Draft Environmental Impact Report
SCH No. 2008061109

Elysian Reservoir
Water Quality Improvement Project

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Environmental Services
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EXECUTIVE SUMMARY

ES.1 Introduction and Overview

This Environmental Impact Report (EIR) has been prepared by the Los Angeles Department of Water and Power (LADWP) to evaluate potential environmental effects that may result from development of the proposed Elysian Reservoir Water Quality Improvement Project. This EIR has been prepared in conformance with the California Environmental Quality Act of 1970 (CEQA) statutes (Cal. Pub. Res. Code, Section 21000 et seq., as amended) and implementing guidelines (Cal. Code Regs., Title 14, Section 15000 et seq.). LADWP is the lead agency under CEQA.

To help ensure the quality, reliability, and stability of the City of Los Angeles drinking water supply and to ensure compliance with updated United States Environmental Protection Agency (EPA) water quality standards, LADWP proposes to construct a new buried concrete-covered reservoir (buried reservoir) to replace the existing uncovered Elysian Reservoir (proposed project). The new buried reservoir would be constructed in essentially the same location as the existing reservoir, although with a slightly reduced footprint. The buried reservoir would provide an equal amount of potable water storage (55 million gallons [MG]) as is available in the existing reservoir. A new 54-inch diameter underground inlet line connecting the buried reservoir to the existing Riverside Trunk Line would also be constructed to replace the existing nearly 67-year-old 36-inch inlet line. The area atop the buried reservoir would be developed for recreation uses. A shallow wildlife pond of not less than 0.5 acres in size would also be created at the northern end of the project site, but not atop the buried reservoir. After completion of project construction, the site would be open to the public as part of Elysian Park. Other than facilities related to water storage and distribution, the site would be maintained and operated by the Los Angeles Department of Recreation and Parks (LADRP).

ES.2 Project Location and Setting

Elysian Reservoir is located in Elysian Park, approximately 1.5 miles north of downtown Los Angeles. Dedicated in 1886 and consisting of approximately 575 acres, Elysian Park is the oldest and second largest park in the City. The park is owned by the City of Los Angeles and operated and maintained by LADRP, excluding the reservoir property, which is operated and maintained by LADWP. The reservoir itself lies northwest of and immediately adjacent to the Pasadena Freeway (State Route [SR] 110), between Dodger Stadium to the southwest and the Golden State Freeway (Interstate [I] 5) to the northeast. Elysian Reservoir is accessed off of Grand View Drive, which is a road located within the interior of Elysian Park.

The existing Elysian Reservoir has a storage capacity of approximately 55 MG. It has a maximum depth of 50 feet, a high water elevation of 462 feet, and a surface area of approximately 6 acres at the high-water elevation. The reservoir is approximately 900 feet long and approximately 400 feet wide at the maximum width near the dam at the southern end, tapering to approximately 170 feet wide near the inlet at the northern end. The materials and shape of Elysian Reservoir impart a clearly manmade appearance. The reservoir has continuous, straight edges and is roughly teardrop in shape. The bottom and sides of the reservoir are paved with asphaltic concrete. The water level in the reservoir can fluctuate considerably, exposing more or less of the asphalt side walls. Currently the surface of Elysian Reservoir is covered with 4-inch diameter black “shade balls” to help prevent the formation of bromate in the stored drinking water. However, this is a temporary situation pending permanent solutions, and the existing condition of the reservoir considered for the environmental analysis in this EIR is that of an open water surface. A concrete parapet wall (approximately 1.5 to 3.0 feet in height) is located several feet outside the upper edge of the reservoir side walls. The parapet wall is topped with a 7-foot tall chain link fence that encloses the entire reservoir. An approximately 12- to 16-foot wide paved road is located around the perimeter of the reservoir. The remainder of the 12-acre reservoir property is vegetated. The property is segregated from Elysian Park by a chain link fence, which is in addition to the fence that immediately surrounds the reservoir. A 15-foot diameter outlet tower is located in the southwest corner of the reservoir, projecting to a height approximately 15 feet above the water surface at the high water elevation. The tower is connected to the perimeter road by an approximately 160-foot long footbridge.

The proposed project site is located at the bottom of an approximately 40-acre ravine within the boundaries of Elysian Park, which is designated as Open Space in the City’s General Plan. Land uses in the vicinity of the Elysian Park are primarily devoted to single- and multi-family residential uses. Dodger Stadium, also an Open Space land use designation in the City’s General Plan, is located southwest of and adjacent to Elysian Park. The Los Angeles Police academy, located approximately 0.5 miles northwest of Elysian Reservoir, is largely surrounded by Elysian Park, although it technically lies outside the park boundaries.

ES.3 Project Objectives

The purpose of the proposed project is to maintain and improve the quality, reliability, and stability of the Elysian Reservoir service area drinking water supply in order to continue to meet customer demand.

The primary project objectives related to this purpose are to:

- Comply with updated water quality standards enacted by the EPA and, by extension, the California Department of Public Health, including the Stage 2 Disinfectants and Disinfection Byproducts Rule (D-DBPR), which establishes new regulations related to the formation of potentially carcinogenic disinfection byproducts that may result from certain drinking water chemical disinfection processes, and the Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR), which establishes new regulations related to the presence of microbial pathogens in drinking water supplies.
- Preserve local water storage capability to maintain reliability and flexibility to meet the Elysian Reservoir service area demand for drinking water at required distribution system pressures, including during emergency or planned outages of upstream supplies.

A secondary objective of the proposed project is to provide a publicly accessible recreation area at the Elysian Reservoir site.

Stage 2 Disinfectants and Disinfection Byproducts Rule

Based on 1996 amendments to the Federal Safe Drinking Water Act, the EPA has promulgated the Stage 2 D-DBPR to balance the risks related to microbial pathogens (i.e., disease-causing bacteria, viruses, and parasitic protozoa), which are normally largely inactivated and/or removed from drinking water by disinfection and filtration, against the production of disinfection byproducts in drinking water, which result from chemical reactions involving the use of chlorine as a disinfectant. The treatment of drinking water with disinfectants is considered one of the most important public health accomplishments of the past century, and it has significantly reduced the incidence of serious waterborne diseases, such as typhoid and cholera. The most common method of disinfection has been the addition of relatively small amounts of chlorine to drinking water. However, due to advances in the ability to detect chemical compounds in water, it is now known that reactions between chlorine and the relatively small amount of natural organic matter present in even treated drinking water can form disinfection byproducts. These disinfection byproducts are volatile organic compounds, such as trihalomethanes and haloacetic acids, which have now been linked, when present at elevated levels in laboratory tests, to potential increased risks of certain types of cancer.

Currently chlorine is used as a secondary residual disinfectant for water that has received primary treatment in the Los Angeles Aqueduct Filtration Plant, located at the Van Norman Complex in Granada Hills. In order to minimize the production of disinfection byproducts in accordance with the Stage 2 D-DBPR, LADWP intends to change over to the use of chloramines. Formed by a mixture of chlorine and ammonia, chloramines are less reactive than chlorine with natural organic matter. Chloramines will replace chlorine throughout the LADWP drinking water distribution system. This changeover to chloramines has already occurred in some drinking water service areas within the LADWP system.

Chloramines are much more stable than chlorine, providing a longer-lasting residual effect throughout the water delivery system and reducing the requirement for supplemental application along the water distribution route. Chloramines are not as potent as chlorine at killing microbial pathogens, but they still provide adequate disinfection to meet safe drinking water standards. This chloramination approach is consistent with EPA mandates to balance disinfection considerations with the requirement to reduce the level of chlorine-related disinfection byproducts in drinking water.

In addition to the disinfection byproducts regulated under the Stage 2 D-DBPR, the formation of bromate in the LADWP drinking water system has also become a concern related to the storage of treated drinking water in uncovered reservoirs. Like the trihalomethanes and haloacetic acids addressed in the Stage 2 D-DBPR, bromate is a chemical compound that has been linked, when present at elevated levels in laboratory tests, to increased risks of certain types of cancer. Bromate levels in drinking water are regulated by the California Department of Public Health. Bromate can be formed when naturally occurring bromide contained in source water interacts with chlorine in the presence of sunlight, as occurred in the recent past at Elysian Reservoir. The LADWP system-wide changeover to chloramines would also eliminate this potential interaction between bromide and chlorine that can create bromate.

