised Vision Plan at an alternative site. The alternate site would be at least 142 acres and located within the City. Potential sites include the 160-acre Wildlife Waystation in the San Fernando Valley or vacant sites near Cabrillo Marine Aquarium, both of which are AZA accredited facilities. The City and Zoo would emphasize selection of a site located within a Transit Priority Areas (TPAs) to improve multi-modal access to the Zoo. Following relocation of the Zoo, the existing Zoo would be demolished and redeveloped as a public park within Griffith Park or serve as a restoration/nature demonstration site connecting with other publicly accessible land within Griffith Park.
5. **Golf Course Expansion** – Under this alternative, the Vision Plan would be amended to maintain the proposed increase in visitor-serving and animal habitat areas, but would relocate the California and Africa planning area development currently proposed within the existing undeveloped hillside areas to the adjacent Wilson & Harding Golf Course property. This alternative would require the vacation of portions or all of the Wilson & Harding Golf Course and relocation of existing Zoo back-of-house and administration facilities currently located along the Zoo's southern property boundary to support the expansion of visitor-serving and animal habitat areas onto the golf course property.
6. **Adjusted Phasing Alternative** –Under this alternative, the Vision Plan would be implemented through a series of phases organized differently than that described in Section 2.4.1, *Phasing & Implementation*. Specifically, this alternative would defer construction of the proposed Africa planning area improvements to Phase 4, and construction of the parking structure would be advanced to Phase 3 (refer to Table 4-1). This would extend the duration of Phase 3 by one year (completion in 2031) and push the timing of each long-term phase back by a similar duration. In addition, the revised phasing schedule would become consolidated, eliminating the need for Phase 7, and implementing the Vision Plan in only six phases. This revised phasing approach would result in a distribution of visitation growth and construction impacts until later stages of Project implementation and may also address the need for a proposed parking structure earlier in Vision Plan implementation where exceedance of available

parking spaces is anticipated (refer to Section 3.15.6, *Non-CEQA Transportation Planning Issues*).

Though the alternative would adjust the timing of impacts, it would not change the overall implementation schedule or change the components of each phase, and specific improvements proposed under this alternative would remain the same as proposed under the Project. This extension would reduce construction intensity, meter out the projected visitation growth, and allow for the Zoo to benefit from longer-term regional transit and TDM improvements in the City (e.g., expanded rail and transit services to the Zoo vicinity) to better serve projected growth in visitation and employment.

Table 4-1. Adjusted Phasing Alternative – Phasing Summary

Phase	Project Components
Phases 1-3: Near Term Project Components	
1 (2020 - 2025)	• Zoo Entry • California Planning Area • Circulation and Parking
2 (2025 - 2027)	• Asia Planning Area • Rainforest Planning Area • Nature Play Park
3 (2027 - 2031)	• Service Areas • Parking Structure
Phases 4-7: Long-term Project Components	
4 (2031 – 2033)	• Africa Planning Area • World Aviary Planning Area • Bird Show and Animal Programs • Service Areas (Condor West)
5 (2034 – 2037)	• Islands
6 (2037 – 2040)	• Administration Building

4.4 SCREENING OF ALTERNATIVES CONSIDERED

As required by the CEQA Guidelines, the selection of alternatives for the proposed Project included a screening process to determine which alternatives could avoid or reduce significant effects and also feasibly meet the Project objectives. Because of the *significant and unavoidable* impacts to aesthetics and transportation, these screening criteria were important for determining the feasibility of alternatives. The screening process for identifying viable Project alternatives included consideration of an alternative's ability to meet the Project objectives (see Table 4-2 and 4-3).

Table 4-2. Screening of No Project Alternative and Alternatives 1 - 3

Objective	Alternative			
	No Project	**1. Reduced Project**	**2. Multi-modal Transportation**	**3. Alternative Use**
1. Animal Welfare and Care	No. While the Zoo's facilities currently meet AZA standards, the No Project Alternative would not allow the Zoo to develop state-of-the-art animal spaces and animal care facilities that exceed animal care standards or upgrade Zoo service centers and veterinary facilities.	Yes. The Reduced Project Alternative would include the improvements and upgrades to animal care and animal health facilities and Zoo service centers, similar but not to the extent of the proposed Project. Reduced area for animal habitats and exhibits would reduce the extent to which animal welfare and care facilities would be available within the Zoo.	Yes. The Multi-modal Transportation Alternative would include the same improvements and upgrades to animal care and animal health facilities and Zoo service centers as the proposed Project.	Yes. Alternative Use of the Project site as a Conservation Center would support expansion of and focus on animal conservation, recovery, education, and research.
2. Increase and Modernize Zoo Exhibit Space	No. The No Project Alternative would not allow the Zoo to increase and modernize Zoo animal space.	Partially. The Reduced Project Alternative would increase and modernize Zoo animal space as compared to existing conditions; however, this alternative would not include the expanded exhibits within the California and Africa planning areas proposed under the Project, which would limit expansion within Zoo property.	Yes. The Multi-modal Transportation Alternative would increase and modernize Zoo animal space to the same extent as the proposed Project.	No. This alternative would eliminate the need for animal facilities for public viewing.
3. Conservation	No. The No Project Alternative would not allow the Zoo to develop conservation facilities and programs.	Partially. This alternative would develop conservation facilities and programs to advance the Zoo's conservation efforts; however, due to the smaller	Yes. This alternative would develop conservation facilities and programs to advance the Zoo's conservation efforts, similar to the proposed Project.	Yes. Alternative Use of the Project site as a Conservation Center would support expansion of and focus on animal

Table 4-2. Screening of No Project Alternative and Alternatives 1 – 3 (Continued)

Objective	Alternative			
	No Project	**1. Reduced Project**	**2. Multi-modal Transportation**	**3. Alternative Use**
		increase in visitation, this alternative would likely not generate as much revenue as the proposed Project. Therefore, this alternative may not be able to support expansion of conservation efforts to the same extent as the proposed Project.		conservation, recovery, education, and research.
4. Learning and Education	No. The No Project Alternative would not allow the Zoo to develop educational facilities and programs to the extent that would otherwise be feasible with improved facilities proposed by the Vision Plan.	Partially. Due to the smaller increase in Zoo animal space and educational facilities under this alternative, the Zoo would not be able to support the same level of public engagement efforts and education.	Yes. The Multi-modal Transportation Alternative would advance public engagement efforts and expand education opportunities for the Zoo Magnet Center students, similar to the proposed Project.	Yes. Alternative Use of the Project site as a Conservation Center would support expansion of and focus on animal conservation, recovery, education, and research.
5. Immersive Visitor Experience	No. The No Project Alternative would not allow the Zoo to improve animal facilities and visitor spaces beyond maintenance and targeted upgrades consistent with the 1998 Zoo Master Plan.	Partially. The Reduced Project Alternative would enhance Zoo facilities and operations over existing conditions but would not utilize all of the Zoo property to maximize immersive experiences for visitors.	Yes. The Multi-modal Transportation Alternative would develop the same immersive visitor spaces as the proposed Project.	No. This alternative would eliminate the need for visitor spaces.
6. World Class Destination	No. The No Project Alternative would not allow the Zoo to enhance Zoo facilities and operations given limitations of existing Zoo design and the age of many facilities.	Yes. While this alternative would involve a smaller footprint than the Project, revitalized and redeveloped facilities would retain all features in the proposed Vision Plan, supporting a	Yes. This alternative would enhance Zoo facilities and operations to increase Zoo visitation, create a world class destination, and generate revenue to support Zoo operations, capital	No. Alternative Use of the site as a Conservation Center would eliminate visitor spaces and would not be a destination for visitors.

Table 4-2. Screening of No Project Alternative and Alternatives 1 – 3 (Continued)

Objective	Alternative			
	No Project	**1. Reduced Project**	**2. Multi-modal Transportation**	**3. Alternative Use**
		transformation into a world class destination.	improvements, and conservation programs.	
7. Visitor-serving Amenities	No. The No Project Alternative would not allow the Zoo to provide new visitor-serving amenities as the Zoo is built-out under the 1998 Zoo Master Plan.	Partially. The Reduced Project Alternative would provide new visitor-serving amenities, such as the proposed Zoo entry shops and plaza. However, visitor-serving amenities would be limited due to the reduced footprint.	Yes. The Multi-modal Transportation Alternative would develop the same visitor-serving amenities as the Project and would provide additional visitor-serving transit services and bicycle connections to the Zoo.	No. This alternative would not provide visitor-serving amenities.
8. Efficient Circulation System	No. The No Project Alternative would not allow the Zoo to develop an internal loop circulation system and the current inefficiencies would persist.	No. Since the Reduced Project Alternative would not support development of Condor Canyon, the Zoo would not be able to develop an internal loop circulation system and current issues with wayfinding and efficiency would persist.	Yes. The Multi-modal Transportation Alternative would develop an internal loop circulation system, similar to the proposed Project.	No. There would be no need for an efficient internal loop circulation system without visitor attendance.
9. Accessibility	No. The No Project Alternative would not allow the Zoo to provide ADA pathways, alternative travel options, or features and facilities for those with special needs and the current deficiencies would persist.	Partially. This alternative would include some improvements to the secondary/exhibit pathways and would implement the proposed Zoo aerial tram to improve access; however, a funicular would not be developed and many of the Zoo's pathways would remain inaccessible for ADA visitors.	Yes. The Multi-modal Transportation Alternative would provide ADA pathways, alternative travel options, and features and facilities for those with special needs, similar to the proposed Project.	No. There would be no need for visitor accessibility and alternative travel options within the site without visitor attendance.
10. Multi-Modal Access	No. The No Project Alternative would not	Yes. The Reduced Project Alternative would provide	Yes. The Multi-modal Transportation Alternative	No. Alternative Use of the Project site would not

Table 4-2. Screening of No Project Alternative and Alternatives 1 – 3 (Continued)

Objective	Alternative			
	No Project	**1. Reduced Project**	**2. Multi-modal Transportation**	**3. Alternative Use**
	support improvements to multi-modal accessibility and regional transportation to the Zoo.	bicycle racks and would consolidate bus stops to provide streamlined transit access to the Zoo from the Parkline Shuttle and Metro Line 96, similar to the proposed Project.	would be focused on providing multi-modal opportunities and incentivizing alternative transportation to the Zoo.	support improvements to multi-modal accessibility and regional transportation to the Project site because visitation would be substantially reduced compared to the Project.
11. Visual Appearance	No. The No Project Alternative would not improve the visual characteristics of the Zoo, as no substantial changes or improvements would occur.	Partially. The Reduced Project Alternative would include some design improvements and landscaping, primarily in previously developed areas of the Zoo. However, this alternative would not include full development of the California planning area, including the hilltop Yosemite lodge-style California Visitor Center and active hillside vineyards, with sweeping views of the Zoo.	Yes. This alternative would include development of the California Visitor Center, reconstruction of the Treetops roof spires, and other architectural and thematic design elements throughout the Zoo, similar to the Project.	No. Alternative Use of the site as a Conservation Center would not support improvements to the visual appearance of the site.
12. Capital Improvements	No. No substantial capital improvements would occur under the No Project Alternative, only maintenance and limited upgrades under the 1998 Zoo Master Plan.	Yes. The Reduced Project Alternative would implement similar capital improvements as the proposed Project, including the stormwater management system, new utility lines, solar PV systems, and lighting systems.	Yes. The Multi-modal Transportation Alternative would implement the same capital improvements as the proposed Project, including the stormwater management system, new utility lines, solar PV systems, and lighting systems.	Partially. Capital improvements may be necessary for continued use of the site with an Alternative Use, but not to the extent required to accommodate future growth under the proposed Project.

Table 4-2. Screening of No Project Alternative and Alternatives 1 – 3 (Continued)

Objective	Alternative			
	No Project	**1. Reduced Project**	**2. Multi-modal Transportation**	**3. Alternative Use**
13. Environmental Sustainability	No. The No Project Alternative would not allow the Zoo to incorporate widespread sustainable design practices into Zoo facilities, rather upgrades would be limited to maintenance projects for existing facilities under the 1998 Zoo Master Plan.	Yes. The Reduced Project Alternative implement sustainable design features, such as the stormwater management system, solar PV systems, and resource efficient infrastructure (e.g., low-flow fixtures, automatic lighting, etc.), similar to the Project.	Yes. The Multi-modal Transportation Alternative would implement sustainable design features, such as the stormwater management system, solar PV systems, and resource efficient infrastructure (e.g., low-flow fixtures, automatic lighting, etc.).	Partially. Alternative Use of the site as a Conservation Center may support incorporation of sustainable design practices, but it is unlikely this alternative would implement the stormwater collection system proposed under the Project for collection of stormwater for reuse as irrigation water, and other sustainability features.
14. Operational Excellence	No. The No Project Alternative would not allow the Zoo to provide facilities and resources that support operational excellence.	Partially. This alternative would support Zoo operations with some upgraded facilities and secondary/exhibit pathways; however, this alternative would not include an internal loop circulation system to improve emergency access and would not utilize underdeveloped portions of the Zoo campus to enhance overall Zoo design and operations.	Yes. Similar to the Project, this alternative would provide facilities and resources that allow efficient and safe Zoo operations and high-quality customer service.	No. Alternative Use of the site as a Conservation Center would not support Zoo operations or provision of high-quality customer service.
Project Objectives Met	None	1, 6, 10, 12, and 13	All	1, 3, and 4
Carried Forward for Analysis	Yes (Mandatory)	Yes	Yes	No

Table 4-3. Screening of Alternatives 4 - 6

Objective	Alternative		
	4. Relocated Zoo	**5. Golf Course Expansion**	**6. Adjusted Phasing**
1. Animal Welfare and Care	Partially. Relocation of the Zoo would require relocation of all Zoo animal residents, some of which would not or could not be easily transported.	Yes. The Golf Course Expansion would improve and upgrade animal care and animal health facilities and Zoo service centers, similar to the proposed Project.	Yes. The Adjusted Phasing Alternative would include the same improvements and upgrades to animal care and animal health facilities and Zoo service centers as the proposed Project.
2. Increase and Modernize Zoo Exhibit Space	No. Rather than increasing and modernizing existing Zoo exhibit space, this alternative would support development of all new exhibit space.	Yes. The Golf Course Expansion would increase and modernize Zoo exhibit space to the same extent as the proposed Project.	Yes. The Adjusted Phasing Alternative would increase and modernize Zoo exhibit space to the same extent as the proposed Project.
3. Conservation	Partially. This alternative would develop conservation facilities and programs to advance the Zoo's conservation efforts in a different location; however, Griffith Park provides a natural and quiet setting in support of the Zoo's conservation programs and a new location may not provide an ideal setting.	Yes. This alternative would develop conservation facilities and programs to advance the Zoo's conservation efforts, similar to the proposed Project.	Yes. This alternative would develop conservation facilities and programs to advance the Zoo's conservation efforts, similar to the proposed Project.
4. Learning and Education	No. While the Zoo would continue to support education programs, the Relocated Zoo would not be in proximity to the Zoo Magnet Center and therefore, would not support integration with school facilities to the same extent as the proposed Project.	Yes. The Golf Course Expansion would advance public learning engagement efforts and expand education opportunities for the Zoo Magnet Center students, similar to the proposed Project.	Yes. The Adjusted Phasing Alternative would advance public engagement and education and expand education opportunities for the Zoo Magnet Center students, similar to the proposed Project.
5. Immersive Visitor Experience	Yes. The Relocated Zoo would develop similar immersive visitor spaces as the proposed Project.	Yes. The Golf Course Expansion would develop similar immersive visitor spaces as the proposed Project.	Yes. The Adjusted Phasing Alternative would develop the same immersive visitor spaces as the proposed Project.
6. World Class Destination	Partially. The Relocated Zoo would not enhance existing Zoo facilities	Yes. This alternative would enhance Zoo facilities and operations to	Yes. This alternative would enhance Zoo facilities and operations to

Table 4-3. Screening of Alternative and Alternatives 4 – 6 (Continued)

Objective	Alternative		
	4. Relocated Zoo	**5. Golf Course Expansion**	**6. Adjusted Phasing**
	to create a World Class Destination, since the site would require all new facilities; however, the new location would be developed to become a world class destination to achieve this objective.	increase Zoo visitation, create an immersive destination, and generate revenue to support Zoo operations, capital improvements, and conservation programs.	increase Zoo visitation, create an immersive destination, and generate revenue to support Zoo operations, capital improvements, and conservation programs.
7. Visitor-serving Amenities	Yes. The Relocated Zoo would develop visitor-serving amenities, such as food and retail establishments, a range of resting and gathering places, and special event centers at the new site.	Partially. The Golf Course Expansion would develop the same visitor-serving amenities as the Project; however, some of these facilities would be relocated south of the existing Zoo boundary, which may create challenges in providing accessible and convenient amenities.	Yes. The Adjusted Phasing Alternative would develop the same visitor-serving amenities as the Project.
8. Efficient Circulation System	Yes. The Relocated Zoo would develop an intuitive internal loop circulation system at the new site.	No. Since the Golf Course Expansion would not support development of Condor Canyon and would create a new Zoo area that would not efficiently connect to the existing Zoo, the Zoo would not be able to develop an internal loop circulation system.	Yes. The Adjusted Phasing Alternative would develop an internal loop circulation system, similar to the proposed Project.
9. Accessibility	Yes. The Relocated Zoo would provide ADA pathways, alternative travel options, and features and facilities for those with special needs at the new site.	Partially. This alternative would include some improvements to the secondary/exhibit pathways and would implement the proposed Zoo aerial tram; however, a funicular would not be developed and many of the Zoo's pathways would remain inaccessible for ADA visitors.	Yes. The Adjusted Phasing Alternative would provide ADA pathways, alternative travel options, and features and facilities for those with special needs, similar to the proposed Project.
10. Multi-Modal Access	No. There are no contiguous 133-acre sites that could accommodate a Zoo along any existing transit corridor or near an existing transit	Yes. The Golf Course Expansion would provide bicycle racks and would consolidate bus stops to provide streamlined transit access	Yes. The Adjusted Phasing Alternative would provide bicycle racks and would consolidate bus stops to provide streamlined transit

Table 4-3. Screening of Alternative and Alternatives 4 – 6 (Continued)

Objective	Alternative		
	4. Relocated Zoo	**5. Golf Course Expansion**	**6. Adjusted Phasing**
	hub. Any 133-acre site that could accommodate the Project would on an isolated site and would not support multi-modal access.	to the Zoo from the Parkline Shuttle and Metro Line 96, similar to the proposed Project.	access to the Zoo from the Parkline Shuttle and Metro Line 96, similar to the proposed Project.
11. Visual Appearance	No. The Relocated Zoo would not reflect the Zoo's history and would not include full development of the California planning area, including the hilltop Yosemite lodge-style California Visitor Center and active hillside vineyards, with sweeping views of the Zoo, as proposed under the Project.	Partially. The Golf Course Expansion would include some design improvements and landscaping, primarily in previously developed areas of the Zoo. However, this alternative would not include full development of the California planning area, including the hilltop Yosemite lodge-style California Visitor Center and active hillside vineyards, with sweeping views of the Zoo.	Yes. This alternative would include development of the California Visitor Center, reconstruction of the Treetops roof spires, and other architectural and thematic design elements throughout the Zoo.
12. Capital Improvements	Partially. This alternative would implement the capital improvements at the new site, including new utility lines, solar PV systems, and lighting systems. However, the relocated site may not be able to accommodate installation of the stormwater management system.	Yes. The Golf Course Expansion would implement the same capital improvements as the proposed Project, including the stormwater management system, new utility lines, solar PV systems, and lighting systems.	Yes. The Adjusted Phasing Alternative would implement the same capital improvements as the proposed Project, including the stormwater management system, new utility lines, solar PV systems, and lighting systems.
13. Environmental Sustainability	No. There is no guarantee that the Relocated Zoo could install the stormwater management system for irrigation reuse onsite. The new site would not include recycled water connections to the LAGWRP. Additionally, the new site would not benefit from the planned 163,000-sf solar improvements at	Yes. The Golf Course Expansion would implement sustainable design features, such as the stormwater management system, solar PV systems, and resource efficient infrastructure (e.g., low-flow fixtures, automatic lighting, etc.).	Yes. The Adjusted Phasing Alternative would implement sustainable design features, such as the stormwater management system, solar PV systems, and resource efficient infrastructure (e.g., low-flow fixtures, automatic lighting, etc.).

Table 4-3. Screening of Alternative and Alternatives 4 – 6 (Continued)

Objective	Alternative		
	4. Relocated Zoo	**5. Golf Course Expansion**	**6. Adjusted Phasing**
	the Zoo's north parking lot and entry.		
14. Operational Excellence	Yes. This alternative would provide facilities and resources that allow efficient and safe Zoo operations and high-quality customer service at the new site.	Partially. This alternative would support Zoo operations with some upgraded facilities and secondary/exhibit pathways; however, this alternative would not include an internal loop circulation system to improve emergency access and would not utilize underdeveloped portions of the Zoo campus.	Yes. Similar to the Project, this alternative would provide facilities and resources that allow efficient and safe Zoo operations and high-quality customer service.
Project Objectives Met	5, 7-9, and 14	1-6, 10, 12, and 13	All
Carried Forward for Analysis	No	No	No

4.4.1 Alternatives Considered and Discarded

As discussed above, CEQA Section 15126.6(c) requires that an EIR disclose alternatives that were considered and rejected and provide a brief explanation as to why such alternatives were not fully considered in the EIR. The following alternatives were considered but eliminated from further analysis by the City due to infeasibility or inconsistency with primary Project objectives (refer to Tables 4-2 and 4-3). Detailed discussion regarding why each of these alternatives were discarded is provided below.

Alternative Use (Reuse/Conservation Center)

This alternative would avoid or substantially lessen the magnitude of impacts associated with the visitor-oriented nature of the Project (e.g., transportation, utility demand). However, through the transition of use of the site away from the exhibition of animals and visitor-serving uses, this alternative would not achieve a majority of the Project objectives. For instance, though the alternative could likely better achieve Project Objectives No. 3 and 4 relating to animal conservation and education programs, the other Project objectives rely largely upon improving the visitor experience and welfare of all the animals of the Zoo. Further, without the revenue provided by annual visitation, the feasibility of the maintaining the 133-acre Zoo property as solely a conservation facility would be questionable. Due to infeasibility and inconsistency with the Project objectives, this alternative has been discarded from further consideration.

Relocated Zoo

Relocation of the Zoo to an alternative site within the City has the potential to result in reduced impacts to the natural environment if the site were host to fewer or less extensive natural resources (e.g., protected trees, sensitive habitat). In addition, if a site could be acquired and developed within a TPA, a greater level of multi-modal access to the Zoo could be accomplished, thereby reducing the Zoo's transportation and vehicle miles traveled (VMT) related impacts. It is possible that relocation and development of a new property could feasibly accomplish most of the Project objectives; however, development of a new site, demolition and restoration of the existing Zoo property, and redevelopment or restoration of the site would result in substantially greater impacts associated with construction activities (e.g., air emissions, construction noise, construction traffic). Further, it is recognized that relocation of the Zoo to an alternative, vacant site within the City may not be feasible due to a lack of large, contiguous, undeveloped properties within the City. As such, relocation of the Zoo may require the acquisition and redevelopment of an existing developed property; however, the ability of the City to acquire such a property would remain uncertain and may be cost prohibitive for the Zoo. Due to infeasibility and a potential increase in environmental impacts, this alternative has been discarded from further consideration.

Golf Course Expansion

Expansion of Zoo visitor serving and animal habitat spaces into lower elevation areas of the Zoo and adjacent areas of the Wilson & Harding Golf Course would reduce or avoid impacts

associated with the development of hillside areas of the existing Zoo property under the Project where sensitive biological resources are located (e.g., extensive coast live oak woodland, the endangered Nevin's barberry). While detailed biological surveys have not been conducted of golf course property, it is unlikely that sensitive biological resources which could be impacted by such an expansion exist within the areas of the golf course adjacent to the Zoo property since these areas are highly disturbed and maintained as turf and course facilities and landscaping. Expansion into the adjacent areas of the Wilson & Harding Golf Course may also reduce impacts associated to views across the Zoo property from nearby trails within Griffith Park by avoiding development of proposed larger features (e.g., the California Visitor Center) from higher elevation areas along the hillsides. However, expansion of the Zoo property would adversely affect operation of the Wilson & Harding Golf Course and presents other uncertainties with regard to the ability for the Zoo to acquire property from the Wilson & Harding Golf Course to support such an expansion. Additionally, this alternative would not lessen significant impacts to aesthetics and transportation compared to the Project. Aesthetic changes may be more visible to the public given this more open setting of the golf course and proximity to local roadways. Transportation impacts would be similar to the Project, including total VMT since the Zoo would expand as intended but into different areas in the Project vicinity. Due to infeasibility and potential increase in environmental impacts, this alternative has been discarded from further consideration.

Adjusted Phasing Alternative

Adjusting the phasing of Project implementation would result in the same overall Project impacts but the timing of when those impacts would occur would change compared to the Project. This would avoid potential impacts caused by near-term Project construction activities. For example, by postponing the construction of the Africa planning area until Phase 4, air quality would potentially benefit from improved engine efficiency and would likely result in fewer criteria pollutants than the Project for that phase; however, Phase 3 would involve development of the Zoo service centers and the multi-story parking structure, which would generate similar levels of construction emissions as the Project. Further, air quality is not a significant impact of the Project following mitigation (see Section 3.3, *Air Quality*). Significant impacts, including aesthetic changes and increases in VMT, would be similar to the Project under this alternative. All physical changes analyzed for the Project would also occur under this alternative, including development of structures visible from public roadways and trails (e.g., the parking structure, Treetops Terrace, and the California Visitor Center). While constructing the proposed parking structure during Phase 3, rather than Phase 7, would help alleviate parking demands on peak days earlier in the Project, the total VMT would remain unchanged, subject to mitigation, and would continue to exceed City VMT thresholds. This indicates that adjusting the phasing of Vision Plan implementation over its 20-year horizon would not change the significance of Project impacts. Though this alternative is feasible, there would be no substantial change to environmental impacts and this alternative has been discarded from further consideration.

4.5 ALTERNATIVES CONSIDERED AND ANALYZED IN THIS EIR

A reasonable range of alternatives with the potential to attain the basic objectives of the Project but avoid or substantially lessen significant impacts is analyzed below. Each alternative is discussed in relation to the Project objectives. Alternatives selected for analysis include:

- No Project Alternative
- Alternative 1 — Reduced Project Alternative (Alternative 1)
- Alternative 2 — Multi-modal Transportation Alternative (Alternative 2)

A description of environmental impacts under each alternative is also provided below. Table 4-4 provides a summary of the comparative impacts of each alternative to the Vision Plan.

Table 4-4. Impact Comparison of Alternatives to the Proposed Project

Environmental Resources	Proposed Project	No Project Alternative	Alternative 1 – Reduced Project Alternative	Alternative 2 – Multi-modal Transportation Alternative
Aesthetics and Visual Resources	Significant and Unavoidable	Less	Less	Less
Air Quality	Less than Significant with Mitigation	Less	Less	Less
Biological Resources	Less than Significant with Mitigation	Less	Less	Similar
Cultural and Tribal Cultural Resources	Less than Significant with Mitigation	Less	Similar	Similar
Energy	Less than Significant	Less	Slightly Less	Less
Urban Forestry Resources	Less than Significant with Mitigation	Less	Less	Similar
Geology and Soils	Less than Significant	Less	Similar	Similar
Greenhouse Gases and Climate Change	Less than Significant	Similar	Slightly Less	Less
Hazards and Hazardous Materials	Less than Significant with Mitigation	Less	Similar	Similar
Hydrology and Water Quality	Less than Significant with Mitigation	Less	Similar	Similar

Table 4-4. Impact Comparison of Alternatives to the Proposed Project (Continued)

Environmental Resources	Proposed Project	No Project Alternative	Alternative 1 – Reduced Project Alternative	Alternative 2 – Multi-modal Transportation Alternative
Land Use and Planning	Less than Significant with Mitigation	Greater	Similar	Less
Noise and Vibration	Less than Significant with Mitigation	Less	Less	Similar
Public Services	Less than Significant with Mitigation	Similar	Similar	Similar
Recreation	Less than Significant	Greater	Similar	Less
Transportation	Significant and Unavoidable	Slightly Less	Slightly Less	Less
Utilities	Less than Significant with Mitigation	Less	Slightly Less	Similar
Wildfire	Less than Significant with Mitigation	Similar	Similar	Similar
Meet Project Objectives?	Yes	No	Partially Yes	Yes
Reduce Severity of Impacts?	No	Yes	Yes	Yes

4.5.1 No Project Alternative

Potential Impacts to Resource Areas

Under the No Project Alternative, a number of environmental impacts would be avoided or reduced compared to the proposed Project, although beneficial impacts to recreation from development of a new public park would not occur. Impacts to aesthetics and visual resources, air quality, biological resources, cultural and tribal cultural resources, noise, and transportation and circulation would be substantially less when compared to the Project, due to the absence of construction activities and lack of significant increase in annual visitation under the Project. Mitigation measures would not be necessary for these resource areas to avoid significant impacts under this alternative. However, the Zoo would not benefit from some of the improvements proposed under the Project, such as the improvement and expansion of space for animals, redevelopment of outdated exhibit structures (e.g., round houses), addition of parking, improvement of the Zoo's stormwater system for onsite reuse, expansion of solar PV systems onsite to offset Zoo energy demands, and improvement of offsite roadways. The following provides analysis of differences in impacts for all resources analyzed in this EIR for the Project.

Aesthetics and Visual Resources

Short-term temporary construction impacts and long-term permanent impacts to aesthetics and visual resources would be negligible under the No Project Alternative. Due to the absence of construction activities, the No Project Alternative would not result in the presence of large construction equipment and active construction sites at the Zoo. Additionally, the No Project Alternative would not introduce new tall features and development (e.g., Treetops Visitor Center, Zoo aerial tram, California Visitor Center, etc.), which have the potential to be visible from Griffith Park public trails such as Condor Trail or Skyline Trail, resulting in the potential to obstruct or alter existing scenic views or vistas. Further, the No Project Alternative would eliminate the need for a parking structure as proposed under the Project. Therefore, there would be no obstruction of views of the natural hillside to the west or disruption of the viewer experience for travelers entering or traversing Griffith Park. The No Project Alternative would not create a substantial adverse temporary or permanent change to distant views and would not diminish scenic views of or across the Zoo from the surrounding public trails in Griffith Park. As a result, no impacts to views of the Zoo would occur.

The No Project Alternative would not alter the existing vegetation or the Zoo's existing tree canopy, except for continuation of annual vegetation clearance for wildfire management around the Zoo's property line. The undeveloped hillsides within the proposed Project's California and Africa planning areas would remain undeveloped under the No Project Alternative. Therefore, this alternative would not create a change in visual character due to the development of the undeveloped hillsides. As there would be no change in the visual setting of the existing Zoo under this alternative, impacts to the visual character of Griffith Park would be less than the proposed Project.

The No Project Alternative would not result in an increase in the frequency and amount of lighting produced from the Project site associated with increased special events held at the Zoo. Lighting would not be introduced to the currently undeveloped hillside planned for the California and Africa planning areas under the Project. Similar to the proposed Project, the Zoo would remain shielded from direct views from the Griffith Observatory and Greek Theater, minimizing potential light spillover. Therefore, impacts to light and glare would be slightly less than the proposed Project.

Similar to existing conditions, future development within the Zoo would be gradually implemented on an as-needed basis, resulting in a built environment that does not share a consistent aesthetic or design. Without a Vision Plan to guide development of the Zoo and seek uniformity in the design of improvements, the visual design and aesthetic character of the Zoo's interior areas would remain inconsistent.

Air Quality

Under the No Project Alternative, air quality impacts would be negligible and substantially less than under the proposed Project. Due to the absence of construction activities, the No Project Alternative would not result in construction air emissions from the use of heavy

construction equipment. Further, since annual attendance at the Zoo would remain consistent with existing conditions, vehicle trips to the Zoo and associated annual VMT from visitors and employees would also remain constant. The No Project Alternative would not result in additional air emissions from increased vehicle trips to the Zoo. Therefore, construction and operational emissions under the No Project Alternative would be substantially less than under the proposed Project.

Biological Resources

Under the No Project Alternative, existing native vegetation communities and protected trees located primarily within the California and Africa planning areas would remain undeveloped, thereby reducing direct impacts to biological resources. However, the No Project Alternative would not guarantee preservation of these resources or avoidance of future impacts to biological resources due to annual vegetation clearance for wildfire management. As observed through biological resource investigations conducted for this EIR, current vegetation management practices result in continued loss of vegetation supporting native habitat and potential removal or disturbance of special status plant and animal species (e.g., Nevin's barberry and San Diego woodrat). For example, past vegetation clearance has resulted in cutting and removal of several black walnut trees, which are protected trees in the City. Under the proposed Project, with **MM WF-1**, a wildfire fuel management plan would be required and include the identification, mapping, and avoidance of sensitive species. Further, the No Project Alternative would not result in the potential enhancement or restoration of habitat within the Zoo (e.g., removal of non-native eucalyptus and replacement with native trees) and within Griffith Park resulting from implementation of mitigation associated with development of the undeveloped areas of the Zoo. Potential future limited improvements under the No Project Alternative also have potential to disturb trees and shrubs protected under the City's existing and proposed amended Tree Preservation Ordinance, but existing policy requiring application for tree removal permits and commensurate replacement under the ordinance would ensure impacts are appropriately mitigated. While biological impacts would not be avoided compared to the proposed Project, the extent of direct disturbance would be less than under the proposed Project.

Cultural and Tribal Cultural Resources

Impacts to historic resources under the No Project Alternative would remain the same as under the proposed Project as there are no designated or eligible historic resources present at the Zoo. Although no cultural resources are known to be present within the Project site, under the No Project Alternative, there would be limited potential for disturbance or damage to any potential unknown sites or human remains as no developed would occur within existing undeveloped areas. The Project site has been previously and extensively disturbed for the development of the existing Zoo. Development under the No Project Alternative would be limited to maintenance and improvements under the 1998 Zoo Master Plan, which would be confined to existing developed areas of the Zoo. Past construction and earthwork within

the canyon bottom and base of the hillsides within the Zoo likely disturbed any buried cultural resources. Therefore, limited development under the No Project Alternative would have less potential for impacts to cultural and tribal cultural resources than the Project.

Energy

Under the No Project Alternative, the Zoo's energy demands would remain similar to those described in Section 3.5.1, *Environmental Setting*. The No Project Alternative would not result in the temporary energy impacts from the short-term use of construction equipment. Transportation fuel consumption would be less than the Project as well both related to construction traffic and from long-term visitation since annual visitation would remain similar to existing conditions. This alternative would also not develop new buildings at the Zoo that would increase the existing operational energy demand. However, many of the existing buildings at the Zoo are outdated and do not operate in compliance with the most recent California Energy Code (California Code of Regulations [CCR] Title 24, Part 6) and Green Building Standard Code (CCR Title 24, Part 11), which indicates older buildings are not energy efficient. The No Project Alternative would not update existing buildings or construct new buildings that would comply with applicable state and local energy codes to ensure efficient energy use. Further, the No Project Alternative would not include installation of solar PV systems atop Zoo facilities to offset Zoo electricity demands. The No Project Alternative would also not upgrade the Zoo's stormwater management system to generate an onsite water source for irrigation, thereby reducing energy demands for water treatment and conveyance. Therefore, while overall energy consumption for the No Project Alternative would be less than the proposed Project, this alternative would eliminate beneficial impacts to energy use at the Zoo when compared to the proposed Project. Continued use of outdated facilities without onsite solar energy systems under this alternative would result wasteful and inefficient use of energy over time when compared to the proposed Project.

Urban Forestry Resources

Impacts to existing urban forest resources would be less than under the proposed Project. The existing lush contiguous canopies provided by hundreds of native and non-native trees located primarily within the California and Africa planning areas would remain undeveloped but subject to annual vegetation clearance for wildfire management (see also, *Biological Resources* above). Unlike the proposed Project, the No Project Alternative would not require the removal of native and non-native trees within the Zoo and parking lot. However, implementation of the No Project Alternative would not result in the potential enhancement or restoration of habitat within the Zoo property and Griffith Park resulting from implementation of mitigation (i.e., **MM UF-1**) associated with development of the undeveloped areas of the Zoo. Potential future limited improvement under the No Project Alternative has potential to disturb trees and shrubs protected under the City's existing and proposed amended Tree Preservation Ordinance, but existing policy requiring application for tree removal permits and commensurate replacement under the ordinance would ensure

impacts are appropriately mitigated. Compared to the proposed Project, the No Project Alternative would result in less impacts to the City's urban forest.

Geology and Soils

Under the No Project Alternative, the Zoo would continue to operate in a seismically active region where groundshaking would continue to present potential risks for Zoo facilities. Unlike the Project, this alternative would not involve extensive ground disturbance for new facilities, including blasting and excavation of Condor Canyon. Therefore, impacts to and from geologic and soil resources under the No Project Alternative would be less than under the proposed Project. Similar to the Project, existing policies and regulations would apply to any improvements made to the Zoo under the 1998 Zoo Master Plan to ensure appropriate measures such as preparation of site-specific geotechnical studies and development consistent with the California Building Code (CBC) are implemented to reduce impacts to and from geologic and soil resources. Therefore, geologic impacts would be less than under the proposed Project.

Greenhouse Gases and Climate Change

Under the No Project Alternative, short-term construction and long-term operational greenhouse gas (GHG) emissions would be substantially reduced when compared to the proposed Project. Unlike the Project, construction within the Zoo would entail maintenance, repair, and improvements to Zoo facilities on as-needed basis under the 1998 Zoo Master Plan. Large-scale demolition, grading, excavation, and vertical construction would not occur, including the substantial excavation that would be needed for Condor Canyon. As such, the construction emissions under the No Project Alternative would be less than the proposed Project. In terms of long-term GHG generation from Zoo operations, the No Project Alternative would not increase annual visitation and related vehicle trips to the Zoo, indicating that mobile GHG emissions would be less than the Project. However, this alternative would not redevelop outdated, energy inefficient buildings. Further, the No Project Alternative would not include installation of solar PV systems atop Zoo facilities to offset Zoo electricity demands. The No Project Alternative would also not upgrade the Zoo's stormwater management system to generate an onsite water source for irrigation, thereby reducing energy demands for water treatment and conveyance. As a result, it is reasonable to assume that GHG emissions associated with long-term operations would be greater than the proposed Project. With a decrease in construction GHG emissions and an increase in operational GHG emissions, it is estimated that Zoo GHG emissions under the No Project Alternative would be similar to the proposed Project.