However, field demonstrations conducted by LADWP have established that it is difficult in uncovered reservoirs to maintain the intended chloramine residual and optimal chlorine-to-ammonia ratio necessary to protect drinking water supplies. The demonstrations have indicated that chloramines degrade rapidly in open reservoirs, reducing residual disinfectant levels in drinking water. Chloraminated water supplies exposed to sunlight in uncovered reservoirs also then become susceptible to algae blooms. The application of additional chloramines to the reservoir after an algae bloom occurs has proven ineffective in reducing the large concentrations of algae contained in the bloom. The use of other chemicals, such as chlorine dioxide and copper sulfate, has also proven ineffective because of limitations on their allowable application rates. Adding chlorine, while more effective in controlling algae, would have the potential to generate disinfection byproducts, thereby defeating the intent of the Stage 2 D-DBPR that has prompted the change-over to chloramines.

Replacing the uncovered Elysian Reservoir with a buried reservoir would allow for the proper management of chloramine disinfectant levels and would prevent the exposure of the treated water to sunlight, which promotes the growth of algae. Because the system-wide changeover to chloramines is being implemented to comply with Stage 2 D-DBPR mandates (and to limit the potential formation of bromate), the ability to manage chloramine residual to safeguard drinking water supplies in the Elysian Reservoir service area is an essential aspect of the proposed project and alternatives to the proposed project.

Long Term 2 Enhanced Surface Water Treatment Rule

In conjunction with the Stage 2 D-DBPR, the EPA has also promulgated the LT2ESWTR to reduce the incidence of disease associated with certain pathogenic microorganisms that have the potential to exist in drinking water. This rule primarily addresses the treatment of drinking water that has surface water as its source, but it also applies to treated water stored in open reservoirs. The rule establishes limits for the presence of certain protozoan pathogens (especially Cryptosporidium) that cause gastrointestinal illness that can be severe or fatal for sensitive groups, such as the elderly, infants, or those with compromised immune systems. The LT2ESWTR requires that either uncovered treated-water reservoirs be covered to limit exposure to the environment and prevent recontamination or that water from uncovered treated-water reservoirs be re-treated before entering the distribution system to achieve established limits for pathogens.

The water treatment system currently used at the Los Angeles Aqueduct Filtration Plant adequately destroys and/or removes Cryptosporidium protozoa during treatment using a multiple-barrier system. This includes the use of ozone, which has been found to be effective at reducing Cryptosporidium levels, followed by the successive use of coagulation, flocculation, and biologically active rapid-rate deep-bed filters, which effectively remove most Cryptosporidium protozoa prior to discharge of the water from the plant. However, regardless of this primary treatment, the LT2ESWTR also includes provisions to ensure that downstream uncovered treated-water storage facilities, such as Elysian Reservoir, are managed to maintain the microbial protection of the treated water they receive before the water is discharged from the storage facilities and enters the distribution system. Treated water stored in uncovered reservoirs can be contaminated from numerous sources that could come in contact with the open water surface, including incidental surface water runoff, bird and animal waste, and airborne deposition (including pollutants and bacteria). Because of potential operational limitations in adequately treating the sometimes large volumes of water at the point of discharge from Elysian Reservoir, it has been proposed that the existing uncovered reservoir be replaced with a buried reservoir to mitigate contamination risks, as required by the LT2ESWTR. Furthermore, if treatment at the point of discharge were practical to comply with LT2ESWTR requirements, leaving Elysian Reservoir uncovered would nonetheless contribute to the degradation of chloramine residual and the optimal chlorine-to-ammonia ratio necessary to maintain an appropriate disinfectant level in the drinking water supply. A solution that responds simultaneously to each water quality issue (i.e., the LT2ESWTR mandates and the maintenance of chloramine residual in relation to the Stage 2 D-DBPR mandates) is necessary. Compliance with the LT2ESWTR at Elysian Reservoir is an essential aspect of the proposed project and alternatives to the proposed project.

Local Water Storage Capability

Beginning in the 1970s, LADWP began efforts to address issues associated with the potential degradation of water quality at its 15 in-City uncovered water storage reservoirs. These reservoirs were dispersed throughout the water distribution system to provide critical local storage capability to meet fluctuations in demand within individual service areas and respond to situations when the primary upstream supply lines or facilities that feed the reservoir service areas may be temporarily out of service due to an unforeseen emergency or planned outage. To preserve this local storage capability while meeting increasingly stringent water quality requirements, a number of the smaller open reservoirs in the system have been covered or replaced with tanks.

In 1991, several of the largest reservoirs in the system, including Encino, Upper and Lower Hollywood, and Lower Stone Canyon, were determined by the California Department of Public Health, in accordance with the 1989 Surface Water Treatment Rule, to be susceptible to contamination from pathogens and pollutants contained in surface water runoff from adjacent hillsides. A number of options were considered to resolve the contamination concerns, including the installation of covers on the reservoirs and the disinfection and filtration of water as it was discharged from the reservoirs into the local distribution system. Based on many considerations, including extensive community involvement, cost and engineering concerns, the location and function of these reservoirs within the LADWP water supply system, and improvements being implemented to the City water distribution system, it was determined that to control potential contamination of the drinking water supply from surface water runoff, the four reservoirs mentioned above should be removed from service as potable water sources.

Although these reservoirs remain in place, most treated drinking water that previously reached the reservoirs is now diverted to the distribution system, including other local storage tanks or reservoirs. Small filtration plants operate at some of the reservoirs to treat water that must be discharged to manage the reservoir water level and quality, but these reservoirs now provide storage for non-potable water that will be utilized as drinking water only during extreme emergencies. The removal of these larger reservoirs from service has eliminated approximately 8 billion gallons of treated water from the LADWP in-City storage system. Maintaining the capability to continue to provide water to local service areas was a key consideration in the removal of these reservoirs from service. Underground tanks have been installed at the Hollywood Reservoir site to partially replace the lost local storage capacity of the upper and lower reservoirs. The storage offered by Encino Reservoir has become less critical because of extensive upgrades to the water distribution system in the San Fernando Valley that have established significantly greater flexibility and redundancy in providing drinking water to the former Encino Reservoir service area. Water for the Stone Canyon service area continues to be provided from the 138-MG Upper Stone Canyon Reservoir, which, like Elysian Reservoir, must also be converted from an open reservoir to a covered storage facility to safeguard water quality and maintain critical local storage capability.

The centralization and reduction of water storage within the City has placed greater reliance on the fewer remaining facilities to meet fluctuations in demand and provide emergency storage within local service areas. Elysian Reservoir has traditionally been fed via the Silver Lake-Ivanhoe Reservoir Complex, which is located about 2 miles northwest of Elysian Reservoir and has historically provided approximately 263 MG of total operational storage capacity for the Elysian service area and other areas of the City. However, in an action related to maintaining water quality in regard to open reservoir storage, Silver Lake Reservoir has recently been removed from service as a primary supply of drinking water and will now only be used if necessary during emergency circumstances or unusually high demand periods, which would require additional treatment of the water stored in the reservoir. Furthermore, to permanently resolve water quality issues related to the Stage 2 D-DBPR and LT2ESWTR and open storage at the complex, both Silver Lake and Ivanhoe reservoirs will be entirely removed from service as drinking water storage facilities by 2015. The water storage functions provided by these reservoirs will be relocated at a reduced capacity of about 110 MG to a new facility located at the Headworks Spreading Grounds in Griffith Park, approximately 5 miles northwest of the Silver Lake-Ivanhoe Reservoir Complex. The Silver Lake-Ivanhoe Reservoir Complex relocation to Headworks, which was subject to a previous CEQA analysis (Silver Lake Reservoir Complex Storage Replacement Project EIR approved on May 16, 2006; State Clearinghouse Number 2003081133]), is anticipated to be completed in 2015. This relocation and reduction in storage will remove substantial backup supplies for the Elysian Reservoir service area and place greater dependence on local storage capability at the Elysian property itself.

Elysian Reservoir serves approximately 285,000 people in the greater downtown Los Angeles area. The service area covers approximately 24 square miles, including Echo Park, Chinatown, Mount Washington, Lincoln Heights, Boyle Heights, a large portion of Downtown, and areas south of Downtown. Installation of the new buried reservoir would maintain critical local supplies that provide drinking water to these areas to respond to temporary losses of upstream sources related to a line rupture or other facility outage until repairs or interim operational modifications to circumvent the breakdown could be implemented. It would also provide flexibility to conduct scheduled maintenance of upstream supply facilities as required and still provide water to the Elysian Reservoir service area at acceptable pressure levels even though the inflow to the reservoir may be temporarily interrupted. The proposed project would provide essentially the same volume of storage as the existing reservoir, which has a total capacity of approximately 55 MG. Maintaining local water storage capability in the Elysian Reservoir service area to respond to emergencies and other outages is an essential aspect of the proposed project and alternatives to the proposed project.

To physically accommodate the proposed buried reservoir and provide improved emergency service to portions of the Elysian Reservoir service area, the existing reservoir bypass line must be relocated and lowered in elevation. This would also necessitate the reconstruction of a portion of the existing 36-inch diameter reservoir inlet line in order to properly feed the relocated bypass line and the buried reservoir. The existing inlet line, which connects the reservoir to the Riverside Trunk Line in Riverside Drive, was installed in the early 1940s when the present-day reservoir was constructed. The line consists primarily of riveted steel, which is no longer utilized by LADWP for water main installations. As part of the Trunk Line Condition Assessment Program, LADWP has been replacing riveted steel lines throughout the City water distribution system to improve infrastructure reliability to avoid widespread leaks and breaks. While the existing Elysian Reservoir inlet line has not experienced any such breakage, because of its age and type of construction, it must be replaced to minimize the risk to the reservoir water supply and to maintain system reliability. Because portions of the inlet line must be reconstructed to accommodate the construction of the buried reservoir, replacing the line in its entirety is considered a key aspect of maintaining local water storage capability in the Elysian Reservoir service.

In addition to providing crucial supplies during a temporary loss of upstream sources of water, Elysian Reservoir plays a critical role in maintaining local water supplies that help accommodate the often wide fluctuations in demand experienced in the reservoir service area on a daily basis. To maintain operational stability, the storage provided by the reservoir supplements water supplies during high-use periods when the outflow from the reservoir generated by customer demand exceeds inflow from upstream supply lines. Without the operational flexibility provided by the reservoir, this peak use in the Elysian Reservoir service area would not be met solely by dependence on the distribution system and upstream supplies, which originate at the Van Norman Complex. Replacing the existing reservoir with a buried structure as a means to achieve the Stage 2 D-DBPR and LT2ESWTR mandates would allow for the continuation of this critical role of providing operational stability to meet fluctuations in demand. Reliability and flexibility required to provide water during peak demand periods is an essential aspect of the proposed project and alternatives to the proposed project.

Recreation Access

The Elysian Subcommittee of the Coalition to Preserve Open Reservoirs (CPOR) includes members of Citizens Committee to Save Elysian Park (CCSEP). CCSEP's main goal is the preservation and expansion of Elysian Park property for the recreational enjoyment of the community. For many years, LADWP has worked with the Elysian Subcommittee of CPOR in relation to facility improvement alternatives at Elysian Reservoir to help achieve this goal while also achieving the requirements mandated by updated federal and state water quality regulations.

The use of existing public property to provide additional open space and recreation opportunities has been identified in the Los Angeles Department of City Planning Silver Lake-Echo Park-Elysian Valley Community Plan (2004). To provide for expansion of recreation functions while minimizing displacement of existing development, the plan encourages City departments, including LADWP, to utilize their properties for such functions wherever feasible. The Final Draft Elysian Park Master Plan (2006) also identifies opportunities for expansion of recreation areas at the Elysian Reservoir property if the existing Elysian Reservoir were to be replaced with an underground structure. Proposals for the reservoir property contained in the Elysian Park Master Plan are largely supported by CCSEP and generally involve passive recreation uses and the restoration of the property with primarily native vegetation. However, proposals to provide active recreation facilities, such as sports fields, have also been advanced by some groups to respond to an identified need in the community for such facilities. The determination of the nature of recreation functions to be provided at the Elysian Reservoir property would require a separate planning process that would involve community, LADRP, LADWP, and City Council office participation and would occur at a date closer in time to the implementation of any recreation improvements at the property.

Based on a consideration of many factors, including the environmental assessment contained in this EIR, the City of Los Angeles Board of Water and Power Commissioners will make a discretionary decision regarding the proposed project, including the implementation of water quality and water storage related improvements and, the provision of public access and recreation use at the reservoir property. However, the planning process required to determine the actual nature of recreation development would not be completed prior to this decision by the LADWP Board of Commissioners. To appropriately support aspects of the LADWP Board of Commissioners' decision related to public access and recreation use prior to the final determination regarding the exact nature of these functions, the development of an active recreation facility is considered in this EIR for the purposes of impact analysis because such a facility would, in relative terms, possess the potential to create the greatest level of environmental impacts. Any recreation/open space development proposal equal to or less intensive in nature than the project considered in this EIR would generally result in an equal or reduced level of environmental impacts in relation to both construction and operations at the reservoir site. Upon completion of the recreation planning process, the City of Los Angeles

Board of Recreation and Parks Commissioners would use this EIR to make a discretionary decision regarding the recreation facility at the reservoir property. Additional future action under CEQA by LADRP may also be required, depending on the exact nature of the recreation facility.

Among the feasible methods to achieve the primary water quality and water storage objectives of the proposed project, the buried reservoir proposal reflected in this EIR is considered the most reasonable means (in terms of cost and minimizing potential environmental impacts) to meet the secondary objective to allow for a publicly accessible recreation area at the reservoir property.

ES.4 Project Description

As discussed above, to accomplish the objectives of the proposed project, the open-surface Elysian Reservoir would be replaced with a new buried concrete-covered reservoir. Other than manholes, hatches providing access to the interior of the buried reservoir, above ground vent structures, above ground electrical cabinets, and similar appurtenant facilities, water storage and distribution facilities would be essentially concealed underground after completion of construction. However, a paved road would still be required around the perimeter of the buried reservoir to provide vehicular access for maintenance and operations of the reservoir. This road would also serve as a maintenance access road for the park facilities, but would not be open to private vehicles.

Certain constraints prevent the direct placement of a concrete roof over the existing Elysian Reservoir, which was constructed nearly 70 years ago. These constraints include the limited bearing capacity of the existing reservoir (i.e., the inability of the current reservoir and the sub-grade upon which it rests to support the load of the concrete roof system and the soil cover placed over the roof); dam integrity and safety that could be compromised by penetrating the upstream side of the existing earth dam with numerous columns required to support the concrete roof; and the existing outlet structure, which includes a tower that extends above the high-water line of the reservoir, preventing the installation of a cover.

Therefore, to implement the proposed project, the existing reservoir, including the inlet structure, outlet tower, and liner (the reservoir bottom and sides), would need to be demolished; the sub-grade beneath the reservoir would need to be stabilized to provide an adequate base to structurally support the buried reservoir; and a new perimeter concrete retaining wall would be required to support the concrete roof. The south segment of the new retaining wall would be located upstream of but functionally integrated with the existing earth dam, which would remain in place. The proposed buried reservoir would also require an impermeable liner and an extensive system of interior shear walls and columns to adequately support the roof and soil cover.

The combined weight of the buried reservoir, the water within the reservoir, and the soil layer atop the reservoir would exert tremendous downward force. If the areas below the proposed reservoir were not properly drained and water collected beneath, the upward force of buoyancy caused by the fluid pressure of the collected water could in turn damage the structure. Therefore, a sub-drain system would be installed beneath the reservoir liner to prevent water from collecting underneath.

The final footprint of the proposed buried reservoir would be slightly smaller than and contained within the footprint of the existing reservoir, but because the side slopes and bottom would be reshaped to accommodate the required sub-grade drainage system, the total storage volume of the proposed reservoir would remain approximately the same as the existing reservoir (55 MG).

In addition to the buried reservoir itself, a new 54-inch diameter water supply bypass line would also be constructed to replace the existing 67-year-old 36-inch bypass line, which is located under the east side of the existing reservoir. Similar to the existing line, the new bypass line would provide the capability to divert water from upstream supply lines around the reservoir when necessary. However, in addition to replacing an aging supply line, the new bypass line would provide greater capacity and would be located to the west of the reservoir, which would not only allow for unimpeded water supply operations during the reservoir construction but would also provide greater accessibility to the line after construction was complete.

The proposed buried reservoir would be covered with a maximum of 3 feet of topsoil, and the property would be developed in accordance with a recreation plan prepared by LADRP. This development plan may provide for a range of passive or active recreation uses, but for the purposes of impact analysis in this EIR, the recreation facilities include up to three soccer fields; a skate plaza; playground; perimeter walking/jogging paths with exercise stations; recreation building(s) housing restrooms, concession areas, offices, and equipment storage areas; a maintenance storage facility; and the associated parking area. These elements would involve about 6 to 8 acres and would be contained within the existing reservoir property. Hard-surface roads to provide access for heavy equipment to the reservoir for maintenance and operations purposes would also need to be provided. A shallow, not less than 0.5-acre wildlife pond would also be constructed at the north end of the Elysian Reservoir property.