Hazards and Hazardous Materials

Hazards and hazardous materials impacts from the No Project Alternative would be reduced when compared to the proposed Project. As described in Section 3.9.3, *Environmental Impact Analysis*, construction of the proposed Project would require transportation, use,

storage, and disposal of commercially available hazardous materials, such as vehicle fuels, oils, transmission fluids, and hydraulic fuels. Under the No Project Alternative, construction would be limited to maintenance, repairs, and improvements to existing facilities on an as-needed basis under the 1998 Zoo Master Plan. Routine transport, use, storage, and disposal of construction wastes and related hazardous materials would be limited compared to proposed Project construction activities. In operations, the Zoo would continue use, store, and dispose of hazardous materials, substances, and waste similar to existing conditions, as described in Section 3.9.1, *Environmental Setting*. Similar to the proposed Project, compliance with applicable regulations as well as oversight by the appropriate federal, state, and local agencies would minimize the risk of hazardous materials exposure during transport, use, storage, and disposal. While the risks of hazardous materials from construction would be reduced, the operational risks would be similar to the proposed Project with regard to the transport, use, storage, and disposal of hazardous materials.

Impacts associated with the disposal of hazardous wastes, such as asbestos-containing material (ACM), lead based paint (LBP), or mold, would be reduced under the No Project Alternative since no major demotion or redevelopment would occur. Rather, construction would be limited to building maintenance and improvements, which would reduce the risk of upset or release of these hazardous wastes. Similar to the proposed Project, hazardous materials encountered during demolition or construction activities would be disposed of in compliance with all pertinent regulations for the handling of such waste including SCAQMD Rule 1403 (asbestos) and CCR Title 8, Industrial Relations. Compared to the Project, impacts from potential release and exposure to ACM, LCP, and mold would be reduced compared to the Project.

Impacts associated with ground disturbing activities in proximity to known or potentially contaminated soils would be eliminated under the No Project Alternative. This alternative would not require soil disturbance in the vicinity of known past contamination or areas of potential contamination from underground storage tanks (USTs), including road improvements at Zoo Drive and Western Heritage Way or in the Zoo's southern parking lot. Similarly, the No Project Alternative would not implement improvements to the existing Zoo Construction Shop and Support area, which is considered a Recognized Environmental Condition (REC) and Vapor Encroachment Condition (VEC) due to the potential release of petroleum products to the subsurface from the onsite fueling dispensers, USTs, and associated piping. As such, this alternative would not have the potential to disturb potentially contaminated soil and hazardous vapors and there would be no adverse impacts from exposure to soil contamination. However, without the Project, Phase II environmental site assessment and needed cleanup of potential contaminated soils would also not occur, as required by **MM HAZ-1** for the Project.

Similar to the proposed Project, this alternative would not result in physical interference or impairment to implementation of an existing emergency and evacuation plan. Emergency response and access would continue to be guided by emergency preparedness procedures in

the event of an emergency and/or evacuation in accordance with the AZA Accreditation Standards and Related Policies. Similar to the Project, there would be no changes to designed public evacuation routes on I-5 and SR-134. Further, the Zoo would continue to comply with existing design standards and safety procedures for the safety of the Zoo's resident animals and animal caretakers.

As the No Project Alternative would not involve soil disturbance or construction, which have risks for upset of and exposure to hazardous materials, hazards impacts would be reduced compared to the proposed Project.

Hydrology and Water Quality

The No Project Alternative would not implement a 20-year plan of construction activities which could contribute to a violation of water quality standards or otherwise substantially degrade surface or groundwater qualities. Implementation of the No Project Alternative would not increase impervious surfaces at the Project site or pump groundwater. Therefore, this alternative would not substantially decrease groundwater supplies or interfere with groundwater recharge. No drainage patterns would be altered under the No Project Alternative; therefore, this alternative would not result in substantial erosion, increase the amount of runoff, or cause flooding. Surface water would continue to receive treatment prior to discharge to the Los Angeles River consistent with requirements of the Los Angeles Regional Water Quality Control Board (RWQCB). Further, this alternative would not result in inconsistency with regional water regulations or plans. As a result, there would be no change in site hydrology or water quality compared to the Project and impacts would be less than the proposed Project as there would be no ground disturbance or expansion of Zoo uses into undeveloped areas of the Zoo property. However, this alternative would not involve installation of the proposed comprehensive onsite stormwater management system to capture, treat, and reuse up to 35 million gallons of Zoo site runoff per year, substantially reducing the burden on the Zoo Wastewater Facility and improving water quality prior to treatment.

Land Use and Planning

The No Project Alternative would involve a continuation of existing operations, with maintenance, repairs, and improvements occurring on an as-needed basis consistent with the 1998 Zoo Master Plan. As such, this alternative would be consistent with existing regional and location plans and regulations, including the Southern California Association of Governments (SCAG) Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), Los Angeles General Plan, Hollywood Community Plan, L.A.'s Green New Deal, Griffith Park Vision Plan, and Los Angeles Municipal Code (LAMC). However, this alternative would not include the facility upgrades to improve energy efficiency, the installation of solar PV systems to offset Zoo electricity demand, or the comprehensive stormwater management system to collect, treat, and reuse up to 35 million gallons of water per year. As such, the No Project Alternative would not help the City implement the stormwater and recycled water reuse

objectives or the energy efficiency goals outlined in L.A.'s Green New Deal and the One Water LA 2040 Plan. As a result, this alternative would have greater land use and planning impacts than the Project.

Noise and Vibration

The No Project Alternative would retain the existing noise environment associated with noise and vibration. Noise impacts under the proposed Project are primarily associated with construction activities, increased special events, and increased traffic noise related to increased Zoo visitation. The No Project Alternative would involve only limited future construction activities on an as needed basis to maintain, repair, and improve Zoo facilities, similar to existing conditions. Construction and noise vibration would be minimal and substantially less than the Project. For example, the No Project Alternative would not require excavation and blasting for Condor Canyon. In terms of operations, annual attendance at the Zoo is expected to remain constant under the No Project Alternative, which would keep visitor and operational noise similar to existing conditions. Special events at the Zoo would continue within existing facilities such as the Angela Collier World of Birds Theater and the pending Angela Collier Gardens event space; however, implementation of the No Project Alternative would not include the three proposed visitor centers and other facilities that would allow for expanded special events during extended nighttime hours. With no increase in annual visitation and no expansion of Zoo hours or special events, this alternative would not increase roadway noise from increased vehicle trips. Therefore, noise and vibration impacts under the No Project Alternative would be less than the proposed Project.

Public Services

The No Project Alternative would not include residential development or generate new jobs and, therefore, would not create population growth in the area. Without an increase in service population, there would be no increased demand for services from the Los Angeles Fire Department (LAFD), Los Angeles Police Department (LAPD), or government or school facilities. As a result, this alternative would not result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered school facilities, the construction of which could cause significant environmental impacts, similar to the Project.

The Zoo's setting in a Very High Fire Hazard Severity Zone (FHSZ) and Zoo operations within structures that predate current California and Los Angeles Fire Code (LAFC) requirements includes risk of fire that would require response from the Los Angeles Fire Department (LAFD). Ongoing maintenance, repair, and improvement projects at the Zoo would continue to introduce potential ignition sources such as the use of heavy machinery and fuels, which could create the potential for sparking and exacerbate fire risk. However, construction activities are temporary in nature and do not create continuing elevated risks requiring fire protection and emergency medical service (EMS) response. Implementation of best management practices (BMPs) recommended within applicable Occupational Safety and

Health Administration, LAMC Fire Code, and CBC regulations would reduce risks associated with limited future Zoo construction projects under the No Project Alternative. As described further under *Wildfire* below, the No Project Alternative would not alter existing internal and external access roads within and surrounding the Zoo. Therefore, emergency access and response would be maintained similar to existing conditions. However, the No Project Alternative would not result in the wayfinding and looping internal circulation system designed around a Primary Path Loop as proposed by the Project, which is intended to facilitate more intuitive navigation of the Zoo and would assist with efficient evacuation and response in the event of an emergency.

Recreation

The No Project Alternative would not result in adverse impacts to recreational resources. Zoo maintenance and operations would continue within existing Zoo property with no changes in adjacent areas of Griffith Park or the Wilson Harding Golf Course. However, implementation of this alternative would not result in beneficial impacts associated with expansion of the visitor-serving areas of the Zoo, including the children's Nature Play Park, the proposed new public park adjacent to the Zoo's northern parking lot, and additional parking spaces that would be available to Griffith Park and Autry Museum of the American West visitors. Additionally, the No Project Alternative would not improve recreational value and opportunities provided by the Zoo associated with redevelopment and expansion of existing facilities and the construction of new facilities proposed under the Project. Therefore, this alternative would not provide the recreation improvements associated with the proposed Project and existing conditions would continue.

Transportation

The No Project Alternative would not generate new jobs or an increase in visitation at the Zoo; therefore, vehicle trips would remain similar to existing conditions as described in Section 3.15.1, *Environmental Setting*. As such, the No Project Alternative would not increase annual VMT for visitors and employees. Therefore, impacts related to VMT would be less than the Project based on the City's adopted net-zero VMT thresholds for regional attractions like the Zoo.

However, the No Project Alternative would not include the multi-modal improvements proposed by the Vision Plan, including expanded bicycle parking and relocation of the bus stop to facilitate more efficient ridership for the Griffith Parkline Shuttle and Metro Line 96. Further, without MM TRANS-2, the Zoo would not implement a comprehensive TDM program to substantially reduce employee and visitor vehicle trips to the Zoo, with no expansion of transit services and incentives for vanpools and carpools to reach the Zoo. Under this alternative, the Zoo would continue to operate with little to no use of transit or active modes of transportation and most Zoo trips would be vehicular. This would conflict with local and regional plans, including the RTP/SCS and Mobility Element, which prioritize multi-modal transportation opportunities. As such, the No Project Alternative would be less

consistent with transportation plans and policy and impacts related to transportation planning would be greater than the Project.

The No Project Alternative would not implement the intersection improvements at Zoo Drive/Western Heritage Way. Similarly, this alternative would not realign Western Heritage Way to border the outside perimeter of the Zoo's southern parking lot. Therefore, this alternative would not result in the beneficial impacts to vehicle congestion at this intersection and would not improve pedestrian safety for students and other pedestrians crossing Western Heritage Way. As such, impacts related to geometric hazards would be greater than the Project and the existing roadway configuration presents greater safety hazards than the proposed improvements included in the Project.

The No Project Alternative would not improve the Zoo's interior pedestrian pathways, which are current discontinuous and include many smaller loops, barriers, and dead ends. The intuitive circulation system designed around a Primary Path Loop proposed under the Project would not be constructed. ADA guests and families with strollers would continue to be limited in available routes due to steep grades and stairs, including at the Zoo Entry. The proposed Zoo aerial tram would not be installed to provide efficient movement across from the Zoo Entry to the Africa planning area. Further, the ground tram route would not be separated from the pedestrian pathways, which would continue to present safety and circulation issues for Zoo visitors. Under this alternative, wayfinding would continue to pose challenges to visitors with no Orientation Plaza connecting to the Primary Path Loop. Therefore, this alternative would not provide the safety improvements associated with the Project's proposed interior circulation system and existing conditions would continue.

Utilities

Under the No Project Alternative, annual visitation would remain constant. As a result, there would be no substantial increase in water demand or the generation of wastewater or solid waste. Similar to the Project, existing utility capacities would be adequate to continue to serve the Zoo, including the Los Angeles Glendale Water Reclamation Plant (LAGWRP) to treat wastewater, the Sunshine Canyon Landfill for solid waste disposal, and the Los Angeles Department of Water and Power (LADWP) for water supply. This alternative would not involve substantial construction, demolition, or soil disturbance, which would not generate solid waste or wastewater or create water demands. As a result, this alternative would have less utility impacts than the proposed Project.

However, the No Project Alternative would not implement utility and infrastructure improvements at the Zoo, including the stormwater collection system proposed under the Project, electricity upgrades with solar PV systems atop facility rooftops, and improved sewer and water lines to serve new facilities. The Zoo would continue to use existing water lines and sewer pipes to convey water and wastewater. Existing utility infrastructure at the Zoo was installed between 50 and 70 years ago, indicating that pipelines and conduits are approaching the end of their useful life, and most sewer and water pipes are operating at capacity. These

utilities are difficult to maintain and require relatively deep excavation for repair or replacement as they were installed deep underground and covered with extensive fill. The No Project Alternative would not result in the long-term operational benefits associated with the installation of new utility lines proposed under the Project and there would not be any infrastructure improvements that would reduce water consumption, maintenance, and resiliency.

Wildfire

The No Project Alternative would not alter the internal or external access roads at the Zoo. Therefore, this alternative would not result in short-term temporary internal rerouting and temporary closures during phased construction that may block evacuation routes or cause circuitous or inefficient evacuation, as well as limit firefighter access to internal areas of the Zoo. However, this alternative would also eliminate the long-term beneficial impact of creating more direct routes and improving the circulatory systems both within and surrounding the Zoo that would improve emergency response and access under the proposed Project.

The No Project Alternative would not increase in the total number of animals housed within the Zoo; therefore, this alternative would not result in increased impacts related to evacuating or sheltering individual animals under Zoo care. Similarly, this alternative would not support an expansion in visitation, maintaining the total and density of people in a designated Very High Fire Hazard Severity Zone (FHSZ). Therefore, the No Project alternative would result in reduced impacts to emergency evacuation and sheltering in place.

Similar to the proposed Project, ongoing maintenance, repair, and improvement that would occur at the Zoo would introduce new potential ignition sources in a Very High FHSZ such as the use of heavy machinery and fuels, which could create the potential for sparking and exacerbate fire risk. The No Project Alternative would not implement construction activities within undeveloped areas that currently support flammable native and non-native vegetation and are located on steep slopes adjacent to wildlands in Griffith Park. Similarly, this alternative would not add to construction-related fire ignition risks from potential blasting for Condor Canyon in the California planning area.

Unlike the proposed Project, the No Project Alternative would not involve removal of hundreds of unmaintained highly flammable eucalyptus trees, as well as over 13 acres of flammable native chaparral and up to 7 acres of oak woodland. Therefore, this alternative would not result in beneficial impacts related to the reduction of fire risk as proposed under the Project. However, annual vegetation removal associated with wildfire management would continue to occur, consistent with existing operations. As a result, the No Project Alternative would result in reduced impacts to the spread of wildfire.

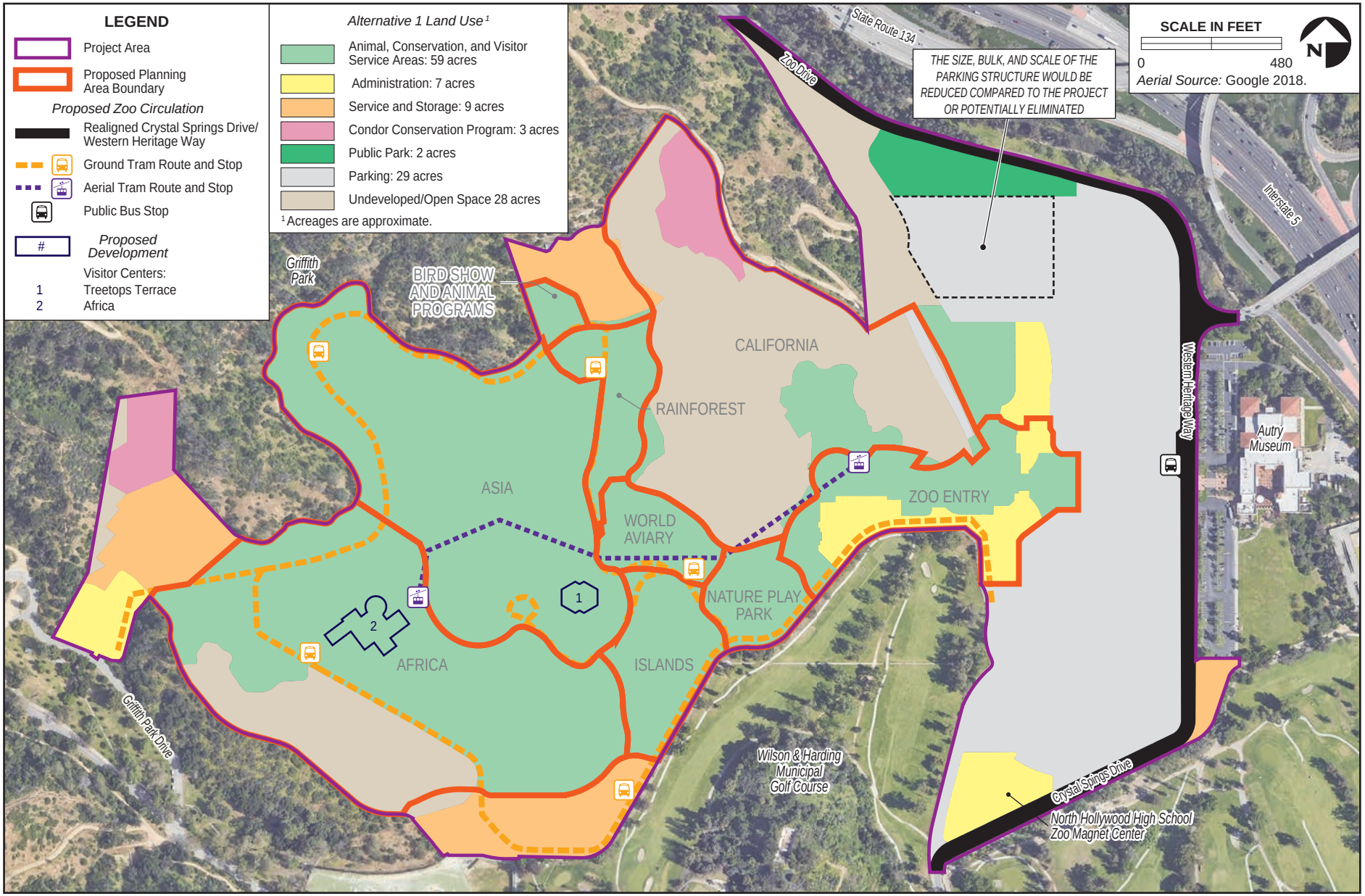
4.5.2 Alternative 1 – Reduced Project Alternative

The existing undeveloped hillsides in the California and Africa planning areas currently support sensitive biological resources, including native vegetation communities, habitat for several designated sensitive species, several occurrences of the federally and state-listed endangered Nevin's barberry, and hundreds of locally protected trees. To reduce impacts to these resources, the Reduced Project Alternative would redesign the Vision Plan's land use plan to avoid development on the Zoo's existing undeveloped hillside areas where these resources are present. In addition, the Reduced Project Alternative would protect views from public roadways such as Zoo Drive and Western Heritage Way by retaining surface parking in the northern parking lot and excluding or substantially reducing the size of a multi-story parking structure. Alternative 1 would reduce or avoid impacts compared to the Project but would fail to meet or would only partially meet several of the Project objectives.

The Reduced Project Alternative (Alternative 1) would guide long-term redevelopment and operations of the Zoo similar to the Project but under a revised land use plan that would avoid undeveloped hillsides containing sensitive biological resources.

Land Use Plan and Site Design

Alternative 1 would include a major reconfiguration of the proposed land use plan and conceptual plan to substantially avoid development of the existing undeveloped hillsides within the California and Africa planning areas. Redevelopment would occur within existing developed areas of the Zoo in the lower elevation areas of the canyon and some undeveloped areas that do not contain sensitive biological resources, resulting in a smaller development footprint (Figure 4-1). In doing so, Alternative 1 would reduce acreage dedicated to Animal, Conservation, and Visitor Service Areas by 20 acres, reduce Service and Storage Area by 1 acre, and increase Undeveloped/Open Space Areas by 21 acres. These reductions to Zoo uses would reduce the number of animal exhibits and the size and complexity of the exhibits and animal habitats. These changes would reduce environmental impacts associated with the development and loss of natural resources within these areas (e.g., native habitat, sensitive plant species, protected trees). Table 4-5 provides a summary of the land use and buildout assumptions proposed under Alternative 1. As presented therein, the overall area of new development under Alternative 1 would decrease by 21 acres as compared to the Project, substantially reducing direct and indirect disturbance of habitats and natural resources in these areas.



wood.

Los Angeles Zoo
Alternative 1 – Reduced Project Alternative

FIGURE 4-1

Table 4-5. Comparison of Land Uses Under Alternative 1 and Proposed Project

Land Use	Proposed Project (acres)	Alternative 1 (acres)	Difference (acres)
Animal Conservation & Visitor Service Areas	79.0	59.0	20.0
Administration	7.0	7.0	0.0
Service & Storage	10.0	9.0	1.0
Condor Conservation Program	3.0	3.0	0
Public Park	2.0	2.0	0.0
Undeveloped/Open Space	7.0	26.0	21.0
Parking	29.0	29.0	0
Realigned Crystal Springs Drive	5	5	0

Note: Land use acreages are approximate due to rounding based on GIS analysis.

By reducing the proposed footprint of the Zoo, this alternative would eliminate several Project features in the California and Africa planning areas, including the California Visitor Center and funicular, Condor Canyon, and the internal circulation system designed around a Primary Path Loop. All other elements of the proposed Project not associated with development of these areas would remain under this alternative, including the Africa Visitor Center, Treetops Visitor Center, Zoo aerial tram. These adjustments would also reduce the physical capacity of the Zoo for daytime visitation and for special events on evenings and weekends (e.g., campouts, galas, etc.), which in turn would commensurately reduce annual visitation compared to the Project. With reduced visitation, the Reduced Project Alternative would also substantially reduce the size of the multi-story parking structure and potentially exclude it; the proposed 2-acre public park would also be excluded if the parking structure is not constructed. Table 4-6 summarizes the components of the Project that would not be implemented under Alternative 1.

Table 4-6. Key Components of the Project Excluded and/or Substantially Reduced Under Alternative 1

Phase	Planning Area	Description of Excluded Improvements
1	California	• Excavation and construction of Condor Canyon • Grading and construction of new animal facilities and exhibits along the hillside area • Construction of the California Visitor Center and funicular • Installation of an active vineyard • Construction of new vehicle service entrance and service roads • Several animal habitats and exhibits and visitor amenities
3	Africa	• Grading and construction of Zoo uses along the hillside area • Several animal habitats and exhibits and visitor amenities
Phase	**Planning Area**	**Description of Potentially Excluded/Substantially Reduced**
7	Parking Structure*	• Excavation and grading • Construct multi-level parking structure • 2-acre public park, if multi-story parking structure is not constructed

* Parking structure would either be eliminated or substantially reduced in size based on reduced annual visitation.

Required discretionary actions and construction phasing would remain similar to the proposed Project (refer to Section 2.4.1, *Phasing & Implementation* and Section 2.5, *Required Actions and Approvals)*; however, the duration of Phases 1 and 3 construction would likely be reduced, with the timing of subsequent phases adjusted accordingly (see Tables 4-7 and 4-8 below).

Internal Zoo Circulation Network, Site Access, and Parking

Under Alternative 1, internal Zoo circulation for both visitors and Zoo service vehicles would be redesigned in response to land use plan changes described above (Figure 4-1). Notable adjustments include the loss of Condor Canyon, which would eliminate the feasibility of an internal circulation pathway around the Zoo designed around a Primary Path Loop. Under the Project, Condor Canyon would serve as a shared pedestrian, ADA accessible and stroller-friendly walkway, ground tram route, and service road that would support a simplified circulation network through the Zoo. Without Condor Canyon under Alternative 1, the Zoo's internal circulation system would remain similar to existing conditions, though some improvements to the secondary/exhibit pathway would continue to occur with redevelopment of animal exhibits. Further, a new vehicle service entrance and service road would not be developed along the ridgeline of the hillside areas in the California planning area, and service access to and around the Zoo would remain similar to existing conditions. Without the California Visitor Center, the proposed funicular would also be eliminated. The proposed alignment of the aerial tram route and location of tram stations/stops would remain similar to the Project, though the service road through the Africa planning area may not be able to remain separated from visitor pathways.

As discussed below, implementation of Alternative 1 would result in a smaller increase in annual Zoo attendance compared to the Project. This reduction in projected future annual attendance would reduce the demand for parking at the Zoo. As a result of reduced demand for parking, Alternative 1 would either include a reduced-size new parking structure within the Zoo's northern parking lot, with fewer stories, or potentially eliminate the parking structure. All other improvements to employee and visitor parking proposed under the Project would remain under Alternative 1.

Annual Attendance and Special Events

Under Alternative 1, annual attendance at the Zoo would be less than the proposed Project. Reduced annual visitation would result from the decrease in the expanded facilities and new attractions, which would drive visitation, particularly those associated with the California planning area. However, attendance would continue to rise under Alternative 1 compared to existing conditions due to the improvement, expansion, or replacement of existing features and attractions associated with other planning areas proposed under the Vision Plan. Though an economic analysis has not been prepared for Alternative 1, based on a reduction in approximately 20 acres of new visitor-serving uses and animal exhibits, total annual attendance anticipated under Alternative 1 would be approximately 2,646,984 persons by 2036, a reduction of approximately 12 percent compared to the Project.

Special events at the Zoo generate a substantial increase in annual attendance. For instance, the L.A. Zoo Lights event, which began in 2014, helped to achieve an increase in attendance by over 200,000 persons per year. Expansion of facilities and spaces that can accommodate new events, more frequent events, or larger events would contribute to increases in annual attendance under this alternative, despite the reduced amount of development. Like the Project, Alternative 1 would include comprehensive improvements to and expansion of visitor-serving facilities within existing developed areas of the Zoo, including special event spaces. These improvements would broaden Zoo attractions and support increased attendance and expansion of special events, though to a lesser extent than the Project. Improvements driving the expansion of special events under Alternative 1 include Treetops Visitor Center, the Africa Visitor Center, new restaurants, classrooms, and event spaces. These improvements would continue to be implemented under Alternative 1, as none of these improvements are proposed within the preserved hillside areas of the Project. However, Alternative 1 would exclude the California Visitor Center and outdoor special event spaces (e.g., campout meadows, picnic areas) in both the California and Africa planning areas. Exclusion of these amenities would limit the Zoo's ability to host special events and would diminish the attraction that California and Africa planning areas would otherwise provide under the Project. As a result, projected growth in annual visitation is expected to be reduced through phase development compared to the Project.

Table 4-7. Projected Growth at the Zoo Under Alternative 1

	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6	Phase 7
Operational Year	2022	2024	2026	2038	2030	2033	2036
Annual Attendance	1,743,800	1,958,288	2,379,320	2,564,907	2,646,984	2,646,984	2,646,984
% Change in Annual Attendance	*0.0%*	*12.3%*	*21.5%*	*7.8%*	*3.2%*	*0.0%*	*0.0%*
Visitor Origin *Resident* *Tourist*	 *85%* *15%*	 *85%* *15%*	 *80%* *20%*	 *80%* *20%*	 *80%* *20%*	 *80%* *20%*	 *80%* *20%*
Total Employees by Phase	570	640	778	839	866	866	866

Source: Draft Los Angeles Zoo Vision Plan ; AECOM 2017
Notes:
Baseline annual attendance = 1,743,800 (2017) per Draft Vision Plan
Phase 1 assumes no growth projected for Circulation/Parking improvements, Zoo Entry and Sea Lions (Phase 1 and 2 per the Draft Vision Plan).
Phase 2 assumes growth projected by the AECOM Financial Feasibility Study for Asia, Nature Play, and Rainforest (Phase 4 in the Draft Vision Plan).
Phase 3 assumes growth projections for Africa and southern service area (Phase 3 in Draft Vision Plan).
Phase 4 assumes growth projections for World Aviary (Phase 5 in Draft Vision Plan, and formerly included the Water exhibit, which was eliminated from the Project through EIR scoping).
Phase 5 assumes growth projections for Islands (Phase 6 in the Draft Vision Plan).
Phases 6 and 7 does not incite or facilitate attendance growth. If the parking structure is eliminated due to lack of need, Phase 7 would be eliminated.
Visitor Origin assumes uptick in tourism following implementation of Phase 2 and the 2028 Summer Olympics.
Baseline employment = 570 (2019)

Construction and Phasing

It is reasonable to assume that Alternative 1 would involve a shortened development program (17 years) occurring over seven phases of construction, reduced from 20 years under the Project due to the reduction in the amount and extent of development. Phases of Zoo development would occur sequentially. All phases would be guided by the Vision Plan's guiding principles (see Sections 2.3.2, *Project Objectives*, and Section 2.3.3, *Vision Plan Guiding Principles*). The timing and components of each of the near-term phases is presented in Table 4-8. As presented therein, due to the reduced amount of development proposed to occur within the California planning area, construction of associated improvements under Alternative 1 would take less time to implement. As such, the duration of Phase 1 would be reduced. Phase 2 would involve the same amount and type of improvements proposed under the Project and would be implemented over the same duration of time but would be initiated early due to the earlier completion date of Phase 1. Similar to Phase 1, improvements associated with the Africa planning area would be reduced due to the lack of required excavation and development of the hillside area and would occur over a slightly shorter time frame (2 years). Implementation of Phase 3 improvements would be initiated following completion of Phase 2. Overall,

implementation of the near-term improvements would occur between 2020 and 2026 for the purposes of this EIR analysis and consistent with the Draft Vision Plan.

Table 4-8. Alternative 1 Phases 1 - 3: Near-Term Project Components

Phase	Project Components
1	**Zoo Entry** • Excavation of outdated utility lines • Install utility trunk lines at the Zoo entry • Grade entry corridor at 5 percent slope or less • Construct a new gift shop, security and first aid center, public programming space, restaurant, and administration buildings • Construction main ground tram station • Expand Sea Life Cliffs exhibit • Install water collection lines for subsurface cisterns • Landscaping at entrance (e.g., citrus grove) and around buildings
	California Planning Area • Demolish existing buildings (e.g., Children's Zoo) • Construct California Condor Rescue Zone • Install lower terminal for aerial tram and associated infrastructure • Install new vegetation
	Circulation and Parking • Install signal at the intersection of I-5 and Western Heritage Way • Demolish Zoo planning trailer in the southern parking lot • Grading and reconfiguration of Crystal Springs Road • Repave southern parking lot and paint parking space lines to add 300 additional parking spaces
2	**Asia Planning Area** • Demolish existing outdated buildings and exhibits • Expand elephant exhibit space • Construct the Asian Forest with lagoon and exhibit island • Renovate and expand existing animal exhibits and habitats • Install new underwater viewing for tiger and gharial exhibits and new water elements • Grade and construct new pathways with neighboring exhibits (e.g., *Nature Play Park*) • Reconstruct Treetops Visitor Center into restaurant/event center • Install Splash Area • Install needed aerial tram infrastructure
	Rainforest Planning Area • Demolish existing Zoopendous Park • Construct a new Rainforest Interpretive Center • Construct expanded animal exhibits • Construct restaurant and restrooms • Install new vegetation, including dense rainforest trees
	Nature Play Park • Relocate and renovate existing natural play area • Construct a new restaurant with deck and terrace • Construct new restrooms

Table 4-8. Alternative 1 Phases 1 - 3: Near-Term Project Components (Continued)

Phase	Project Components
3	**Africa Planning Area** • Demolish existing outdated buildings and exhibits • Construct the Africa Visitor Center • Construct expanded animal exhibits and habitats • Install a manmade river • Install aerial tram
	Service Areas • Demolish outdated North America exhibit buildings • Construct a new service area • Paint 56 new employee parking spaces

Alternative 1 would involve the same long-term elements proposed under the Project (Table 4-9). These long-term improvements would be initiated following completion of Phase 3 improvements and implemented through Alternative 1's horizon (2036).

Table 4-9. Alternative 1 Phases 4 - 7: Long-term Project Components

Phase	Project Components
4	**World Aviary Planning Area** • Renovate the existing aviary to meet ADA requirements • Construct a new bird rearing complex • Construct new roads connecting to *Rainforest* and *California*
	Bird Show and Animal Programs • Renovate the existing amphitheater area with shade structures • Construct specialized animal care facilities • Renovate service space behind amphitheater for operations
	Service Areas (Condor West) • Construct two aviaries and one new conservation/classroom building at the Condor West exhibit • Create a new animal feed storage and commissary operations structure • Reconfigure truck access to the construction services area • Repaint 92 employee parking spaces
5	**Islands** • Renovate and expand the existing Australia House • Install new pathways and landscaping
6	**Administration Building** • Construct a new Administration Building
7*	**Parking Structure (if needed)** • Excavation and grading • Construct reduced size parking structure to accommodate reduced visitation • Install adjacent public park if the parking structure is also constructed

* Phase 7 would only occur if needed to accommodate parking demand from increased visitation. If not required, Phase 7 would not occur.

Similar to the Project, each phase under Alternative 1 would entail the same stages of construction, including: pre-construction design and permitting; demolition and grading; site preparation (including installation of utilities and stormwater infrastructure); construction; architectural coatings/finishing; and final landscaping. Each phase would also require temporary relocation of Zoo animals displaced during construction (see Section 2.2.3, *Existing Zoo Operations* for the Zoo's Animal Welfare Best Management Practices). Building construction, paving, and architectural coating activities would occur within each phase, sequentially. All construction Best Management Practices proposed or required under the Project would continue to be implemented under Alternative 1.

Due the reduced amount of construction proposed under Alternative 1, the amount and intensity of grading activities would be substantially reduced compared to the Project. Most notably, Alternative 1 would not involve blasting and extensive cut of soils associated with Condor Canyon improvements, reducing the anticipated volume of cut and fill material necessary under Alternative 1 by at least 74,000 cubic yards (cy) (Table 4-10). Similarly, the maximum depth of ground disturbance would be reduced. All infrastructure improvements and building construction activities would continue to be implemented as described for the Project (refer to discussion of *Infrastructure Improvements* and *Building Construction* in Section 2.4.2, *Construction Activities*).

Table 4-10. Alternative 1 Grading Estimates by Phase

Phase	Cut (cy)	Fill (cy)	Export/Import (cy)
1	0	0	0
2	0	0	0
3	0	10,000	10,000 (import/stockpile)
4-7	0	38,000	38,000 (import/stockpile)
Grading Total	0	48,000	48,000 (net import)

Potential Impacts to Resources

Aesthetics and Visual Resources

VIS-1: Would the project have a substantial adverse effect on a scenic vista?

Impacts to scenic resources onsite would decrease under this alternative as a result of reduced development on visible hillsides and ridgelines in the California and Africa planning areas. This alternative would not include the ridgetop California Visitor Center and funicular, the excavation of Condor Canyon, or the hillside animal exhibit spaces and picnic areas on hillsides in the Africa planning area. Avoiding development in these areas would maintain existing distant view from trails in Griffith Park such as Condor Trail or Skyline Trail. During construction, these areas would be retained in their vegetated and undeveloped conditions with mature native and non-native trees, shrubs, and grasses. No grading or excavation would occur, avoiding visible geological modifications, and no construction equipment or activities would be visible within the undeveloped hillsides in both California and Africa planning areas.

As a result, Alternative 1 would reduce the visual impact to public views from Griffith Park trails. Similar to the Project, however, the Skyline, Condor, and North Trails provide views over the Zoo from various locations, but future development within the Zoo's interior would not be easily visible due to the dense tree canopy. Therefore, while the visual impact would be reduced under Alternative 1, the reduction would be slight.

Similar to the Project, Alternative 1 would include taller structures such as the two remaining proposed visitor centers and the aerial tram, which would extend above the urban forest canopy within the Zoo, adding structural features not currently visible from surrounding areas. For example, the Treetops Terrace Visitor Center would reconstruct the iconic spires that are intended to be highly visible as a wayfinding beacon. These changes would manifest in the Asia and Africa planning areas. Further, similar to the Project, each phase of development would involve varying degrees of vegetation removal and replanting. During construction of a Project phase, vegetation would be modified or removed to clear areas for new development of animal environment, visitor-serving, and Zoo facility spaces. In this way, the Project would incrementally and temporarily affect the visual quality of the Zoo's urban forest as viewed from scenic vistas. However, replanting and restoration would ensure that the long-term visual impacts related to the tree canopy and vegetation are avoided.

Similar to the Project, Alternative 1 would not substantially adversely affect scenic vistas or views from trails in Griffith Park. Despite the addition of several taller structures or features, such as the reconstructed Treetops Visitor Center and the aerial tram and associated towers, existing distant views of Griffith Park or urban environment from surrounding trails would not be substantially altered or intruded into. Proposed structures would blend into the Zoo topography and urban forest landscape and would not substantially intrude into or interrupt more distant scenic vistas. Because these scenic vistas are more distant and higher in elevation than the Zoo, obstruction or interference of views by proposed development would be minimal, and scenic vistas of distant prominent features would not be substantially altered. With the reduction in development on undeveloped hillsides and ridgelines, Alternative 1 would further reduce this impact. Therefore, similar to the Project, Alternative 1 would have a *less than significant* impact on existing scenic views and vistas.

VIS-2: Would the project conflict with applicable zoning and other regulations governing scenic quality?

Impacts under this alternative would reduce potential significant impacts to scenic policy consistency as compared to the Project. This alternative would substantially avoid development of the existing undeveloped hillsides within the California and Africa planning areas, including the ridgetop California Visitor Center and funicular, Condor Canyon, and hillside exhibit and visitor spaces. Thus, this alternative would substantially reduce the tree removal and grading activities and associated views of construction equipment and bare hillsides. Likewise, this alternative would maintain the existing topography and general circulation system of the existing Zoo. However, similar to the Project, this alternative would continue to change the existing visual character of the interior of the Zoo, particularly through

substantial short-term vegetation removal and modifications to the urban forest canopy and grading, along with long-term transformation of the Zoo's facilities and layout. Similar to the proposed Project, **MM UF-1** and **MM UF-2** would mitigate impacts related to tree removal.

Alternative 1 would substantially reduce impacts to the existing visual character of the area fronting the Zoo, including the Zoo Drive gateway to Griffith Park. Alternative 1 would likely reduce the need for parking and, therefore, the size, bulk, and scale of the parking structure would be reduced or eliminated when compared to the proposed Project, although the exact size and design is not known at this time. With a reduced-size parking structure (or no parking structure), these visual changes would be substantially less impactful compared to the Project. If required and not eliminated, the reduced-size parking structure would be subject to **MM VIS-2** to reduce visibility and screen the parking structure from view from public roadways, thereby reducing the effect on visual character compared to the Project.

Alternative 1 would install only traffic signals at the Zoo Drive/Western Heritage Way intersection, rather than the potential roundabout or below-grade crossing analyzed under the proposed Project. While this alternative would continue to require signalization of the Zoo Drive/Western Heritage Way intersection and realignment of Crystal Springs Drive, these roadway improvements would not substantially alter the existing character of this area with implementation of **MM VIS-1**, which would ensure roadway design is sensitive to the Griffith Park setting and designed to maintain the existing character. Therefore, Alternative 1 would not modify the existing visual character of the Zoo Drive gateway to Griffith Park or detract from the urban wilderness identity of the park. Further, implementation of the intersection improvements proposed under Alternative 1 (i.e., traffic signals) would not affect views of the topography or natural resources across Griffith Park and would be consistent with the Conservation Element, Framework Element, 1988 Hollywood Community Plan, and Griffith Park Vision Plan. Therefore, impacts to consistency with applicable zoning and regulations governing scenic quality would be reduced compared to the Project and *less than significant with mitigation*.

VIS-3:	Would the project create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?

Similar to the Project, Alternative 1 would result in an increase in the frequency and amount of lighting produced from the Project site associated with increased special events held at the Zoo. The Zoo would also remain shielded from direct views from the Griffith Observatory, Greek Theater, and other nighttime uses within Griffith Park, minimizing potential light spillover to affect sensitive receptors. However, under Alternative 1, new lighting would not be introduced to the currently undeveloped hillsides in the California and Africa planning areas under the Project, which would reduce the overall light generation and potential for nighttime light visibility.

As Alternative 1 would not involve the development atop undeveloped hillsides within the Project site, no structures, which may be constructed or designed with reflective surfaces (e.g.,

large windows, polished surfaces), would be visible from trails in the vicinity of the Project site in Griffith Park. However, similar to the proposed Project, the glare generated from the gondolas of the proposed Zoo aerial tram could create a nuisance and distract from the scenic views of the Los Angeles Basin from these areas. There are no residential or other uses in the vicinity of the Project site that are considered sensitive to light or glare, and these features would only be visible in the distance from public trails and viewpoints within Griffith Park. Similar to the proposed Project, Alternative 1 would require implementation of **MM VIS-3**, which would require the Zoo utilize aerial tram gondolas that would have matte finishing and earth tone colors to blend with the landscape and reduce or eliminate glare. In addition, the measure would require all glass features of the gondolas utilize non-reflective glass or film covers to reduce reflectivity. With implementation of this mitigation measure, Alternative 1 impacts from generation of glare would be similar to the Project and *less than significant with mitigation*.

Air Quality

AQ-1: Would the proposed Project conflict with or obstruct implementation of the applicable air quality plan?

Under Alternative 1, emissions from grading, excavation, and building construction activities would be reduced compared to the Project. The total area of new development within the Zoo would be reduced by approximately 21 acres primarily atop the hillsides of the California and Africa planning areas. In particular, Alternative 1 would not include excavation and construction of Condor Canyon, which would substantially reduce construction emissions from heavy equipment and potentially blasting, including diesel emissions and fugitive dust. Alternative 1 would also either eliminate or substantially reduce the size of the proposed parking structure, further reduce construction emissions. As a result, construction emissions for CO, VOCs, NO_x, particulate matter (PM_{10} and $PM_{2.5}$), and SO_x would be reduced compared to the proposed Project. While emissions would be reduced under Alternative 1, **MM AQ-1**, which would require that all diesel-powered construction equipment with engines greater than 50 horsepower (hp) shall meet, at a minimum, Tier 4 Final emissions standards, would still be required to reduce NOx emissions from off-road equipment during construction to less than significant levels. Further, similar to the Project, construction activities associated with Alternative 1 would not introduce population or employment growth to the SCAG region and would have no significant impact related to underlying assumptions factored into the AQMP inventories. The mitigated emissions would not have the potential to conflict with or obstruct implementation of the 2016 Air Quality Management Plan (AQMP) by exacerbating air quality violations or delaying attainment of the air quality standards.

Operation of Alternative 1 would result in reduced vehicle trips and VMT associated with reduced annual visitation and new jobs when compared to the Project. The projected reduction in VMT would reduce air pollutant emissions as compared to the proposed Project. In particular, Alternative 1 would have the potential to reduce visitor and employee VMT by

up to 12 percent less than projected VMT levels under the proposed Project (see also, *Transportation* for Alternative 1 below). Similar to the Project, the incremental change in operational emissions with implementation of long-term improvements would not exceed any applicable SCAQMD mass daily threshold of significance. Operation of Alternative 1 would not have the potential to exacerbate air quality violations in the SCAB or possibly delay attainment of the air quality standards as set forth in the 2016 AQMP. Furthermore, operation of Alternative 1 implementation would not conflict with land use policies promulgated by SCAQMD and SCAG, similar to the Project.

Similar to the Project, Alternative 1 would not generate construction or operation emissions that exceed regional thresholds and would not conflict with or obstruct the AQMP or other applicable air quality plan. Therefore, Alternative 1 impacts would be similar to the Project and *less than significant with mitigation*.

AQ-2:	Would the proposed Project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

Although Alternative 1 would generate reduced construction emissions as compared to the proposed Project, without mitigation this alternative would generate emissions of NO_X, an O_3 precursor, in excess of the applicable SCAQMD regional mass daily threshold. Similar to the proposed Project, mitigated emissions of pollutants generated by construction activities would not generate emissions of pollutants exceeding project-level significance thresholds. Implementation of **MM AQ-1** would ensure that maximum daily NOx emissions generated by construction of the proposed Project would not result in a significant increase in emissions of O_3 precursors or particulate matter at either the regional or local assessment scale. Therefore, impacts related to cumulatively considerable net increases in nonattainment pollutants would be *less than significant with mitigation*, similar to the Project.

Although operation of Alternative 1 would increase VMT and corresponding emissions, as well as emissions from sources located on the Project site over existing conditions, the reduced scope of this alternative would result in reduced operational emissions compared to the Project. The incremental increases in daily air pollutant emissions during all stages of operations throughout Alternative 1 improvements would remain below applicable SCAQMD mass daily thresholds of significance. In accordance with SCAQMD guidance, operational emissions of O_3 precursors and particulate matter would be below project-level thresholds and would not result in a cumulatively considerable net increase of any criteria pollutants for which Los Angeles County is currently designated in nonattainment. Therefore, operational impacts to air quality related to cumulatively considerable emissions of nonattainment pollutants would be less than the Project and *less than significant*.

AQ-3: Would the proposed Project expose sensitive receptors to substantial pollutant concentrations?

The sensitive receptors with greatest susceptibility to air quality impacts from implementation of Alternative 1 would be visitors and employees of the Zoo, as well as receptors at the Zoo Magnet Center located in the southern parking lot on the Project site. There are no residential receptors in the Zoo vicinity. Similar to the proposed Project, sources of pollutant emissions involved in construction activities under Alternative 1 would at times be near Zoo visitors and employees, as Zoo would operate throughout implementation of the Vision Plan. Alternative 1 components that would be implemented in the immediate vicinity of the Zoo Magnet Center are the circulation and parking improvements and Zoo Entry renovation in Phase 1. Due to the slight decrease in the duration and extent of construction activities under Alternative 1, this alternative would generate slightly less toxic air contaminants (TACs) that would affect nearby sensitive receptors. Similar to the proposed Project, at no time during construction of Alternative 1 would maximum daily emissions from sources located on the site meet or exceed applicable localized significance thresholds (LST) screening values (refer to Section 3.2, *Air Quality*). Furthermore, implementation of **MM AQ-1** would substantially reduce onsite emissions of NO_X and diesel particulate matter from off-road equipment by requiring the use of construction equipment that meets Tier 4 Final emissions standards. Implementation of **MM AQ-1** and compliance with SCAQMD BMPs would ensure that Alternative 1 construction would not expose sensitive receptors to substantial pollutant concentrations. Further, construction activities would be conducted in accordance with the California Code of Regulations related to lead and asbestos exposure in the event that materials potentially containing these contaminants are encountered during demolition or renovation activities. Therefore, Alternative 1 impacts related to sensitive receptor exposure to construction emissions would be less than the Project and *less than significant with mitigation*.

After construction associated with each phase of Alternative 1 is complete and the heavy equipment is removed from the Project site, the operational emissions sources on the Project site would be similar to existing conditions. There would be no substantial stationary source of air pollutant emissions associated with operation of Alternative 1. Minor increases in landscaped and building areas would primarily produce incremental increases in VOC, NO_X, and CO emissions from maintenance sources and consumer products use that would be spread throughout the 142-acre Project site. Operation of Alternative 1 would not result in a land use change or alteration to the site that would place sensitive receptors in closer proximity to substantial sources of air pollutant emissions. As previously described, the reduced development footprint under Alternative 1 would significantly reduce visitor and employee VMT and associated air pollutant emissions as compared to projected VMT under the proposed Project. Therefore, operational impacts related to exposure of sensitive receptors to substantial pollutant concentrations would be similar to the Project and *less than significant*.

Air pollutant emissions generated by construction may also be disruptive to Zoo animals. Captive animal species may have a unique sensitivity to the air quality setting of an urban environment. The Zoo is dedicated to the health and welfare of all its animals. Zookeepers and animal caretakers are trained in the monitoring of the Zoo's animals and implement measures appropriate for each individual species to ensure their safety and welfare in accordance with the AZA accreditation and the Animal Welfare Act (AWA), which governs the care, handling, and transport of zoo animals. As the Zoo has done in the past during construction of prior improvements, measures to protect these animals may include their temporary relocation away from construction activities, closure of exhibits, or even the transfer of animals to other zoos. Similar to the proposed Project, accommodations specific to each animal would be developed during the planning process for each phase and details would be included in final construction plans. With continued management of each species of animal exhibited or rehabilitated at the Zoo and required compliance with the AWA, there would be no adverse effects on Zoo animals from air pollutant emissions generated during construction of Alternative 1.

AQ-4:	Would the proposed Project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Similar to the Project, Alternative 1 would result in similar temporary, construction-related odors as those described for the proposed Project; however, the duration of exposure to these odors would be slightly reduced. Therefore, air quality impacts related to construction odors and dust would be less than the Project and *less than significant*.

As described for the proposed Project, operational odors under this alternative would be associated animal habitats. Due to the reduced scope of expansion of animal exhibits and enclosures, Alternative 1 implementation would generate an incrementally reduced source of odors as compared to the proposed Project. The Zoo would continue to engage in composting for green waste and herbivore animal wastes in Griffith Park. Similar to the proposed Project, Alternative 1 implementation would not place sensitive receptors in closer proximity to sources of odors or other emissions that could create nuisance conditions. Therefore, impacts related to other emissions would be similar to the Project and *less than significant*.

Biological Resources

BIO-1:	Would the Project result in the loss of individuals, or the reduction of existing habitat, of a state or federal listed endangered, threatened, rare, protected, or candidate species, or a Species of Special Concern or federally listed critical habitat?

Alternative 1 would substantially reduce impacts to biological resources compared to the Project. This alternative would avoid development of sensitive biological resources in the undeveloped hillsides within 21 acres of the proposed California and Africa planning areas. Thus, this alternative would substantially reduce required onsite construction grading and

disturbance compared to the Project. Alternative 1 would protect up to 21 acres of native vegetation communities with sensitive plant species and hundreds of native and non-native trees. Reduced development in the California planning area would minimize impacts to laurel sumac shrubland, Nevin's Barberry, and City-protected oaks that would occur under the Project. Elimination of the Africa planning area would substantially reduce impacts to coast live oak woodland and Southern California black walnut trees in this area as compared to the proposed Project. However, similar to the Project, construction under Alternative 1 could result in indirect impacts to special-status wildlife species associated with noise and light. These species could abandon habitats and move into adjacent areas in the vicinity (e.g., Griffith Park), increasing competition for available resources in those areas. This could result in indirect impacts to and the loss of additional special-status wildlife species outside of the Project site, including sensitive species that may not be able to survive with increased competition.

Since Alternative 1 would still construct new development within undeveloped areas at the base of the hillsides, Alternative 1 would require implementation of **MM BIO-1** through **MM BIO-4** to reduce impacts to special-status plant species and protected biological resources. These measures would require protection or restoration of native plant communities and special-status species to the maximum extent feasible through pre-construction surveys, fencing, capture, relocation, and replanting. Further, with implementation of **MM BIO-2** and **MM WF-1**, adverse impacts to biological resources as a result of installation and maintenance of vegetation clearance from fuel breaks would be reduced through maximum avoidance of native vegetation and appropriate restoration offsite. Alternative 1 would have substantially fewer impacts to biological resources, and implementation of these measures would ensure impacts are *less than significant with mitigation*.

BIO-2:	Would the proposed Project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

By avoiding development of hillsides that contain sensitive biological resources, Alternative 1 would protect approximately 19.8 acres of laurel sumac shrubland and adjacent eucalyptus/mixed woodland within the California planning area, as compared to 3 acres of undeveloped area under the proposed Project. Alternative 1 would preserve an additional 5.6 acres of undeveloped open space within the Africa planning area, including vegetation communities such as coast live oak woodlands, non-native grassland, and adjacent eucalyptus/mixed woodlands. Protection of these vegetation communities would substantially retain habitat connectivity within the Zoo and adjacent natural habitats in Griffith Park and the Los Angeles River, as compared to the Project. Implementation of mitigation measures as described under Section 3.4, *Biological Resources*, would further reduce potential impacts to sensitive and protected species and natural habitats onsite. Implementation of **MM BIO-1**, **MM BIO-2**, **MM BIO-4**, and **MM BIO-5** would require the

implementation of construction BMPs and a Worker Environmental Awareness Program (WEAP) to reduce construction-related impacts to special-status bird species to the maximum extent feasible. These measures would delineate vegetation communities and area of disturbance associated with proposed development plans by phase and preserve or replace affected vegetation communities and sensitive species at appropriate ratios. Implementation of **MM UF-1**, requiring preservation, relocation, or replacement of native tree species onsite or at an appropriate offsite location within Griffith Park, and **MM UF-2**, requiring the Zoo implement a tree and urban canopy restoration plan, would also serve to reduce impacts associated with the loss of roosting habitat by ensuring suitable roosting habitat is retained onsite or created or improved offsite through planting of native trees. Therefore, impacts to Impacts to wildlife movement would be less than the Project and *less than significant with mitigation.*

BIO-3: Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Alternative 1 would substantially reduce impacts to native vegetation communities and native trees due to the reduced scope of development, primarily on the undeveloped hillsides within the Zoo. However, development at the base of the hillsides would still result in the disturbance or removal of several protected tree species. Disturbance, alteration, or removal of trees would result in the loss or damage of locally protected plant species within coast live oak woodland and laurel sumac shrubland communities, which are known to support some native tree and shrub species that are locally designated for protection under the LAMC. While Alternative 1 would avoid development within the California hillsides, Alternative 1 may require the removal the two Southern California black walnut trees in the mixed eucalyptus woodland in the Nature Play Park adjacent to existing facilities within the California planning area, similar to the Project. Several small coast live oak and larger western sycamores, planted as landscape trees within Zoo parking lots, Zoo entry, and along Western Heritage Way, may be impacted by parking lot and Western Heritage Way/Crystal Springs Road realignment and design, and Zoo entry redevelopment. In addition, realignment of Western Heritage Way/Crystal Springs Road could also result in the potential loss of some small specimen oaks and sycamore trees along its alignment behind the Zoo Magnet Center and Zoo storage areas. These trees and shrubs are protected and regulated under the existing City Tree Preservation Ordinance and Protected Tree Code Amendment.

As with the proposed Project, implementation of **MM UF-1**, requiring preservation, relocation, or replacement of protected native tree and shrub species onsite or at an appropriate offsite location within Griffith Park, and **MM UF-2**, requiring the Zoo implement a tree and urban canopy restoration plan, would serve to reduce impacts associated with the loss of protected native trees and shrubs. Alternative 1 would have less impact on protected trees, and implementation of these measures would ensure impacts to native trees and shrubs would be *less than significant with mitigation.*

Cultural and Tribal Cultural Resources

CUL-1: Would the project Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?

Similar to the proposed Project, Alternative 1 would involve phased redevelopment of the majority of the Zoo, including demolition of some structures dating from the 1960s, such as the World Aviary exhibit. However, most original 1966 buildings are highly altered, including the Treetops Terrace. Therefore, the Zoo no longer represents mid-20th century zoological design or the original vision of noted architectural firm Charles Luckman Associates. In particular, the Zoo no longer retains the two strongest architectural statements made by Luckman in his original design: the main entrance and the Theme Building/Treetops Terrace. The main entrance was demolished in 2005 and replaced with the existing Entry Plaza, including a contemporary-looking entrance gate and marquee, and a Mediterranean-inspired shopping street called International Marketplace. Treetops Terrace originally featured twin 105-foot hexagonal spires that served as a beacon and wayfinding feature visible throughout the Zoo. However, its twin spires were removed around 2000, effectively negating this function and the building's roof canopy was cut back on the east side to accommodate the adjacent carousel in 2011. Most redevelopment under Alternative 1 would involve the demolition of structures dating from 1990s to the 2000s, when modifications to the Zoo's physical campus accelerated for implementation of the Zoo's 1992 and 1998 master plans.

As described in Section 3.4, *Cultural and Tribal Cultural Resources*, the Zoo is not listed as a historical resource, either as a district or as individual resources within the Zoo, in the NRHP or CRHR. Although Griffith Park is listed on the CRHR and has been identified as a designated Los Angeles Historical-Cultural monument, the Zoo was determined to be a non-contributing component and was built after the significance period for Griffith Park. Therefore, the Zoo does not represent the same historical merit as Griffith Park.

The historical resources assessment prepared for the proposed Project concluded the Zoo is not eligible for historic listing or designation at federal, state, or local level and no buildings, structures, or other features of the Zoo were found individually eligible for historic listing or designation (refer to Section 3.4, *Cultural and Tribal Cultural Resources*; see Appendix G). Due to previous renovations and expansions facilities within the Project site, potentially historic structures no longer retain historical integrity or overarching uniform character. The Project site does not contain any historical resources as defined by CEQA, and therefore there is no potential for impacts to historical resources as a result of Alternative 1, similar to the Project. Therefore, Alternative 1 impacts to historic resources would be *less than significant*.

CUL-2: Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

No previously recorded archaeological sites occur on the Project site and intensive pedestrian ground surface survey conducted for the Project recorded no archaeological resources or

unique geographical features (Appendix F). Therefore, the potential for prehistoric resources is low in areas formerly developed as part of the original Zoo construction and on slopes over 20 percent.

With a low potential for disturbance to archeological resources, Alternative 1 impacts to cultural and tribal cultural resources would be only slightly reduced, as the reduction in 21 acres of development would decrease potential for incidental discovery and impacts. Grading, excavation, and earth moving activities would still occur on the Zoo's previously developed interior and at the base of the undeveloped hillsides. Similar to the Project, excavation depths would range from surficial grading to approximately 30 feet bgs for building foundations and structural footings. Most of the developed areas of the Zoo overlie artificial fill that was previously graded and disturbed for installation of utilities and construction of walkways during original Zoo construction in 1966. Consequently, these interior developed areas of the Zoo are highly unlikely to contain any intact, previously undisturbed cultural resources.

While highly unlikely, there is a potential for Alternative 1 improvements to impact unknown cultural resources. Similar to the Project, Alternative 1 would implement **MM CUL-1** prior to ground disturbance for each phase to ensure that, in the unlikely event isolated unknown prehistoric and historic-period archaeological resources are encountered during construction activities, appropriate action would be taken to prevent adverse impacts. In the unlikely event that previously unidentified archaeological resources are discovered during Alternative 1 construction, any inadvertently discovered resources would be protected and curated, through implementation of **MM CUL-2**. Therefore, Alternative 1 impacts to potential prehistoric resources would be similar to the Project and *less than significant with mitigation*.

CUL-3: Would the project disturb any human remains, including those interred outsides of formal cemeteries?

As described in Section 3.4, *Cultural and Tribal Cultural Resources*, the majority of the Project site has previously been developed/disturbed during construction of the Zoo, and undeveloped hillsides are unlikely to have supported prehistoric activity or occupation. Additionally, Alternative 1 would substantially limit development to the presently undeveloped areas of the Project site. Therefore, the possibility of discovering human remains during construction of Alternative 1 is reduced as compared to the proposed Project, and very low. If, however, in the unlikely event that previously unidentified human remains are discovered, further disturbances and construction activities shall stop in any area or nearby area suspected to overlie remains in accordance with State Health and Safety Code Section 7050.5, and the Los Angeles County Coroner would be contacted in accordance with Title 14, CCR, Section 15064.5(e). Pursuant to PRC Section 5097.98, if the coroner determines that the human remains are of Native American origin, the NAHC would be notified. Arrangements for the human remains would be made, and further provisions of PRC Section 5097.98 are to be followed as applicable. Further, implementation of **MM CUL-3** would

ensure the protection and curation of any inadvertently discovered. Therefore, Alternative 1 impacts would be similar to the Project and *less than significant with mitigation*.

CUL-4: Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is listed or eligible for listing in the CRHR, or in a local register of historical resources as defined in PRC Section 5020.1(k), or that is a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1?

As described in Section 3.4, *Cultural and Tribal Cultural Resources*, there are no known cultural resources that are eligible for listing in the CRHR or in a local register within the Project site or that may be adversely affected by Alternative 1 implementation. However, consultation with Native American tribal representatives conducted for the proposed Project determined there is potential for impacts to tribal cultural resources, including buried resources and cultural landscapes associated with village of *Cahuenga* located west of Griffith Park and the rancheria of *Maugna* located in the vicinity of Griffith Park. Due to previous ground disturbance and development within the interior of the Project site and limited proposed development along undeveloped areas such as the base of the California hillside, there is little potential for the discovery of unknown buried tribal cultural resources during construction activities. However, the potential exists for Alternative 1 to result in the discovery, alteration, removal, or destruction of tribal cultural resources, including objects, sites, or features with value to a California Native American tribe. With implementation of **MM CUL-4** through **MM CUL-7**, requiring the monitoring of all construction activities by an appropriate Native American representative and the management of resources in the unlikely event that such resources are uncovered, Alternative 1 impacts would be similar to the Project and *less than significant with mitigation*.

Energy

EN-1: Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation?

The total development footprint under Alternative 1 would be reduced by approximately 21 acres from the total development footprint under the proposed Project. Due to the reduction in the duration and scale of construction activities under Alternative 1, temporary, construction-related energy impacts would be reduced below those described for the proposed Project (refer to Impact EN-1 in Section 3.5, *Energy*).

Due to the reduction of 21 acres and elimination of the California Visitor Center under Alternative 1, long-term operational energy impacts would be reduced relative to the proposed Project. Alternative 1 may result in a reduced overall energy demand, including electricity, natural gas, and transportation as compared to the proposed Project (see the *Greenhouse Gas Emissions* discussion). This alternative would also incorporate similar energy efficiency measures into the design of the buildings and service systems, as all new and redevelopment activities would be subject to the provisions of the LA Green Building Code, LEED Silver design standards and best management practices, and LA's Green New Deal (Sustainable City pLAn 2019) pertaining to energy efficiency for non-residential buildings. Additionally, all new structures with rooftop area greater than 250 sf would be considered for the feasibility of solar panel installations, similar to the Project. Therefore, similar to the Project, Alternative 1 would not result in wasteful, inefficient, or unnecessary consumption of energy sources and the impact would be *less than significant*.

EN-2: Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Similar to the Project, Alternative 1 would be designed to comply with the Los Angeles Green Building Code. Under this alternative, reduced development would include sustainability features, such as a solar PV system. Green building elements would also increase energy efficiency by meeting LEED Silver standards of design or better and through use of reduced-flow plumbing fixtures and energy efficient appliances, solar PV systems, LED traffic lighting systems, stormwater reuse, use of recycled water onsite, and implementation of TDM plan for VMT reductions (refer to **MM T-2** in Section 3.15, *Transportation*). As discussed for the proposed Project in Section 3.5, *Energy* and Section 3.11, *Land Use and Planning*, Alternative 1 would be consistent with local, regional, and state goals and policies related to energy efficiency and would not result in wasteful, inefficient, and unnecessary consumption of energy. Therefore, as with the proposed Project, impacts to energy under Alternative 1 would be *less than significant*.

Urban Forestry Resources

UF-1: Would the project conflict with the provision of an adopted local tree preservation policy or ordinance?

As described under *Biological Resources* for Alternative 1 above, this alternative would minimize the direct removal, trimming, limbing, or root cuts of native and nonnative trees by substantially avoiding development of undeveloped hillsides within the proposed California and Africa planning areas. New development within the California planning area would be limited to the base of the California hillside, directly adjacent to existing development. Alternative 1 would protect 22 Southern California black walnut trees, 113 coast live oak trees, 15 toyon and 21 elderberry shrubs that would be potentially removed or impacted within the Africa planning area under the proposed Project. An additional 7 coast live oak trees, and 4

toyon and 15 elderberries would be protected within the California planning area. Due to the reduced development footprint under Alternative 1, dozens of additional trees considered important to the urban canopy provided by existing Zoo landscaping, such as Moreton Bay figs, coral, acacia, sycamore, scrub oak, and maple trees, would also be protected under Alternative 1. Therefore, impacts to protected trees within the Zoo would be substantially reduced as compared to the proposed Project. Alternative 1 would also maintain substantial numbers of non-native trees, including eucalyptus and pines, which contribute to the urban forest canopy but have drawbacks including safety risks. Unlike the Project, restoration and replanting of the hillsides in the California and Africa planning areas with native vegetation and important ornamental tree species as part of a comprehensive landscape plan would not occur, forgoing an opportunity for a richer, more well-maintained urban forest.

Similar to the proposed Project, several small coast live oak and larger western sycamores, planted as landscape trees within Zoo parking lots, Zoo entry, and along Western Heritage Way, may be impacted by improvements to the southern parking lot, installation of the reduced-size parking structure (if needed) in the northern parking lot, Western Heritage Way/Crystal Springs Road realignment and design, and Zoo Entry redevelopment. In addition, realignment of Western Heritage Way/Crystal Springs Road could also result in the loss of some small specimen oaks and sycamore trees along its alignment behind the Zoo Magnet Center and Zoo storage areas.

Similar to the proposed Project, impacts to trees would occur incrementally and overlap with replanting/landscaping and regrowth, as Alternative 1 implementation would occur incrementally over seven phases. Alternative 1 would similarly implement **MM UF-1** requiring replacement of removed protected and important trees at a 4:1 ratio as indicated by the City's proposed Tree Preservation Ordinance amendment, notification of large-scale tree removal, acquisition of a necessary tree removal permit(s), and application of City tree removal procedures. Since significant trees impacted during Alternative 1 implementation would be protected, relocated, or replaced consistent with applicable City tree protection policies. With an overall reduction in the number of significant trees affected compared to the Project, Alternative 1 would have less impact to trees and impacts would be *less than significant with mitigation.*

UF-2:	Would the project result in the loss or alteration to the Los Angeles urban forest?

Alternative 1 would protect hundreds of trees and shrubs, primarily within the California and Africa planning areas, due to the reduced development footprint within these undeveloped hillsides as compared to the proposed Project. In particular, Alternative 1 would protect a total of 142 native trees and 85 native shrubs protected under the City's existing Tree Preservation Ordinance and proposed Protected Tree Code Amendment. While less severe than the proposed Project, Alternative 1 would continue to require extensive redevelopment within the Zoo and along roadway and parking improvements fronting the Zoo that would remove hundreds of trees that comprise the urban forest. Similar to the proposed Project,

Alternative 1 would include installation of new landscaping, including extensive tree planting, following removal or disturbance of trees within the City's and Zoo's urban forest canopy for proposed development. Additionally, Zoo botanical collections and gardens would be protected and enhanced, similar to the proposed Project. Since no landscaping plan have been prepared for Alternative 1 that would demonstrate a recovery or enhancement of the Zoo's urban forest, Alternative 1 would similarly require implementation of **MM UF-2**, requiring preparation of a detailed landscape plan as part of each proposed phase. As a result, each phase would be landscaped, irrigated, and maintained with a diverse mix of tree species that would individually and cumulatively provide significant urban forest value and restore and enhance urban forest values lost through construction. With implementation of this measure, Alternative 1 would ensure recovery or even enhancement of the Zoo's, and the City's urban forest such that a net loss of urban forestry resources would not occur. While the area of impact to urban forest under Alternative 1 would be lessened compared to the Project, impacts would similarly be *less than significant with mitigation*.

Geology and Soils

GEO-1:	Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earth fault or strong seismic ground shaking?

As described in Section 3.7, *Geology and Soils*, the Project site is located within seismically active region of Southern California and would potentially be exposed to moderate to strong seismic ground shaking in the event of an earthquake on a nearby fault (e.g., Hollywood Fault, Verdugo Fault, Raymond Fault). A strong earthquake could result in substantial damage to older existing structures and infrastructure and put visitors and employees in danger from ground shaking and structural damage/collapse. Similar to the proposed Project, all new structures constructed at the Zoo under Alternative 1 would be required to adhere to the most current building standards of the LAMC and Los Angeles Building Code, which adopts CBC standards by reference with local amendments. Alternative 1 would upgrade and/replace older buildings within the Zoo that do not meet current Los Angeles Building Code and CBC building standards and may present a hazard to public safety during an earthquake. In addition, the City is required to prepare and submit a site-specific geotechnical report for review and approval by the Los Angeles Department of Building and Safety (LADBS) prior to the issuance of a grading or a building permit. Alternative 1 would facilitate the construction of new buildings that meet the most current and stringent seismic requirements, thus reducing the level of risk within each planning area and at the Zoo as a whole, compared to existing conditions. Therefore, compliance with the Los Angeles Building Code, CBC, and adherence to the design recommendations detailed in site-specific geotechnical studies would reduce Alternative 1 impacts related to seismic ground shaking to *less than significant*, similar to the proposed Project.

GEO-2: Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?

As described in Section 3.7, *Geology and Soils*, geologic hazards, including liquefaction hazards, within the Project site are dependent upon the type of foundation, the structural design of the building, and the as-graded compaction and stability of the soil on which a structure is built. Alternative 1 would facilitate upgrades and replacement of older buildings throughout the Zoo that do not meet current Los Angeles Building Code and CBC building standards and may present a geologic hazard to public safety. Similar to the Project, Alternative 1 would involve the construction of new multi-story buildings (e.g., Africa Visitor Center), some with subterranean structures (e.g., Treetops Visitor Center kitchen). To address geologic hazards, all new structures constructed in the Zoo would be required to adhere to the most current and stringent seismic requirements building standards of the LAMC and Los Angeles Building Code, which adopts CBC standards by reference with local amendments. Adherence to the LAMC and Los Angeles Building Code requirements would ensure the maximum practicable protection available for all structures constructed within the Project site. The site-specific geotechnical report required for review and approval by the LADBS would identify additional design requirements for structures and foundations to maintain structural integrity to the maximum extent feasible. With **MM GEO-1** to ensure geotechnical investigations are completed for each phase of Alternative 1 development and that engineering techniques and technologies are integrated into final Zoo development plans, impacts related to ground failure would be the same as the proposed Project and *less than significant with mitigation*.

GEO-3: Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?

The 2019 geotechnical investigation prepared for the Project concluded that the Project site is not located in an area considered susceptible to large-scale landslides (refer to Section 3.7, *Geology and Soils*; see Appendix J). However, some slopes along the western and northern portions of the site were observed to expose weathered and fractured bedrock and may be subject to small to moderate-sized rock falls. Alternative 1 would substantially avoid new development within the California and Africa planning areas, which are located on and adjacent to these exposed rock slopes. In particular, Alternative 1 would avoid excavation for the Condor Canyon and other ground-disturbing construction techniques that would produce vibrations (e.g., jackhammering, drilling, blasting, and pile installation) within the California and Africa planning areas. However, new development under Alternative 1 would still occur at the base of the California planning area hillside directly adjacent to existing developments. Therefore, while substantially reduced, the potential for damage associated with landslides would remain. Per **MM GEO-1**, these slopes would be observed, mapped, and further evaluated for Alternative 1 components proposed adjacent to exposed rock slopes or if cuts slopes are planned in bedrock areas (e.g., California planning area). Therefore, Alternative 1

impacts related to landslide risks would be similar to the Project and *less than significant with mitigation*.

GEO-4: Would the project result in substantial soil erosion or the loss of topsoil?

Alternative 1 construction would result in reduced impacts to soil erosion and loss of topsoil due to the substantial avoidance of new development within presently undeveloped areas of the Zoo campus. Alternative 1 would develop 3 acres of undeveloped areas with native topsoils as compared to the approximately 22 acres proposed under the Project. However, Alternative 1 implementation would still result in the limited potential for erosion due to excavation activities during construction, similar to the Project. Excavation activities for construction of Treetops Visitor Center subterranean kitchen and Zoo aerial tram and installation of the stormwater collection system would disturb and loosen soils, resulting in the potential for erosion, especially during rain events. As with the proposed Project, Alternative 1 implementation would require preparation of a Storm Water Pollution Protection Plan (SWPPP) to obtain an National Pollutant Discharge Elimination System (NPDES) stormwater permit from the State Water Resources Control Board (SWRCB) in accordance with the federal Clean Water Act. All Alternative 1 components would be required to comply with all BMPs identified within the SWPPP and the City's Stormwater and Urban Runoff Pollution Control Ordinance (Chapter VI Article 4.4 of the LAMC) to address soil erosion and control the discharge of pollutants, including sediment, into the local surface water drainages. With adherence to existing state and local regulations that address soil erosion, Alternative 1 impacts potentially resulting from erosion or loss of topsoil would be similar to the Project and *less than significant*.

GEO-5: Would the project be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project and potentially result in an onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse?

During Alternative 1 construction phases, excavation for the Treetop Visitor Center's subterranean kitchen, the aerial tram foundations, and the stormwater collection system may loosen exposed soils or slopes, potentially causing instability within the excavation site or compromised stability for adjacent properties. Similar to the proposed Project, adequate sloping or shoring of soils would be necessary to provide structural support for neighboring buildings to prevent soil collapse during excavation. All excavation activities associated with Alternative 1 would be required to adhere to mandatory regulations set forth by the California Division of Occupational Safety and Health (CalOSHA) to ensure the safety of construction workers during excavation, and the Los Angeles Building Code, and CBC to ensure stable excavations and cut or fill slopes.

Alternative 1 would upgrade and replace outdated facilities at the Zoo that do not meet current Los Angeles Building Code and CBC building standards and may present a hazard to public safety during an earthquake. All new structures under Alternative 1 would be constructed to

meet the most current and stringent building safety requirements, thus reducing the level of risk on a site and within the Zoo as a whole, compared to existing conditions. Therefore, compliance with the Los Angeles Building Code, CBC, and adherence to the design recommendations detailed in site-specific geotechnical studies would address potential impacts related to unstable soils.

Similar to the proposed Project, groundwater dewatering may be necessary for construction subterranean structures, such as the Treetops Visitor Center subterranean kitchen and the stormwater collection system. In cases where the there is a high or perched groundwater table where the floor of subterranean structure encounters the groundwater table, ongoing groundwater dewatering may be necessary to prevent the percolation or inflow of groundwater into excavation pits and future basement levels. If the dewatering of groundwater is necessary, a dewatering permit from the RWQCB would be obtained (refer to Section 3.10, *Hydrology and Water Quality*).

Additionally, the site-specific geotechnical report for each phase of development would evaluate site-specific geotechnical hazards and soil stability and would be required to identify building design requirements to ensure soil stability to the maximum extent feasible. The geotechnical report would also be required to identify known historic groundwater levels onsite and identify measures to address groundwater impacts such as dewatering during construction as needed to protect against water contact and to minimize the seeping of water into the subterranean structure. All recommendations and design features in the geotechnical report are required to be incorporated into the building design for Alternative 1 components, similar to the Project. With **MM GEO-1**, these required geotechnical investigations would be completed for each phase of Alternative 1 development and engineering techniques and technologies would be integrated into final Zoo development plans. Implementation would **MM GEO-1** would ensure impacts are similar to the Project and *less than significant with mitigation*.

GEO-6:	Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

As described in Section 3.7, *Geology and Soils*, there are two sedimentary units beneath the Project site with Moderate to High potential to contain significant paleontological resources, specifically within the Africa planning area. Implementation of Alternative 1 would reduce impacts to paleontological resources as this alternative would substantially avoid development of the existing undeveloped hillsides within the proposed Africa and California planning areas. While highly unlikely, the potential remains for construction under Alternative 1 to encounter and impact significant paleontological resources, similar to the Project. Therefore, Alternative 1 would implement **MM GEO-2** and **MM GEO-3**, which would include monitoring of ground disturbing activities for discovery of fossil specimens as well as subsequent collection, preparation, and permanent deposition in a designated repository of fossil specimens. These actions would preserve paleontological resources that

would otherwise be permanently lost and, similar to the Project would reduce Alternative 1 impacts to *less than significant with mitigation*.

Greenhouse Gas Emissions

GHG-1: Would the Project generate GHG emissions, either directly or indirection, that may have a significant impact on the environment? Would the proposed Project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

GHG emissions would be reduced under this alternative, as new development would be reduced by 21 acres when compared to the proposed Project. With less development, grading and excavation required for building construction would be lessened under this alternative, which would decrease emissions from heavy construction equipment. This alternative would also reduce anticipated visitation growth and new jobs by approximately 12 percent, with corresponding reductions in vehicle trips and VMT, which generate mobile-sourced GHG emissions. Alternative 1 would also result in a decrease in emissions generated onsite from Zoo operations, as energy, water, and other utilities would not be needed for the California Visitor Center and funicular and exhibit spaces that would not be built in the California and Africa planning areas.

Similar to the proposed Project, Alternative 1 would contribute to the expansion of renewable energy infrastructure by installing 70,000 square feet of rooftop solar panels, in addition to the separate LADWP project that would provide up to 163,000 square feet of solar panel coverage in the Zoo's northern parking lot. Additionally, similar to the Project, Alternative 1 would provide high efficiency lighting and amenities throughout the Zoo property and in the parking lots and parking structure. Similar to the Project, these components of Alternative 1 would reduce operational GHG emissions compared to business-as-usual. Alternative 1 would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. implementation would not interfere with any statewide or regional initiatives to reduce GHG emission associated with the energy production sector. This impact would be less than the proposed Project and *less than significant*. Though not directly required to reduce impacts associated with GHG emissions, **MM UF-1**, **MM UF-2**, **MM HYD-2**, **MM T-2**, **MMT-3**, and **MM UT-1** would result in further reductions in overall GHG emissions generated by Alternative 1 and/or consistency with applicable plans, policies, and regulations adopted with the intent of reducing GHG emissions.

Hazards and Hazardous Materials

HAZ-1: Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Under Alternative 1, impacts related to hazards and hazardous materials would be similar to the proposed Project. Similar to the proposed Project, construction for Alternative 1

implementation would require transportation, use, storage, and disposal of small quantities of commercially available hazardous materials, which would be handled in compliance with federal, state, and local regulations pertaining to their transport, use, or disposal. As such, the potential for hazardous materials release would be limited to disturbance of contaminated soil during ground-disturbing activities and accidental spill of chemicals, petroleum, oils, and lubricants within the construction staging areas on the Project site or transportation routes. However, due to the reduction in extent and duration of construction activities, construction of Alternative 1 would result in reduced potential for hazardous materials spills or exposure. Compliance with federal, state, and local regulations related to the safe transportation of hazardous materials as well as oversight by the appropriate federal, state, and local agencies would minimize the risk of hazardous materials exposure during transport, similar to the Project. Additionally, ACM, LBP, contaminated soils, or other hazardous material encountered during demolition or construction activities would be handled and disposed of in compliance with all pertinent federal, state, and local regulations for the handling of such waste. Therefore, construction associated with Alternative 1 implementation would result in *less than significant* impacts with regard to the transport of hazardous materials and disposal of hazardous wastes, similar to the proposed Project.

All hazardous materials used onsite for operation of Alternative 1 would be subject to all applicable regulation and documentation for the handling, use, and disposal of such materials consistent with all appropriate federal, state, and local regulations and standards established by the U.S. EPA, CalEPA, SCAQMD, Los Angeles County, and the City to protect the public health and safety. As required, appropriate permits, worker training, and agency inspections would be obtained and provided. Implementation of standard good housekeeping measures, BMPs, site maintenance and security precautions, as well as compliance with standards and regulations would ensure potential impacts related to the routine transport, use, or disposal of hazardous materials are similar to the Project and *less than significant*.