In addition to the reservoir elements and the recreation improvements above the reservoir, a new 54-inch diameter underground inlet line connecting the buried reservoir to the existing Riverside Trunk Line within Riverside Drive would be constructed to replace the existing 67-year-old 36-inch inlet line. This new inlet line would help maintain critical system reliability for the Elysian Reservoir service area and provide improved distribution system capability, which would otherwise be limited based on the diameter of the existing inlet line. Construction of the new inlet line would proceed essentially independently of construction of the reservoir itself (which includes the new bypass line), occurring concurrently with the first two years of the reservoir construction.

ES.4.1 Project Construction

The proposed project construction activities would occur at two physically separate sites. Construction for the buried reservoir and the reservoir bypass line would occur essentially at the Elysian Reservoir property. Construction activity related to the new inlet line would take place essentially within the Caltrans island located adjacent to the west side of Riverside Drive between the freeway on-ramps opposite Duvall Street and Barclay Street, approximately 1,700 feet northwest of Elysian Reservoir and separated from the reservoir property by I-5 and the ridgeline that forms the eastern boundary of the ravine in which Elysian Reservoir is located.

Elysian Reservoir Property Construction Activity

Construction of the proposed buried reservoir, including the active recreation area, would take approximately 5.5 years to complete, and the analysis contained in this EIR related to potential environmental impacts caused by construction activity is based on this assumption. However, given the magnitude and the complex nature of project construction, and therefore the potential for unforeseen delays, the actual construction period may continue for up to 6.5 years. It is anticipated that construction activities would start in early 2015 and, assuming no major delays, would be completed in late 2020. For the purposes of estimating the calendar duration of the project and the monthly levels of activity related to personnel, truck deliveries, equipment operations, and earthwork, it has been assumed that, on average, 20 workdays would be available each month. This would generally account for holidays and rain days that would fall on weekdays and during which no construction activity would occur.

Because of the size and configuration of the reservoir property in relation to the footprint of the existing Elysian Reservoir and proposed buried reservoir, certain construction activities would be required to be conducted outside the reservoir property boundaries and within adjacent areas of Elysian Park. The canyon north of the reservoir, but below Grand View Drive, would be used to temporarily stockpile earth material excavated from the reservoir site until the material was needed to backfill around the completed reservoir. As the only relatively flat area near the reservoir site, the existing picnic grounds north of Grand View Drive between Park Row Street and the reservoir would be used as a construction staging area, including for temporary offices and other support facilities, equipment, and construction materials laydown.

Throughout construction, Grand View Drive would be completely closed to ensure public safety and to provide for truck access and maneuvering, worker parking, and limited material and equipment staging areas. This road segment essentially surrounds the reservoir. It is located outside the reservoir property but entirely within the boundaries of Elysian Park. Because of restrictions related to loads on certain roads and bridges and to minimize impacts to local neighborhoods, the proposed truck delivery and haul route in the vicinity of the reservoir remains largely within the confines of Elysian Park. The inbound route would proceed from the I-5 Stadium Way exit, south along Stadium Way, east (left) on Academy Road (to the Dodger Stadium Gate), north (left) on Academy Road, north (left) on Solano Canyon Drive, south (right) on Park Row Drive to Park Row Street, and east (left) on Grand View Drive to the project site. Outbound traffic would follow the same route in reverse. During certain periods of construction involving truck deliveries to and hauling from the site, parking restrictions would be required along Solano Canyon Drive, Park Row Drive, and Park Row Street to allow for the safe passage of trucks. Parking along the west side of Park Row Street in front of the existing residences near the Grand View Drive entry to the reservoir would be maintained; however, a flag person may be required in this segment to facilitate the safe passage of vehicles. Closures of park roads other than Grand View Drive may also be required during certain periods.

During construction, drinking water would continue to be provided to the Elysian Reservoir site from the Van Norman Complex in Granada Hills. During the initial phases of construction, it would continue to be fed to the service area from the existing Riverside Trunk Line via the existing inlet and bypass lines, and during the latter stages of construction, water would be fed through the new inlet and bypass lines. Water supplies would be further supplemented as necessary to help temporarily meet peak demand during construction (when the reservoir would be out of service) with additional purchases from the Metropolitan Water District.

Construction of the buried reservoir would consist of several tasks, including mobilization; construction of the new bypass line; demolition of the existing reservoir; excavation and reshaping of the reservoir sides and bottom; construction of the concrete perimeter retaining walls and interior shear walls; installation of the concrete liner; construction of the concrete roof columns and roof; backfilling around and above the reservoir; and construction of the recreation facility above the new structure. Each of these tasks would require truck deliveries and/or haul trips and the operation of heavy equipment, including cranes, excavators, loaders, graders, dozers, and various types of trucks. Various tasks and phases related to the reservoir construction would generally be sequential in that some must precede others at a given location, a certain amount of overlap would likely occur in different locations within the project site as construction proceeds. However, the analysis in the EIR generally considers the tasks and phases separately as a means of describing the overall sequence of construction and establishing the general level of activity related to functions such as equipment operations, truck deliveries, worker commute trips, and earthwork in order to determine potential environmental impacts related to the construction phase of the project.

ES.4.2 Inlet Line Construction

The new inlet line construction would involve boring an approximately 2,300-foot long tunnel between the Riverside Trunk Line and a site just north of Elysian Reservoir, where the inlet line would connect to the reservoir bypass line. From this point, the inlet line would also be connected to the new buried reservoir inlet structure. The construction of the inlet line would take 23 months to complete, and, as discussed above, would occur concurrently with the first two years of reservoir construction because the two construction sites are physically separated. The inlet line would be installed by means of tunneling, a construction technique in which a tunnel is excavated utilizing a boring machine or similar equipment, excess earth material is removed, and steel or concrete tunnel liners or supports are installed and grouted in-place to secure the excavated opening. Once the tunnel is completed, the inlet pipe itself is installed in segments, welded together, and placed in the tunnel. This type of construction requires a pit from which to launch the boring machine and install the pipe sections. The pit also serves as the receiving area for the earth material excavated from the tunnel. In relation to the length of the Elysian Reservoir inlet line (2,300 feet), pipe tunneling would be the least intrusive method of construction, requiring no trenching or other surface openings other than the launching pit, which would eliminate disruption of traffic on I-5 and the transition roads between I-5 and SR 110. Although the inlet line tunnel would be located primarily within the boundaries of Elysian Park, pipe tunneling would avoid impacts to Elysian Park, since it would be completely subterranean. Inbound construction traffic related to tunneling activities would generally proceed from southbound 1-5 to the Riverside Drive exit opposite Elmgrove Street and turn right (southbound) on Riverside Drive to the construction site. Outbound construction traffic would generally proceed southbound on Riverside Drive from the site and turn right at the northbound I-5 entrance opposite Barclay Street.

ES.4.3 Project Operations

The Elysian Reservoir property would remain under the ownership of the City of Los Angeles. The recreation function and the property maintenance (other than the water supply and distribution facilities) would be the responsibility of LADRP as an expansion of its Elysian Park operations. The new water storage facilities would not create the need for LADWP personnel to be located permanently on site. LADWP operations on site would involve maintenance of the reservoir, pipelines, and ancillary elements at a similar level of activity as current operations at Elysian Reservoir. These operations would generate minimal traffic to and from the site, similar to current levels.

As discussed above, the determination of the nature of recreation functions to be provided at the reservoir property would require a separate planning process involving community, LADRP, LADWP, and City Council office participation. This process would not be completed prior to the decision by the Board of Water and Power Commissioners regarding the proposed project, including the implementation of water-quality related improvements and the provision of public access and recreation use at the reservoir property. To maintain flexibility for the recreation planning process, LADRP has identified an intensive level of recreation development at the site that may include any or all of the following elements:

- Up to three soccer fields
- Skate plaza
- Playground
- Perimeter walking/jogging path with exercise stations
- Recreation support building(s) housing restrooms, concession areas, offices, and equipment storage areas
- Maintenance storage facility
- Parking for up to 200 vehicles
- Bus drop-off/turnaround area

Based on the constraints discussed above, it is unlikely that all of these elements could be accommodated within the reservoir property. However, this recreation program is nonetheless considered in this EIR for the purposes of impact analysis because, as discussed above, such a facility would, in relative terms, possess the potential to create the greatest level of environmental impacts. Due to site constraints, parking and building(s) would probably be limited to the southern end of the property (generally south of the proposed buried reservoir), near the Grand View Drive entrance gate. Open recreation functions, such as fields, would be sited north of the parking area, including over the buried reservoir.