HAZ-2:	Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involved the release of hazardous materials into the environment?

As described in Section 3.9, *Hazards and Hazardous Materials*, the Project site is located near multiple regulated hazardous material sites, including one leaking UST with a closed status near the southern parking lot and one Superfund cleanup site that extends to the north of the Autry Museum and is undergoing continuing cleanup and investigation activities. Construction of the parking and circulation improvements (e.g., improvements to the intersection of Zoo Drive & Western Heritage Way, realignment of Western Heritage Way/Crystal Springs Road, construction of the multi-story parking structure) would be located nearest these sites. It is unlikely that existing contaminants identified on other nearby sites would have an impact on the Project site, due to distance, hydraulic gradient in relation to the Project site, or due to past cleanup efforts.

Similar to the proposed Project, ground-disturbing activities (i.e., excavation, trenching, grading) during proposed improvements to Condor West, the Construction Shop and Support area, and the Gottlieb Animal Health and Conservation Center under Alternative 1 has the potential to disturb historic contaminated soil and hazardous vapors associated with the fueling station located within the visitor-restricted Zoo Construction Shop and Support area. However, since Alternative 1 would not include development of most undeveloped hillsides in the Africa planning area, this alternative would result in reduced potential for hazardous materials release associated with vapor migration from the fueling station. Implementation of **MM HAZ-1** would require a Phase II Environmental Site Assessment (ESA) to evaluate the presence of hazardous soil contamination and vapor intrusion in the vicinity of the existing fueling station, the southern parking lot, and north of the Autry Museum prior to demolition and grading activities. In the event that the Phase II ESA identifies soil and/or groundwater contamination at or above regulatory levels, implementation of **MM HAZ-2** would require remediation activities prior to the issuance of grading permits to ensure no adverse impacts from exposure to soil contamination. Similar to the Project, ACM, LBP, contaminated soils, or other hazardous material encountered during demolition or construction activities would be disposed of in compliance with all pertinent federal, state, and local regulations for the handling of such waste. Implementation of **MM HAZ-1**, which would require the Phase II ESA to identify the potential presence of ACM and LBP in the buildings proposed for demolition or renovation, would reduce potentially hazardous waste impacts, similar to the Project.

Since Alternative 1 implementation would not include development of the funicular in the California planning area, this alternative would reduce the potential for safety hazards as compared to the proposed Project. Similar to the proposed Project, the Zoo aerial tram would comply with all applicable safety and engineering standards, including the current Safety Requirements for Passenger Tramways (ANSI B77.1) and CCR Title 8, Subchapter 6.1, Article 8 Wire Rope and Strand Requirements, thereby addressing potential safety hazards.

With mitigation to address potential soil contamination and ACM and LBP within older structures during demolition and excavation, impacts to hazardous materials would be similar to the Project and *less than significant with mitigation*.

HAZ-3:	Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Similar to the proposed Project, Alternative 1 would include construction involving the use of commercially available potentially hazardous materials in the immediate vicinity of the Zoo Magnet Center (i.e., circulation and parking improvements and Zoo Entry renovation in Phase 1). However, all construction activities associated Alternative 1 would comply with applicable federal, state, and local regulations relating to protection of the public and the environment from exposure to hazardous materials. Further, **MM HAZ-1** would require the preparation of a Phase II ESA to ensure no adverse impacts related to hazardous emissions

or spills would occur during implementation of Alternative 1. As such, construction impacts related to hazardous emissions and hazardous materials, substances, and waste within 0.25 miles of a school would be similar to the Project and *less than significant with mitigation*. After construction is complete and the heavy equipment is removed from the Project site, the potential for hazardous spills would be low and similar to existing conditions at the Project site. Therefore, operational impacts related to hazardous emissions and hazardous materials, substances, and waste within 0.25 miles of a school would be similar to the Project and *less than significant*.

HAZ-4: Would the project be located on a site which is included on a list of hazardous materials sites complied pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

As described in Section 3.9, *Hazards and Hazardous Materials*, while the Project site is included on several databases for its operation as a small quantity generator of hazardous waste, the Zoo is not included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. Alternative 1 would include the reconfiguration of Crystal Springs Drive along the periphery of the Zoo parking lots, which would potentially affect the area adjoining a listed leaking UST site, and, if needed, development of a reduced-size parking structure and improvements to the Zoo Drive/Western Heritage Way intersection, which may encounter contaminated soils from an offsite site cleanup. Similar to the Project, **MM HAZ-2** would be implemented to ensure any contaminated soils are properly removed, handled, and transported to an appropriately licensed disposal facility, in accordance with local and state regulations. With implementation of **MM HAZ-2**, near-term and long-term construction activities would have a *less than significant* impact to sites included on a list of hazardous materials sites complied pursuant to Government Code Section 65962.5, and as such, would not create a significant hazard to the public or the environment, similar to the Project.

HAZ-5: Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

The Zoo maintains emergency preparedness procedures in the event of an emergency and/or evacuation in accordance with the AZA accreditation standards. Similar to the proposed Project, all buildings and structures under Alternative 1 would be constructed in compliance with the applicable state and City building, fire, and emergency access codes to meet current fire protection standards. Alternative 1 does not propose changes, obstructions, or reconfigurations to public evacuation routes, so Alternative 1 would not result in physical interference or impairment to implementation of this existing emergency and evacuation plan. While construction activities associated with Alternative 1 would add vehicles (e.g., construction equipment, worker vehicles, etc.) to regional and local roads that could increase congestion, emergency access would be maintained during construction with implementation

of **MM T-1**, which would require preparation and implementation of a Construction Traffic & Access Management Plan for each phase of Alternative 1 (refer to Section 3.15, *Transportation*). Therefore, similar to the Project, Alternative 1 would not impair implementation or physically interfere with an adopted emergency response plan or emergency evacuation plan and impacts would be *less than significant*.

Hydrology and Water Quality

HYD-1: Would the project violate any water quality standards or waste discharge requirements or otherwise degrade water quality?

Alternative 1 would reduce ground disturbance by approximately 21 acres within the California and Africa planning areas, which would reduce potential for soil erosion, sediment transport, and disturbance of soil contamination compared to the Project. In particular, Alternative 1 would eliminate excavation for Condor Canyon, which would substantially reduce the amount of soil disturbance compared to the Project. Further, with elimination or reduction in the size of the proposed parking structure, soil disturbance would be reduced in the areas fronting the Zoo as well. However, Alternative 1 would still involve substantial earthwork activities, including excavation for installation of the proposed underground stormwater management system, which would disturb soils and increase the potential for soil erosion and sediment transport into the Los Angeles River during periods of rainfall or runoff. Similar to the Project, Alternative 1 would be required to implement construction BMPs to address soil erosion, including topsoil mobilization and loss, and urban runoff in compliance with the City's Stormwater and Urban Runoff Pollution Control Ordinance (Chapter VI Article 4.4 of the LAMC). All stormwater generated during construction would continue to be directed either to the Zoo's existing storm drain system and Zoo Wastewater Facility (or to the proposed stormwater collection system for the respective area for each completed phase) in the near-term phases, or the proposed stormwater capture system in the long-term phases, similar to the proposed Project. The Zoo Wastewater Facility would continue to remove silt and grit from the stormwater before discharging to the City's North Outfall Sewer for treatment at the LAGWRP, significantly reducing or eliminating any sediment and polluted runoff generated during construction that would flow into the existing or proposed stormwater system. In addition, implementation of **MM HYD-1** through **MM HYD-3**, requiring preparation of a stormwater management plan to determine the appropriate sequencing of improvements, preparation of a SWPPP, and implementation of standard construction BMPs, and timing of construction to avoid adverse effects of seasonal storms, would avoid potential for mobilization of sediments and typical construction pollutants during all phases of Alternative 1 construction. Implementation of these measures would reduce associated impacts on water quality from earthwork and typical construction activities similar to the Project and would be *less than significant with mitigation.*

Similar to the project, ground disturbing activities associated with improvements to Condor West, the Construction Shop and Support area, and the Gottlieb Animal Health and

Conservation Center (Phase 4) have the potential to degrade surface water quality through the disturbance of potentially contaminated soil (see also, *Hazards and Hazardous Materials* for Alternative 1 above). Additionally, realignment of Western Heritage Way/Crystal Springs Road and installation of traffic signals and potential intersection lane improvements (e.g., road widening and sidewalk improvement) during Phase 1 could disturb potential contamination from equipment leaks or spill of stored hazardous chemicals or leaks from the USTs located at or adjacent to the Zoo's storage yard at the southern parking lot and Autry Museum (refer to *Hazards and Hazardous Materials* above). However, implementation of **MM HAZ-1** and **MM HAZ-2** would require a Phase II ESA to evaluate the presence of hazardous soil contamination and vapor intrusion in the vicinity of the existing fueling station, the southern parking lot, and north of the Autry Museum, and remediation activities if necessary to ensure no adverse impacts from exposure to soil contamination. Therefore, with these measures, potential impacts to water quality from soil contamination would be similar to the Project and *less than significant with mitigation*.

Operation of the Zoo during implementation of Phases 1 through 3 (through 2030) would result in pollutant discharges and runoff similar to existing conditions, which would be captured and treated by the Zoo Wastewater Facility and the LAGWRP prior to discharge to the Los Angeles River. Following Phase 3, all surface runoff and stormwater within the Zoo would be directed to the proposed onsite stormwater management system and proposed LID features to capture, treat, and reuse stormwater onsite. Similar to the proposed Project, the stormwater collection system is also proposed to allow retention and reuse of stormwater for irrigation at the Zoo to reduce annual irrigation water demands (refer to Section 3.16, *Utilities*). The stormwater capture and retention system as proposed does not include pre-treatment or other LID measures to treat the runoff that would be reused for irrigation of the Zoo, resulting in the potential to unnecessarily contribute pollutants captured within the system back into the Zoo drainage system. Implementation of **MM HYD-6** would require the Zoo install pre-treatment and LID features to treat water within the stormwater collection system and remove pollutants prior to reuse for irrigation.

Similar to the proposed Project, the proposed stormwater collection system under Alternative 1 would be designed to capture 100 percent of stormwater runoff generated during a typical 2-year, 24-hour rainfall event. During larger storm events when capacity of the stormwater collection system is exceeded, stormwater would overflow to the Zoo Wastewater Facility and undergo the same level of treatment as occurs under existing conditions. Implementation of the stormwater collection system and proposed LID features would improve the water quality within the Zoo drainage area during operation of the Zoo to the same extent as the proposed Project (refer to Section 3.10, *Hydrology and Water Quality*). With implementation of **MM HYD-6**, stormwater impacts would be similar to the Project and *less than significant with mitigation*.

HYD-2: Would the project 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)?

Similar to the proposed Project, Alternative 1 would continue to use the LADWP water supply and would not draw from local groundwater. As Alternative 1 would substantially avoid new development within presently undeveloped areas of the Zoo (e.g., California and Africa planning areas), this alternative would result in a reduced footprint of impervious surfaces compared to the proposed Project. Therefore, Alternative 1 would substantially maintain the existing rate of percolation onsite and this alternative's effects on groundwater recharge would be incremental. Therefore, Alternative 1 implementation would not have an adverse effect on groundwater recharge and impacts to groundwater infiltration would be *less than significant*, similar to the Project.

Groundwater at the Project site and immediate vicinity may be contaminated due to a former leaking UST and Superfund cleanup site in proximity to the Zoo's parking lot and Western Heritage Way, as well as from fueling dispensers, USTs, and associated piping within the Zoo Construction Shop and Support area and existing storage yard (refer to Section 3.9, *Hazards and Hazardous Materials*, for further discussion of the potential groundwater contamination onsite). Implementation of **MM HAZ-1** would require the City to prepare a Phase II ESA to determine whether contamination exists and, if so, the extent of contamination within the Project site. If contaminants are detected in soil at or above regulatory levels, then the results of the soil sampling shall be reviewed and acted upon by the LAFD and other regional or state regulatory agencies as needed. Therefore, Alternative 1 impacts to groundwater contamination on- and offsite would be similar to the Project and *less than significant with mitigation*.

The potential to encounter groundwater under Alternative 1 is limited, similar to the Project, particularly on hillsides in the California and Africa planning areas where depth to groundwater is greater than interior canyon areas of the existing Zoo. Groundwater dewatering may still be necessary for the construction of subterranean structures in areas with a high groundwater table (e.g., Treetops Terrace subterranean kitchen). In cases where the there is a high or perched groundwater table where the floor of subterranean structure encounters the groundwater table, ongoing groundwater dewatering may be necessary to prevent the percolation or inflow of groundwater into excavation pits and future basement levels. If dewatering is necessary, the City would obtain a dewatering permit from the Los Angeles RWQCB in compliance with existing RWQCB regulations and the requirements of the NPDES permit program. A geotechnical report for each phase (required under **MM GEO-1**) would be required to identify known historic groundwater levels onsite and identify measures to address groundwater impacts such as dewatering during construction as needed to protect against water contact and to minimize the seeping of water into the subterranean

structure. All recommendations and design features in the geotechnical report are required to be incorporated into the final building design. Therefore, impacts to groundwater quality and recharge from Alternative 1 implementation would be similar to the Project and *less than significant with mitigation*.

HYD-3:	Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation onsite or offsite? Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite?

As Alternative 1 would substantially avoid new development within the undeveloped California and Africa planning areas, including the substantial topographic modifications needed for Condor Canyon, this alternative would reduce alteration of the onsite drainage pattern as compared to the proposed Project. Nevertheless, alteration of the onsite drainage pattern would still occur through excavation, grading, and installation of the proposed stormwater collection system within existing developed areas of the Zoo, and minor increases in development and impervious surfaces. Generally, all Alternative 1 construction activities, particularly those involving substantial soil excavation, would result in exposure of soils and would cause minor alterations to onsite drainage, including the potential for temporary ponding during storm events. However, all Alternative 1 components would be required to comply with the Stormwater and Urban Runoff Pollution Control Ordinance (Chapter VI Article 4.4 of the LAMC) to address soil erosion, including topsoil mobilization and loss, and urban runoff. Further, all stormwater generated during construction would continue to be directed either to the Zoo's existing storm drain system in the near-term phases, or the proposed stormwater capture system in the long-term phases. Compliance with existing City regulations as well as implementation of **MM HYD-1** through **MM HYD-3** would reduce soil erosion impacts of Alternative 1 to *less than significant with mitigation*.

While not expected, if dewatering of groundwater is required based on onsite groundwater depth in some phases, it would be accomplished in accordance with Los Angles RWQCB's Project Dewatering to Surface Waters in Coastal Watersheds of Los Angeles and Ventura Counties (refer to Impact HYD-2). Construction activities would alter onsite drainage, subject to requirements to control water quality and stormwater flows, but would not alter drainage patterns or amounts offsite to the Zoo Wastewater Facility or the Los Angeles River; therefore; similar to the Project, construction activities associated with Alternative 1 would result in a *less than significant* impact.

Following construction, Alternative 1 would not increase the potential for soils to be subject to wind or water erosion. Implementation of **MM HYD-4** through **MM HYD-6** would require preparation of an operations and management (O&M) Plan, application of gorilla mulch over landscaped areas, and pre-treatment, filtering, and other LID features as part of

the stormwater collection system to ensure continued water quality benefits from the LID features and the stormwater collection system. Similar to the proposed Project, Alternative 1 would result in beneficial impacts to soil erosion associated with reducing surface runoff and directing all stormwater runoff into the proposed stormwater collection system, rather than conveying runoff to the Los Angeles River. With adherence to existing state and local regulations and mitigation measures that address soil erosion, impacts to receiving waters potentially resulting from erosion would be similar to the Project and *less than significant with mitigation*.

Alternative 1 would result in a smaller increase in impervious surfaces onsite as compared to the proposed Project. However, similar to the Project, Alternative 1 would include substantial stormwater retention and treatment facilities onsite to accommodate stormwater runoff and avoid on and offsite increases in flooding, consistent with the requirements of the City's Stormwater and Urban Runoff Pollution Control Ordinance (LAMC Article 4.4) and the SWRCB's Post-Construction Requirements. Similar to the Project, the proposed onsite stormwater management system under Alternative 1 would be designed to capture stormwater runoff, reduce peak flows, and reduce flow to the Zoo Wastewater Facility and ultimately the Los Angeles River. The remaining runoff not captured by the stormwater management system would be from the parking lots, which drain into existing LID features for onsite treatment prior to flowing to the Los Angeles River. The increase in pervious surfaces under Alternative 1 and additional point and non-point source water retention features (e.g., vegetated retention basins and pervious paving) would further slow and retain surface flows. Overflows of the stormwater management system would be directed to the Zoo Wastewater Facility. Following desilting and grit removal at the Zoo Wastewater Facility, stormwater would continue to be discharged to the North Outfall Sewer, which would direct water to the LAGWRP, similar to existing conditions for all stormwater within the Zoo. Since the volume of stormwater directed to the Zoo Wastewater Facility would be substantially reduced when compared to existing conditions, the Zoo Wastewater Facility total capacity of 1.8 million gallons would be adequately sized to accommodate overflow runoff from the Zoo. As such, stormwater would be adequately managed, maintained, and attenuated through on- and offsite stormwater control features, which are designed consistent with the requirements of the City Stormwater and Urban Runoff Pollution Control Ordinance and SWRCB Post Construction Requirements. Therefore, similar to the Project, Alternative 1 impacts to onsite and offsite flooding would be *less than significant*.

HYD-4:	Would the project 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?

Alternative 1 would result in a smaller increase in impervious surfaces due to the avoidance of new development in the California and Africa planning areas, thereby resulting in a smaller increase in stormwater runoff at the Zoo. The reduction in new development on presently undeveloped areas would increase infiltration and reduce surface runoff onsite. Additionally,

implementation of the proposed stormwater collection system would substantially reduce stormwater runoff and peak flow by capturing and storing all rainfall from the Zoo and the 79.7-acre hillside area adjacent to the Zoo for reuse onsite as irrigation water. Additional LID features, such as bioretention cells and vegetated bioswales, would be incorporated during final design of the planning areas to retain runoff and increase infiltration. The substantial reduction in surface runoff and peak flow would result in beneficial impacts to water quality, as the reduced volume and velocity of stormwater flows would reduce the rate of soil erosion and sedimentation.

Implementation of the proposed stormwater collection system would reduce the volume of discharge to the Zoo Wastewater Facility; therefore, this system would not be exceeded during the 2-year or the 100-year storm events. Implementation of the proposed stormwater collection system would also reduce the volume of discharge from the Zoo Wastewater Facility to the City's North Outfall Sewer. The Zoo Wastewater Facility would continue to hold animal pond water and overflow stormwater from the Zoo until the demand for wastewater discharge is low (i.e., nighttime). Thus, the Zoo Wastewater Facility would prevent exceedance of the North Outfall Sewer's capacity. Therefore, similar to the Project, implementation of the stormwater collection system would result in beneficial and *less than significant* impacts to existing stormwater drainage systems.

Land Use and Planning

LU-1:	Would the project cause a significant environmental impact due to conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

Alternative 1 would protect up to 21 acres of native vegetation communities and hundreds of native trees due to the avoidance of development on the California and Africa planning area hillsides. This would include up to 142 native trees and 85 native shrubs protected and regulated under the existing City Tree Preservation Ordinance and Protected Tree Code Amendment (refer to *Urban Forestry Resources*). Implementation of required mitigation measures would help ensure the Project's consistency with the SCAG RTP/SCS, Los Angeles General Plan, Hollywood Community Plan, L.A.'s Green New Deal, and LAMC, as well as the Vision Plan for Griffith Park as it applies to areas outside of Zoo property. Therefore, similar to the proposed Project, land use impacts from Alternative 1 would be *less than significant with mitigation*.

Noise and Vibration

NOI-1: Would the proposed Project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Alternative 1 construction would generate reduced noise levels as compared to the proposed Project due to avoidance of development of the California and Africa planning area hillsides. In particular, without Condor Canyon, Alternative 1 would avoid noise and vibration from excavation and potentially blasting through the existing hillside. The most perceptible levels of construction noise would likely occur during Phase 1 when the Zoo Entry and reduced California planning area improvements are underway, including grading, excavation, and building construction, concurrent with improvements to the Zoo's southern parking lot, realignment of Western Heritage Way/Crystal Springs Road, and the Zoo Drive & Western Heritage Way intersection. Similar to the proposed Project, there are no residential sensitive receptors in the vicinity. The building construction activity would be the loudest phase of construction and would generate a noise level of approximately 86.2 dBA L_{eq} at 50 feet. Equipment noise levels during general construction activities would exceed 75 dBA L_{eq} at nearby sensitive receptors during Phases 1, 2, 3, 5, and 6. During Phase 1, the Zoo Magnet Center and the Wilson and Harding Golf Courses would experience noise level above 75 dBA L_{eq} (Table 3.12-9). For Phases 2, 3, 5 and 6 the only sensitive receptor that would experience noise levels above 75 dBA L_{eq} is Wilson and Harding Golf Courses. Pile driving activity related to the aerial tram would result in a noise level of 77.4 dBA L_{eq} at the Wilson and Harding Golf Course. However, golfers would move further away from the noise source as they play through each hole resulting in reduced noise levels. Furthermore, the existing ambient noise levels are elevated at the golf course due to the presence of the I-5 freeway to the east.

Similar to the Project, **MM NOI-1** through **MM NOI-5** would substantially reduce construction noise levels. The equipment mufflers associated with **MM NOI-1** would reduce construction noise levels by approximately 3 dBA. **MM NOI-2** through **MM NOI-4**, although difficult to quantify, would also reduce and/or control construction noise levels. **MM NOI-4** would require coordination with the construction contractor and the coordinator of the Zoo Magnet Center to avoid disruption to classroom instruction. **MM NOI-5** would reduce construction noise levels by approximately 10 dBA at Zoo Magnet Center by installing temporary noise barriers around the facility. Similar to the proposed Project, with implementation of these measures, noise levels would be reduced to approximately 66 dBA L_{eq} at the exterior of the school, which would be below the 75 dBA L_{eq} standard. Therefore, Alternative 1 impacts related to construction noise would be similar to the Project and *less than significant with mitigation*.

Stationary noise sources introduced under Alternative 1 would be similar to existing noise sources. Stationary noises sources include Zoo visitors conversing in the park, noise from animals, noise related to special events, mechanical equipment noise within the park, service

vehicles, the public address (PA) system, parking noise, and background music. Zoo attendance and special events would decrease under Alternative 1 but would increase compared to existing conditions. The increased attendance due to Zoo expansion, new Zoo facilities, and Zoo programming may result in increased noise levels and expanded duration of operational noise, including after-hours noise from evening special events and noise from vehicle traffic in the Project vicinity. However, the increase in visitation and associated operational noise impacts under Alternative 1 would be less severe than the proposed Project. **MM NOI-6**, which would require the Zoo to orient shop faces inwards toward Zoo property, is intended to reduce service area noise through thoughtful design. Therefore, Alternative 1 impacts related to operational noise from stationary and mobile sources would be less than the proposed Project and *less than significant with mitigation*.

NOI-2: Would the proposed Project result in generation of excessive groundborne vibration or groundborne noise levels?

Alternative 1 would implement substantially reduced construction activities as compared to the proposed Project and would completely avoid the need for blasting due to the elimination of Condor Canyon. Therefore, construction associated with Alternative 1 would result in significantly reduced vibration levels from the use of typical construction equipment, and impacts would be *less than significant*, similar to the Project.

Similar to the proposed Project, Alternative 1 does not include stationary sources of vibration, such as heavy-duty industrial equipment. Regarding additional traffic, the FTA has stated that rubber-tired vehicles do not typically generate perceptible vibration levels outside of the right-of-way. Additionally, Alternative 1 would result in reduced vehicle traffic to the Project site, as compared to the proposed Project. There are no operational sources of vibration that would generate vibration levels that exceed 75 VdB. Therefore, impacts associated with operational vibration would be similar to the Project and *less than significant*.

Reduced construction vibration under Alternative 1 would also result in reduced potential disturbance of Zoo animals, particularly elephants. As the Zoo has done in the past during construction, measures to protect these animals may include temporary relocation away from construction activities, closure of exhibits, or even the transfer of animals to other zoos. Accommodations specific to each animal would be developed during the planning process for each phase and details would be included in final construction plans. With continued management of each species of animal exhibited or rehabilitated at the Zoo and required compliance with the AWA, there would be no adverse effects on Zoo animals from vibration during construction of Alternative 1.

Public Services

PS-1:	Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for fire protection?

Due to the reduction in new development in currently undeveloped hillsides within the Zoo property, this alternative would reduce the potential for ignition risks during construction. While reduced, Alternative 1 construction would continue to introduce a potential ignition source for fires (e.g., flammable materials, sparks) and may create hazardous conditions requiring EMS; however, LAFD maintains fire response and EMS at adequate levels to respond to incidents at the Zoo during Project construction. Construction contractors and work crews would employ "good housekeeping" procedures (e.g., proper maintenance of mechanical equipment and proper storage of flammable or other hazardous materials) and would comply with Cal/OSHA, LAMC Fire Code, and CBC regulations to reduce risk of potential fires, hazardous spills of other conditions during construction that would require fire protection and EMS. Therefore, Alternative 1 construction would not require additional firefighting or EMS personnel or new or expanded facilities.

Construction activities would result in temporary changes to roadways, access points, and staging areas currently used by LAFD to respond to incidents in the Zoo and nearby areas in Griffith Park. However, Alternative 1 would not directly impair designated County or City Disaster Routes along I-5, SR-134 and San Fernando Road, as all development would be contained to the Zoo and roadways serving the Zoo. Implementation of **MM T-1**, requiring a Construction Traffic & Access Management Plan with measures for controlling and ensuring continued access to the Zoo and through the interior of the Zoo circulation system, would address impacts from construction of proposed improvements on emergency access and response.

Under Alternative 1, the anticipated increase in annual visitation to 2,646,984 guests and the hiring of approximately 296 additional staff by 2040 has the potential to result in increases the frequency of incidents with commensurate increases in demand for fire protection and EMS from LAFD. Compared to the Project, this alternative would result in reduced potential for emergency incidents. Due to the acceptable response times from Station No. 56, which currently serves the Project site, the LAFD would have adequate resources and personnel to continue to serve the Zoo without needing to expand any facilities or personnel. All Alterative 1 components would be constructed in accordance with applicable sections of the LAMC Fire Code and CBC, which require the provision of adequate emergency access, use of ignition-resistant construction materials, installation of automated fire suppression systems, emergency water supply and adequate fire flow rates, and appropriate defensible space requirements. Alternative 1 would also include emergency evacuation plans, similar to the

Project, allowing for quick and safe evacuation of Zoo guests, employees, and Zoo animals in the event of an emergency. Consistent with LAFD standards, this combination of development standards for new development and existing LAFD service capabilities would ensure demands for fire protection and EMS would continue to be met under Alternative 1. Therefore, no additional LAFD facilities or personnel would be required to serve Alternative 1.

Similar to the proposed Project, Alternative 1 would include roadway and circulatory improvements (i.e., intersection improvements at Zoo Drive & Western Heritage Way, realignment of Western Heritage Way/Crystal Springs Road, increased parking) to reduce vehicle congestion in the Project vicinity and improve direct access to the Zoo for firefighters and EMS. While some improvements to the secondary/exhibit pathway would continue to occur under Alternative 1, this alternative would not include construction of Condor Canyon, and therefore, would not complete the Primary Path Loop for intuitive circulation throughout the Zoo. A new vehicle service entrance and service road would not be developed along the ridgeline of the hillside areas, and service access to and around the perimeter of the Zoo would remain similar to existing conditions.

Similar to the Project, Alternative 1 would not increase demand for LAFD response or require new firefighting equipment or facilities. Further, there would be no significant increase in risk for ignition or reduction in response times or evacuation planning. Therefore, impacts to fire protection and emergency response services would be *less than significant*, similar to the Project. However, Alternative 1 would not result in the same beneficial impacts to improved site circulation, wayfinding, and emergency access as the proposed Project.

PS-2:	Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for police protection?

As Alternative 1 is anticipated to result in a smaller increase in annual visitation compared to the proposed Project, the increase in demand for additional police protection at the Zoo would be less than the proposed Project. To address anticipated increases in demand for law enforcement services, Alternative 1 would include construction of a new 13,000 sf single-story security and first aid center, located within the proposed entry plaza where it would be easily accessible to Zoo guests, and the hiring of additional security personnel to accommodate the such needs. Zoo security staff would continue to respond to most incidents at the Zoo, limiting the increased demand for LAPD services. Because Zoo security is provided onsite and would not regularly necessitate responses from community LAPD stations, Alternative 1 would not substantially interfere with LAPD response times. Further, Alternative 1 would result in reduced impacts to the resident-to-officer ratio of the LAPD. Further, most jobs associated with the proposed Project are anticipated to be filled by the existing local or regional labor

force within the City, surrounding cities, and surrounding Los Angeles region. Therefore, any net population increase spurred by Alternative 1 is anticipated to be nominal and would not substantially affect LAPD officer-to-resident ratios.

As described in Section 3.13, *Public Services*, while the Project site is in an area with comparatively low crime rates, has an adequate officer-to-resident ratio, and provides adequate response times, the Zoo currently experiences a relatively high number of vehicle theft/break ins. Similar to the Project, this trend is expected to continue since Alternative 1 would maintain the open, publicly accessible parking lot and does not propose measures to limit access or increase patrol or parking lot security. Implementation of **MM PS-1**, requiring the Zoo implement measures to increase security of the Zoo's parking lot areas such as frequent patrolling and installation of additional surveillance cameras, would help to reduce vehicle theft/break in and manage crime within the Zoo, thereby reducing LAPD and Zoo security demands. Further, improvements to Zoo facilities would include modernization of security systems such as access control to buildings, secured parking facilities, walls/fences with key systems, and well-illuminated spaces designed with a minimum of dead space to eliminate areas of concealment.

Existing resources of the LAPD and Northeast Community Police Station are adequate to continue providing acceptable levels of service to the Zoo with Alternative 1, similar to the Project. With implementation of **MM PS-1** to address increased law enforcement issues from vehicle theft/break ins, impacts to public safety and police protection services would be similar to the Project and *less than significant with mitigation*.

PS-3:	Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered school facilities, the construction of which could cause significant environmental impacts?

Alternative 1 is anticipated to result in a smaller increase in annual visitation and fewer new jobs compared to the proposed Project, which would reduce overall demands for governmental facilities, including schools. Similar to the proposed Project, Alternative 1 would not include residential development, and therefore, would not result in an increased number of school-aged children in the Los Angeles Unified School District (LAUSD). Alternative 1 would create approximately 296 new jobs, but it is anticipated that these jobs would be filled by the existing local workforce, and, therefore, would not create population growth in the area, thereby increasing demand for public school services. Alternative 1 would not result in physical changes to existing LAUSD facilities, including the Zoo Magnet Center, since most Alternative 1 improvements would occur within Zoo planning areas inside the Zoo and away from the Zoo Magnet Center campus. However, Alternative 1 would realign Western Heritage Way/Crystal Springs Drive to the perimeter of the southern parking lot and would add approximately 300 guest surface parking spaces in the southern parking lot, immediately adjacent to the Zoo Magnet Center through removal of existing Zoo uses and restriping of parking spaces. While there has historically not been significant conflict in parking

availability for Zoo Magnet Center and Zoo guests, Alternative 1 implementation is anticipated to increase daily attendance to the Zoo and substantially increase demand for Zoo parking (refer to Section 3.15, *Transportation*). To ensure parking availability remains for Zoo Magnet Center students and staff and avoid need for additional facilities to serve school operations, **MM PS-2** would require improvements to the southern parking lot to include designated parking spaces for Zoo Magnet Center school buses and implement parking hour limitations to accommodate 10 teachers, the office administrator, and campus counselor, with an additional reserve space for visitors. Reserved parking stalls would be in effect during hours of Zoo Magnet Center operation. With implementation of this measure, Alternative 1 impacts to schools would be similar to the Project and *less than significant with mitigation*.

Recreation

REC-1:	Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Similar to the proposed Project, Alternative 1 would upgrade the Zoo Drive/Western Heritage Way intersection with a new signal in Phase 1. The signalization of this intersection would not affect the mobility of pedestrians, bicyclists, and equestrians along the Main Trail or affect their safety. Therefore, implementation of Alternative 1 would substantially reduce impacts to mobility and safety along the Main Trail as compared to the proposed Project and impacts associated with accessibility to recreational resources would be *less than significant*.

Alternative 1 would increase Zoo visitation and increase visitor-serving spaces within the Project area, but to a lesser extent than the proposed Project. Expansions and improvements to Zoo facilities under Alternative 1 would be contained within existing Zoo boundaries. Thus, Alternative 1 would result in no net loss of recreational lands and would not cause direct impacts to recreational facilities within Griffith Park or elsewhere, similar to the proposed Project. Further, the addition of a 2-acre public park to the north of the proposed parking structure would slightly expand recreational amenities within Griffith Park; this public park would continue to be contributed through the Project if the proposed parking structure is also constructed. Within the Zoo, the proposed Nature Play Park would replace the existing children's playground within the Zoo, named the Papiano Play Park, increase the playground size threefold to 18,300 square feet of a natural play area equipped with play structures and water features, and relocate the park nearby the main entrance.

Similar to the proposed Project, Alternative 1 would not facilitate indirect population or economic growth within the City or greater region that would place demand on recreation and park services compared to the existing level of service available. The approximately 296 new jobs generated by Alternative 1 implementation are anticipated to be supplied by the existing local or regional labor force within the City, surrounding cities, and surrounding Los Angeles region. Therefore, any net population increase spurred by Alternative 1 is anticipated to be less than under the proposed Project and nominal. As such, no additional demand on

existing recreational facilities or for new recreational amenities is anticipated as a result of Alternative 1 implementation, similar to the Project. Therefore, Alternative 1 impacts would be *less than significant*.

REC-2:	Would the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?

Under Alternative 1, redevelopment and expansion of existing facilities and the construction of new facilities within the Zoo would improve the recreational value and opportunities provided by the Zoo, to a lesser degree than the proposed Project. Alternative 1 implementation would result in impacts to the environment, including adverse effects to air quality, biological resources, cultural and tribal resources, the City's urban forest, geology and soils, hazards and hazardous materials, and transportation. However, Alternative 1 would result in reduced impacts due to avoidance of new development within presently undeveloped areas of the Zoo. Where potentially significant impacts are identified as they relate to the construction or expansion of recreational facilities, applicable existing regulations or appropriate mitigation is identified which would reduce associated Alternative 1 impacts. With implementation of the regulations and required mitigation measures, impacts from the construction or expansion of recreational facilities would be similar to the Project and *less than significant.*

Transportation

T-1:	Would the project cause a significant environmental impact due to conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?

With implementation of a comprehensive TDM Program (**MM T-2**), Alternative 1 would align with the VMT reduction goals and objectives within the SCAG's 2016 RTP/SCS, Los Angeles General Plan, Mobility Plan 2035, Hollywood Community Plan, Griffith Park Vision Plan, Green New Deal Plan, and Plan for a Healthy Los Angeles. As described for the proposed Project, Alternative 1 would be consistent with the plans listed above to a greater extent than the proposed Project due to overall reduced VMTs, but would be similar to the Project in terms of multi-modal local and regional transportation policies. Alternative 1 would not cause significant environmental impacts due to conflicts with any transportation plan, policy, or regulation, and impacts would be similar to the Project and *less than significant with mitigation*.

T-2:	Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

Alternative 1 construction activities would result in additional VMT in the Project vicinity and on the I-5 and SR-134 freeways, associated with construction materials deliveries, soil import

and export, export of demolition debris, and construction workers trips. Construction-related increases in VMT would occur intermittently and would be lower in volume than the construction vehicle trips and VMT associated with the proposed Project. The Construction Traffic & Access Management Plan required under **MM T-1** would further reduce construction VMT impacts through provisional measures to reduce construction traffic and associated VMT.

As described in Section 3.15, *Transportation*, the Zoo is currently isolated from major and local transit hubs, with only two transit lines (i.e., Parkline Shuttle and Metro Line 96) currently serving the Project site. Similar to the proposed Project, Alternative 1 would include several TDM measures associated with the expansion of transit services to serve the Project site and encourage the use of transit and active transportation modes by visitors and employees under **MM T-2**. For example, the TDM Program may include providing incentives for carpooling/vanpooling for Zoo employees, discounting entrance fees for visitors who can provide proof of arrival via transit; and showers, racks, lockers for Zoo employees.

Alternative 1 would result in a smaller increase in daily VMT when compared to the proposed Project due to the reduction in annual visitation and employment compared to the Project. Additionally, Alternative 1 would implement **MM T-2** similar to the proposed Project to meet an overall goal of reducing projected Zoo employee VMT by 10 percent and Zoo visitor VMT to the extent feasible. As such, daily visitor VMT on weekends (the highest attendance days) in 2040 would be reduced by an estimated 12 percent, from 139,287 under the proposed Project to approximately 122,896 under Alternative 1, prior to mitigation. This reduction estimate is relative to the physical area and capacity difference between the Project and Alternative 1. Consequently, daily employee VMT on Mondays and Fridays in 2040 would be reduced from 24,436 under the proposed Project to approximately 21,504 under Alternative 1 prior to mitigation. While the reduced visitation and implementation of **MM T-2** under Alternative 1 would result in a reduction in operational visitor and employee VMT when compared to the proposed Project, this alternative's VMT estimates would still exceed the TAG's established net-zero VMT threshold for event centers and regional-serving entertainment venues. Therefore, Alternative 1, similar to the Project, would have *significant and unavoidable* impacts related to increased VMT.

T-3:	Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Due to the reduced area of development under Alternative 1, construction would be reduced in scope and duration, resulting in fewer trucks trips, construction worker vehicle trips, and other construction-related trips along the surrounding street network and I-5 and SR-134 freeways. Therefore, Alternative 1 would result in fewer impacts to vehicle, pedestrian, and bicycle safety due to construction traffic. Further, implementation of **MM T-1** would require preparation of a Construction Traffic & Access Management Plan to address construction traffic routing and control, safety, construction parking, and vehicle, bicycle, and pedestrian

safety. The Construction Traffic & Access Management Plan would require haul trips to be restricted between 9:00 AM and 2:00 PM to avoid pedestrian safety impacts associated with pick-up and drop-off at the Zoo Magnet Center, and would require construction flaggers, as necessary, to maintain the flow of traffic and allow safe passage for pedestrians across crosswalks and along the Main Trail. Within the Zoo each phase of Alternative 1 would be fenced for safety and security, and all construction equipment would be staged within the fenced area. Therefore, Alternative 1 construction activities would not result in safety hazards within the Zoo. With the implementation of **MM T-1**, construction-related hazards would be similar to the Project and *less than significant with mitigation*.