Recreation functions would be conducted during daylight hours only, and no night lighting other than minimal parking lot and pathway security lighting would be provided. The peak parking demand at the site would occur during the overlap between arriving and departing participants for consecutively scheduled activities. During peak use periods on weekend days, it is anticipated that approximately 188 vehicle trips to and from the site could be generated by the recreation activity associated with the proposed facilities. Use of the athletic fields and other facilities would be scheduled through LADRP. A gate would be installed at the entrance to the site that would be opened in the morning and closed at dusk.

ES.5 Issues Raised by the Public and Agencies

A public agency scoping meeting was held at Logan Street Elementary School in Echo Park on July 12, 2008. The purpose of the meeting was to seek input from public agencies and the general public regarding the environmental issues and concerns that may potentially result from the proposed project. Approximately 10 people attended the scoping meeting. The following list summarizes the public comments or questions that were received at the scoping meeting:

- What is the size of the existing reservoir?
- How many truck trips a day will be generated by the proposed project during construction?
- What does LADRP plan to do with the additional recreation area created by the proposed project?

- What are the existing air quality conditions in the project area?
- What is the impact of truck idling times on construction air quality?
- What are the existing noise levels in the project area?
- What is the impact of trucking idling on construction noise levels?
- Will part of Riverside Drive be closed? Which part would be closed?
- How much traffic uses Stadium Way to cut across the park?
- The EIR should refer to the traffic calming measures in the Elysian Park Master Plan. The intersection of Stadium Way at the Grace E. Simons Lodge should have a traffic signal.

In addition to the comments provided at the scoping meeting, eight comment letters were received in response to the Notice of Preparation and Initial Study for this project. Copies of the comment letters are provided in Appendix A. The primary issues identified by the public and agencies included the following:

- The EIR should include a construction management related traffic study.
- The EIR should identify impacts to state highways from haul truck trips on congested freeways.
- What are the impacts to aesthetics, birds, biological resources, air quality, etc.?
- What will the recreational component consist of? Will it include restrooms?
- The EIR should include a complete recent assessment of the flora and fauna within and adjacent to the project site.
- The EIR should include a thorough analysis of direct, indirect, and cumulative impacts to biological resources.
- A range of alternatives should be considered in the EIR. These alternatives should minimize impacts to biological resources.
- What is the impact to residents on Park Row Street from the haul trucks?
- Water that is drained from the reservoir should be used for irrigation.
- All areas of disturbance, including laydown areas, should be identified in the EIR.
- The EIR should include a study of a full range of alternatives to active recreation.
- A dog park should be developed at the site.
- The project site has the potential to contain Native American resources.
- Active recreation would be the preferred use of the site following construction of the buried tanks.

ES.6 Summary of Environmental Impacts

An analysis of environmental impacts caused by the proposed project has been conducted and is contained in this EIR. Six issue areas are analyzed in detail and presented in Chapter 3.0. Table ES-1 provides a summary of the potentially significant environmental impacts that would result during construction and operation of the proposed project, mitigation measures that would lessen potential environmental impacts, and the level of significance of the environmental impacts that would remain after implementation of the proposed mitigation. The proposed project would create significant and unavoidable impacts related to construction air quality (Chapter 3.2) and construction noise (Chapter 3.5). The EIR identifies potentially significant impacts requiring mitigation for biological resources (Chapter 3.3), cultural resources (Chapter 3.4), and construction traffic (Chapter 3.6). The EIR identified less than significant impacts for aesthetics (Chapter 3.1), operational air quality and greenhouse gas emissions (Chapter 3.2), operational noise (Chapter 3.5), and operational traffic (Chapter 3.6). As discussed in Chapter

4, the proposed project would also contribute to significant and unavoidable cumulative impacts related to construction air quality and construction noise.

Table ES-1 Summary of Significant Impacts and Mitigation Measures

Potential Environmental Impacts	Significance Determination	Mitigation Measures	Level of Significance after Mitigation
AESTHETICS			
VIS-1: The proposed project would not have a substantial adverse effect on a scenic vista.	Less than significant	No mitigation measures are required.	Less than significant
VIS-2: The proposed project would not substantially degrade the existing visual character or quality of the site and its surroundings.	Less than significant	No mitigation measures are required.	Less than significant
AIR QUALITY			
AIR-1: During the construction phase, nitrogen oxides emissions would exceed the South Coast Air Quality Management District's significance threshold, and therefore, the proposed project would contribute to an existing or projected air quality violation.	Significant	**AIR-A** Heavy-duty equipment operations shall be suspended during first and second stage smog alerts. **AIR-B** Equipment and vehicle engines shall be maintained in good condition and in proper tune per manufacturers' specifications. **AIR-C** Based on a 2015 start of construction, all off-road construction diesel engines not registered under the California Air Resources Board's (CARB) Statewide Portable Equipment Registration Program that have a rating of 50 horsepower (hp) or more shall meet, at a minimum, the Tier 4 California Emission Standards for Off-Road Compression-Ignition Engines as specified in California Code of Regulations, Title 13, Section 2423(b)(1) unless such engine is not available for a particular item of equipment. In the event a Tier 4 engine is not available for any off-road equipment larger than 100 hp, that equipment shall be equipped with a Tier 3 engine. Equipment properly registered under and in compliance with CARB's Statewide Portable Equipment Registration Program shall be considered in compliance with this mitigation measure. **AIR-D** Electricity shall be utilized from power supply sources rather than temporary gasoline or diesel	Significant

Table ES-1 Summary of Significant Impacts and Mitigation Measures

Potential Environmental Impacts	Significance Determination	Mitigation Measures	Level of Significance after Mitigation
		power generators, as feasible. **AIR-E** Heavy-duty trucks shall be prohibited from idling in excess of five minutes, both on and off site, except as follows: • When verifying that the vehicle is in safe operating condition, or • When the vehicle is positioning or providing a power source for equipment or operations, or • While operating defrosters, heaters, air conditioning, or any other device to prevent a health or safety emergency.	
AIR-2: The proposed project would expose sensitive receptors to substantial pollutant concentrations of particulate matter less than 10 microns in diameter (PM_{10}), particulate matter 2.5 microns in diameter ($PM_{2.5}$), and toxic air contaminants (TACs) during construction.	Significant	See mitigation measures AIR-A through AIR-E above.	Significant
AIR-3: The proposed project would not generate greenhouse gas emissions, either directly or indirectly, that would have a significant impact on the environment or conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	Less than significant	No mitigation measures are required.	Less than significant
BIOLOGICAL RESOURCES			
BIO-1: The proposed project would have a substantial adverse effect, either directly or through habitat modifications, on species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California	Significant	**BIO-A** Project-related activities such as tree removal or vegetation clearance that would be likely to have the potential to disturb suitable bird nesting habitat shall be prohibited from February 15 through September 15 unless a qualified biologist surveys the project sites prior to	Less than significant

Table ES-1 Summary of Significant Impacts and Mitigation Measures

Potential Environmental Impacts	Significance Determination	Mitigation Measures	Level of Significance after Mitigation
Department of Fish and Game or the U.S. Fish and Wildlife Service.		disturbance to confirm the absence of active nests. Disturbance shall be defined as any activity that physically removes and/or damages vegetation or habitat. Surveys shall be conducted weekly, beginning no earlier than 30 days and ending no later than 3 days prior to the commencement of disturbance. If an active nest is discovered, disturbance within a buffer area surrounding the nest site shall be prohibited until nesting is complete; the buffer distance shall be determined by the biological monitor in consideration of species sensitivity and existing nest site conditions. Limits of the buffer area shall be demarcated with flagging or fencing. Once a flagged nest is determined to be no longer active, the biological monitor shall remove all flagging and allow construction activities to proceed.	
BIO-2: The proposed project would have a substantial adverse effect on riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service.	Significant	**BIO-B** Prior to the start of construction, to minimize incidental impacts to adjacent vegetation, the construction contractor shall place construction fencing (chain link, silt fencing, or other fencing as appropriate) along the construction limits of work. The City of Los Angeles Department of Water and Power shall be responsible for hiring a qualified biologist to inspect the fencing upon installation and monthly thereafter for the duration of the project. The construction contractor shall be responsible for any improvements or repairs deemed necessary by the biologist.	Less than significant
BIO-3: The proposed project would not have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not	No impact	No mitigation measures are required.	No impact