Similar to the proposed Project, each development phase under Alternative 1 would be required to undergo review by City agencies, including a review of roadway improvements and operations so that vehicle, bicycle, and pedestrian access are adequately accommodated without obstructing, hindering, or impairing drivers' reasonable and safe views of other vehicles, people walking, or people bicycling on the same street and/or restricting the ability of a driver to stop a motor vehicle without danger of an ensuing collision. Design of each development phase would need to be consistent with Mobility Plan 2035 policies, Walkability Checklist standards, and Vision Zero policies, which focus on eliminating existing hazards and designing the transportation network so as to enhance safety of all ways of travel. Although Alternative 1 implementation would add vehicle trips to the surrounding roadways, this general increase in vehicle traffic volumes would be less than the proposed Project and distributed among multiple streets in the transportation study area, and therefore, would not be considered a traffic hazard.

Similar to the Project, the proposed realignment of Western Heritage Way/Crystal Springs Drive would improve pedestrian safety associated with Zoo Magnet Center students and staff crossing this roadway. The existing driveway serving the overflow parking lot and the Zoo Magnet Center would be eliminated, thereby reducing the potential vehicle and bicycle conflicts at that location. The realigned roadway and south driveway would be engineered to comply with LADOT standards and designed to intersect the roadway at a right angle to address line of sight, turning radii, spacing, etc. The roadway would also provide necessary sidewalks, crosswalks, and pedestrian movement controls to meet the City's requirements to protect vehicle, bicycle, and pedestrian safety. The overall reduction in vehicle trips and vehicle congestion under operation of Alternative 1 would improve safety for bicycles and pedestrians in the Project vicinity. Therefore, impacts related to driving hazards would be similar to the proposed Project and *less than significant*.

Since Alternative 1 would not include excavation for Condor Canyon, Alternative 1 would not result in beneficial circulation and safety impacts associated with provision of the Primary Path Loop for pedestrians and the separated pedestrian and service roads. Alternative 1 would also eliminate the funicular within the California planning area and associated safety impacts. The proposed Zoo aerial tram would comply with the current applicable safety regulations (i.e., Safety Requirements for Passenger Tramways [ANSI B77.1] and CCR Title 8, Subchapter

6.1, Article 8 Wire Rope and Strand Requirements). Implementation of the current engineering design and operational standards for the proposed Zoo aerial tram would ensure there are no near-term or long-term safety impacts associated with operation of these structures. Similar to the Project, Alternative 1 improvements to the Zoo's internal circulation would result in reduced beneficial and *less than significant* operational impacts to safety hazards.

T-4: Would the project result in inadequate emergency access?

While Alternative 1 would involve demolition, excavation, and construction of roadways, pathways, and access routes both internal and external to the Zoo, construction activities would not disrupt access to primary or secondary designated Disaster Routes along I-5, SR-134 and San Fernando Road. Further, this alternative's phasing plan would limit disruption or obstruction of access and evacuation routes within the Zoo (refer to *Public Services*). Implementation of **MM T-1,** requiring a Construction Traffic & Access Management Plan with measures for controlling and ensuring continued access to the Zoo and through the interior of the Zoo circulation system, would address impacts from construction of proposed improvements on emergency access and evacuation Alternative 1 operation would also not impair adopted County or City mapped Disaster Routes along I-5, SR-134 and San Fernando Road, as all development would be contained within and immediately adjacent to the Zoo. Alternative 1 would include improvements to existing roadways and intersections surrounding the Zoo that would improve emergency response and access (refer to *Public Services*). However, Alternative 1 would include limited improvements to the circulation system within the Zoo and would result in reduced beneficial impacts but *less than significant* impacts to emergency access, similar to the Project.

Utilities

UT-1: Would the project result in the construction of new water facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? Would the project have sufficient water supplies available to serve the project from existing entitlements and resources, or would new or expanded entitlements be needed?

Similar to the proposed Project, Alternative 1 construction would require water for dust control, equipment cleaning, soil excavation and export, and re-compaction and grading activities. Water use is conservatively estimated at 2,000 gpd during construction, which would be substantially less than existing water consumption at the Project site, which is estimated to be approximately 107,508,000 gallons per year (approximately 294,542 gpd) and could be accommodated by the existing water infrastructure onsite. Further, due to the reduced extent and duration of construction activities under Alternative 1, there would be a reduction in potable water demand as compared to proposed Project construction. Therefore,

temporary construction-related impacts associated with water demand and water infrastructure would be less than the Project and *less than significant*.

While Alternative 1 would require installation of new water lines to replace existing lines, this alternative would require limited expansion to undeveloped areas of the Zoo in the California and Africa planning areas. Alternative 1 would connect to the City's water supply system with new laterals installed within the Project site and existing outdated water mains within the Project site would remain protected, capped, and abandoned in place during construction. Construction impacts associated with the installation of laterals, and installation of a new recycled water connection would primarily involve minor trenching onsite. Prior to ground disturbance, all proposed work associated with the water laterals would be subject to review and approval by the City Department of Public Works and all appropriate permits (e.g., public right-of-way permits) would be obtained, as necessary. The construction contractor would be required to notify the City Public Works Department in advance of ground disturbance activities to existing avoid water lines and/or disruption of water service to offsite properties. Therefore, impacts on water infrastructure from construction activities would be similar to the Project and *less than significant*.

During operation, water demand would be less compared to the proposed Project due to the reduction development and associated decreases in annual visitation. Based on the anticipated amount of growth to occur under Alternative 1, Alternative 1 would increase annual demand for potable water to 10,142,368 gallons per year (31 AFY) over existing conditions, a 9.4 percent increase. This increase would be approximately 27,317,629 gallons per year less than the proposed Project. Similar to the Project, the proposed stormwater management system would substantially offset the increased water demand and virtually eliminate the Zoo's irrigation water demand. As described under *Hydrology and Water Quality*, the proposed stormwater management system would be designed to retain 100 percent of flows generated under a 2-year, 24-hour storm event (equivalent to 2.44 inches of rainfall) or approximately 6.8 million gallons (20.9 AF). Based on historic precipitation data for the Los Angeles area, the proposed stormwater system once completed in Phase 3 of Alternative 1 would be capable of capturing and retaining 35,000,000 gallons per year (107 AFY) (refer to Section 3.16, *Utilities*) for irrigation of landscaping and exhibit areas. With this offset in annual irrigation water demands, the increased annual potable water demand under Alternative 1 would be entirely offset by the proposed stormwater system. Therefore, Alternative 1 would result in no operational water demand on the City's water supply. Therefore, the City would be able to serve Alternative 1 without additional unplanned new or expanded entitlements and Alternative 1 implementation would not affect the ability of the City to meet its goal to source 70 percent of water locally by 2035 under the Green New Deal pLAn.

Potable water demand would be further reduced through compliance with City's Water Efficiency Requirements and Green Building Code (LAMC Chapter XII, Article 5 and Chapter IX, Article 9), **MM UT-1**, and **MM HYD-7**, which would require the use of highly efficient

plumbing fixtures, irrigation, and landscaping for new construction, expanded use of recycled water, and installation of efficient irrigation systems for all existing and proposed new landscaped areas within the Zoo. While not required to further reduce impacts from the Zoo's water demand, **MM UT-2** is recommended to include all recommended civil engineering and water efficiency measures recommended in the Appendix (*New Infrastructure: Plumbing)* of the draft Vision Plan. Further, **MM UT-1** would require the Zoo to extend recycled water lines throughout the interior areas of the Zoo to provide recycled water for washdown of the animal holding areas, irrigation, and power washers, in the Zoo's exhibits (e.g., treatment systems, ponds, aesthetics/water features, etc.) where feasible, as well as for fire suppression where feasible. Based on the City's current recycled water production capacity of 649,600 AFY and objectives for expanding opportunities for use of recycled water supplies, the City recycled water system has available capacity to adequately serve the recycled water demands of the Project. Expansion of the Zoo's non-potable water use as required by **MM UT-1** would require an additional connection to the City's water recycling system at the existing 8-inch recycled water main at the west end of the Zoo parking lot. The expanded use of recycled water for Zoo operations that do not require potable water quality would further reduce the Zoo's dependence on potable water supplies and implement the Green New Deal pLAn and One Water L.A. Plan. Therefore, similar to the Project, impacts on the City's non-potable (recycled or reclaimed) water supplies would be *less than significant with mitigation*.

UT-2: Would the project result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Similar to the Project, the proposed stormwater management system would result in environmental impacts associated with excavation and trenching of underlying soils, emissions from construction equipment and fugitive dust, construction vehicle traffic, construction stormwater runoff, potential disturbance of archaeological and paleontological resources, and construction related noise. Detailed analysis of the potential impacts associated with installation of the proposed stormwater system are analyzed in each of the respective resources sections of Section 4.5.2, *Alternative 1 – Reduced Project Alternative*. Alternative 1 implementation, along with installation of the stormwater collection system would also result in or contribute to construction-related impacts to those resources. Mitigation measures necessary to reduce Alternative 1 impacts associated with installation of the new stormwater collection system are also identified therein and would be capable of reducing environmental impacts to *less than significant with mitigation*. With regard to impacts from hydrology and water quality, the stormwater collection system would result in beneficial drainage impacts associated with stormwater reuse, similar to the Project.

UT-3: Would the project require or result in the construction of new wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? Would the project 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? Would the project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

Similar to the Project, the proposed stormwater collection system would capture, convey, and store rainfall from the Zoo and the 79.7-acre hillside area adjacent to the Zoo for reuse onsite as irrigation water. Therefore, the proposed stormwater collection system would substantially reduce flow to the Zoo Wastewater Facility. Since the Zoo Wastewater Facility would receive only overflow stormwater from flows greater than the 2-year, 24-hour storm event, the volume of water directed to the Zoo Wastewater Facility would be reduced by up to 35 million gallons per year and up to 6.8 million gallons per day. Following completion of the proposed stormwater collection system, the majority of flows to the Zoo Wastewater Facility would include animal pond water from the Zoo's exhibits. Similar to the Project, there is no proposed increase in the total number of pools requiring periodic draining and refilling, requiring water demand and treatment at the Zoo Wastewater Facility. Any additional animal pools and other water features that would be constructed under Alternative 1 would be installed with Life Support Systems (i.e., recirculating water treatment systems), which require a much lower frequency of draining and filling. Proposed expansion of the animal exhibits would increase generation of animal pond water to the Zoo Wastewater Facility by approximately 2,182 gpd, for a total of 32,182 gpd. Due to the substantial reduction in stormwater flows that would be conveyed to the Zoo Wastewater Facility, an incremental increase in generation of animal pond water would not exceed the 1.8-million-gallon maximum capacity of the Zoo Wastewater Facility.

Based on reduced visitation and employment, Alternative 1 would increase wastewater generation at the Project site by up to 32,788 gpd, which would be 10,909 gpd less than the proposed Project and less than 1 percent of the LAGWRP's approximately 2.8 mgd of additional full tertiary treatment capacity. Given that the increased wastewater flow would be a *de minimus* incremental increase, the LAGWRP would have sufficient capacity to serve Alternative 1's projected demand in addition to the provider's existing commitments and no new or expanded water or wastewater treatment facilities would be required to serve Alternative 1. Further, Alternative 1 proposes a new plumbing system within the Zoo to replace the existing outdated sewer pipes and connect to new restrooms. The proposed new plumbing systems at the Zoo would be installed in accordance with the current California Building Code and Plumbing Code (CCR Title 24), Green Building Code (CCR Title 24, Part 11), State Water Conservation Guidelines, and Green Building Standards. In accordance with Section 64.15 of the LAMC, the Zoo would be required to submit a Sewer Capacity Availability Review (SCAR) request to the BOE and pay a SCAR Fee prior to building plan approval to

evaluate the capacity of the existing North Outfall Sewer to convey the projected wastewater generation from the Zoo through 2040. With assurance of adequate planning-level surveys of the existing North Outfall Sewer per existing City regulations, impacts to the LAGWRP and the North Outfall Sewer would be similar to the Project and *less than significant*.

Implementation of the proposed stormwater collection system would reduce the volume of discharge from the Zoo Wastewater Facility to the City's North Outfall Sewer by 56 percent during and following storm events (refer to Section 3.16, *Utilities*). Additionally, the Zoo Wastewater Facility would continue to hold animal pond water and overflow stormwater from the Zoo until periods of low flow to avoid overloading the North Outfall Sewer. Therefore, implementation of the stormwater collection system would result in beneficial and *less than significant* impacts to the North Outfall Sewer, similar to the Project.

UT-4: Would the project be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs? Would the project comply with federal, state, and local statutes and regulations related to solid waste?

Alternative 1 construction would generate similar C&D waste to the proposed Project since Alternative 1 would demolish and redevelop existing areas of the Zoo. In accordance with the City's C&D Waste Recycling Ordinance, all mixed C&D waste generated during construction and not reused onsite would be hauled to a City-certified C&D waste processor. Therefore, solid waste impacts from C&D waste would be similar to the Project.

Alternative 1 would not substantially increase disposal of animal bedding and waste at the Griffith Park Compost Facility due to the limited new development and expansion of animal exhibits. Based on the proposed increase in Zoo animal space, Alternative 1 would increase disposal of animal bedding and waste at the Griffith Park Compost Facility by up to 48.91 tons per day, which is 40 percent less than the proposed Project. Therefore, future solid waste generation would remain below the Griffith Park Compost Facility's total permitted capacity of 156 tons per day.

Although Alternative 1 would also increase operational solid waste generation at the Zoo, including trash and recycling, this increase would be less compared to the proposed Project due to the limited new development and associated increase in annual visitation. Based on the projected annual visitation growth, the estimated increased solid waste generation under Alternative 1 is 5.46 tons per day. Assuming the existing diversion rate of 76.4 percent, this would result in up to 1.29 tons per day. The additional 1.29 tons of solid waste per day that is anticipated to be generated by Alternative 1 implementation in 2040 would comprise less than 1 percent of the total daily permitted capacity of Sunshine Canyon Landfill (8,300 tons of solid waste per day). Further, the Zoo would manage trash and recycling generated by animal care, dining facilities, restrooms, and other visitor-serving facilities within the Zoo campus in accordance with all applicable state and local requirements. Therefore, similar to the Project, Alternative 1 would not conflict with federal, state, or local statues and regulations related to solid waste disposal. Similar to the Project, Alternative 1 would be served by solid waste

facilities that maintain adequate policy. Therefore, Alternative 1 would have a *less than significant* impact related to solid waste.

Wildfire

WF-1:	Would the project impair an adopted emergency response plan or emergency evacuation plan?

While Alternative 1 would involve demolition, excavation, and construction of roadways, pathways, and access routes both internal and external to the Zoo, construction activities would not disrupt access to primary or secondary designated Disaster Routes along I-5, SR-134 and San Fernando Road and this alternative's phasing plan would limit disruption or obstruction of access and evacuation routes within the Zoo (refer to *Public Services*). Implementation of **MM T-1,** requiring a Construction Traffic & Access Management Plan with measures for controlling and ensuring continued access to the Zoo and through the interior of the Zoo circulation system, would address impacts from construction of proposed improvements on emergency access and evacuation of the Zoo in response to a wildfire. Impacts associated with increased risk of wildfire during Alternative 1 construction would be similar to the Project and *less than significant with mitigation.*

As discussed in *Public Services* for Alternative 1 above, operation of Alternative 1 would not impair adopted County or City mapped Disaster Routes along I-5, SR-134 and San Fernando Road, as all development would be contained within the Zoo and bordering areas of Griffith Park. Alternative 1 would include improvements to existing roadways and circulatory systems both within and surrounding the Zoo that would improve emergency response and access, emergency evacuation, and sheltering in place (refer to *Public Services*). Therefore, Alternative 1 would not impair emergency response or evacuation, similar to the Project, and impacts would be *less than significant.*

WF-2:	Would the project exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire due to slope, prevailing winds, and other factors?

The Project site is located within a Very High FHSZ at the base of steep vegetated slopes within Griffith Park with onsite and adjacent fire-prone vegetation, steep slopes, limited perimeter access, and annual Santa Ana winds. Alternative 1 construction would introduce new potential ignition sources over the course of 20 years, such as the use of heavy machinery and fuels, which create the potential for sparking and could exacerbate wildfire risk. Although all construction would be performed in a fire-safe manner consistent with existing regulations, potential for accidental ignition of onsite or adjacent wildland vegetation would remain, similar to the project. Additionally, Alternative 1 would avoid tree and vegetation removal, including hundreds of highly flammable eucalyptus trees, as well as over 13 acres of flammable native chaparral and up to 7 acres of oak woodland. Therefore, Alternative 1 would

not result in beneficial impacts associated with reducing the extent of onsite flammable vegetation.

Alternative 1 would avoid construction on hillsides in the California and Africa planning areas, which currently support flammable native and non-native vegetation and are located on steep slopes adjacent to wildlands in Griffith Park. Additionally, Alternative 1 would avoid blasting, for Condor Canyon in the California planning area, and associated construction-related fire ignition risks. Therefore, Alternative 1 construction would reduce risk of fire hazard when compared to the proposed Project. Similar to the Project, Alternative 1 construction would be implemented in compliance with all applicable requirements of the City's Fire Code and NFPA 241 *Standards for Safeguarding Construction, Alternation, and Demolition Operations*. With implementation of existing regulations, risks associated with Alternative 1 construction would be reduced such that Alternative 1 construction impacts associated with increased risk of wildfire during Project construction would be the same as the Project and *less than significant*.

Alternative 1 would also reduce risk of onsite vegetation ignition due to reduced visitation and exhibit expansion as compared to the proposed Project. Alternative 1 would not include campouts in the Africa and California planning areas, which could involve potential ignition sources ranging from regulated campfires, cooking/BBQ, electric wiring, and unpermitted smoking. While Alternative 1 is expected to increase in visitor attendance over existing conditions, the total and density of people within a designated Very High FHSZ would be reduced as compared to the proposed Project.

Similar to the proposed Project, the Zoo would continue to implement procedures for managing fuels, ensuring adequate evacuation of the Zoo, and providing appropriate forms of access to the Zoo and surrounding wildland-urban interface (WUI), as required in the City's Fire Code and by LAFD, and preparation and application of emergency management and evacuation plans per both City and AZA regulations. In addition, all development would undergo plan review by the LAFD to ensure appropriate designs for access and fire flow as required under Chapter 5 of the City Fire Code. Per **MM WF-2**, the Zoo would be required to update these plans as appropriate based on proposed improvements and changes in site access and circulation through Alternative 1 implementation. Therefore, with the application of existing regulations and requirements to update wildfire management and evacuation plans, Alternative 1 would not significantly exacerbate wildfire risks resulting in the exposure of Zoo staff and visitors to wildfire hazards, and impacts would be *less than significant with mitigation*, similar to the Project.

WF-3: Would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

Unlike the proposed Project, Alternative 1 would not develop hillside areas within the Zoo that currently act as fuel breaks between the Zoo and wildland areas. As such, this alternative would not require expansion or reestablishment of these fuel breaks elsewhere and would minimize impacts from loss of sensitive natural communities, species, and protected trees. Alternative 1 implementation could protect up to 6 acres of native chaparral and oak woodland habitat within Griffith Park, and thus, impacts would be less than the Project. Alternative 1 would result in *less than significant* impacts to the environment from the installation or maintenance of fire-related infrastructure.

WF-4: Would the project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

Alternative 1 development would occur downslope or downstream of steep hillsides and three small drainages within Griffith Park. There are no creeks or rivers mapped within the Project site, but stormwater flows from the hillsides through the Zoo's stormwater management system, which removes silt and grit from stormwater before it flows to the LAGWRP. If a wildfire burned large areas within Griffith Park adjacent to the Zoo, post-fire runoff from a major storm event, slope instability, landslides, drainage changes, and limited flooding or sedimentation could occur within the Zoo. The relatively small size of the watershed draining into the Zoo (~80-acres) would potentially limit problems. If wildfire-denuded surrounding hillsides were subjected to a high intensity rain event, new development within the Zoo, especially new development at the base of the hillsides, has limited potential to experience damage from sedimentation. Sediment and debris could plug existing and planned drainage improvements, including the proposed stormwater collection system (refer to Section 3.10, *Hydrology and Water Quality*). Two of the proposed subsurface cisterns serving the Bird Show and Animal Programs amphitheater and the Nature Play Park planning area are located on high elevation sites relative to the flat interior or the Zoo. These new cisterns would capture all runoff, debris, and sediments conveyed through the watershed, resulting in the potential accumulation of sediment or debris within the system, especially in the event of high rainfall closely following burn of the watershed. However, the small size of the existing watersheds would not create significant runoff, debris flow, or landslides caused by post-fire slope instability that place Zoo occupants or structures at substantial risk. Therefore, impacts would be similar to the proposed Project and *less than significant*.

Conclusion and Relationship to Project Objectives

Alternative 1 would retain approximately 21 acres of undeveloped area currently within Zoo property in its current setting. In doing so, this alternative would preserve a combination of

native and non-native vegetation communities supporting a limited range of sensitive species and protected trees, as well as avoid visual and geologic changes to these areas. As a result, this alternative would reduce potentially significant impacts to biological and urban forestry resources, as well as aesthetics, air quality and GHG emissions, energy, noise, transportation, and utilities. With mitigations required for the Project, Alternative 1 would reduce one significant and unavoidable impact (Impact VIS-2) related to aesthetic impacts to the visual character of the Zoo in context of the Zoo Drive gateway to Griffith Park. However, Alternative 1 would still generate VMTs that exceed the City's TAG threshold of net-zero VMT for regional attractions like the Zoo and impacts related to Zoo would remain significant and unavoidable under Alternative 2.

Alternative 1 would continue to support long-term redevelopment of the existing Zoo to be partially consistent with several of the Project objectives, including improvement of animal welfare and care (Project Objective No. 1) though to a lesser extent, modernization of exhibit spaces (Project Objective No. 2), improvement of the visual appearance of the Zoo (Project Objective No. 11), and incorporation of sustainable design practices (Project Objective No. 13). However, this alternative would not include the expanded exhibits within the California and Africa planning areas proposed under the Project, which would limit expansion within Zoo property. Due to the reduced footprint of the Zoo and smaller increase in visitation over time, this alternative would likely not generate as much revenue as the proposed Project and could undermine the economic viability of the Vision Plan. Therefore, this alternative may not be able to support expansion of conservation efforts, education, or enhanced visual appearance to the same extent as the proposed Project.

Likewise, with less area contributing to the design and function of a redeveloped zoo, this alternative would not utilize all of the Zoo property to maximize immersive experiences for visitors or expand visitor-serving features (Project Objectives Nos. 5, 6, and 7). The improvements proposed as part of the California and Africa planning area under the Project are intended to be designed as nature-based, immersive exhibits and features that seamlessly blend with the visitor environment and would facilitate development of new Zoo experiences that would attract visitors and establish the Zoo as a world class destination. These areas would no longer include key facilities for daytime and evening special events, including the California Visitor Center, picnic areas, and campout zones. Reduction in special event space would limit the Zoo's ability to draw visitors to a diverse range of experiences that would support the Zoo's operations and overall financial success.

Further, elimination of Condor Canyon would inhibit the creation of an efficient and accessible internal loop circulation system with a Primary Loop Path (Project Objective No. 8). This feature is key to improving not only visitor experience but also to visitor safety and operational excellence (Project Objective Nos. 9 and 14). This alternative would include some improvements to the secondary/exhibit pathways and would implement the proposed Zoo aerial tram to improve access; however, a funicular would not be developed and many of the Zoo's pathways would remain inaccessible for ADA visitors and potentially difficult to

navigate, similar to the existing setting at the Zoo. As a result, Alternative 1 would not meet or only partially several Project objectives.

4.5.3 Alternative 2 – Multi-modal Transportation Alternative

Under the Multi-modal Transportation Alternative, the Zoo would implement measures that would go beyond the state and regional goals and policies for reducing VMT and increasing multi-modal transportation. Alternative 2 would incorporate Project mitigation measures and additional measures for reducing VMT into the design of the Project. This would involve additional measures to increase active transportation and transit to and from the Zoo by coordinating with local and responsible agencies, providing funding for key improvements, and incentivizing alternative modes of travel. Alternative 2 would result in a greater level of consistency with state and regional goals for reducing VMT and associated vehicle GHG emissions, slightly reducing impacts compared to the Project; however, due to the City's adopted thresholds for regional serving retail projects, impacts would remain significant and unavoidable. Nevertheless, Alternative 2 would achieve all of the Project objectives.

The Multi-Modal Transportation Alternative (Alternative 2) would guide long-term redevelopment and operations of the Zoo with an identical land use and phasing plan as the Project but under a substantially expanded transportation and circulation plan to integrate physical and programmatic improvements for multi-modal transportation to the Zoo. As proposed, the Vision Plan includes improvements to roadways and parking areas, including realignment of Crystal Springs Drive/Western Heritage Way, intersection improvements at Zoo Drive/Western Heritage Way, increased capacity for 300 additional spaces in the southern parking lot, and construction of a 2,000-space parking structure in the northern parking lot. These improvements would be needed to accommodate growth in average daily trips to the Zoo from 1.2 million additional visitors per year and increased employees. Improvements for non-vehicular modes are limited to relocation of an existing bus stop to be more directly accessible to the Zoo Entry and the Autry Museum of the American West and maintenance of bicycle parking to minimally comply with City standards.

The Zoo is set in a relatively transit poor area where one bus stop is served by two local routes (Metro Line 96 and the Griffith Parkline) with limited services (i.e., longer headways, limited hours of operation). There are also few direct and desirable pedestrian and bicycle facilities connecting to surrounding communities, including Burbank, Glendale, and City neighborhoods. For example, the Los Angeles River Bike Path is not directly connected to the Zoo via on-road or dedicated bike paths. As a result, most trips to the Zoo are made by vehicle. The Zoo also provides free parking to visitors and employees, which makes driving more attractive and convenient. Without investments in multi-modal transportation infrastructure and equipment and targeted incentives and public information to change travel behaviors, additional trips to the Zoo under the Project would continue to be made largely by vehicle. As

discussed below, continued operation of the Zoo with limited facilities and support for multi-modal transportation does not comport with adopted and emerging state, regional, and local policies and regulation to transform travel behavior, reduce VMT, and provide non-vehicular options for daily commuting and regional trips.

Alternative 2 would address these policies to expand multi-modal connectivity and further reduce VMT compared to the Project. All components described in Section 2.0, *Project Description* would remain exactly as described under this alternative, including all planning area improvements, growth and attendance projections, transportation and circulation features, utility improvements (e.g., the proposed stormwater management system), and construction assumptions for grading, excavation, equipment, and durations. Alternative 2 would involve the same development program as the Project (20 years) occurring over seven phases of construction. The one exception would be the proposed parking structure in the northern parking lot, which would be reduced in size commensurate to reduced demand for parking that may occur by Phase 7 of Vision Plan implementation. Similar to the Project, phases of Zoo development would occur sequentially. All phases would be guided by the Vision Plan's guiding principles (see Sections 2.3.2, *Project Objectives*, and Section 2.3.3, *Vision Plan Guiding Principles*). This alternative is analyzed programmatically due to the nature of the Vision Plan and lack of detailed design and information regarding proposed improvements.

Issue Background

In the past two decades, the state has initiated plans, strategies, and policies establishing goals and objectives for reducing GHG emissions in an effort to slow the rate of human-induced global climate change. With the passage of the Global Warming Solutions Act (AB 32) in 2006 and several subsequent Executive Orders and Senate Bills (SBs), the state is committed to reducing statewide GHG emissions to 1990 levels. In 2008, the state recognized the connection between land use planning and reliance on vehicles as the primary mode of transportation as a substantial source of GHG emissions, with the result being emissions from vehicles accounting for 30 percent of GHG emissions in California. To achieve the GHG reduction targets established under AB 32 and SB 32, the California Air Resources Board (CARB) prepared the Climate Change Scoping Plan and updated it in 2017. The 2017 Climate Change Scoping Plan reflects the statewide GHG emissions reduction goals and includes various measures to reduce VMT and vehicle GHG, including a goal to reduce light duty VMT by 15 percent by 2050.

In 2016, Governor Brown passed SB 743, after which the Office of Planning and Research (OPR) amended to CEQA Guidelines to utilize VMT-based performance metrics for analyzing transportation impacts under CEQA. Consistent with the 2017 Climate Change Scoping Plan, OPR has recommended a similar threshold for transportation impacts, recommending that a residential or office project that would exceed a level of 15 percent below existing VMT per capita may indicate a significant transportation impact. For regional serving retail projects, OPR's recommended that any increase in VMT may indicate a significant impact (OPR 2018).

In July 2019, the City adopted the revised City of Los Angeles CEQA Transportation Thresholds, which adopted these same thresholds for regional attractions. As discussed in Section 3.15, *Transportation,* the Project is considered a Regional-Serving Entertainment Venue and Event Center per the City's 2020 TAG, and impacts are evaluated against the threshold of no net increase in VMT. However, because the Zoo is a regional destination located in a relatively transit poor area and the nature of the Vision Plan is to increase visitation, achieving a net-zero increase in VMT can be difficult or nearly impossible, and impacts would be significant and unavoidable when compared to this threshold. Strategies or mitigation for achieving VMT reductions for regional attractions can be difficult due to the nature of the trips, large volume of visitors attracted to the use each year, and the origin of the trip or distance traveled by visitors.

Expanded Multi-Modal Transportation Improvement & Strategies under Alternative 2

In recognition of these measures for reducing VMT and difficulties in achieve net-zero VMT, Alternative 2 would maximize alternative modes of travel to and from the Zoo to achieve greater reductions in VMT consistent with the goals of state and regional plans. Under Alternative 2, all transportation, circulation, and parking improvements proposed under the Project would continue to be implemented with the exception of the onsite parking structure, which would be reduced in size commensurate to the reduced demand for parking resulting from increased use of alternate modes of transportation (see discussion of *Parking Improvements* below). In addition, Alternative 2 would incorporate all of the measures identified as part of the Zoo TDM Program (**MM T-2**), plus additional measures necessary to achieve a goal of reducing total Zoo VMT by 15 percent by 2040. This collection of TDM measures would become additional components of the Vision Plan.

Alternative 2 would include the comprehensive TDM Program overseen by a qualified TDM Coordinator, as described in **MM T-2**. The TDM Coordinator would monitor visitor and employee mode share with annual surveys, collect and analyze parking and transit use data, and develop annual reports for submittal to BOE and LADOT. Monitoring results would be used to determine the appropriate TDM measures to employ in the coming year to reduce total Zoo VMT by 15 percent by 2040, champion transit and alternative mode transportation to the Zoo for visitors and employees, develop appropriate incentives to increase the Zoo's transit mode share incrementally over time, and develop effective marketing tools to advertise transit and non-vehicular travel mode availability and incentives. Specific VMT reduction strategies, which would be finalized during review and approval by the City and LADOT, would meet an overall goal of reducing projected Zoo employee VMT and visitor VMT each by 15 percent. Alternative 2 would include the improvements and measures described below:

General Trip Reduction Measures

Alternative 2 would include general measures to increase awareness of TDM programs and opportunities to travel to the Zoo without a car, including the following:

- Offer employee TDM benefits for use of active transportation commuter modes, including ridesharing, transit, bicycling, walking, carpool/vanpool, etc. Incentives for Zoo employees could include flexible scheduling or options for telecommuting.
- Maximize opportunities for Zoo employee to telecommute as part of regular scheduling.
- Provide a transportation information center and a commuter club to support a collaborative approach among employees to TDM.
- Continue to seek grant funding to support expanded TDM measures to reduce employee VMT per capita.

Transit and Rideshare Improvements

Alternative 2 would involve the Zoo establishing an initial transit mode share target of 5 percent by 2025, 10 percent by 2030, and 15 percent by 2040. Alternative 2 would include the following improvements or measures to substantially increase transit ridership and ridesharing:

- Develop/expand the Zoo vanpool program and encourage employee participation in existing vanpool programs, including City employee and Metro vanpool programs.
- Provide employee incentives to participate in a vanpool program and regularly advertise the opportunities to vanpool through a variety of employee communication formats.
- Partner with rideshare companies such as Uber or Lyft to guarantee availability of an emergency ride home or provide access to City vehicles for this purpose.
- Offer discounted Zoo entrance tickets for patrons using transit to visit the Zoo. Visitors must provide proof of arrival via transit to receive discounted rate. Advertise the availability of ticket discounts for transit through social media and in coordination with RAP, LADOT, and Metro.
- Coordinate with Metro to increase bus service frequency to the Zoo bus stop, including proportional share funding.
- Pursue proportional share funding in coordination with RAP or the development of other alternatives to expand Parkline Shuttle service to increase access to Griffith Park and Zoo from nearby Metro light rail stations, as follows:
    - Expand Parkline Shuttle service to connect to the Metro B Line Vermont/Sunset station in the south and the Metro B/G (formerly, Orange) Line North Hollywood station in the north. Shuttle routes should be coordinated with LADOT and RAP.
    - Extend Parkline Shuttle service hours to begin serving the Zoo bus stop at 9:30 AM, before the Zoo opens each day, and continue to run until 10:00 PM to ensure availability to employees and visitors. This expanded service would first be targeted to occur during peak demand periods such as Easter, Memorial Day, and during Los Angeles Unified School District (LAUSD) holidays, such as the week of spring break.

  - Coordinate with RAP to monitor the success of the Parkline Shuttle during such peak periods and to fund expansion of the service over time, as needed, to facilitate and accommodate increased ridership. The program shall then be expanded to broaden the hours and days of operation as needed to meet demand.
  - Coordinate with RAP on how best to advertise and perform outreach to user groups regarding the availability of this transit service and methods to increase ridership (e.g., social media outreach, print media, radio, television).
- Pursue proportional share funding in coordination with Metro and LADOT or development of other alternatives to provide an express shuttle service to and from Los Angeles Union Station and the Zoo.
  - Provide Union Station shuttle during operating hours on weekends and legal holidays. This new service would first be targeted as a pilot program to occur during peak demand periods such as Easter, Memorial Day, and during LAUSD holidays, such as spring break week. If successful, the program shall then be expanded to broaden hours and days of operation.
  - Coordinate with Metro and LADOT on how best to advertise and perform outreach to user groups regarding the availability of this transit service and methods to increase ridership (e.g., social media outreach, print media, radio, television).

Bicycle and Pedestrian Improvements

The existing Zoo is relatively isolated from surrounding communities in the cities of Glendale and Burbank. As such, pedestrian and bicycle access to the Zoo is limited. Alternative 2 would include the following measures or improvements intended to improve or promote active modes of travel to the Zoo:

- Provide onsite bicycle facilities (i.e., shower, racks, and lockers) for Zoo employees in an amount and location informed by annual employee surveys and monitoring reports.
- Encourage bicycles as a primary commute mode for employees and provide incentives for biking to work, including providing free or discounted equipment to employees such as helmets, locks, bicycle commuter gear, and bicycles (electric or non-electric).
- Coordinate with LARiverworks, RAP, and LADOT to identify and facilitate new bicycle and pedestrian linkages and bridges between the Zoo and neighboring communities, particularly linkages to Los Angeles River Bike Path. The Zoo, RAP, and LADOT in consultation with the City of Glendale shall consider development of a new bicycle and pedestrian bridge across Colorado Boulevard, linking neighborhoods within the City of Glendale to Griffith Park, south of the Project site. The Zoo, RAP, and LADOT shall ensure that all bicycle and pedestrian linkages and bridges to Griffith Park are well-signed and provide lighting, are regularly patrolled by law enforcement.
- Maintain and expand onsite bicycle parking for Zoo visitors in an amount and location informed by visitor surveys and annual monitoring reports.

- Maintain and expand short-term bicycle parking within the Zoo to meet changing demands evaluated in the TDM Program annual reports.
- Provide well-lit, clearly signed, bicycle parking that is convenient and in close proximity to the Zoo Entry to encourage bicycling by visitors.
- Provide secure short-term bicycle parking and/or a bicycle parking attendant, bicycle valet, or indoor bicycle parking facility or other measures to prevent theft and ensure parking availability for Zoo visitors.
- Design bicycle racks with space-efficient configurations, such as vertically staggered racks and two-tier racks.
- Provide a bike share station at the Zoo as a part of the Metro Bike Share, Ofo, or a new bike share program specific to Griffith Park. The provision of funds for the bike share station may be determined based on the area required for the bike station. The bike share station shall be well-lit and located at a safe and convenient location adjacent to the Zoo entrance.

Parking Management

Alternative 2 would involve all of the same parking improvements proposed under the Project with a new parking program to manage employee and visitor demand and generate a funding source for the Zoo. A paid parking program in concert with the expansions in transit and active transportation modes would help to encourage traveling to the Zoo without a car for employees and visitors. Alternative 2 includes the following measures to discourage driving and parking at the Zoo:

- Implement a paid parking program to discourage employee vehicle trips to the Zoo and generate revenue that the Zoo may use to expand transit ridership for employee trips. Pricing options of onsite employee parking spaces include pay-per-use passes.
- Develop and implement a paid parking program for Zoo visitors to discourage personal vehicle trips to the Zoo and identify possible funding source to help subsidize TDM, transit improvements, and other trip reduction measures, considering the following options:
  - A Peak Period Parking Program would charge for preferred parking during the highest visitation periods, including all weekends (Saturdays and Sundays), holidays, the spring months (April and May), and December, collecting fees for preferred parking on approximately 170 days of the year (based on the 2020 calendar year).
  - An Everyday Parking Program would charge for preferred parking 363 days of the year (every day the Zoo is open).
  - Maintain at least 15 percent of parking spaces as free parking to meet the needs of disadvantaged households and ensure that low-income visitors may continue to visit the Zoo.

- The Zoo's TDM Coordinator shall prepare a quarterly report on the effectiveness of the Paid Parking Program and monthly revenue generated.
- Continue to seek grant funding to support expanded TDM measures to reduce visitor VMT per capita.

Potential Impacts to Resources

Aesthetics and Visual Resources

VIS-1: Would the project have a substantial adverse effect on a scenic vista?

Alternative 2 would result in identical impacts to scenic views as the proposed Project. The built environment within the Zoo's interior is not easily visible from surrounding vistas due to the dense tree canopy and the Zoo's setting within a canyon bottom surrounded by elevated hillsides and ridgelines. Similar to the proposed Project, impacts to scenic vistas and viewsheds under Alternative 2 would relate to proposed taller structures such as the three proposed visitor centers, including the ridgetop California Visitor Center, and the aerial tram, which would extend above the urban forest canopy within the Zoo, adding structural features not currently visible from surrounding areas. For example, the Treetops Terrace Visitor Center would reconstruct the iconic spires that are intended to be highly visible as a wayfinding beacon. These changes would manifest in the Asia and Africa planning areas.

Construction associated with Alternative 2 would occur in sequential phases in different areas of the Zoo over the course of the 20-year implementation timeline and would involve the presence of large construction equipment and activities that could diminish scenic views of or across the Zoo. Construction activities, particularly grading and the clearing of trees and vegetation, may be visible from the existing Griffith Park public trails where overlooks are provided due to the temporary loss of tree canopy that blocks views of the Zoo's interior and maintains a more natural view of adjacent Griffith Park features. Similar to the proposed Project, construction activities have the potential to create a temporary and adverse change in the existing scenic views or viewsheds; however, adverse changes in the quality of views across the Zoo from local trails would be limited to the duration of construction and short-term. Impacts to views from the removal of vegetation and tree cover are temporarily adverse, and extensive landscaping and tree replanting would restore the existing canopy through each phase of implementation. Therefore, it is anticipated that the dense tree canopy and associated views of the Zoo would return to a condition similar to that which currently exists at the Zoo following implementation.

Similar to the Project, Alternative 2 would not substantially adversely affect scenic vistas or views from trails in Griffith Park. Despite the addition of several taller structures or features, such as the reconstructed Treetops Visitor Center, the ridgetop California Visitor Center, and the aerial tram and associated towers, existing distant views of Griffith Park or urban environment from surrounding trails would not be substantially altered or intruded into. Proposed structures would blend into the Zoo topography and urban forest landscape and

would not substantially intrude into or interrupt more distant scenic vistas. Because these scenic vistas are more distant and higher in elevation than the Zoo, obstruction or interference of views by proposed development would be minimal, and scenic vistas of distant prominent features would not be substantially altered. Therefore, existing distant views of Griffith Park or urban environment would be maintained similar to the Project, and implementation of Alternative 2 would have a *less than significant* impact on existing scenic views and vistas.

VIS-2: Would the project conflict with applicable zoning and other regulations governing scenic quality?

Within the Zoo, Alternative 2 would facilitate substantial redevelopment, including expanded animal care and visitor-serving uses into 33 acres of currently undeveloped area within the Zoo property, similar to the Project. Given the existing developed nature of the site as a regional Zoo, additional Zoo development would not result in a drastic transition in use or visual character of the site. The greatest change in visual character within the Zoo would result from development of the undeveloped hillsides within the California and Africa planning areas within the interior canyon portions of the Zoo, including tree removal and terrain changes. Similar to the proposed Project, **MM UF-1** and **MM UF-2** would mitigate impacts related to tree removal. As described above, views of the interior of the Zoo from surrounding public viewing areas are largely obstructed by existing vegetation, ridgelines, or the Zoo's existing tree canopy. The majority of development would continue to be obstructed by or occur below the Zoo's urban tree canopy, which would be maintained through extensive landscaping and tree replanting as each phase of Alternative 3 is implemented. The proposed visible features, including the Zoo aerial tram, California Visitor Center, and Treetops Visitor Center, would not substantially alter views of the topography and natural resources within Griffith Park. Therefore, interior Zoo improvements under Alternative 2 would be consistent with the City's General Plan Conservation Element, Framework Element, 1988 Hollywood Community Plan, and Griffith Park Vision Plan, and impacts would be *less than significant with mitigation*.

Alternative 2 would likely reduce the need for parking with an reduction in vehicle trips from increased TDM measures, and, therefore, the size, bulk, and scale of the parking structure would be reduced when compared to the proposed Project, although the exact size and design is not known at this time. Alternative 2 would reduce impacts to the Zoo's existing visual character as viewed from Zoo Drive and Western Heritage Way due to the reduced parking structure in the northern parking lot. The reduced-size parking structure would be subject to **MM VIS-2** to further reduce visibility and screen the parking structure from view from public roadways, thereby reducing the effect on visual character compared to the Project.

Alternative 2 would install traffic signals at the Zoo Drive/Western Heritage Way intersection, rather than the potential roundabout or below-grade crossing analyzed under the proposed Project. While this alternative would continue to require signalization of the Zoo Drive/Western Heritage Way intersection and realignment of Crystal Springs Drive, these

roadway improvements would not substantially alter the existing character of this area with implementation of **MM VIS-1**, which would ensure roadway design is sensitive to the Griffith Park setting and designed to maintain the existing character. Therefore, Alternative 2 would not modify the existing visual character of the Zoo Drive gateway to Griffith Park or detract from the urban wilderness identity of the park. Further, implementation of the intersection improvements proposed under Alternative 2 (i.e., traffic signals) would not affect views of the topography or natural resources across Griffith Park and would be consistent with the Conservation Element, Framework Element, 1988 Hollywood Community Plan, and Griffith Park Vision Plan. Therefore, impacts to consistency with applicable zoning and regulations governing scenic quality would be reduced compared to the Project and *less than significant with mitigation*.

VIS-3: Would the project create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?

Alternative 2 would involve new development that would potentially produce glare during the daytime from reflective building materials or lighting spillover at night from special event and security lighting. Development would include structures that would protrude above the tree canopy within the Zoo such as the California Visitor Center, Treetops Visitor Center, and the Zoo aerial tram. However, there are no residential or other uses in the vicinity of the Project site that are sensitive to light or glare, and these features would only be visible in the distance from public trails and viewpoints within Griffith Park. Similar to the Project, the Zoo would remain shielded from direct views from the Griffith Observatory and Greek Theater, minimizing potential light spillover and glare effects to these light-sensitive uses.

Similar to the Project, Alternative 2 would result in an increase in lighting produced from the Project site associated with increased special events held at nighttime. While lighting used during such events may be visible from surrounding trails and roadways, hiking trails in Griffith Park are closed at sunset and, therefore, would not be in use during hours when night lighting is used. Further, given the distance between trail overlooks and event centers, lit buildings or structures, such as the California Visitor Center, would not be highly intrusive in context of the overall urbanized landscape view available from the Condor Trail, North Trail, and Skyline Trail. New lighting would also not adversely affect surrounding roadways, as the additional lighting would be similar in context and intensity of after-hour lighting that currently occurs at the Zoo, as well as offsite lighting sources such I-5 and SR-134 and security lighting used at nearby industrial buildings to the east.

Under Alternative 2, structures and features may have reflective surfaces (e.g., large windows, polished surfaces), similar to the Project. For example, proposed aerial tram gondolas are typically constructed with large, rounded glass panels to allow 360° views for riders or include other reflective features that could generate glare that would be visible from nearby public trails. The glare generated from the gondolas could create a nuisance and distract from the scenic views of the Los Angeles Basin from these areas. Similar to the proposed Project, Alternative 2 would require implementation of **MM VIS-3**, which would require the Zoo

utilize tram gondolas that would have matte finishing and earth tone colors to blend with the landscape and reduce or eliminate glare. In addition, the measure would require all glass features of the gondolas utilize non-reflective glass or film covers to reduce reflectivity.

Similar to the Project, Alternative 2 would not generate substantial light and glare impacts with implementation of MM VIS-3 to ensure no substantial glare from the proposed Zoo aerial tram. Therefore, Alternative 2 impacts from generation of glare would be *less than significant with mitigation*.

Air Quality

AQ-1: Would the proposed Project conflict with or obstruct implementation of the applicable air quality plan?

Impacts associated with construction of Alternative 2 would be similar to construction impacts to air quality the proposed Project. Similar to the Project, construction activities associated with Alternative 2 would not introduce population or employment growth to the SCAG region and would have no impact related to underlying assumptions factored into the AQMP inventories. Since construction activities associated with implementation of Alternative 2 would be largely similar to the proposed Project, air pollutant emissions during construction are anticipated to be similar to the proposed Project. Implementation of Alternative 2 would require implementation of **MM AQ-1** to reduce air pollutant emissions from off-road equipment during construction to less than significant levels. The mitigated emissions would not have the potential to conflict with or obstruct implementation of the 2016 AQMP by exacerbating air quality violations or delaying attainment of the air quality standards. Therefore, Alternative 2 construction impacts related to the applicable air quality plan would be similar to the Project.

Operation of Alternative 2 would result in substantially reduced air quality impacts associated with reduced vehicle trips and associated VMT. While expansion of animal exhibits and enhancement of visitor-serving facilities would generate increased visitor attendance and employee growth at the Zoo, the multi-modal transportation improvements (i.e., expansion of transit routes to the Project site, bicycle and pedestrian connections, visitor and employee incentives for transit use) would allow reduced vehicle trips to the Zoo and substantially reduced VMT compared to the Project. Alternative 2 would reduce visitor and employee VMT by at least 15 percent less than projected VMT levels under the proposed Project, which would be consistent with state, regional, and local plans and goals for air quality. Similar to the proposed Project, the incremental change in operational emissions with implementation of long-term improvements would not exceed any applicable SCAQMD mass daily threshold of significance. Operation of Alternative 2 would not have the potential to exacerbate air quality violations in the SCAB or possibly delay attainment of the air quality standards as set forth in the 2016 AQMP. The VMT reduction measures included as a part of Alternative 2 would be consistent with the goals and objectives of the 2016 AQMP. Furthermore, operation of

Alternative 2 implementation would not conflict with land use policies promulgated by SCAQMD and SCAG.

Similar to the Project, Alternative 2 would not generate construction or operation emissions that exceed regional thresholds and would not conflict with or obstruct the AQMP or other applicable air quality plan. Therefore, Alternative 2 impacts would be similar to the Project and *less than significant with mitigation*.

AQ-2: Would the proposed Project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

Without mitigation, construction of Alternative 2 would generate emissions of NO_X, an O_3 precursor, in excess of the applicable SCAQMD regional mass daily threshold. Similar to the proposed Project, mitigated emissions of pollutants generated by construction activities would not generate emissions of pollutants exceeding project-level significance thresholds. Implementation of **MM AQ-1** would ensure that maximum daily pollutant emissions generated by construction of Alternative 2 would not result in a significant increase in emissions of O_3 precursors or particulate matter at either the regional or local assessment scale. Therefore, impacts related to cumulatively considerable net increases in nonattainment pollutants would be *less than significant with mitigation*, similar to the Project.

Compared to the Project, Alternative 2 would reduce operation vehicle trips and VMT by 15 percent compared to the Project, with corresponding reducing in mobile emissions. Emissions sources located on the Project site, including facility operations, would result in incremental increases in daily air pollutant emissions during all stages of operations throughout Alternative 2 improvements, similar to the Project, and would remain below applicable SCAQMD mass daily thresholds of significances. In accordance with SCAQMD guidance, operational emissions of O_3 precursors and particulate matter would be below project-level thresholds and would not result in a cumulatively considerable net increase of any criteria pollutants for which Los Angeles County is currently designated nonattainment. Further, due to the multi-modal improvements included as a part of Alternative 2, Zoo visitors and employees would be encouraged to use alternative transportation to get to the Zoo. Therefore, this alternative would result in substantially reduced operational air quality impacts associated with VMT. Operational impacts to air quality related to cumulatively considerable emissions of nonattainment pollutants would be *less than significant*.

AQ-3: Would the proposed Project expose sensitive receptors to substantial pollutant concentrations?

The sensitive receptors with greatest susceptibility to air quality impacts from implementation of Alternative 2 would be visitors and employees of the Zoo, as well as receptors at the Zoo Magnet Center located in the southern parking lot on the Project site. Similar to the proposed Project, sources of pollutant emissions involved in construction

activities under Alternative 2 would at times be in close proximity to Zoo visitors and employees, as Zoo operations would continue throughout implementation of the Vision Plan. Alternative 2 components that would be implemented in the immediate vicinity of the Zoo Magnet Center are the circulation and parking improvements and Zoo Entry renovation in Phase 1. Similar to the proposed Project, at no time during construction of Alternative 2 would maximum daily emissions from sources located on the site meet or exceed applicable LST screening values (refer to Tables 3.2-9 through 3.2-12 for the proposed Project). Furthermore, implementation of **MM AQ-1** would substantially reduce on-site emissions of NO_X and diesel particulate matter from off-road equipment by requiring the use of construction equipment that meets Tier 4 Final emissions standards. Implementation of **MM AQ-1** and compliance with SCAQMD BMPs would ensure that Alternative 2 construction would not expose sensitive receptors to substantial pollutant concentrations. Further, construction activities would be conducted in accordance with the California Code of Regulations related to lead and asbestos exposure in the event that materials potentially containing these contaminants are encountered during demolition or renovation activities. Impacts related to sensitive receptor exposures would be *less than significant with mitigation*.

After construction associated with each phase of Alternative 2 is complete and the heavy equipment is removed from the Project site, the operational emissions sources on the Project site would be similar to existing conditions. There would be no substantial stationary source of air pollutant emissions associated with operation of Alternative 2. Increases in landscaped and building areas would primarily produce minor increases in VOC, NO_X, and CO emissions from maintenance sources and consumer products use that would be spread throughout the 142-acre Project site. Operation of Alternative 2 would not result in a land use change or alteration to the site that would place sensitive receptors in closer proximity to substantial sources of air pollutant emissions. Further, the multi-modal transportation improvements included in Alternative 2 would significantly reduce visitor and employee VMT by 15 percent and associated air pollutant emissions would be reduced compared to the proposed Project. Therefore, operational impacts related to exposure of sensitive receptors to substantial pollutant concentrations would be less than the Project and *less than significant.*

Air pollutant emissions generated by construction may also be disruptive to Zoo animals. Captive animal species may have a unique sensitivity to the air quality setting of an urban environment. The Zoo is dedicated to the health and welfare of all its animals. Zookeepers and animal caretakers are trained in the monitoring of the Zoo's animals and implement measures appropriate for each individual species to ensure their safety and welfare in accordance with the AZA accreditation and the AWA, which governs the care, handling, and transport of zoo animals. As the Zoo has done in the past during construction of prior improvements, measures to protect these animals may include their temporary relocation away from construction activities, closure of exhibits, or even the transfer of animals to other zoos. Similar to the proposed Project, accommodations specific to each animal would be developed during the planning process for each phase and details would be included in final construction plans. With continued management of each species of animal residing or being

rehabilitated at the Zoo and required compliance with the AWA, there would be no adverse effects on Zoo animals from air pollutant emissions generated during construction of Alternative 1.

AQ-4:	Would the proposed Project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Alternative 2 would result in similar temporary, construction-related odors as those described for the proposed Project. Therefore, air quality impacts related to construction odors and dust would be similar to the Project and *less than significant*.

As described for the proposed Project, operational odors under this alternative would be associated animal habitats. Due to the reduced scope of expansion of animal exhibits and enclosures, Alternative 2 would generate an incrementally reduced source of odors as compared to the proposed Project. The Zoo would continue to engage in composting for green waste and herbivore animal wastes in Griffith Park. Similar to the proposed Project, Alternative 2 implementation would not place sensitive receptors in closer proximity to sources of odors or other emissions that could create nuisance conditions. Therefore, impacts related to other emissions would be similar to the Project and *less than significant*.

Biological Resources

BIO-1:	Would the Project result in the loss of individuals, or the reduction of existing habitat, of a state or federal listed endangered, threatened, rare, protected, or candidate species, or a Species of Special Concern or federally listed critical habitat?

Similar to the Project, Alternative 2 would impact known or potentially suitable habitat for several special-status plant and wildlife species through direct removal, construction of new exhibits and facilities, or vegetation management for fire protection, particularly in the undeveloped areas of the proposed California and Africa planning areas. Similar to the proposed Project, Alternative 2 would potentially result in the removal and direct disturbance of more than 19 acres of native vegetation communities and hundreds of native and non-native trees. Disturbance, alteration, or removal of these habitats would result in the loss or damage (take) of sensitive wildlife and plant species, particularly bats and potentially avian species that use these trees for roosting, nesting or foraging, to the same degree as the proposed Project. These species could be accidentally be harmed or forced to abandon habitats that are disturbed or removed during construction and move into adjacent areas in the vicinity (e.g., Griffith Park), increasing competition for available resources in those areas. This could result in indirect impacts to and the loss of additional special-status wildlife species outside of the Project site, including sensitive species that may not be able to survive with increased competition.

Similar to the proposed Project, Alternative 2 would impact onsite native vegetation communities and associated special-status species, primarily related to development within

the proposed California and Africa planning areas. Development would occur within mapped native habitats, including the laurel sumac shrubland, coast live oak woodlands, adjacent eucalyptus/mixed woodlands, coast live oak woodland, and California sage coastal sage scrub habitats, with potential for impacts to special-status species. Alternative 2 also would directly displace or result in the loss of several special status plant species for development of the California and Africa planning areas, including a small population of Nevin's barberry, 24 Southern California black walnut trees, Plummer's mariposa lily, Hubby's phacelia, and San Gabriel Mountains leather oak, similar to the Project.

Alternative 2 would require implementation of **MM BIO-1** through **MM BIO-4** to reduce impacts to special-status plant species. These measures would require protection or restoration of native plant communities and special-status species to the maximum extent feasible through pre-construction surveys, fencing, capture, relocation, and replanting. Further, with implementation of **MM BIO-2** and **MM WF-1**, adverse impacts to biological resources as a result of installation and maintenance of vegetation clearance from fuel breaks would be reduced through maximum avoidance of native vegetation and appropriate restoration offsite. Implementation of these measures would ensure impacts are *less than significant with mitigation.*

BIO-2:	Would the proposed Project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Similar to the proposed Project, development of Alternative 2 could impede, block, or disrupt local wildlife movement within the Zoo and adjacent natural habitats in Griffith Park and the Los Angeles River. Undeveloped coast live oak woodland, laurel sumac shrubland, coastal sage scrub, and eucalyptus/mixed woodlands support resident wildlife that could be disrupted or displaced by both construction and long-term habitat loss as new facilities replace existing habitats. However, the Project site does not appear to support such regional movement corridors or linkages that connect to larger patches of open pace. Therefore, Alternative 2 is unlikely to affect ongoing or seasonal regional movements that are important for the long-term genetic flow between subpopulations.

Implementation of **MM BIO-1**, **MM BIO-2**, **MM BIO-4**, and **MM BIO-5** would require the implementation of construction BMPs and a Worker Environmental Awareness Program (WEAP) to reduce construction-related impacts to special-status bird species to the maximum extent feasible. These measures would delineate vegetation communities and area of disturbance associated with proposed development plans by phase and preserve or replace affected vegetation communities and sensitive species at appropriate ratios. Implementation of **MM UF-1**, requiring preservation, relocation, or replacement of native tree species onsite or at an appropriate offsite location within Griffith Park, and **MM UF-2**, requiring the Zoo implement a tree and urban canopy restoration plan, would also serve to reduce impacts associated with the loss of roosting habitat by ensuring suitable roosting habitat is retained

onsite or created or improved offsite through planting of native trees. Impacts would be *less than significant with mitigation,* similar to the Project.

BIO-3: Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Similar to the Project, Alternative 2 would require removal of protected trees and shrubs to clear land for construction of new exhibits and facilities, or vegetation management for fire protection, to the same degree as the proposed Project. Disturbance, alteration, or removal of trees would result in the loss or damage of locally protected plant species, particularly within the undeveloped areas of the proposed California and Africa planning area. Impacted locally designated plant species could include two Southern California black walnut trees, 7 coast live oak trees, and 4 toyon and 15 elderberries within the California planning area. In addition, 22 Southern California black walnut trees, 113 coast live oak trees, 15 toyon and 21 elderberry shrubs would be potentially removed or impacted within the Africa planning area. Several small coast live oak and larger western sycamores, planted as landscape trees within Zoo parking lots, Zoo entry, and along Western Heritage Way, may be impacted by parking lot, transit facilities, and Western Heritage Way/Crystal Springs Road realignment and design, and Zoo entry redevelopment. In addition, realignment of Western Heritage Way/Crystal Springs Road could also result in the potential loss of some small specimen oaks and sycamore trees along its alignment behind the Zoo Magnet Center and Zoo storage areas. These trees and shrubs are protected and regulated under the existing City Tree Preservation Ordinance and Protected Tree Code Amendment.

As with the proposed Project, implementation of **MM UF-1**, requiring preservation, relocation, or replacement of protected native tree and shrub species onsite or at an appropriate offsite location within Griffith Park, and **MM UF-2**, requiring the Zoo implement a tree and urban canopy restoration plan, would serve to reduce impacts associated with the loss of protected native trees and shrubs. Implementation of these measures would ensure impacts to native trees and shrubs would be similar to the Project and *less than significant with mitigation.*

Cultural and Tribal Cultural Resources

CUL-1: Would the project Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?

Similar to the proposed Project, Alternative 2 would involve phased redevelopment of the majority of the Zoo, including demolition of some structures dating from the 1960s, such as the World Aviary exhibit. However, most original 1966 buildings are highly altered, including the Treetops Terrace. Treetops Terrace originally featured twin 105-foot hexagonal spires that served as a beacon and wayfinding feature visible throughout the Zoo. However, its twin spires were removed around 2000, effectively negating this function and the building's roof canopy was cut back on the east side to accommodate the adjacent carousel in 2011. As a

result, the Zoo no longer represents mid-20th century zoological design or the original vision of noted architectural firm Charles Luckman Associates. Most redevelopment under Alternative 1 would involve the demolition of structures dating from 1990s to the 2000s, when modifications to the Zoo's physical campus accelerated for implementation of the Zoo's 1992 and 1998 master plans.

As described in Section 3.4, *Cultural and Tribal Cultural Resources*, the Zoo is not listed as a historical resource, either as a district or as individual resources within the Zoo, in the NRHP or CRHR. Although Griffith Park is listed on the CRHR and has been identified as a designated Los Angeles Historical-Cultural monument, the Zoo was determined to be a non-contributing component and was built after the significance period for Griffith Park. Therefore, the Zoo does not represent the same historical merit as Griffith Park. The historical resources assessment prepared for the proposed Project concluded the Zoo is not eligible for historic listing or designation at federal, state, or local level and no buildings, structures, or other features of the Zoo were found individually eligible for historic listing or designation (refer to Section 3.4, *Cultural and Tribal Cultural Resources*; see Appendix G). The Project site does not contain any historical resources as defined by CEQA, and therefore there is no potential for impacts to historical resources as a result of Alternative 1, similar to the Project. Therefore, Alternative 1 impacts to historic resources would be *less than significant*.

CUL-2: Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

No previously recorded archaeological sites occur on the Project site and intensive pedestrian ground surface survey conducted for the Project recorded no archaeological resources or unique geographical features (Appendix F). Therefore, the potential for prehistoric resources is low in areas formerly developed as part of the original Zoo construction and on slopes over 20 percent.

Alternative 2 would involve grading, excavation, and earth moving activities on the Zoo's previously developed interior canyon areas and undeveloped hillsides, to the same extent as the proposed Project. The undisturbed Africa and California Planning area hillsides comprise steep slopes exceeding 20 percent, making them unlikely to have been used for prehistoric occupation or activity. Most of the developed areas of the Zoo overlie artificial fill that was previously graded and disturbed for original Zoo construction in 1966. Consequently, these interior developed areas of the Zoo are highly unlikely to contain any intact, previously undisturbed cultural resources.

However, while highly unlikely, there is a potential for Alternative 2 improvements to impact unknown cultural resources through discovery during construction. Alternative 2 would implement **MM CUL-1** prior to ground disturbance for each phase to ensure that, in the unlikely event isolated unknown prehistoric and historic-period archaeological resources are encountered during construction activities, appropriate action would be taken to prevent adverse impacts. Any inadvertently discovered resources would be protected and curated,

through **MM CUL-2**. Therefore, Alternative 2 impacts to potential prehistoric resources would be *less than significant with mitigation,* similar to the Project.

CUL-3: Would the project disturb any human remains, including those interred outsides of formal cemeteries?

As described in Section 3.4, *Cultural and Tribal Cultural Resources*, the majority of the Project site has previously been developed/disturbed during construction of the Zoo, and undeveloped hillsides are unlikely to have supported prehistoric activity or occupation. Therefore, the possibility of discovering human remains during construction of Alternative 2 is very low. If, however, in the unlikely event that previously unidentified human remains are discovered, further disturbances and construction activities shall stop in any area or nearby area suspected to overlie remains in accordance with State Health and Safety Code Section 7050.5, and the Los Angeles County Coroner would be contacted in accordance with Title 14, CCR, Section 15064.5(e). Pursuant to PRC Section 5097.98, if the coroner determines that the human remains are of Native American origin, the NAHC would be notified. Arrangements for the human remains would be made, and further provisions of PRC Section 5097.98 are to be followed as applicable. Further, implementation of **MM CUL-3** would ensure the protection and curation of any inadvertently discovered. Alternative 2 impacts would be the same as the proposed Project and *less than significant with mitigation*.

CUL-4: Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is listed or eligible for listing in the CRHR, or in a local register of historical resources as defined in PRC Section 5020.1(k), or that is a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1?

As described in Section 3.4, *Cultural and Tribal Cultural Resources*, there are no known cultural resources that are eligible for listing in the CRHR or in a local register within the Project site or that may be adversely affected by Alternative 2 implementation. However, consultation with Native American tribal representatives conducted for the proposed Project determined there is potential for impacts to tribal cultural resources, including buried resources and cultural landscapes associated with village of *Cahuenga* located west of Griffith Park and the rancheria of *Maugna* located in the vicinity of Griffith Park. Due to previous ground disturbance and development within the interior of the Project site and the steep slopes along undeveloped areas, there is little potential for the discovery of unknown buried tribal cultural resources during construction activities. However, with implementation of **MM CUL-4** through **MM CUL-7**, requiring the monitoring of all construction activities by an appropriate Native American representative and the management of resources in the

unlikely event that such resources are uncovered, Alternative 2 impacts would be the same as the proposed Project and *less than significant with mitigation*.

Energy

EN-1: Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation?

The duration and extent of construction activities for Alternative 2 would be identical to the Project and construction-related energy impacts would be similar as compared to the proposed Project (Section 3.5, *Energy*). Under Alternative 2, the proposed land uses would also be identical to those described for the proposed Project, which would result in the same estimated increased electricity and natural gas demands for facility operations. This alternative would also incorporate similar energy efficiency measures into the design of the buildings and service systems, as all new and redevelopment activities would be subject to the provisions of the LA Green Building Code, LEED Silver design standards and best management practices, and LA's Green New Deal (Sustainable City pLAn 2019) pertaining to energy efficiency for non-residential buildings. Additionally, all new structures with rooftop area greater than 250 sf would be considered for the feasibility of solar panel installations. Transportation fuel demand would be reduced, however, due to the additional TDM measures proposed under Alternative 2. Therefore, long-term operational energy impacts associated with transportation would be reduced relative to the Project. Therefore, similar to the Project, Alternative 2 would not result in wasteful, inefficient, or unnecessary consumption of energy sources and the impact would be *less than significant*.

EN-2: Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Alternative 2 would be designed to comply with the Los Angeles Green Building Code. Under this alternative, development would include sustainability features, such as a solar PV system. Green building elements would also increase energy efficiency by meeting LEED Silver standards of design or better and through use of reduced-flow plumbing fixtures and energy efficient appliances, a solar PV systems, LED traffic lighting systems, stormwater reuse, and use of recycled water onsite. Additionally, Alternative 2 would include TDM measures to enhance transportation sustainability consistent with SB 375 and SCAG's RTP/SCS when compared to the proposed Project. As discussed for the proposed Project in Section 3.5, *Energy* and Section 3.11, *Land Use and Planning*, Alternative 2 would be consistent with local, regional, and state goals and policies related to energy efficiency. Therefore, as with the proposed Project, impacts to energy under Alternative 2 would be *less than significant*.

Urban Forestry Resources

UF-1: Would the project conflict with the provision of an adopted local tree preservation policy or ordinance?

Alternative 2 would result in the direct removal, trimming, limbing, or root cuts of native and non-native trees to the same extent as the proposed Project. Indirect impacts associated with ground disturbance and changes to light and water availability may also affect existing healthy trees, resulting in poor condition and potentially removal as health declines. Similar to the Project, a total of 142 native trees and 85 native shrubs protected under the City's existing Tree Preservation Ordinance and proposed Protected Tree Code Amendment would be subject to damage or removal. Additional trees considered important within developed areas of the Zoo, including Moreton Bay figs, coral, acacia, sycamore, scrub oak, and maple trees, are also likely be subject to damage or removal during construction associated with Alternative 2. Thus, Alternative 2 implementation has the potential to damage or remove hundreds of trees and shrubs protected under existing and proposed City ordinances or warranted individual protection, as described for the proposed Project. Similar to the proposed Project, impacts to trees would occur incrementally and overlap with replanting/landscaping and regrowth as Alternative 2 implementation would occur incrementally over seven phases and 20 years, similar to the Project. Alternative 2 would similarly implement **MM UF-1** requiring replacement of removed protected and important trees at a 4:1 ratio as indicated by the City's proposed Tree Preservation Ordinance amendment, notification of large-scale tree removal, acquisition of a necessary tree removal permit(s), and application of City tree removal procedures. Since significant trees impacted during Alternative 2 implementation would be protected, relocated, or replaced consistent with applicable City tree protection policies, impacts would be the same as the proposed Project and *less than significant with mitigation*.

UF-2: Would the project result in the loss or alteration to the Los Angeles urban forest?

Similar to the proposed Project, Alternative 2 would include installation of substantial new landscaping, including major tree planting, following removal or disturbance of trees within the City's and Zoo's urban forest canopy. Additionally, Zoo botanical collections and gardens would be protected and enhanced similarly to the proposed Project (refer to Section 3.6, *Urban Forestry Resources*). Though removal of substantial numbers of trees during construction would reduce tree cover over the near-term horizon (e.g., 10 years), following completion of construction activities, tree cover and the urban canopy would likely be restored as part of a major landscaping and tree planting program, which would replace or improve the City's urban forest over the long-term. To ensure urban forest regeneration, Alternative 2 would similarly require implementation of **MM UF-2**, requiring preparation of a detailed landscape plan as part of each proposed phase. The Project area would be landscaped, irrigated, and maintained with a diverse mix of tree species that would

individually and cumulatively provide significant urban forest value. With implementation of this measure, Alternative 2 would ensure recovery or even enhancement of the urban forest such that a net loss of urban forestry resources would not occur. Impacts would be the same as the proposed Project and *less than significant with mitigation*.

Geology and Soils

GEO-1: Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earth fault or strong seismic ground shaking?

As described in Section 3.7, *Geology and Soils*, the Project site is located within the seismically active region of Southern California and would potentially be exposed to moderate to strong seismic ground shaking in the event of an earthquake on a nearby fault (e.g., Hollywood Fault, Verdugo Fault, Raymond Fault). A strong earthquake could result in substantial damage to older existing structures and infrastructure and put visitors and employees in danger from ground shaking and structural damage/collapse. However, all new structures constructed at the Zoo under Alternative 2 would be required to adhere to the most current building standards of the LAMC and Los Angeles Building Code, which adopts CBC standards by reference with local amendments. Adherence to seismic design and construction parameters of the LAMC and Los Angeles Building Code requirements would ensure the maximum practicable protection available for all structures. In addition, the City is required to prepare and submit a site-specific geotechnical report for review and approval by the LADBS prior to the issuance of a grading or a building permit.

Similar to the proposed Project, Alternative 2 would upgrade and/replace older buildings within the Zoo that do not meet current Los Angeles Building Code and CBC building standards and may present a hazard to public safety during an earthquake. Alternative 2 would facilitate the construction of new buildings that meet the most current and stringent seismic requirements, thus reducing the level of risk within each planning area and at the Zoo as a whole, compared to existing conditions. Therefore, compliance with the Los Angeles Building Code, CBC, and adherence to the design recommendations detailed in site-specific geotechnical studies would reduce Alternative 2 impacts related to seismic ground shaking to *less than significant*, similar to the proposed Project.

GEO-2: Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?

As described in Section 3.7, *Geology and Soils*, geologic hazards, including liquefaction hazards, posed at any given development site within the Project site are dependent upon the type of foundation, the structural design of the building, and the as-graded compaction and stability of the soil on which a structure was built. Alternative 2 would facilitate upgrades and replacement of older buildings throughout the Zoo that do not meet current Los Angeles

Building Code and CBC building standards and may present a hazard to public safety during an earthquake. Redevelopment of existing outdated facilities would involve the construction of new multi-story buildings (e.g., the California and Africa Visitor Centers), some with subterranean structures (e.g., Treetops Visitor Center kitchen), similar to the proposed Project. All new structures constructed in the Zoo would be required to adhere to the most current and stringent seismic requirements building standards of the LAMC and Los Angeles Building Code, which adopts CBC standards by reference with local amendments. Adherence to the LAMC and Los Angeles Building Code requirements would ensure the maximum practicable protection available for all structures constructed within the Project site. The site-specific geotechnical report required for review and approval by the LADBS would identify additional design requirements for structures and foundations to maintain structural integrity during an earthquake to the maximum extent feasible. With **MM GEO-1** to ensure geotechnical investigations are completed for each phase of Alternative 2 development and that engineering techniques and technologies are integrated into final Zoo development plans, impacts related to ground failure would be the same as the proposed Project and *less than significant with mitigation*.

GEO-3: Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?

The 2019 geotechnical investigation prepared for the Project concluded that the Project site is not located in an area considered susceptible to large-scale landslides (refer to Section 3.7, *Geology and Soils*; see Appendix J). However, some slopes along the western and northern portions of the site were observed to expose weathered and fractured bedrock and may be subject to small to moderate sized rock falls. Similar to the proposed Project, Alternative 2 improvements within the California and Africa planning areas would be developed on sites within and adjacent to these exposed rock slopes. Several Alternative 2 components would involve excavation and building construction techniques that would produce vibrations, such as jackhammering, drilling, blasting, and pile installation (refer to Section 3.7, *Geology and Soils*, for a list of development components that would involve excavation activities). Per **MM GEO-1**, these slopes would be observed, mapped, and further evaluated for Alternative 2 components proposed adjacent to exposed rock slopes or if cuts slopes are planned in bedrock areas (e.g., California planning area). Therefore, Alternative 2 impacts related to landslide risks would be the same as the proposed Project and *less than significant with mitigation*.

GEO-4: Would the project result in substantial soil erosion or the loss of topsoil?

Alternative 2 construction presents the same potential for erosion, particularly within the existing undeveloped areas of the Zoo, as the proposed Project. Excavation activities for construction of the California and Africa planning area and Zoo aerial tram would disturb and loosen soils, resulting in the potential for erosion, especially during rain events. Similar to the proposed Project, Alternative 2 would develop approximately 22 acres of undeveloped areas with native topsoils, including 20 acres of topsoils in undeveloped areas in the California and

Africa planning areas that would be graded and developed with pavement, structures, and landscaping. As with the proposed Project, Alternative 2 implementation would require preparation of a SWPPP to obtain an NPDES stormwater permit from the SWRCB in accordance with the federal Clean Water Act. All Alternative 2 components would be required to comply with all BMPs identified within the SWPPP and the City's Stormwater and Urban Runoff Pollution Control Ordinance (Chapter VI Article 4.4 of the LAMC) to address soil erosion and control the discharge of pollutants, including sediment, into the local surface water drainages. With adherence to existing state and local regulations that address soil erosion, Alternative 2 impacts potentially resulting from erosion or loss of topsoil would be the same as the proposed Project and *less than significant*.

GEO-5: Would the project be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project and potentially result in an onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse?

During Alternative 2 construction phases, excavation for California's Condor Canyon, Treetop Terrace's subterranean kitchen, the Africa hillside, and the aerial tram foundations may loosen exposed soils or slopes, potentially causing instability within the excavation site or compromised stability for adjacent properties. Similar to the proposed Project, adequate sloping or shoring of soils would be necessary to provide structural support for neighboring buildings to prevent soil collapse during excavation. All excavation activities associated with Alternative 2 would be required to adhere to mandatory regulations set forth by CalOSHA to ensure the safety of construction workers during excavation, and the Los Angeles Building Code, and CBC to ensure stable excavations and cut or fill slopes.

Alternative 2 would upgrade and replace outdate facilities at the Zoo that do not meet current Los Angeles Building Code and CBC building standards and may present a hazard to public safety during an earthquake. All new structures under Alternative 2 would be constructed to meet the most current and stringent building safety requirements, thus reducing the level of risk on a site and within the Zoo as a whole, compared to existing conditions. Therefore, compliance with the Los Angeles Building Code, CBC, and adherence to the design recommendations detailed in site-specific geotechnical studies would address potential impacts related to unstable soils.

Similar to the proposed Project, groundwater dewatering may be necessary for construction subterranean structures, such as the Treetops Terrace subterranean kitchen, and stormwater collection system. In cases where the there is a high or perched groundwater table where the floor of subterranean structure encounters the groundwater table, ongoing groundwater dewatering may be necessary to prevent the percolation or inflow of groundwater into excavation pits and future basement levels. If the dewatering of groundwater is necessary, a dewatering permit from the RWQCB would be obtained (refer to Section 3.10, *Hydrology and Water Quality*).

Additionally, the required site-specific geotechnical reports would evaluate site-specific geotechnical hazards and soil stability and would be required to identify building design requirements to ensure soil stability to the maximum extent feasible. The geotechnical reports would also be required to identify known historic groundwater levels onsite and identify measures to address groundwater impacts such as dewatering during construction as needed to protect against water contact and to minimize the seeping of water into the subterranean structure. All recommendations and design features in the geotechnical report are required to be incorporated into the building design for Alternative 2 components. With **MM GEO-1**, these required geotechnical investigations would be completed for each phase of Alternative 2 development and engineering techniques and technologies would be integrated into final Zoo development plans. Implementation would **MM GEO-1** would ensure impacts are *less than significant with mitigation*, similar to the proposed Project.

GEO-6:	Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

As described in Section 3.7, *Geology and Soils*, there are two sedimentary units beneath the Project site with Moderate to High potential to contain significant paleontological resources, specifically within the Africa planning area. Similar to the proposed Project, phased development under Alternative 2 would involve excavation and building construction techniques that would potentially impact paleontological resources, such as the potential destruction of fossil specimens, depending upon their location and depth of excavation. Alternative 2 would similarly implement **MM GEO-2** and **MM GEO-3**, which would include monitoring of ground disturbing activities for discovery of fossil specimens as well as subsequent collection, preparation, and permanent deposition in a designated repository of fossil specimens. These actions would preserve paleontological resources that would otherwise be permanently lost and, similar to the Project, would reduce Alternative 2 impacts to *less than significant with mitigation*.

Greenhouse Gas Emissions

GHG-1:	Would the Project generate GHG emissions, either directly or indirection, that may have a significant impact on the environment? Would the proposed Project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Alternative 2 would result in reduced impacts to GHG emissions from mobile sources when compared to the proposed Project. Unlike the proposed Project, Alternative 2 would incorporate multi-modal improvements to encourage transit use and active transportation and reduce VMT and associated GHG emissions. In particular, Alternative 2 would coordinate with Metro, LADOT, and RAP to provide future connections to additional transit nodes and develop new pedestrian and bicycle connections to the Project site. Additionally, Alternative 2 would incentivize transit use by discounting tickets to transit riders and other incentives.

Therefore, Alternative 2 would incorporate VMT reduction measures that align with GHG reduction goals of California's 2017 Climate Change Scoping Plan, SCAG's RTP/SCS, and the City's Green LA Climate Action Plan, Sustainable City pLAn, and Green New Deal.

Similar to the proposed Project, Alternative 2 implementation would not interfere with any statewide or regional initiatives to reduce GHG emission, and would contribute to the expansion of renewable energy infrastructure by installing 70,000 square feet of rooftop solar panels, in addition to the separate LADWP project that would provide up to 163,000 square feet of solar panel coverage. Additionally, implementation of the proposed Project would enhance transportation sustainability by providing a more efficient internal circulation network for patrons, employees, and vendors, providing high efficiency outdoor lighting throughout the Zoo property and in the parking lots and parking structure, and improving pedestrian and bicyclist safety and public transit accessibility along Western Heritage Way/Crystal Springs Road by roadway reconfigurations and signalizing the intersection of Zoo Drive & Western Heritage Way.