Table ES-1 Summary of Significant Impacts and Mitigation Measures

Potential Environmental Impacts	Significance Determination	Mitigation Measures	Level of Significance after Mitigation
limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.			
BIO-4: The proposed project would not interfere substantially with the movement of 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.	Less than significant	No mitigation measures are required.	Less than significant
BIO-5: The proposed project would conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.	Significant	**BIO-C** If it is determined that trimming of coast live oak trees along Grand View Drive is necessary, the City of Los Angeles Department of Water and Power shall follow the procedures and recommendations described in the Los Angeles Department of Recreation and Parks Urban Forest Program *Tree Care Manual*. The City of Los Angeles Department of Water and Power shall apply for a permit from the Board of Public Works and obtain approval prior to pruning of trees. Any pruning shall be performed in compliance with the Oak Tree Pruning Standards set forth by the Western Chapter of the International Society of Arboriculture. **BIO-D** All coast live oak, western sycamore, and southern California black walnut trees that are removed shall be replaced at a minimum 2:1 ratio of the same species with a minimum 15-gallon specimen measuring one inch or more in diameter at a point one foot above the base, and not less than 7 feet in height, measured from the base. **BIO-E** Prior to removal of any toyon plants, the City of Los Angeles Department of Water and Power shall obtain a recommendation for action from	Less than significant

Table ES-1 Summary of Significant Impacts and Mitigation Measures

Potential Environmental Impacts	Significance Determination	Mitigation Measures	Level of Significance after Mitigation
		the City of Los Angeles Department of Recreation and Parks arborist that has been approved by the Department of Recreation and Parks General Manager. Upon completion of construction activities, any removed toyon shall be replaced in accordance with Los Angeles City Landscape Policy (Urban Forest Program *Tree Care Manual*, Appendix M).	
CULTURAL RESOURCES			
CR-1: The proposed project would not cause a substantial adverse change in the significance of a historical resource.	Less than significant	No mitigation measures are required.	Less than significant
CR-2: The proposed project would cause a substantial adverse change in the significance of an archaeological resource.	Significant	**CR-A** Because the potential to encounter archaeological resources exists within the Elysian Reservoir property, qualified archaeological and Native American monitors shall perform monitoring during all ground disturbing activities, including but not limited to, excavation, trenching, boring, and grading at the Elysian Reservoir site. In the event that potential archaeological materials are encountered during construction, all construction activity in the area of the find shall cease until the discovery can be evaluated by a qualified archaeologist in accordance with the provisions of CEQA Guidelines Section 15064.5. The archaeological monitor shall have the authority, in coordination with the construction manager, to temporarily re-direct construction equipment in the event potential archaeological resources are encountered until appropriate action to protect the resource has occurred.	Less than significant

Table ES-1 Summary of Significant Impacts and Mitigation Measures

Potential Environmental Impacts	Significance Determination	Mitigation Measures	Level of Significance after Mitigation
CR-3: The proposed project would directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	Significant	**CR-B** Because the Elysian Reservoir site has high paleontological sensitivity, a qualified paleontological monitor shall perform monitoring during the grading and excavation phases of construction. Monitoring shall include inspection of exposed surfaces and microscopic examination of matrix. In the event that potential significant fossil localities are encountered during construction, all construction activity in the area of the find shall cease until the discovery can be evaluated by a qualified paleontologist. The paleontological monitor shall have authority, in coordination with the construction manager, to temporarily divert grading away from exposed resources until action to protect the resource has occurred. Fossils recovered shall be prepared, identified, and catalogued before donation to the federally accredited repository designated by the lead agency.	Less than significant
NOISE			
NOISE-1: Construction of the proposed project would result in a substantial temporary increase in ambient noise levels in the vicinity of the project site.	Significant	**NOISE-A** All mobile construction equipment shall be equipped with properly operating mufflers or other noise reduction devices. **NOISE-B** Grading and construction contractors shall use quieter equipment as opposed to noisier equipment (such as rubber-tired equipment rather than metal-tracked equipment), to the extent possible. **NOISE-C** The construction contractor shall use on-site electrical sources to power equipment rather than diesel generators where feasible. **NOISE-D** The construction contractor shall implement sound barriers or blankets on the Riverside Drive perimeter of the Caltrans island. The	Significant

Table ES-1 Summary of Significant Impacts and Mitigation Measures

Potential Environmental Impacts	Significance Determination	Mitigation Measures	Level of Significance after Mitigation
		sound barriers or blankets shall be capable of blocking at least 15 dB of construction noise. The barriers or blankets shall be placed to the extent possible such that the line-of-sight between ground-level construction activity and sensitive land uses is blocked.	
NOISE-2: Operation of the proposed project would not expose persons to noise levels in excess of City standards.	Less than significant	No mitigation measures are required.	Less than significant
NOISE-3: Construction and operation of the proposed project would not expose people to excessive groundborne vibration.	Less than significant	No mitigation measures are required.	Less than significant
TRANSPORTATION/TRAFFIC			
TRANS-1: The proposed project would conflict with an applicable plan, ordinance, or policy for establishing measures of effectiveness for the performance of the circulation system on study street segments during construction.	Significant	**TRANS-A** During construction when games or other events are scheduled at Dodger Stadium, the Los Angeles Department of Water and Power shall coordinate with the Los Angeles Department of Transportation to establish manual traffic control at established major intersections along the Stadium Way-Academy Road route to and from the stadium. If manual control cannot be provided, construction traffic shall not be allowed on the haul route from the hour before through the hour after a major event at Dodger Stadium. **TRANS-B** Traffic on non-park roads shall be controlled during construction by adhering to the guidelines contained in Standard Specifications for Public Works Construction and Caltrans' Traffic Manual, Chapter 5, "Manual of Traffic Controls for Construction and Maintenance Work Zones" and applicable City requirements. These guidelines provide methods to minimize construction effects on traffic flow.	Less than significant

Table ES-1 Summary of Significant Impacts and Mitigation Measures

Potential Environmental Impacts	Significance Determination	Mitigation Measures	Level of Significance after Mitigation
TRANS-2: Construction activity would exceed the level of service standards established by the county congestion management agency for designated roads or highways.	Significant	**TRANS-C** During construction, the construction contractor shall space truck trips destined to the north and arriving from the north via Interstate 5 to avoid caravans of trucks on the on- and off-ramps.	Less than significant
TRANS-3: The proposed project would create a safety hazard during construction at Elysian Reservoir associated with incompatible uses.	Significant	**TRANS-D** Prior to construction, a construction traffic control plan shall be prepared by the Los Angeles Department of Water and Power for review and approval by the Los Angeles Department of Transportation and the Los Angeles Department of Recreation and Parks. The plan shall include, at a minimum, advanced signing on Stadium Way and Riverside Drive alerting motorists to construction and an increase in construction vehicle movements; signage to alert motorists to temporary or limited access points to adjacent properties; appropriate barricades for road closures; construction speed limit signage along the haul route; other appropriate signage along the haul route to warn park users of construction equipment and vehicles; flag persons at road closure locations, blind spots, other sharp turns to direct construction and other vehicle traffic; temporary crosswalks for park users; and parking restrictions during construction. **TRANS-E** Prior to the start of construction, and periodically during construction, as necessary, the construction contractor shall provide all construction drivers with safety training to minimize conflicts between construction activities and park users. Training shall include adherence to posted speed limits, discussion of haul routes, and explanation of the construction traffic control plan.	Less than significant

Table ES-1 Summary of Significant Impacts and Mitigation Measures

Potential Environmental Impacts	Significance Determination	Mitigation Measures	Level of Significance after Mitigation
		TRANS-F The Los Angeles Department of Water and Power shall coordinate with the Los Angeles Department of Recreation and Parks and the Los Angeles Department of Transportation to prohibit on-street parking during peak phases of construction on the following street segments: Academy Road (minor), Solano Canyon Drive, and Park Row Drive/Street.	
TRANS-4: The proposed project would not result in inadequate parking supply.	Less than significant	No mitigation measures are required.	Less than significant

ES.7 Alternatives to the Proposed Project

The CEQA Guidelines Section 15126.6 requires consideration and discussion of alternatives to the proposed project in an EIR. Several alternatives, including the No Project Alternative and numerous alternate project sites, were considered but rejected from consideration in this EIR, as discussed in Chapter 5. The two alternatives summarized below are reviewed in detail in Chapter 5.

ES.7.1 Floating Cover Alternative

Under the floating cover alternative, Elysian Reservoir would remain in basically its existing configuration, and an approximately 325,000-square-foot flexible membrane floating cover would be installed over the entire water surface and anchored to the edge of the reservoir basin above the top of water elevation. The floating cover would be larger in area than the reservoir itself at the high-water elevation to allow the cover to float on the water surface as the level of the water in the reservoir rises and falls. The cover would be a minimum of 45-mil thick and a maximum of 60-mil thick polypropylene or hypalon material. Although the reservoir liner and appurtenant facilities would be removed and replaced under this alternative, the reservoir would retain essentially its existing shape and volume (approximately 55 MG), providing local storage capacity for the reservoir service area equivalent to the proposed project.