Implementation of Alternative 2 would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. This impact would be less than the proposed Project and l*ess than significant*. Though not directly required to reduce impacts associated with GHG emissions, **MM UF-1**, **MM UF-2**, **MM HYD-2**, **MM T-2**, and **MM UT-1** would result in further reductions in overall GHG emissions generated by Alternative 2 and/or consistency with applicable plans, policies, and regulations adopted with the intent of reducing GHG emissions.

Hazards and Hazardous Materials

HAZ-1: Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Construction and operation of Alternative 2 would result in similar impacts associated with hazardous materials when compared to the proposed Project. Similar to the proposed Project, construction for Alternative 2 implementation would result transportation, use, storage, and disposal of small quantities of commercially available hazardous materials, which would be handled in compliance with federal, state, and local regulations pertaining to their transport, use, or disposal. As such, the potential for hazardous materials release would be limited to disturbance of contaminated soil during ground-disturbing activities and accidental spill of chemicals, petroleum, oils, and lubricants within the construction staging areas on the Project site or transportation routes. Compliance with federal, state, and local regulations related to the safe transportation of hazardous materials as well as oversight by the appropriate federal, state, and local agencies would minimize the risk of hazardous materials exposure during transport. Additionally, ACM, LBP, contaminated soils, or other hazardous material encountered during demolition or construction activities would be disposed of in compliance with all pertinent federal, state, and local regulations for the handling of such waste. Therefore, construction associated with Alternative 2 implementation would result in *less*

than significant impacts with regard to the transport of hazardous materials and disposal of hazardous wastes, similar to the proposed Project.

All hazardous materials used onsite for operation of Alternative 2 would be subject to all applicable regulation and documentation for the handling, use, and disposal of such materials consistent with all appropriate federal, state, and local regulations and standards established by the U.S. EPA, CalEPA, SCAQMD, Los Angeles County, and the City to protect the public health and safety. If necessary, appropriate permits, worker training, and agency inspections would be obtained and provided. Implementation of standard good housekeeping measures, BMPs, site maintenance and security precautions, as well as compliance with standards and regulations would ensure potential impacts related to the routine transport, use, or disposal of hazardous materials are *less than significant,* similar to the Project.

HAZ-2: Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involved the release of hazardous materials into the environment?

Similar to the Project, ACM, LBP, contaminated soils, or other hazardous material encountered during demolition or construction activities would be disposed of in compliance with all pertinent federal, state, and local regulations for the handling of such waste. Ground-disturbing activities (i.e., excavation, trenching, grading) during proposed improvements to Condor West, the Construction Shop and Support area, and the Gottlieb Animal Health and Conservation Center under Alternative 2 has the potential to disturb historic contaminated soil and hazardous vapors associated with the fueling station located within the visitor-restricted Zoo Construction Shop and Support area. Alternative 2 implementation may result in incrementally increased potential for encountering off-site contamination adjacent to the southern parking lot and Autry Museum (refer to Section 3.9, Hazards and Hazardous Materials) due to construction and depending on the location of off-site transportation improvements. Similar to the proposed Project, implementation of **MM HAZ-1** would require a Phase II ESA to evaluate the presence of hazardous soil contamination and vapor intrusion in the vicinity of the existing fueling station, the southern parking lot, and north of the Autry Museum prior to demolition and grading activities. In the event that the Phase II ESA identifies soil and/or groundwater contamination at or above regulatory levels, implementation of **MM HAZ-2** would require remediation activities prior to the issuance of grading permits to ensure no adverse impacts from exposure to soil contamination. With mitigation to address potential soil contamination and ACM and LBP within older structures during demolition and excavation, impacts to hazardous materials would be similar to the Project and *less than significant with mitigation*.

HAZ-3: Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Similar to the proposed Project, Alternative 2 would include construction involving the use of commercially available potentially hazardous materials in the immediate vicinity of the Zoo Magnet Center (i.e., circulation and parking improvements and Zoo Entry renovation in Phase 1). Alternative 2 implementation would result in incrementally increased construction impacts to the school additional construction in the immediate vicinity for the multi-modal improvements (e.g., pedestrian and bicycle connections, transit facilities). However, all construction activities associated Alternative 2 would comply with applicable federal, state, and local regulations relating to protection of the public and the environment from exposure to hazardous materials. Further, **MM HAZ-1** would require the preparation of a Phase II ESA to ensure no adverse impacts related to hazardous emissions or spills would occur during implementation of Alternative 2. As such, construction impacts related to hazardous emissions and hazardous materials, substances, and waste within 0.25 miles of a school would be the same as the Project and *less than significant with mitigation*. After construction is complete and the heavy equipment is removed from the Project site, the potential for hazardous spills would be low and similar to existing conditions at the Project site. Therefore, operational impacts related to hazardous emissions and hazardous materials, substances, and waste within 0.25 miles of a school would be *less than significant*, similar to the Project.

HAZ-4: Would the project be located on a site which is included on a list of hazardous materials sites complied pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

As described in Section 3.9, *Hazards and Hazardous Materials*, while the Project site is included on several databases for its operation as a small quantity generator of hazardous waste, the Zoo is not included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. Alternative 2 would include the reconfiguration of Crystal Springs Drive along the periphery of the Zoo parking lots, which would potentially affect the area adjoining a listed leaking UST site, and development of a reduced-size parking structure and improvements to the Zoo Drive/Western Heritage Way intersection, which may encounter contaminated soils from an offsite site cleanup. Similar to the Project, **MM HAZ-2** would be implemented to ensure any contaminated soils are properly removed, handled, and transported to an appropriately licensed disposal facility, in accordance with local and state regulations. With implementation of **MM HAZ-2**, near-term and long-term construction activities would have a *less than significant* impact to sites included on a list of hazardous materials sites complied pursuant to Government Code Section 65962.5, and as such, would not create a significant hazard to the public or the environment, similar to the Project.

HAZ-5: Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

The Zoo maintains emergency preparedness procedures in the event of an emergency and/or evacuation in accordance with the AZA accreditation standards. Similar to the proposed Project, all buildings and structures under Alternative 1 would be constructed in compliance with the applicable state and City building, fire, and emergency access codes to meet current fire protection standards. Alternative 2 does not propose changes, obstructions, or reconfigurations to public evacuation routes, so Alternative 2 would not result in physical interference or impairment to implementation of this existing emergency and evacuation plan. While construction activities associated with Alternative 2 would add vehicles (e.g., construction equipment, worker vehicles, etc.) to regional and local roads that could increase congestion, emergency access would be maintained during construction with implementation of **MM T-1**, which would require preparation and implementation of a Construction Traffic & Access Management Plan for each phase of Alternative 2 (refer to Section 3.15, *Transportation*). Therefore, similar to the Project, Alternative 2 would not impair implementation or physically interfere with an adopted emergency response plan or emergency evacuation plan and impacts would be *less than significant*.

Hydrology and Water Quality

HYD-1: Would the project violate any water quality standards or waste discharge requirements or otherwise degrade water quality?

Similar to the proposed Project, Alternative 2 would involve earthwork activities, including excavation, that would disturb soils and increase the potential for soil erosion and sediment transport into the Los Angeles River during periods of rainfall or runoff. Larger improvements such as excavation of Condor Canyon, installation of new exhibits within hillside areas, installation of the Zoo's proposed subterranean stormwater management system, and development of the reduced-size multi-story parking structure would result in the greatest amount of earthwork and soil disturbance across the Project site. Alternative 2 could result in additional impacts to the Los Angeles River during construction of additional bicycled and pedestrian improvements, which may include additional bridges across the river. Similar to the Project, Alternative 2 would be required to implement construction BMPs to address soil erosion, including topsoil mobilization and loss, and urban runoff in compliance with the City's Stormwater and Urban Runoff Pollution Control Ordinance (Chapter VI Article 4.4 of the LAMC). All stormwater generated during construction would continue to be directed either to the Zoo's existing storm drain system and Zoo Wastewater Facility (or to the proposed stormwater collection system for the respective area for each completed phase) in the near-term phases, or the proposed onsite stormwater management system in the long-term phases, similar to the proposed Project. The Zoo Wastewater Facility would continue to remove silt and grit from the stormwater before discharging to the City's North Outfall Sewer for treatment at the LAGWRP, significantly reducing or eliminating any

sediment and polluted runoff generated during construction that would flow into the existing or proposed stormwater system. In addition, implementation of **MM HYD-1** through **MM HYD-3**, requiring preparation of a stormwater management plan to determine the appropriate sequencing of improvements, preparation of a SWPPP, and implementation of standard construction BMPs, and timing of construction to avoid adverse effects of seasonal storms would reduce potential for mobilization of sediments and typical construction pollutants during all phases of Alternative 2 construction. Therefore, implementation of these measures would reduce associated impacts on water quality from earthwork and typical construction activities to *less than significant with mitigation,* similar to the Project.

Ground disturbing activities associated with construction of the Africa planning area (Phase 3) and improvements to Condor West, the Construction Shop and Support area, and the Gottlieb Animal Health and Conservation Center (Phase 4) have the potential to degrade surface water quality through the disturbance of historic contaminated soil. Additionally, realignment of Western Heritage Way/Crystal Springs Road, installation of traffic signals and potential intersection lane improvements (e.g., road widening and sidewalk improvement), and installation of other multi-modal improvements (e.g., transit connections, bicycle and pedestrian facilities) could disturb potential contamination from equipment leaks or spill of stored hazardous chemicals or leaks from the USTs located at or adjacent to the Zoo's storage yard at the southern parking lot and Autry Museum (refer to *Hazards and Hazardous Materials*). However, implementation of **MM HAZ-1** and **MM HAZ-2** would require a Phase II ESA to evaluate the presence of hazardous soil contamination and vapor intrusion in the vicinity of the existing fueling station, the southern parking lot, and north of the Autry Museum, and remediation activities if necessary to ensure no adverse impacts from exposure to soil contamination. Therefore, with these measures, potential impacts to water quality from soil contamination would be *less than significant with mitigation*, similar to the Project.

Operation of the Zoo during implementation of Phases 1 through 3 (through 2030) would result in pollutant discharges and runoff similar to existing conditions. However, following Phase 3, all stormwater within the Zoo would be directed to the proposed onsite stormwater management system and proposed LID features. Similar to the proposed Project, the proposed stormwater collection system under Alternative 2 would be designed to capture 100 percent of stormwater runoff generated during a typical 2-year, 24-hour rainfall event. During larger storm events when capacity of the stormwater collection system is exceeded, stormwater would overflow to the Zoo Wastewater Facility and undergo the same level of treatment as occurs under existing conditions. Implementation of the stormwater collection system and proposed LID features would improve the water quality within the Zoo drainage area during operation of the Zoo to the same extent as the proposed Project (refer to Section 3.10, *Hydrology and Water Quality*).

Similar to the proposed Project, the proposed stormwater collection system under Alternative 1 would be designed to capture 100 percent of stormwater runoff generated during a typical 2-year, 24-hour rainfall event. During larger storm events when capacity of the stormwater

collection system is exceeded, stormwater would overflow to the Zoo Wastewater Facility and undergo the same level of treatment as occurs under existing conditions. Implementation of the stormwater collection system and proposed LID features would improve the water quality within the Zoo drainage area during operation of the Zoo to the same extent as the proposed Project (refer to Section 3.10, *Hydrology and Water Quality*). With implementation of **MM HYD-6**, stormwater impacts would be similar to the Project and *less than significant with mitigation*.

HYD-2:	Would the project 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)?

Similar to the proposed Project, Alternative 2 would continue to use the LADWP water supply and would not draw from local groundwater. Alternative 2 would expand the existing animal exhibits and develop currently undeveloped portions (i.e., California and Africa planning area hillsides) of the Zoo, which would increase impervious surfaces from 51 percent to approximately 70 percent in the near-term (i.e., by 2030). No increase in impervious surfaces would occur during the long-term (i.e., by 2040) development as long-term improvements would involve redevelopment of currently paved and developed areas. Permeable pavements and other LID features would be included in the final design of Alternative 2 components to facilitate onsite percolation where feasible. As described for the proposed Project, Alternative 2 effects on amount of percolation and groundwater recharge would be incremental relative to the 144,640-acre San Fernando Valley Groundwater Basin (SFVGB) area. Therefore, Alternative 2 would not have an adverse effect on groundwater recharge and impacts to groundwater infiltration would be *less than significant*, similar to the Project.

Groundwater at the Project site and immediate vicinity may be contaminated due to a former leaking UST and Superfund cleanup site in proximity to the Zoo's parking lot and Western Heritage Way, as well as from fueling dispensers, USTs, and associated piping within the Zoo Construction Shop and Support area and existing storage yard (refer to Section 3.9, *Hazards and Hazardous Materials*, for further discussion of the potential groundwater contamination onsite). Implementation of **MM HAZ-1** would require the City to prepare a Phase II ESA to determine whether contamination exists and, if so, the extent of contamination within the Project site. If contaminants are detected in soil at or above regulatory levels, then the results of the soil sampling shall be reviewed and acted upon by the LAFD and other regional or state regulatory agencies as needed. Therefore, Alternative 2 impacts to groundwater contamination on- and offsite would be similar to the Project and *less than significant with mitigation*.

The potential to encounter groundwater under Alternative 2 is limited, similar to the Project, particularly on hillsides in the California and Africa planning areas where depth to groundwater is greater than interior canyon areas of the existing Zoo. Groundwater

dewatering may still be necessary for the construction of subterranean structures in areas with a high groundwater table (e.g., Treetops Terrace subterranean kitchen). In cases where the there is a high or perched groundwater table where the floor of subterranean structure encounters the groundwater table, ongoing groundwater dewatering may be necessary to prevent the percolation or inflow of groundwater into excavation pits and future basement levels. If dewatering is necessary, the City would obtain a dewatering permit from the Los Angeles RWQCB in compliance with existing RWQCB regulations and the requirements of the NPDES permit program. A geotechnical report for each phase (required under **MM GEO-1**) would be required to identify known historic groundwater levels onsite and identify measures to address groundwater impacts such as dewatering during construction as needed to protect against water contact and to minimize the seeping of water into the subterranean structure. All recommendations and design features in the geotechnical report are required to be incorporated into the final building design. Therefore, impacts to groundwater quality and recharge from Alternative 2 implementation would be similar to the Project and *less than significant with mitigation*.

HYD-3:	Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation onsite or offsite? Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite?

Alternative 2 would alter the onsite drainage pattern to the same extent as the proposed Project through excavation, grading, and development of the undeveloped California and Africa hillsides, installation of the proposed stormwater collection system, and increases in development and impervious surfaces. Generally, all Alternative 2 construction activities, particularly those involving substantial soil excavation, would result in exposure of soils and would cause minor alterations to onsite drainage, including the potential for temporary ponding during storm events. However, all stormwater generated during construction would continue to be directed either to the Zoo's existing storm drain system in the near-term phases, or the proposed onsite stormwater management system in the long-term phases. Alternative 2 would also be required to comply with the Stormwater and Urban Runoff Pollution Control Ordinance (Chapter VI Article 4.4 of the LAMC) to address soil erosion, including topsoil mobilization and loss, and urban runoff. Compliance with existing City regulations and implementation of **MM HYD-1** through **MM HYD-3** would reduce soil erosion impacts of Alternative 2 to the same extent as the Project and would be *less than significant with mitigation*.

While not expected, if dewatering of groundwater is required based on onsite groundwater depth in some phases, it would be accomplished in accordance with Los Angles RWQCB's Project Dewatering to Surface Waters in Coastal Watersheds of Los Angeles and Ventura

Counties (refer to Impact HYD-2). Construction activities would alter onsite drainage, subject to requirements to control water quality and stormwater flows, but would not alter drainage patterns or amounts offsite to the Zoo Wastewater Facility or the Los Angeles River; therefore; similar to the Project, construction activities associated with Alternative 2 would result in a *less than significant* impact.

Following construction, Alternative 2 would not increase the potential for soils to be subject to wind or water erosion. Implementation of **MM HYD-4** through **MM HYD-6** would require preparation of an O&M Plan, application of gorilla mulch over landscaped areas, and pre-treatment, filtering, and other LID features as part of the stormwater collection system to ensure continued water quality benefits from the LID features and the stormwater collection system. Similar to the proposed Project, Alternative 2 would result in beneficial impacts to soil erosion associated with reducing surface runoff and directing all stormwater runoff into the proposed stormwater collection system, rather than conveying runoff to the Los Angeles River. With adherence to existing state and local regulations and mitigation measures that address soil erosion, impacts to receiving waters potentially resulting from erosion would be the same as the proposed Project and *less than significant with mitigation*.

Alternative 2 would result in the same increase in impervious surfaces onsite as compared to the proposed Project. Similar to the Project, Alternative 1 would include substantial stormwater retention and treatment facilities onsite to accommodate stormwater runoff and avoid on and offsite increases in flooding, consistent with the requirements of the City's Stormwater and Urban Runoff Pollution Control Ordinance (LAMC Article 4.4) and the SWRCB's Post-Construction Requirements. Similar to the Project, the proposed onsite stormwater management system under Alternative 1 would be designed to capture stormwater runoff, reduce peak flows, and reduce flow to the Zoo Wastewater Facility and ultimately the Los Angeles River. The remaining runoff not captured by the stormwater management system would be from the parking lots, which drain into existing LID features for onsite treatment prior to flowing to the Los Angeles River. The increase in pervious surfaces under Alternative 1 and additional point and non-point source water retention features (e.g., vegetated retention basins and pervious paving) would further slow and retain surface flows. Overflows of the stormwater management system would be directed to the Zoo Wastewater Facility. Following desilting and grit removal at the Zoo Wastewater Facility, stormwater would continue to be discharged to the North Outfall Sewer, which would direct water to the LAGWRP, similar to existing conditions for all stormwater within the Zoo. Since the volume of stormwater directed to the Zoo Wastewater Facility would be substantially reduced when compared to existing conditions, the Zoo Wastewater Facility total capacity of 1.8 million gallons would be adequately sized to accommodate overflow runoff from the Zoo. As such, stormwater would be adequately managed, maintained, and attenuated through on- and offsite stormwater control features, which are designed consistent with the requirements of the City Stormwater and Urban Runoff Pollution Control Ordinance and SWRCB Post Construction Requirements. Therefore, similar to the Project, Alternative 2 impacts to onsite and offsite flooding would be *less than significant*.

HYD-4: Would the project 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?

Alternative 2 would result in a 19 percent increase (51 percent to 70 percent) in impervious surfaces that would occur primarily from development of the California and Africa planning areas (Phases 1 and 3, respectively), which would decrease water infiltration and increase stormwater runoff at the Zoo. However, implementation of the proposed stormwater collection system would substantially reduce stormwater runoff and peak flow by capturing and storing all rainfall from the Zoo and the 79.7-acre hillside area adjacent to the Zoo for reuse onsite as irrigation water. Additional LID features, such as bioretention cells and vegetated bioswales, would be considered during final design of the planning areas to retain runoff and increase infiltration. The substantial reduction in surface runoff and peak flow would result in minor beneficial impacts to water quality, as the reduced volume and velocity of stormwater flows would reduce the rate of soil erosion and sedimentation. Therefore, implementation of the stormwater collection system would result in beneficial and *less than significant* impacts to polluted runoff, similar to the Project.

The proposed stormwater collection system would reduce the volume of discharge to the Zoo Wastewater Facility by up to 35 million gallons per year (see also, *Utilities below*) and up to 95,890 gallons per day; therefore, this system would not be exceeded during the 2-year or the 100-year storm events (refer to Section 3.10, *Hydrology and Water Quality*). The proposed stormwater collection system would also subsequently reduce the volume of discharge from the Zoo Wastewater Facility to the City's North Outfall Sewer. The Zoo Wastewater Facility would continue to hold animal pond water and overflow stormwater from the Zoo until the demand for wastewater discharge is low (i.e., nighttime). Thus, the Zoo Wastewater Facility would prevent exceedance of the North Outfall Sewer's capacity. Therefore, implementation of the stormwater collection system would result in beneficial and *less than significant* impacts to existing stormwater drainage systems, similar to the proposed Project.

Land Use and Planning

LU-1: Would the project cause a significant environmental impact due to conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

Alternative 2 would include TDM measures and improvements to transit and active transportation services and infrastructure that would better align with the VMT reduction and land use planning goals of the SCAG 2016 RTP/SCS. Alternative 2, with implementation of required mitigation measures and required consistency with existing regulations, would be consistent with the SCAG RTP/SCS, Los Angeles General Plan, Hollywood Community Plan, L.A.'s Green New Deal, and LAMC, as well as the Vision Plan for Griffith Park as it applies to areas outside of Zoo property. Therefore, similar to the proposed Project, land use impacts from Alternative 1 would be *less than significant with mitigation*.

Noise and Vibration

NOI-1: Would the proposed Project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Similar to the proposed Project, construction activities associated with Alternative 2 would generate noise levels typical of construction. The most perceptible levels of construction noise would likely occur during Phase 1 when the Zoo Entry and California planning area improvements are underway, including excavation, blasting of Condor Canyon, and building construction, concurrent with improvements to the Zoo's southern parking lot, realignment of Western Heritage Way/Crystal Springs Road, the Zoo Drive & Western Heritage Way intersection, and additional multi-modal improvements proposed under Alternative 2. Similar to the proposed Project, the building construction activity would be the loudest phase of construction and would generate a noise level of approximately 86.2 dBA L_{eq} at 50 feet. Equipment noise levels during general construction activities would exceed 75 dBA L_{eq} at nearby sensitive receptors during Phases 1, 2, 3, 5, and 6. During Phase 1 the Zoo Magnet Center and the Wilson and Harding Golf Courses would experience noise level above 75 dBA L_{eq} (Table 3.12-9). For Phases 2, 3, 5 and 6 the only sensitive receptor that would experience noise levels above 75 dBA L_{eq} is Wilson and Harding Golf Courses. Pile driving activity related to the Zoo aerial tram would result in a noise level of 77.4 dBA L_{eq} at the Wilson and Harding Golf Courses. However, golfers would move further away from the noise source as they play through each hole resulting in reduced noise levels. Furthermore, the existing ambient noise levels are elevated at the golf course due to the presence of the I-5 freeway to the east. Blasting activity associated with the proposed Condor Canyon would also result in the exceedance of 75 dBA L_{max} at the Skyline Trail in Griffith Park. Blasting noise would be an instantaneous event and would not result extended noise impacts over the duration of construction activity.

MM NOI-1 through **MM NOI-5** would substantially reduce construction noise levels. The equipment mufflers associated with **MM NOI-1** would reduce construction noise levels by approximately 3 dBA. **MM NOI-2** through **MM NOI-4**, although difficult to quantify, would also reduce and/or control construction noise levels. **MM NOI-4** would require coordination with the construction contractor and the coordinator of the Zoo Magnet Center to avoid disruption to classroom instruction. **MM NOI-5** would reduce construction noise levels by approximately 10 dBA at Zoo Magnet Center by installing temporary noise barriers around the property boundary. Similar to the proposed Project, with implementation of these measures, noise levels would be reduced to approximately 66 dBA L_{eq} at the exterior of the school, which would be below the 75 dBA L_{eq} standard. Therefore, Alternative 2 impacts related to construction noise would be *less than significant with mitigation,* similar to the Project.

Stationary noise sources introduced under Alternative 2 would be similar to existing noise sources. Stationary noises sources include Zoo visitors conversing in the park, noise from

animals, noise related to special events, mechanical equipment noise within the park, service vehicles, the PA system, parking noise, and background music. However, increased attendance due to Zoo expansion, new Zoo facilities, and Zoo programming may result in increased noise levels and expanded duration of operational noise, including after-hours noise from evening special events, similar to the proposed Project. While additional transit service to the Zoo may result in increased operational noise levels from buses, Alternative 2 would also incorporate active transportation improvements to encourage bicycling and walking to the Project site, which would reduce operational noise from vehicle traffic and parking. **MM NOI-6**, which would require the Zoo to orient shop faces inwards toward Zoo property, is intended to reduce service area noise through thoughtful design. Therefore, Alternative 2 impacts related to operational noise from stationary and mobile sources would be similar to the proposed Project and *less than significant with mitigation*.

NOI-2: Would the proposed Project result in generation of excessive groundborne vibration or groundborne noise levels?

Alternative 2 would implement similar construction and blasting activities as the proposed Project. Therefore, construction associated with Alternative 2 would result in similar short-term, intermittent, and localized vibration levels from the use of typical construction equipment, pile driving, and blasting activity, and impacts would be *less than significant*.

Similar to the proposed Project, Alternative 1 does not include stationary sources of vibration, such as heavy-duty industrial equipment. Regarding additional traffic, the FTA has stated that rubber-tired vehicles do not typically generate perceptible vibration levels outside of the right-of-way. Additionally, Alternative 1 would result in reduced vehicle traffic to the Project site, as compared to the proposed Project. There are no operational sources of vibration that would generate vibration levels that exceed 75 VdB. Therefore, impacts associated with operational vibration would be similar to the Project and *less than significant*.

Reduced construction vibration under Alternative 1 would also result in reduced potential disturbance of Zoo animals, particularly elephants. As the Zoo has done in the past during construction, measures to protect these animals may include temporary relocation away from construction activities, closure of exhibits, or even the transfer of animals to other zoos. Accommodations specific to each animal would be developed during the planning process for each phase and details would be included in final construction plans. With continued management of each species of animal exhibited or rehabilitated at the Zoo and required compliance with the AWA, there would be no adverse effects on Zoo animals from vibration during construction of Alternative 1.

Public Services

PS-1:	Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for fire protection?

Construction of Alternative 2 would introduce a potential ignition source for fires (e.g., flammable materials, sparks) and may create hazardous conditions requiring EMS; however, LAFD maintains fire response and EMS at adequate levels to respond to incidents at the Zoo during Project construction. Construction contractors and their work crews would employ "good housekeeping" procedures (e.g., proper maintenance of mechanical equipment and proper storage of flammable or other hazardous materials) to reduce risk of potential fires, hazardous spills of other conditions during construction that would require fire protection and EMS. Further, construction of Alternative 2 would comply with CalOSHA, LAMC Fire Code, and CBC regulations pertaining to application of BMPs and other measures for reducing risks associated with construction. Therefore, Alternative 2 construction would not require additional firefighting or EMS personnel or new or expanded facilities.

Construction activities would result in temporary changes to roadways, access points, and staging areas currently used by LAFD to respond to incidents in the Zoo and nearby areas in Griffith Park. However, Alternative 2 would not directly impair designated County or City Disaster Routes along I-5, SR-134 and San Fernando Road, as all development would be contained to the Zoo and roadways serving the Zoo. Implementation of **MM T-1**, requiring a Construction Traffic & Access Management Plan with measures for controlling and ensuring continued access to the Zoo and through the interior of the Zoo circulation system, would address impacts from construction of proposed improvements on emergency access and response. Therefore, impacts associated with hinderance of emergency response times during Alternative 2 construction would be *less than significant with mitigation*.

Under Alternative 2, the anticipated increase in annual visitation to 3,000,000 guests and the hiring of approximately 531 additional staff by 2040 has the potential to result in increases the frequency of incidents with commensurate increases in demand for fire protection and EMS from LAFD. Due to the acceptable response times from Station No. 56, which currently serves the Project site, the LAFD would have adequate resources and personnel to continue to serve the Zoo without needing to expand any facilities or personnel. Similar to the proposed Project, Alterative 2 components would be constructed in accordance with applicable sections of the LAMC Fire Code and CBC, which require the provision of adequate emergency access, use of ignition-resistant construction materials, installation of automated fire suppression systems, emergency water supply and adequate fire flow rates, and appropriate defensible space requirements. Alternative 2 would also include emergency evacuation plans allowing for quick and safe evacuation of Zoo guests, employees, and Zoo animals in the event of an

emergency. Consistent with LAFD standards, this combination of development standards for new development and existing LAFD service capabilities would ensure demands for fire protection and EMS would continue to be met under Alternative 2. Therefore, no additional LAFD facilities or personnel would be required to serve Alternative 2 and impacts related to fire response and EMS demand would be *less than significant*.

In addition to the roadway and circulatory improvements proposed by the Project (i.e., intersection improvements at Zoo Drive & Western Heritage Way, realignment of Western Heritage Way/Crystal Springs Road, increased parking), Alternative 2 would further reduce vehicle congestion through the expansion of transit service and bicycle connections to the Project site. These additional improvements under Alternative 2 would reduce congested circulation and improve direct access to the Zoo for firefighters and EMS. Similar to the proposed Project, emergency vehicle access to the interior of the Zoo would be expanded and enhanced by the reconfiguration of internal roads, installation of a perimeter ground tram road, and improved service roads with access to high fire hazard areas along the Zoo's perimeter. Proposed improvements to site circulation and access under Alternative 2 would maintain or improve emergency access to the site to a greater extent than the proposed Project. Therefore, impacts to fire protection and emergency response services would be less than the proposed Project and *less than significant*.

PS-2:	Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for police protection?

As Alternative 2 is anticipated to result in the same increase in annual visitation as the proposed Project, Alternative 2 would equally increase the demand for additional police protection at the Zoo, with calls possibly related to theft, trespassing, car break-ins, or vandalism, especially during highly-attended special events. To address anticipated increase in demand for law enforcement services, Alternative 2 would include construction of a new 13,000 sf single-story security and first aid center, located within the proposed entry plaza where it would be easily accessible to Zoo guests, and the hiring of additional security personnel to accommodate the such needs. Zoo Security would continue to respond to most incidents at the Zoo, therefore, not causing a substantial increased demand for LAPD services. Because Zoo Security is provided onsite and would not regularly necessitate responses from community LAPD stations, Alternative 2 would not substantially interfere with LAPD response times.

As described in Section 3.13, *Public Services*, while the Project site is in an area with comparatively low crime rates, has an adequate officer-to-resident ratio, and provides adequate response times, the Zoo currently experiences a relatively high number of vehicle theft/break ins. Similar to the Project, this trend is expected to continue since Alternative 2

would maintain the open, publicly accessible parking lot and does not propose measures to limit access or increase patrol or parking lot security. However, Alternative 2 would encourage other modes of transportation to the Zoo through expansion of transit facilities and service lines to the Zoo, construction of additional bicycle connections to Griffith Park, and employee and visitor incentives for transit use. Therefore, Alternative 2 would result in slightly reduced impacts to vehicle safety when compared to the proposed Project. Implementation of **MM PS-1**, requiring the Zoo implement measures to increase security of the Zoo's parking lot areas such as frequent patrolling and installation of additional surveillance cameras, would help to reduce the likelihood for vehicle theft/break in and manage crime within the Zoo, thereby reducing LAPD and Zoo Security demands. Further, improvements to Zoo facilities would include modernization of security systems such as access control to buildings, secured parking facilities, walls/fences with key systems, and well-illuminated spaces designed with a minimum of dead space to eliminate areas of concealment.

If all 531 new jobs anticipated to be created under Alternative 2 were also new residents, this growth would represent less than a 0.02 percent increase in the existing service population and would not measurably affect the resident-to-officer ratio of the LAPD. Further, most jobs associated with the proposed Project are anticipated to be filled by the existing local or regional labor force within the City, surrounding cities, and surrounding Los Angeles region. Therefore, any net population increase generated by Alternative 2 is anticipated to be nominal and would not substantially affect LAPD officer-to-resident ratios. Existing resources of the LAPD and Northeast Community Police Station are adequate to continue providing acceptable levels of service to the Zoo with Alternative 2 implementation. As discussed above, with implementation of **MM PS-1** to address increased law enforcement issues from vehicle theft/break ins, impacts to public safety and police protection services would be similar to the proposed Project and *less than significant with mitigation*.

PS-3:	Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered school facilities, the construction of which could cause significant environmental impacts?

Similar to the proposed Project, Alternative 2 would not include residential development, and therefore, would not result in an increased number of school-aged children in the LAUSD. Alternative 2 would create approximately 531 new jobs, but it is anticipated that these jobs would be filled by the existing local workforce, and, therefore, would not create population growth in the area, thereby increasing demand for public school services.

Alternative 2 would not result in physical changes to existing LAUSD facilities, including the Zoo Magnet Center, since most Alternative 2 improvements would occur within Zoo planning areas inside the Zoo and away from the Zoo Magnet Center. However, Alternative 2 would realign Crystal Springs Drive to the perimeter of the southern parking lot and would add approximately 300 guest surface parking spaces in the southern parking lot, immediately

adjacent to the Zoo Magnet Center through removal of existing Zoo uses and restriping of parking spaces. While there has historically not been significant conflict in parking availability for Zoo Magnet Center and Zoo guests (refer to Section 3.13, *Public Services*), Alternative 2 implementation is anticipated to increase daily attendance to the Zoo and substantially increase demand for Zoo parking (refer to Section 3.15, *Transportation*). Even with the additional 300 parking spaces to the southern parking lot during Phase 1, the construction of a new parking structure during Phase 7, and the implementation of the TDM Program, the potential remains for an increased demand for parking to reduce parking availability for Zoo Magnet Center visitors, staff, and buses. To ensure parking availability remains for Zoo Magnet Center students and staff and avoid need for additional facilities to serve school operations, **MM PS-2** would require improvements to the southern parking lot to include designated parking spaces for Zoo Magnet Center school buses and implement parking hour limitations to accommodate 10 teachers, the office administrator, and campus counselor, with an additional reserve space for visitors. Reserved parking stalls would be in effect during hours of Zoo Magnet Center operation. With implementation of this measure, Alternative 2 impacts to schools would be *less than significant with mitigation*, similar to the Project.

Under Alternative 2, expansion of resources available to Zoo Magnet Center students, including animal observation space, may improve the quality or quantity of educational opportunities to students. Under Alternative 2, expanded Zoo facilities would aid in the Zoo's mission of expanding animal conservation programs and expand the Zoo's capacity to provide care for additional animals. As such, Alternative 2 could increase both the number of zookeepers employed by the Zoo and animals under their care, which in turn, could expand educational programs available to Zoo Magnet School students.

Recreation

REC-1:	Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Similar to the proposed Project, Alternative 2 would upgrade the Zoo Drive/Western Heritage Way intersection with a new signal in Phase 1. The signalization of this intersection would not affect the mobility of pedestrians, bicyclists, and equestrians along the Main Trail or affect their safety. Therefore, implementation of Alternative 2 would substantially reduce impacts to mobility and safety along the Main Trail as compared to the proposed Project and impacts associated with accessibility to recreational resources would be *less than significant*.

Alternative 2 would increase Zoo visitation and increase visitor-serving spaces within the Project area to the same extent as the proposed Project. Expansions and improvements to Zoo facilities under Alternative 1 would be contained within existing Zoo boundaries. Thus, Alternative 1 would result in no net loss of recreational lands and would not cause direct impacts to recreational facilities within Griffith Park or elsewhere, similar to the proposed

Project. Further, the addition of a 2-acre public park to the north of the proposed parking structure would slightly expand recreational amenities within Griffith Park. Within the Zoo, the proposed Nature Play Park would replace the existing children's playground within the Zoo, named the Papiano Play Park, increase the playground size threefold to 18,300 square feet of a natural play area equipped with play structures and water features, and relocate the park nearby the main entrance.

Similar to the proposed Project, Alternative 2 would not facilitate indirect population or economic growth within the City or greater region that would place demand on recreation and park services compared to the existing level of service available. The approximately 513 new jobs generated by Alternative 1 implementation are anticipated to be supplied by the existing local or regional labor force within the City, surrounding cities, and surrounding Los Angeles region. Therefore, any net population increase spurred by Alternative 1 is anticipated to be less than under the proposed Project and nominal. As such, no additional demand on existing recreational facilities or for new recreational amenities is anticipated as a result of Alternative 1 implementation, similar to the Project. Therefore, Alternative 2 impacts would be *less than significant*.

REC-2:	Would the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?

Under Alternative 2, redevelopment and expansion of existing facilities and the construction of new facilities within the Zoo would improve the recreational value and opportunities provided by the Zoo. Alternative 2 would include the public park in the northern parking lot as proposed for the Project. Alternative 2 would also involve the construction of additional bicycle and pedestrian enhancements and connected in the Project vicinity, which may serve as a recreational resource as well as additional connections to Griffith Park. These recreational improvements would result in impacts to the environment, including adverse effects to air quality, biological resources, cultural and tribal resources, the City's urban forest, geology and soils, hazards and hazardous materials, and transportation, as described in this EIR similar to the Project. Where potentially significant impacts are identified as they relate to the construction or expansion of recreational facilities, applicable existing regulations or appropriate mitigation is identified which would reduce associated Alternative 2 impacts. With implementation of the regulations and required mitigation measures, impacts from the construction or expansion of recreational facilities would be similar to the Project and *less than significant*.

Transportation

T-1:	Would the project cause a significant environmental impact due to conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?

Alternative 2 would include a comprehensive TDM program that expands multi-modal transportation to the Zoo and would align with the VMT reduction goals and objectives within the SCAG's 2016 RTP/SCS, Los Angeles General Plan, Mobility Plan 2035, Hollywood Community Plan, Griffith Park Vision Plan, Green New Deal Plan, and Plan for a Healthy Los Angeles. As described for the proposed Project, Alternative 2 would be consistent with the plans listed above to a greater extent than the proposed Project due to overall reduced VMTs, and multi-modal local and regional transportation policies. Alternative 2 would not cause significant environmental impacts due to conflicts with any transportation plan, policy, or regulation, and impacts would be similar to the Project and *less than significant with mitigation*.

T-2:	Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

Alternative 2 construction activities would result in additional VMT in the Project vicinity and on the I-5 and SR-134 freeways, associated with construction materials deliveries, soil import and export, export of demolition debris, and construction workers trips. Construction-related increases in VMT would occur intermittently and would be lower in volume than the construction vehicle trips and VMT associated with the proposed Project. The Construction Traffic & Access Management Plan required under **MM T-1** would further reduce construction VMT impacts through provisional measures to reduce construction traffic and associated VMT.

As described in Section 3.15, *Transportation*, the Zoo is currently isolated from major and local transit hubs, with only two transit lines (i.e., Parkline Shuttle and Metro Line 96) currently serving the Project site. Alternative 2 would include comprehensive TDM measures associated with the expansion of transit services to serve the Project site and encouraging the use of transit by visitors and employees. While Alternative 2 implementation would increase daily VMT over existing conditions due to the addition of a new employees and an increase of approximately 1.2 million new annual visitors, Alternative 2 would meet an overall goal of reducing projected Zoo VMT by 15 percent (5 percent greater than **MM T-2** under the proposed Project). As such, daily visitor VMT on weekends (the highest attendance days) in 2040 would be reduced from 136,287 under the proposed Project to approximately 115,844 under Alternative 2. Daily employee VMT on Mondays and Fridays in 2040 would be reduced from 24,436 under the proposed Project to 20,771 under Alternative 2. While Alternative 2 would result in a significant reduction in operational visitor and employee VMT when compared to the proposed Project without additional mitigation, this alternative's VMT estimates would still exceed the TAG's established net-zero VMT threshold for event centers

and regional-serving entertainment venues. Therefore, Alternative 2, similar to the Project, would have *significant and unavoidable* impacts related to increased VMT.