The floating cover would require a minimal amount of ground disturbance and a relatively low level of construction activity. It would be the least expensive means of covering the Elysian Reservoir water supply to achieve the LT2ESWTR and Stage 2 D-DBPR objectives of the proposed project (an estimated $25 million versus $110 million for the proposed project over a 60-year lifecycle; these figures exclude the cost related to the proposed inlet and bypass lines, which would be common to both the proposed project and the floating cover alternative). Floating covers require more maintenance, including replacement every 15 to 20 years due to deterioration, compared to a buried concrete reservoir, which has a projected lifespan of over 100 years. However, these additional maintenance and replacement costs have been factored into the total life-cycle costs reflected above. The floating cover alternative would require that the reservoir be removed from service for the least amount of time compared to the proposed project (approximately 2.5 years versus 5.5 years).

Because the floating cover would not allow for accessible open space at the reservoir property, no recreational facilities would be provided under this alternative, and the Elysian Reservoir property would remain under the operation of LADWP and closed to public access. As with the proposed project, a wildlife pond would be created at the north end of the reservoir property as part of the floating cover alternative.

Construction of this alternative would take approximately 2.5 years to complete, primarily because, in addition to the replacement of the reservoir liner and the installation of a floating cover, it includes the replacement of the existing 36-inch diameter reservoir bypass line with a new 54-inch line, similar to the proposed project. It is anticipated that construction activities would start in 2014 and be completed in 2016.

Similar to the proposed project, the floating cover alternative at Elysian Reservoir would also include the construction of a new 54-inch diameter underground inlet line connecting the reservoir to the existing Riverside Trunk Line within Riverside Drive. This new inlet line would replace the existing 67-year-old 36-inch inlet line to help maintain critical system reliability for the Elysian Reservoir service area and provide improved distribution system capability, which would otherwise be limited based on the diameter of the existing inlet line. The primary site for the inlet line construction would be located within the Caltrans island adjacent to the on-ramp to the northbound I-5, along the west side of Riverside Drive, roughly between Barclay Street and Duvall Street. Construction of the new inlet line could proceed essentially independently of construction at the reservoir itself (which includes the new bypass line) because the two construction sites are physically separated. The inlet line construction would be essentially concurrent with the floating cover alternative construction. The construction of the inlet line would be the same as described in Section ES.4.2 above.

The reconstructed reservoir with the floating cover would not create the need for LADWP personnel to be located permanently on site. LADWP operations on site would involve maintenance of the reservoir, pipelines, and ancillary elements at a similar level of activity as current operations at Elysian Reservoir. Occasional washing of the cover to remove dirt and debris would be necessary to protect the drinking water supply. These operations would generate minimal traffic to and from the site, similar to current levels. Every 15 to 20 years, the floating cover may require replacement.

As with the proposed project, the floating cover alternative would meet the two primary project objectives. The floating cover alternative would comply with updated water quality regulations, and it would maintain local drinking water storage capacity within the Elysian Reservoir service area. This alternative would not meet the secondary project objective of providing publicly-accessible open space at the Elysian Reservoir property.

The following summarizes the potential environmental impacts that would be created by the floating cover alternative compared to those that would be created by the proposed project.

Aesthetics

- Neither the floating cover alternative nor the proposed project would create a significant impact to a scenic vista.
- Neither the floating cover alternative nor the proposed project would create a significant impact by substantially degrading the existing visual character or quality of the site and its surroundings. However, to completely avoid an impact, some landscape screening in selected areas would be required under the floating cover alternative.

Air Quality

- The floating cover alternative, like the proposed project, would create a significant and unavoidable regional air quality impact during certain periods of the construction phase. However, the floating cover alternative would result in slightly lower peak emissions and substantially lower emissions over the entire construction period compared to the proposed project.
- Neither the proposed project nor the floating cover alternative would create a significant regional air quality impact related to post-construction project operations. Because the floating cover alternative would generate no additional post-construction traffic or maintenance activity at the reservoir property from recreation use, it would create no impacts related to regional air pollutant emissions during post-construction operations.
- The floating cover alternative would result in the same peak localized air pollutant concentrations but lower peak toxic air contaminants (TACs) emissions during construction

compared to the proposed project. However, the floating cover alternative, like the proposed project, would create a significant and unavoidable impact related to localized air pollutant emissions and TACs during certain periods of the construction phase. It would result in substantially lower air pollutant concentrations and TAC emissions over the entire construction period.

- The proposed project would create a less than significant impact related to localized air pollutant emissions and TACs during post-construction project operations. Because the floating cover alternative would generate no additional post-construction traffic or maintenance activity at the reservoir property from recreation use, it would create no impacts related to localized air pollutant emissions or TACs during post-construction operations.
- Neither the proposed project nor the floating cover alternative would create a significant impact related to greenhouse gas (GHG) emissions from either construction or operations. However, the floating cover alternative would create substantially lower GHG emissions during construction and operations when compared to the proposed project.

Biological Resources

- Both the floating cover alternative and the proposed project could create significant impacts related to migratory birds, indirect impacts to native vegetation, and conflicts with local tree protection ordinances. With the implementation of mitigation measures BIO-A through BIO-D, these impacts would be reduced to a less than significant level under both the floating cover alternative and the proposed project. However, potential impacts to biological resources would be appreciably decreased under the floating cover alternative when compared to the proposed project because the nature and duration of construction activities would be reduced and the area of disturbance would be smaller.

Cultural Resources

- Both the floating cover alternative and the proposed project would create significant impacts related to ground disturbing activities that have the potential to uncover previously unearthed archaeological and paleontological resources within the reservoir property. With the implementation of mitigation measures CR-A and CR-B, these impacts would be reduced to a less than significant level under both the floating cover alternative and the proposed project. However, the potential for impacts would be decreased under the floating cover alternative when compared to the proposed project because ground disturbing activities would be substantially reduced.

Land Use

- Unlike the proposed project, the floating cover alternative would require a zoning variance for the Elysian Reservoir property.

Noise

- Both the floating cover alternative and the proposed project would create a less than significant impact related to construction equipment noise at both the Elysian Reservoir site and the Caltrans island with implementation of mitigation measures NOISE-A through NOISE-D. However, over the entire period of construction, the floating cover alternative would create less noise than the proposed project because of the nature and duration of construction activities.

- The floating cover alternative would have a less than significant mobile noise impact associated with haul truck trips to and from both the reservoir site and the Caltrans Island. The impact would be less than the proposed project, which would create a significant and unavoidable mobile noise impact.
- The proposed project would create a less than significant impact related to noise during post-construction project operations. Because the floating cover alternative would generate no additional post-construction traffic or maintenance activity at the reservoir property from recreation use, it would create no impact related to noise during post-construction operations.

Transportation and Traffic

- Neither the floating cover alternative nor the proposed project would create a significant impact related to level of service at the study intersections during construction. However, the floating cover alternative would create substantially fewer average and peak construction-related daily vehicle trips compared to the proposed project.
- Both the floating cover alternative and the proposed project would create a significant impact to the level of service on two roadway segments when construction activity overlaps with games scheduled at Dodger Stadium. With the implementation of mitigation measures TRANS-A and TRANS-B, these impacts would be reduced to a less than significant level under both the floating cover alternative and the proposed project.
- Both the floating cover alternative and the proposed project would create significant impacts related to potential conflicts with park patrons during the peak period of construction traffic. With the implementation of mitigation measures TRANS-D through TRANS-F, these impacts would be reduced to a less than significant level under both the floating cover alternative and the proposed project. However, truck traffic during the peak of construction of the floating cover alternative would be substantially less than under the proposed project.
- Unlike the proposed project, the floating cover would not create a significant impact to Congestion Management Program (CMP) facilities in the project vicinity during construction.
- The proposed project would create a less than significant impact related to traffic and parking during post-construction project operations. Because the floating cover alternative would generate no additional post-construction traffic or maintenance activity at the reservoir property from recreation use, it would create no impact related to traffic and parking during post-construction operations.

ES.7.2 Aluminum Cover Alternative

Under the aluminum cover alternative, Elysian Reservoir would remain in basically its existing configuration, and a lightweight aluminum cover would be installed over the entire surface of the reservoir. The aluminum cover structure would consist of a standing seam roof, situated several feet above the water surface, resting on concrete side walls. Although the reservoir liner and appurtenant facilities would be removed and replaced under this alternative, the reservoir would retain essentially its existing shape and volume (approximately 55 MG minus an insignificant volume lost to the roof support columns), providing local storage capacity for the reservoir service area essentially equivalent to the proposed project.