T-3: Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Alternative 2 construction would increase construction traffic and congestion associated with trucks trips, construction worker vehicle trips, and other construction-related trips on the surrounding street network and I-5 and SR-134 freeways throughout the construction period. Heavy truck traffic entering and exiting the intersection of Zoo Drive & Western Heritage Way could interfere with pedestrian and bicycle flows along both streets, particularly during periods of high pedestrian activity such as events and festivals within Griffith Park and at the Zoo. Other potential construction-related impacts include idling and parked or queued heavy trucks that could potentially obstruct visibility. Specific construction access points and haul routes would be determined during the pre-construction design and permitting associated with each individual construction phase. Further, implementation of **MM T-1** would require preparation of a Construction Traffic & Access Management Plan to address construction traffic routing and control, safety, construction parking, and vehicle, bicycle, and pedestrian safety. The Construction Traffic & Access Management Plan would require haul trips to be restricted between 9:00 AM and 2:00 PM to avoid pedestrian safety impacts associated with pick-up and drop-off at the Zoo Magnet Center, and would require construction flaggers, as necessary, to maintain the flow of traffic and allow safe passage for pedestrians across crosswalks and along the Main Trail. With the implementation of **MM T-1**, construction-related hazards would be reduced to *less than significant with mitigation*.

Similar to the proposed Project, each phase of development under Alternative 2 would be required to undergo review by City agencies, including a review of roadway improvements and operations so that vehicle, bicycle, and pedestrian access are adequately accommodated without obstructing, hindering, or impairing drivers' reasonable and safe views of other vehicles, people walking, or people bicycling on the same street and/or restricting the ability of a driver to stop a motor vehicle without danger of an ensuing collision. Design features of individual development projects would need to be consistent with Mobility Plan 2035 policies, Walkability Checklist standards, and Vision Zero policies, which focus on eliminating existing hazards and designing the transportation network so as to enhance safety of all ways of travel. Although Alternative 2 implementation would add vehicle trips to the surrounding roadways, this general increase in vehicle traffic volumes would be less than the proposed Project and distributed among multiple streets in the transportation study area, and therefore, would not be considered a traffic hazard.

Similar to the Project, the proposed realignment of Western Heritage Way/Crystal Springs Drive would improve pedestrian safety associated with Zoo Magnet Center students and staff crossing this roadway. The existing driveway serving the overflow parking lot and the Zoo Magnet Center would be eliminated, thereby reducing the potential vehicle and bicycle

conflicts at that location. The realigned roadway and south driveway would be engineered to comply with LADOT standards and designed to intersect the roadway at a right angle to address line of sight, turning radii, spacing, etc. The roadway would also provide necessary sidewalks, crosswalks, and pedestrian movement controls to meet the City's requirements to protect vehicle, bicycle, and pedestrian safety. The overall reduction in vehicle trips and vehicle congestion under operation of Alternative 2 would improve safety for bicycles and pedestrians in the Project vicinity. Therefore, impacts related to driving hazards would be similar to the proposed Project and *less than significant*.

Similar to the Project, Alternative 2 would result in beneficial circulation and safety impacts associated with provision of the Primary Path Loop for pedestrians and the separated pedestrian and service roads. As described for the proposed Project, The proposed Zoo aerial tram would comply with the current applicable safety regulations (i.e., Safety Requirements for Passenger Tramways [ANSI B77.1] and CCR Title 8, Subchapter 6.1, Article 8 Wire Rope And Strand Requirements). Implementation of the current engineering design and operational standards for the proposed Zoo aerial tram would ensure there are no near-term or long-term safety impacts associated with operation of these structures. Similar to the Project, Alternative 1 improvements to the Zoo's internal circulation would result in reduced beneficial and *less than significant* operational impacts to safety hazards.

T-4: Would the project result in inadequate emergency access?

While Alternative 2 would involve demolition, excavation, and construction of roadways, pathways, and access routes both internal and external to the Zoo, construction activities would not disrupt access to primary or secondary designated Disaster Routes along I-5, SR-134 and San Fernando Road. Further, this alternative's phasing plan would limit disruption or obstruction of access and evacuation routes within the Zoo (refer to *Public Services*). Implementation of **MM T-1,** requiring a Construction Traffic & Access Management Plan with measures for controlling and ensuring continued access to the Zoo and through the interior of the Zoo circulation system, would address impacts from construction of proposed improvements on emergency access and evacuation Alternative 2 operation would also not impair adopted County or City mapped Disaster Routes along I-5, SR-134 and San Fernando Road, as all development would be contained within and immediately adjacent to the Zoo. Alternative 2 would include improvements to existing roadways and intersections surrounding the Zoo that would improve emergency response and access and improve internal circulation, wayfinding, and emergency access within the Zoo (refer to *Public Services*). Therefore, Alternative 2 would result in beneficial and *less than significant* impacts to emergency access, similar to the Project.

Utilities

UT-1: Would the project result in the construction of new water facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? Would the project have sufficient water supplies available to serve the project from existing entitlements and resources, or would new or expanded entitlements be needed?

Similar to the proposed Project, Alternative 2 construction would require water for dust control, equipment cleaning, soil excavation and export, and re-compaction and grading activities. Water use is conservatively estimated at 2,000 gpd during construction, which would be substantially less than existing water consumption at the Project site, which is estimated to be approximately 107,508,000 gallons per year (approximately 294,542 gpd) and could be accommodated by the existing water infrastructure onsite. Therefore, temporary construction-related impacts associated with water demand and water infrastructure would be similar to the Project and *less than significant*.

Alternative 2 would require installation of new water lines to replace existing lines and expand to undeveloped areas of the Zoo in the California and Africa planning areas. Alternative 2 would connect to the City's water supply system with new laterals installed within the Project site and existing outdated water mains within the Project site would remain protected, capped, and abandoned in place during construction. Construction impacts associated with the installation of laterals, and installation of a new recycled water connection would primarily involve minor trenching onsite. Prior to ground disturbance, all proposed work associated with the water laterals shall be subject to review and approval by the City Department of Public Works and all appropriate permits (e.g., public right-of-way permits) would be obtained, as necessary. The construction contractor would be required to notify the City Public Works Department in advance of ground disturbance activities to existing avoid water lines and/or disruption of water service to offsite properties. Therefore, impacts on water infrastructure from construction activities would be *less than significant.*

Based on the anticipated amount of growth to occur under Alternative 2, primarily as a result of expansion of visitor-serving and animal exhibit areas into existing undeveloped areas and increases in annual visitation, Alternative 2 implementation is expected to increase annual demand for potable water to 144,967,997 gallons per year (444.9 AFY), a 35 percent increase. The proposed stormwater management system would substantially offset the increased water demand and virtually eliminate the Zoo's irrigation water demand. As described under *Hydrology and Water Quality*, the proposed stormwater management system would be designed to retain 100 percent of flows generated under a 2-year, 24-hour storm event (equivalent to 2.44 inches of rainfall) or approximately 6.8 million gallons (20.9 AF). Based on historic precipitation data for the Los Angeles area, the proposed stormwater system once completed in Phase 3 of Alternative 2 implementation would be capable of capturing and retaining 35,000,000 gallons per year (107 AFY) (refer to Section 3.16, *Utilities*) for irrigation of landscaping and exhibit areas. With this offset in annual irrigation water demands,

Alternative 2 is anticipated to increase annual potable water demand by 2,459,997 gallons per year (7.5 AFY), a 2.2 percent increase over existing water demands.

Following the completion of Alternative 2 construction in 2040, the operational water demand (144,967,997 gallons per year or 444.9 AFY) would constitute less than 1 percent of the City's total water supply. The City would be able to serve Alternative 2 without additional unplanned new or expanded entitlements and Alternative 2 implementation would not adversely affect the ability of the City to meet its goal to source 70 percent of water locally by 2035 under the Green New Deal pLAn. Potable water demand would be further reduced through compliance with City's Water Efficiency Requirements and Green Building Code (LAMC Chapter XII, Article 5 and Chapter IX, Article 9), **MM UT-1**, and **MM HYD-7**, which would require the use of highly efficient plumbing fixtures, irrigation, and landscaping for new construction, expanded use of recycled water, and installation of efficient irrigation systems for all existing and proposed new landscaped areas within the Zoo. While not required to further reduce impacts from the Zoo's water demand, **MM UT-2** is recommended to include all recommended civil engineering and water efficiency measures recommended in the Appendix (*New Infrastructure: Plumbing)* of the Vision Plan.

Though the City's recycled water system has adequate capacity to serve the increase in Zoo recycled water use for irrigation of the parking lot areas and proposed public park, in accordance with the One Water L.A. Plan, **MM UT-1** would require the Zoo to extend recycled water lines throughout the interior areas of the Zoo to provide recycled water for washdown of the animal holding areas, irrigation, and power washers, in the Zoo's exhibits (e.g., treatment systems, ponds, aesthetics/water features, etc.) where feasible, as well as for fire suppression where feasible. Based on the City's current recycled water production capacity of 649,600 AFY and objectives for expanding opportunities for use of recycled water supplies, the City recycled water system has available capacity to adequately serve the recycled water demands of the Project. Expansion of the Zoo's non-potable water use as required by **MM UT-1** would require an additional connection to the City's water recycling system at the existing 8-inch recycled water main at the west end of the Zoo parking lot. The expanded use of recycled water for Zoo operations that do not require potable water quality would further reduce the Zoo's dependence on potable water supplies and implement the Green New Deal pLAn and One Water L.A. Plan. Impacts on the City's non-potable (recycled or reclaimed) water supplies would be reduced to *less than significant with mitigation*, similar to the Project.

UT-2: Would the project result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Similar to the Project, the proposed stormwater management system would result in environmental impacts associated with excavation and trenching of underlying soils, emissions from construction equipment and fugitive dust, construction vehicle traffic, construction stormwater runoff, potential disturbance of archaeological and paleontological

resources, and construction related noise. Detailed analysis of the potential impacts associated with installation of the proposed stormwater system are analyzed in each of the respective resources sections of Section 4.5.3, *Alternative 2 – Multi-Modal Transportation Alternative*. Alternative 2 implementation, along with installation of the stormwater collection system would also result in or contribute to construction-related impacts to those resources. Mitigation measures necessary to reduce Alternative 2 impacts associated with installation of the new stormwater collection system are also identified therein and would be capable of reducing environmental impacts to *less than significant with mitigation*. With regard to impacts from hydrology and water quality, the stormwater collection system would result in beneficial drainage impacts associated with stormwater reuse, similar to the Project.

UT-3: Would the project require or result in the construction of new wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? Would the project 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? Would the project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

Similar to the Project, the proposed stormwater collection system would capture, convey, and store rainfall from the Zoo and the 79.7-acre hillside area adjacent to the Zoo for reuse onsite as irrigation water. Therefore, while Alternative 2 implementation would generate increased stormwater within the Zoo property due to the addition of impervious surfaces, the proposed stormwater collection system would substantially reduce flow to the Zoo Wastewater Facility. Since the Zoo Wastewater Facility would receive only overflow stormwater from flows greater than the 2-year, 24-hour storm event, the volume of water directed to the Zoo Wastewater Facility would be reduced by up to 35 million gallons per year and up to 6.8 million gallons in one day. Following completion of the proposed stormwater collection system, the majority of flows to the Zoo Wastewater Facility would be comprised of animal pond water from the Zoo's exhibits. There is no proposed increase in the total number of pools requiring periodic draining and refilling, requiring water demand and treatment at the Zoo Wastewater Facility. Any additional animal pools and other water features that would be constructed under Alternative 2 would be installed with Life Support Systems, which require a much lower frequency of draining and filling. Proposed expansion of the animal exhibits would increase generation of animal pond water within the Zoo Wastewater Facility by approximately 13,091 gpd, for a total of 43,091 gpd. Due to the substantial reduction in stormwater flows that would be conveyed to the Zoo Wastewater Facility, an incremental increase in generation of animal pond water would not exceed the 1.8-million-gallon maximum capacity of the Zoo Wastewater Facility.

Similar to the Project, Alternative 2 implementation would generate an increase of approximately 30,606 gpd (of 100,606 gpd total) of sewage flows within the Zoo's sewer system and the City's North Outfall Sewer due to the addition of a new employees and an

annual increase of approximately 1.2 million new visitors. Additionally, proposed expansion of the animal exhibits would increase generation of animal pond water within the North Outfall Sewer by approximately 13,091 gpd, for a total of 43,091 gpd. Alternative 2 proposes a new plumbing system within the Zoo to replace the existing outdated sewer pipes and connect to new restrooms. The proposed new plumbing systems at the Zoo would be installed in accordance with the current California Building Code and Plumbing Code (CCR Title 24), Green Building Code (CCR Title 24, Part 11), State Water Conservation Guidelines, and Green Building Standards. In accordance with Section 64.15 of the LAMC, the Zoo would be required to submit a SCAR request to the BOE and pay a SCAR Fee prior to building plan approval to evaluate the capacity of the existing North Outfall Sewer to convey the projected wastewater generation from the Zoo through 2040. If deemed necessary, replacement of several sewer mains in the North Outfall Sewer could also create secondary short-term periodic construction impacts, such as air emissions, noise, and disruption of traffic flows. However, with assurance of adequate planning-level surveys of the existing North Outfall Sewer per existing City regulations, impacts to the North Outfall Sewer associated with sanitary sewer water would be reduced to *less than significant*, similar to the Project.

Implementation of the proposed stormwater collection system would reduce the volume of discharge from the Zoo Wastewater Facility to the City's North Outfall Sewer by 56 percent during and following storm events (refer to Section 3.16, *Utilities*). Additionally, the Zoo Wastewater Facility would continue to hold animal pond water and overflow stormwater from the Zoo until periods of low flow in order to avoid overloading the North Outfall Sewer. Therefore, implementation of the stormwater collection system would result in beneficial and *less than significant* impacts to the North Outfall Sewer.

Alternative 2 would increase wastewater generation at the Project site by up to 43,697 gpd, which would be less than 1 percent of the LAGWRP's approximately 2.8 mgd of additional full tertiary treatment capacity. Given that the increased wastewater flow from implementation of the proposed Vision Plan would be a *de minimus* incremental increase, the LAGWRP would have sufficient capacity to serve Alternative 2's projected demand in addition to the provider's existing commitments and no new or expanded water or wastewater treatment facilities would be required to serve Alternative 2. Therefore, Alternative 2 impacts to the LAGWRP would be the same as the Project and *less than significant*.

UT-4: Would the project be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs? Would the project comply with federal, state, and local statutes and regulations related to solid waste?

Alternative 2 construction would generate similar C&D waste to the proposed Project with demolition and redevelopment of existing areas of the Zoo. In accordance with the City's C&D Waste Recycling Ordinance, all mixed C&D waste generated during construction and not reused onsite would be hauled to a City-certified C&D waste processor. Therefore, solid waste impacts from C&D waste would be similar to the Project.

Based on the proposed increase in Zoo animal space, Alternative 2 would increase disposal of animal bedding and waste at the Griffith Park Compost Facility by up to 81.39 tons per day (refer to Section 3.16, *Utilities*). Therefore, future solid waste generation would remain below the Griffith Park Compost Facility's total permitted capacity of 156 tons per day.

Alternative 2 would also increase operational solid waste generation at the Zoo due to the limited new development and associated increase in annual visitation, similar to the Project. Based on the projected annual visitation growth, the estimated increased solid waste generation under Alternative 2 is 6.19 tons per day. Assuming the existing diversion rate of 76.4 percent, this would result in up to 1.46 tons per day. The additional 1.46 tons of solid waste per day that is anticipated to be generated by Alternative 2 implementation in 2040 would comprise less than1 percent of the total daily permitted capacity of Sunshine Canyon Landfill (8,300 tons of solid waste per day). Further, the Zoo would manage trash and recycling generated by animal care, dining facilities, restrooms, and other visitor-serving facilities within the Zoo campus in accordance with all applicable state and local requirements. Therefore, similar to the Project, Alternative 2 would not conflict with federal, state, or local statues and regulations related to solid waste disposal. Similar to the Project, Alternative 2 would be served by solid waste facilities that maintain adequate policy. Therefore, Alternative 2 would have a *less than significant* impact related to solid waste.

Wildfire

WF-1:	Would the project impair an adopted emergency response plan or emergency evacuation plan?

While Alternative 2 would involve demolition, excavation, and construction of roadways, pathways, and access routes both internal and external to the Zoo, construction activities would not disrupt access to primary or secondary designated Disaster Routes along I-5, SR-134 and San Fernando Road and this alternative's phasing plan would limit disruption or obstruction of access and evacuation routes within the Zoo (refer to *Public Services*). Implementation of **MM T-1,** requiring a Construction Traffic & Access Management Plan with measures for controlling and ensuring continued access to the Zoo and through the interior of the Zoo circulation system, would address impacts from construction of proposed improvements on emergency access and evacuation of the Zoo in response to a wildfire. Impacts associated with increased risk of wildfire during Alternative 2 construction would be *less than significant with mitigation.*

As discussed in *Public Services* for Alternative 2 above, Alternative 2 operation would not impair adopted County or City mapped Disaster Routes along I-5, SR-134 and San Fernando Road, as all development would be contained within the Zoo and bordering areas of Griffith Park. Alternative 2 improvements would include improvements to existing roadways and circulatory systems both within and surrounding the Zoo that would improve emergency response and access, emergency evacuation, and sheltering in place (refer to *Public Services*).

Therefore, Alternative 2 would not impair emergency response or evacuation, similar to the Project, and impacts would be *less than significant.*

WF-2: Would the project exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire due to slope, prevailing winds, and other factors?

The Project site is located within a Very High FHSZ at the base of steep vegetated slopes within Griffith Park, with onsite and adjacent fire-prone vegetation, steep slopes, limited perimeter access, and annual Santa Ana winds. Alternative 2 construction would introduce new potential ignition sources over the course of 20 years, such as the use of heavy machinery and fuels, which create the potential for sparking and could exacerbate wildfire risk. Major construction of the new California and Africa planning areas in Phases 1 and 3 would occur within areas that currently support flammable native and non-native vegetation and are located on steep slopes adjacent to wildlands in Griffith Park. Vegetation clearing, grubbing, grading, and facility construction, for the planned tram road, service facilities, and the California and Africa exhibits along Zoo's perimeter would similarly occur within and adjacent to areas that support flammable vegetation. Major excavation, including potential blasting, for Condor Canyon in the California planning area, could also add to construction-related fire ignition risks. Although all construction would be performed in a fire-safe manner consistent with existing regulations, potential for accidental ignition of onsite or adjacent wildland vegetation would remain.

Similar to the proposed Project, Alternative 2 would involve tree and vegetation removal, including hundreds of highly flammable eucalyptus trees, as well as over 13 acres of flammable native chaparral and up to 7 acres of oak woodland. Construction in these areas would remove unmaintained flammable native and nonnative vegetation and replace it with irrigated native and ornamental vegetation, potentially reducing the extent of onsite flammable vegetation. Additionally, Alternative 2 construction would be implemented in compliance with all applicable requirements of the City's Fire Code and NFPA 241 *Standards for Safeguarding Construction, Alternation, and Demolition Operations.* With implementation of existing regulations, risks associated with Alternative 2 construction would be reduced such that Alternative 2 construction impacts associated with increased risk of wildfire during Project construction would be the same as the Project and *less than significant.*

While changes in the interior of the Zoo may reduce risk of onsite vegetation ignition, increased visitation and new exhibits may provide new ignition sources, which could also incrementally increase risk of wildfire occurring within Griffith Park. For instance, similar to the proposed Project, Alternative 2 would expand nighttime activities, including campouts in the Africa and California planning areas, and additional special events throughout the year. These new activities may involve potential ignition sources ranging from regulated campfires, cooking/BBQ, electric wiring, and unpermitted smoking. The projected increase in visitor attendance would increase the total and density of people within a designated Very High

FHSZ. In the event of a wildfire incident, Zoo visitors and animal residents would also be exposed to increased risk of fire-created pollutant emissions (smoke). Similar to the proposed Project, the Zoo would continue to implement procedures for managing fuels, ensuring adequate evacuation of the Zoo, and providing appropriate forms of access to the Zoo and surrounding WUI, as required in the City's Fire Code and by LAFD, and preparation and application of emergency management and evacuation plans per both City and AZA regulations. In addition, all development would undergo plan review by the LAFD to ensure appropriate designs for access and fire flow as required under Chapter 5 of the City Fire Code. Per **MM WF-2**, the Zoo would be required to update these plans as appropriate based on proposed improvements and changes in site access and circulation through Alternative 2 implementation. Therefore, with the application of existing regulations and requirements to update wildfire management and evacuation plans, Alternative 2 would not significantly exacerbate wildfire risks resulting in the exposure of Zoo staff and visitors to wildfire hazards, and impacts would be the same as the Project and *less than significant with mitigation*.

WF-3:	Would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

Alternative 2 would include the installation and maintenance of new or improved/realigned roads, emergency water sources, power lines or other utilities throughout the Zoo within existing developed/disturbed areas. The risks associated with installation, operation, and maintenance of these facilities is discussed in detail under Impact WF-2 above. However, Alternative 2 would develop hillside areas within the Zoo that currently act as fuel breaks between the Zoo and wildland areas. Expansion or reestablishment of these fuel breaks elsewhere around these proposed areas of development would potentially result in loss of sensitive natural communities, species, and protected trees. Vegetation within portions of these undeveloped hillsides are currently managed through clearing, mowing, or trimming by the Zoo and LAFD as a fuel breaks between the Zoo and surrounding Griffith Park and WUI. It is likely new fuel breaks would be located along the perimeter of the California and Africa planning areas in compliance with existing City Fire Code and LAFD regulations. The installation and maintenance of new or expanded fire buffer and fuel breaks would require mowing, substantial trimming, or complete removal of almost all vegetation within up to a 100-foot buffer area around the Zoo perimeter, including native chaparral and oak woodland habitats, as well as nonnative grasses and scattered invasive species (e.g., eucalyptus). Precise measurements of habitat loss are difficult to calculate due to the conceptual nature of Project plans and are also contingent upon LAFD direction, which is provided annually based on site inspections. However, in total, installation and maintenance of this fuel buffer could result in up to 6 acres of disturbance or loss of native chaparral and oak woodland habitat within Griffith Park. With implementation of **MM UF-1**, **MM UF-2**, and **MM WF-1**, adverse impacts to biological resources as a result of installation and maintenance of these fuel breaks

would be reduced through maximum avoidance of native vegetation and appropriate restoration offsite. Therefore, Alternative 2 impacts would be the same as the Project and *less than significant with mitigation.*

WF-4: Would the project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

Alternative 2 development would occur downslope or downstream of steep hillsides and three small drainages within Griffith Park. There are no creeks or rivers mapped within the Project site, but stormwater flows from the hillsides through the Zoo's stormwater management system, which removes silt and grit from stormwater before it flows to the LAGWRP. If a wildfire burned large areas within Griffith Park adjacent to the Zoo, post-fire runoff from a major storm event, slope instability, landslides, drainage changes, and limited flooding or sedimentation could occur within the Zoo. The relatively small size of the watershed draining into the Zoo (~80-acres) would potentially limit problems. If wildfire-denuded surrounding hillsides were subjected to a high intensity rain event, new development within the Zoo, especially new development at the base of the hillsides, has limited potential to experience damage from sedimentation. Sediment and debris could plug existing and planned drainage improvements, including the proposed stormwater collection system (refer to Section 3.10, *Hydrology and Water Quality*). Two of the proposed subsurface cisterns serving the Bird Show and Animal Programs amphitheater and the Nature Play Park planning area are located on high elevation sites relative to the flat interior or the Zoo. These new cisterns would capture all runoff, debris, and sediments conveyed through the watershed, resulting in the potential accumulation of sediment or debris within the system, especially in the event of high rainfall closely following burn of the watershed. However, the small size of the existing watersheds would not create significant runoff, debris flow, or landslides caused by post-fire slope instability that place Zoo occupants or structures at substantial risk. Therefore, impacts would be similar to the proposed Project and *less than significant*.

Conclusion and Relationship to Project Objectives

Alternative 2 would substantially expand multi-modal transportation opportunities for the Zoo to give visitors and employees the option to use transit, bicycles, walking, and ridesharing as a viable and attractive travel mode. In doing so, Alternative 2 would substantially reduce total Zoo VMT to a greater extent than the Project. As a result, this alternative would reduce potentially significant impacts to aesthetics, air quality and GHG emissions, energy, land use and planning, and transportation. VMT is the metric by which transportation impacts are measured in the City, per the 2020 TAG and consistent with state law. Reducing VMT through Alternative 2 aims to substantially reduce the significant transportation impact of the Project. However, given that the 2020 TAG's VMT threshold for regional attractions and event centers is net-zero new VMT, Alternative 2 would not result in zero new VMT. Therefore, transportation impacts would remain significant and unavoidable, even with TDM

components that would reduce VMT consistent with the 2017 Scoping Plan and the 2035 Mobility Element.

Alternative 2 would guide redevelopment of the Zoo consistent with all of the Project objectives. Since Alternative 2 would include all of the same development components included in the proposed Project, this alternative would provide the same benefits to the Zoo associated with expanded animal exhibits, enhanced visitor-serving areas, improved circulation, and updated facilities. However, the possibility of funding from multiple stakeholders, and the amount of funding required for new transit facilities and services, bicycle and pedestrian bridges and connections, and multi-modal incentives for employees and visitors would be costly. Therefore, Alternative 2 implementation may present challenges in terms of economic feasibility.

4.6 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

Section 15126.6(e)(2) of the State CEQA Guidelines indicates that an analysis of alternatives shall identify an environmentally superior alternative among the alternatives evaluated in the EIR. In general, the environmentally superior alternative as defined by CEQA should minimize adverse impacts to the Project site and its surrounding environment. Table 4-2 summarizes the environmental advantages and disadvantages associated with the proposed Project and the three analyzed alternatives.

Each alternative analyzed in this section was evaluated based on significance criteria, location, extent and magnitude of impacts, potential benefits, and relative impacts in comparison to other alternatives. The alternative with the fewest adverse impacts and relatively greatest benefits is thereby considered the Environmentally Superior Alternative. Although the No Project Alternative would result in the least amount of impacts, CEQA Guidelines section 15126.6 states that if the environmentally superior alternative is the No Project Alternative, the EIR shall also identify an environmentally superior alternative from among the other alternatives.

Based on the information in this EIR, Alternative 1, the Reduced Project Alternative, is identified as the Environmentally Superior Alternative. Alternative 1 was found to generate the least adverse impacts compared to the Project and Alternative 2, the Multi-Modal Transportation Alternative. Alternative 1 would reduce impacts as compared to the Project in the following resource areas: aesthetics, air quality; biological resources; energy; urban forestry resources; greenhouse gas emissions; noise; transportation; and utilities. For instance, avoidance of development within the hillsides of the California and Africa planning areas would greatly eliminate impacts to habitats onsite, including laurel sumac shrubland, coast live oak woodlands, eucalyptus/mixed woodlands, coast live oak woodland, and California sage coastal sage scrub habitats. Alternative 1 would also minimize impacts to Nevin's barberry in the California planning area and Southern California black walnut in the Africa planning area. Reduction or elimination of the proposed parking structure would also

reduce visual impacts to the public from roadways and areas fronting the Zoo in Griffith Park. However, Alternative 1 would continue to result in significant and unavoidable impacts to transportation, similar to the Project and Alternative 2.

Alternative 1 would only meet the Project objectives for animal welfare and care within fewer exhibit spaces and animal habitats, capital improvements, and environmental sustainability. A majority of the remaining Project objectives would only be partially met by Alternative 1. For instance, the Zoo's ability to increase and modernize Zoo exhibit space, develop conservation facilities and programs, promote learning and education, provide an immersive visitor experience, create a world class destination, and provide visitor-serving amenities would all be hindered by the reduced development footprint under Alternative 1. Elimination of the California planning area would include elimination of the California Visitor Center and associated restaurant, meeting rooms, visitor shop, and restrooms. Therefore, while Alternative 1 would be the Environmentally Superior Alternative, it would not achieve the objectives for the Project to the same extent as the Project and Alternative 2.

5.0 OTHER CEQA CONSIDERATIONS

The proposed Project would result in significant and unavoidable impacts to aesthetic and visual resources and transportation. The Project would not result in any impacts to agricultural or traditional forestry resources or mineral resources due to the absence of such resources at the Project site, and would not significantly affect population and housing within the City or surrounding cities of Burbank and Glendale. In addition, the Project would result in significant irreversible environmental impacts associated with the commitment of non-renewable energy resources, human resources, and natural resources. The Project would not result in the removal of obstacles to growth within the Los Angeles region and is not expected to substantially induce growth

This section presents an analysis not covered in other sections of this Environmental Impact Report (EIR) regarding significant and unavoidable effects of the proposed Los Angeles Zoo and Botanical Gardens (Zoo) Vision Plan (Vision Plan; Project), significant irreversible effects, growth inducing impacts, removal of obstacles to growth, and resources areas that are found not to be significant. In particular, Section 15126 of the CEQA Guidelines requires that all aspects of a project must be considered when evaluating its impact on the environment, including planning, acquisition, development, and operation. Accordingly, in addition to the analysis provided in Section 3.0, *Environmental Impact Analysis and Mitigation Measures,* this EIR must identify growth inducing impacts and significant irreversible environmental changes that would potentially result from the proposed implementation of the Project.

5.1 SIGNIFICANT AND UNAVOIDABLE ENVIRONMENTAL IMPACTS

CEQA Guidelines Section 15126.2(c) requires that an EIR describe any significant impacts that cannot be avoided, even with implementation of feasible mitigation measures. As analyzed in this EIR, the proposed Project would result in potentially significant and unavoidable adverse impacts to aesthetics, and transportation (refer to Section 3.1, *Aesthetics and Visual Resources*, and Section 3.15, *Transportation*).

Specific significance thresholds were defined for each potential impact associated with each resource area. Based on the environmental impact assessment presented in Section 3.0, *Environmental Impact Analysis and Mitigation Measures,* of this EIR, the resource areas of aesthetics and visual resources, land use and planning, and transportation would result in significant impacts even after mitigation is applied to reduce the level of impact.

Under CEQA Guidelines Section 15065, when an EIR demonstrates that implementation of a proposed project will cause significant and unavoidable impacts, the agency must issue a Statement of Overriding Considerations before approving the project. A Statement of Overriding Considerations is a report of the lead agency's findings regarding the merits of

approving a proposed project despite its significant environmental impacts and reflects the balancing of competing public objectives. Therefore, the City will be required to adopt a Statement of Overriding Considerations to address the significant impacts identified above and discussed in detail in Section 3.0, *Environmental Impact Analysis and Mitigation Measures*. In this instance, the City may weigh the long-term benefits of the Project, such as improving the quality and extent of animal habitats within the Zoo, against potentially adverse impacts created by the Project. To facilitate consideration of these issues, this EIR discloses potential impacts and provides a range of Project alternatives that could more fully alleviate environmental concerns. In addition, Section 3.11, *Land Use and Planning,* provides an overview of the City's policy context, which provides information on how the Project meets several important City policy objectives and where it may raise concerns over consistency with other City policies. All this information should be reviewed when considering this Project.

5.2 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL IMPACTS

CEQA Guidelines, Section 15126.2(d) requires a discussion of "significant irreversible environmental changes which would be caused by the proposed project should it be implemented. Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified."

Analysis of environmental impacts of the proposed Project considers effects on the environment from future development anticipated under the proposed Vision Plan through the year 2040. Construction and operation of new development in the Zoo would entail the commitment of (1) non-renewable energy resources; (2) human resources; and (3) natural resources, such as lumber and other forest products, sand and gravel, asphalt, steel, copper, lead, other metals, and water resources, most of which are non-renewable or locally limited natural resources. Resources that would be permanently and continually consumed during the life of the proposed Vision Plan include water, electricity, natural gas, and fossil fuels, as well as landfill space; however, the amount and rate of consumption of these resources would not result in the inefficient or wasteful use of resources. Compliance with all applicable building codes, as well as General Plan and Hollywood Community Plan policies, standard conservation features, and current City programs would ensure that natural resources are conserved to the maximum extent feasible. Additionally, it is possible that new technologies or systems will emerge in the future, or will become more cost-effective or user-friendly, to further reduce the reliance on nonrenewable natural resources. While future construction activities and operational activities anticipated to occur under the proposed Project would result in the irretrievable commitment of nonrenewable energy resources (primarily in the

form of fossil fuels, including fuel oil, natural gas, and gasoline for automobiles and construction equipment, as well as commitment of limited landfill space), consumption of such resources is associated with any development in the region, and are not unique or unusual to the City or the Zoo (refer to Section 3.5, *Energy*).

The proposed Project would not be expected to result in environmental accidents that have the potential to cause irreversible damage to the natural or human environment. While development anticipated to occur under the proposed Vision Plan would result in the limited use, transport, storage, and disposal of hazardous materials, all activities would comply with applicable state and federal laws related to hazardous materials transport, use, and storage, which would significantly reduce the likelihood and severity of accidents that could result in irreversible environmental damage (refer to Section 3.9, *Hazards and Hazardous Materials*).

5.3 GROWTH-INDUCING IMPACTS

As required by the CEQA Guidelines (CEQA Guidelines Section 15126.2[e]), this EIR must include a discussion of the ways in which the proposed Project could cause growth inducing impacts. A project may be growth inducing if it directly proposes the construction of additional housing or if it indirectly fosters economic or population growth by removing obstacles to population growth. Increases in population growth may increase the demand for community service facilities, requiring the construction of new facilities that could cause significant environmental effects. Additionally, a project may encourage or facilitate other activities that could cause significant environmental effects. Under CEQA, this growth is not to be considered necessarily detrimental, beneficial, or of significant consequence.

In general, a project may foster physical, economic, or population growth in a geographic area if it meets any one of the criteria identified below:

- The project proposes the construction of new housing
- The project results in the urbanization of land in a remote location (leapfrog development)
- The project removes an impediment to growth (e.g., the provision of new roads to a remote area that would otherwise be unreachable)
- The project establishes a precedent-setting action that could encourage and facilitate other activities that could significantly affect the environment (e.g., a change in zoning or general plan amendment approval for conversion of undeveloped land)
- Significant economic expansion or growth occurs in an area in response to the project (e.g., establishment of employment centers, etc.)

If a project meets any one of these criteria, it may be considered growth inducing. Generally, growth-inducing projects are either located in isolated, undeveloped, or underdeveloped

areas, necessitating the extension of major infrastructure, such as sewer and water facilities or roadways, or encourage premature or unplanned growth.

To comply with CEQA, an EIR must discuss the ways in which the proposed project could promote economic or population growth in the vicinity of the project area and how that growth would, in turn, affect the surrounding environment (CEQA Guidelines Section 15126.2(e)). Under CEQA, this growth is not to be considered necessarily detrimental, beneficial, or of significant consequence. Induced growth is considered a significant impact only if it affects (directly or indirectly) the ability of agencies to provide needed public services, or if it can be demonstrated that the potential growth, in some other way, significantly affects the environment.

Removal of Obstacles to Growth

The proposed Project would be confined entirely to property currently owned by the Zoo or City and largely within fully urbanized areas of the City. The cities of Los Angeles, Burbank, and Glendale are almost entirely built out with little to no opportunity for additional future development within the Project vicinity. Both the Zoo and surrounding areas are well-served by existing infrastructure. Implementation of the Project include minor improvement of existing utility systems or connection to utility services to serve the Zoo and improvement of existing roadways and intersection to reduce congestion around the Zoo. Major improvements to water, sewer, and circulation systems and drainage connection infrastructure or the extension of this infrastructure would not be needed. Because the proposed Project constitutes redevelopment within an urbanized area and does not require the extension of new infrastructure through undeveloped areas, Project implementation would not remove an obstacle to growth.

Population and Housing Generation

Growth in the Los Angeles region is projected based on long-term trends in natural births, immigration, and changes in demographic patterns. Planning documents such as the local Los Angeles General Plan, Hollywood Community Plan, and the Southern California Association of Governments (SCAG) 2016-2040 Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS) provide the regulatory framework for guiding how this growth is to occur.

The Project may induce growth within the City and region due to the creation of short- and long-term employment opportunities which draw newcomers to the region and increase economic growth. For the purposes of this EIR, implementation of the Vision Plan is anticipated to result in the creation of an additional 531 full-time equivalent (FTE) jobs. It is assumed that a large portion of the 531 FTE jobs would be absorbed by existing working-class residents of the City and surrounding region. Therefore, the proposed Project would not be considered growth inducing as it would not substantially affect long-term employment opportunities. Additionally, even if a portion of the 531 new employees were to move to the City or surrounding vicinity, a total increase of 531 new residents to the City would represent

an insignificant increase in the overall population of the cities of Los Angeles (population 3,979,576), Burbank (population 102,511), and Glendale (population 199,303) (U.S. Census Bureau 2020). The proposed Project's potential population increase would represent less than 0.5 percent of each of these cities total populations and would not significantly increase the population of the region. Further, the proposed Project would not have significant economic or social effects that would result in adverse physical changes or deterioration of the surrounding area.

Potential impacts associated with population, housing, and economic growth anticipated to result from implementation of the proposed Project are further addressed in Section 5.4, *Resource Areas Found Not to Be Significant*.

5.4 RESOURCE AREAS FOUND NOT TO BE SIGNIFICANT

CEQA Guidelines state that an EIR shall contain a statement briefly indicating the reasons that various possible significant effects of a project were determined not to be significant and, therefore, are not discussed in detail in the EIR (Section 15128).

Agriculture and Traditional Forestry Resources

The Project site does not contain traditional forestry resources or lands which are classified as Prime Farmland, Unique Farmland, Farmland of statewide Importance, or designated for agricultural or timber extraction. There are no lands within the City under the Williamson Act contracts. The Project does not propose any actions that would substantially affect such resources within the City or surrounding region. Therefore, implementation of the proposed Project would not result in impacts to these resource areas.

Mineral Resources

There are no mineral extraction operations within the Project site or anywhere in the nearby vicinity. The Project site is not designated as an existing mineral resources extraction area by the State, and because the Project site is already highly disturbed, the potential for unknown, recoverable mineral resources to occur on-site is low. Therefore, implementation of the proposed Project would not result in impacts to mineral resources.

Population and Housing

The Project would not have the potential for significant impacts associated with population and housing (refer to Section 5.3, *Population and Housing Generation*). The Project would not result in the demolition, construction, or renovation of any residential uses or units within the City or surrounding cities of Burbank and Glendale. As such, the Project would not directly increase the population of these cities. The Project would, however, provide an unknown amount of short-term employment opportunities during construction as well as approximately 531 FTE jobs over the course of Vision Plan implementation. Short-term Project construction employment would draw from the existing regional workforce and would

not significantly increase the population of these cities. Although a majority of Zoo employees would be anticipated to come from the existing regional workforce, the Project could attract workers from other localities, increasing the resident population of those cities. However, assuming all 531 new FTE employees would move from outside the region to live near the Zoo, these increases would represent less than 0.5 percent of the existing population of the cities of Los Angeles, Burbank, and Glendale, and therefore would not be considered to result in substantial population growth. Therefore, potential impacts of the Project associated with population and housing would be considered *less than significant*. Further analysis of this issue is not required.

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