The aluminum cover would create less ground disturbance and require less construction activity than the proposed project. It would also be a less expensive means than the proposed project to cover the Elysian Reservoir water supply to achieve the LT2ESWTR and Stage 2 D-DBPR mandates (an estimated $55 million versus $110 million for the proposed project over a 60-year lifecycle; these figures exclude the cost related to the proposed inlet and bypass lines, which would be common to both the proposed project and the aluminum cover alternative). The aluminum cover would require approximately 4 years for construction compared to 5.5 years for the proposed project. The aluminum cover would be less durable than the concrete cover, but still require relatively little maintenance or replacement of components.

Because the aluminum cover would not allow for accessible open space at the reservoir property, no recreational facilities would be provided under this alternative, and the Elysian Reservoir property would remain under the operation of LADWP and closed to public access. As with the proposed project, a wildlife pond would be created at the north end of the reservoir property as part of the aluminum cover alternative.

Columns would be necessary to support the aluminum cover, including some that would need to be located within the earth dam at the southern end of the reservoir. However, the comparatively small number of columns that would penetrate the dam (approximately 30), combined with the relatively light weight of the aluminum cover, would not compromise the structural integrity of the dam, even during seismic events.

Construction of this alternative would take approximately 4 years to complete, partially because, in addition to the replacement of the reservoir liner and the construction of an aluminum cover, it includes the replacement of the existing 36-inch diameter reservoir bypass line with a new 54-inch line, similar to the proposed project. It is anticipated that construction activities would start in 2014 and be completed in 2018.

Similar to the proposed project, the aluminum cover alternative at Elysian Reservoir would also include the construction of a new 54-inch diameter underground inlet line connecting the reservoir to the existing Riverside Trunk Line within Riverside Drive. This new inlet line would replace the existing 67-year-old 36-inch inlet line to help maintain critical system reliability for the Elysian Reservoir service area and provide improved distribution system capability, which would otherwise be limited based on the diameter of the existing inlet line. The primary site for the inlet line construction would be located within the Caltrans island adjacent to the on-ramp to the northbound I-5, along the west side of Riverside Drive, roughly between Barclay Street and Duvall Street. Construction of the new inlet line could proceed essentially independently of construction at the reservoir itself (which includes the new bypass line) because the two construction sites are physically separated. The inlet line construction would be concurrent with the first two years of the aluminum cover alternative construction. The construction of the inlet line would be the same as described in Section ES.4.2 above.

The reconstructed reservoir with the aluminum cover would not create the need for LADWP personnel to be located permanently on site. LADWP operations on site would involve maintenance of the reservoir, pipelines, and ancillary elements at a similar level of activity as current operations at Elysian Reservoir. Little actual maintenance of the aluminum cover itself would be necessary. These operations would generate minimal traffic to and from the site, similar to current levels.

As with the proposed project, the aluminum cover alternative would meet the two primary project objectives. The aluminum cover alternative would comply with updated water quality regulations and maintain local drinking water storage within the Elysian Reservoir service area.

This alternative would not meet the secondary project objective of providing publicly-accessible open space at the Elysian Reservoir property.

Solar Panel Option

In an effort to help meet LADWP's ongoing commitment to renewable energy production to provide for the electrical power needs of the City, an option to install solar photovoltaic (PV) panels on the aluminum cover at Elysian Reservoir is under consideration. A solar energy option is not under consideration for the floating cover alternative because incompatibilities between the floating cover and the solar components would hinder operations and maintenance and compromise the integrity of both the water storage and solar energy systems. A solar energy option is not under consideration for the buried concrete reservoir (the proposed project) because it would preclude the provision of a publicly accessible recreation area at the Elysian Reservoir property, which is the primary reason for the buried reservoir approach to achieving the water storage and water quality objectives of the project. The solar panel option would extend the construction period for the aluminum cover alternative from approximately 4 years to 4.5 years, compared to 5.5 years for the proposed project.

To effectively and efficiently meet LADWP's goal of in-City solar projects, LADWP is focusing on sites that provide an opportunity for large-scale rooftop and ground mounted installations. Elysian Reservoir, which is located on City-owned property and offers several acres of generally unshaded area, provides such an opportunity. The Elysian solar facility would create approximately 2 megawatts (MW) of power generation, enough to provide for the annual electrical energy needs of over 600 households in the City.

The installation of the solar panels would represent an additional phase of construction that would occur after the construction of the aluminum cover itself. As such, the potential environmental impacts of the construction and operation of the aluminum cover alternative (without the solar panel component) can be considered separately, and the impacts associated with the construction and operation of the solar panel option can then be considered additionally along with any impacts related to the aluminum cover alternative.

No additional personnel would be required at the Elysian Reservoir site on a daily basis to maintain and operate the solar power facilities. A small number of personnel may be required during brief periods when certain maintenance operations must be performed. The project would be monitored by automated methods to ensure that it is generating electricity to the specified capacity. Static PV arrays generate electricity without moving parts, and general maintenance requirements are characteristically low. Maintenance activities, such as troubleshooting, repairing, replacing, or optimizing system components, would occur on an event-driven basis. Occasional washing of the solar panels may be required in order to restore generation efficiency. However, such washing would be performed only as needed to maintain system performance and manufacturer's warranties on electrical equipment.

The following summarizes the potential environmental impacts that would be created by the aluminum cover alternative compared to those that would be created by the proposed project. Unless otherwise noted, the impacts pertain to the aluminum cover with or without the implementation of the solar panel option.

Aesthetics

- Neither the aluminum cover alternative nor the proposed project would create a significant impact to a scenic vista.
- Neither the aluminum cover alternative nor the proposed project would create a significant impact by substantially degrading the existing visual character or quality of the site and its surroundings. However, to completely avoid an impact, some landscape screening in selected areas would be required under the aluminum cover alternative.

Air Quality

- The aluminum cover alternative, like the proposed project, would create a significant and unavoidable regional air quality impact during certain periods of the construction phase. However, while the aluminum cover alternative would result in slightly higher peak emissions, it would result in substantially lower emissions over the entire construction period compared to the proposed project.
- Neither the proposed project nor the aluminum cover alternative would create a significant regional air quality impact related to post-construction project operations. Because the aluminum cover alternative would generate no additional post-construction traffic or maintenance activity at the reservoir property from recreation use, it would create no impacts related to regional air pollutant emissions during post-construction operations.
- The aluminum cover alternative would result in the same peak localized air pollutant concentrations but slightly lower peak TAC emissions during construction compared to the proposed project. However, the aluminum cover alternative, like the proposed project, would create a significant and unavoidable impact related to localized air pollutant emissions and TACs during certain periods of the construction phase. It would result in substantially lower air pollutant concentrations and TAC emissions over the entire construction period.
- The proposed project would create a less than significant impact related to localized air pollutant emissions and TAC during post-construction project operations. Because the aluminum cover alternative would generate no additional post-construction traffic or maintenance activity at the reservoir property from recreation use, it would create no impacts related to localized air pollutant emissions or TACs during post-construction operations.
- Neither the proposed project nor the aluminum cover alternative would create a significant impact related to GHG emissions from either construction or operations. However, the aluminum cover alternative would create substantially lower GHG emissions during construction and operations when compared to the proposed project.

Biological Resources

- Both the aluminum cover alternative and the proposed project could create significant impacts related to migratory birds, indirect impacts to native vegetation, and conflicts with local tree protection ordinances. With the implementation of mitigation measures BIO-A through BIO-E, these impacts would be reduced to a less than significant level under both the aluminum cover alternative and the proposed project. However, potential impacts to biological resources would be appreciably decreased under the aluminum cover alternative when compared to the proposed project because of the nature and duration of construction activities would be reduced and the area of disturbance would be smaller.

Cultural Resources

- Both the aluminum cover alternative and the proposed project would create significant impacts related to ground disturbing activities that have the potential to uncover previously unearthed archaeological and paleontological resources within the reservoir property. With the implementation of mitigation measures CR-A and CR-B, these impacts would be reduced to a less than significant level under both the aluminum cover alternative and the proposed project. However, the potential for impacts would be decreased under the aluminum cover alternative when compared to the proposed project because ground disturbing activities would be substantially reduced.

Land Use

- Unlike the proposed project, the aluminum cover alternative would require a zoning variance for the Elysian Reservoir property.

Noise

- Both the aluminum cover alternative and the proposed project would create a less than significant impact related to construction equipment noise at both the Elysian Reservoir site and the Caltrans island with implementation of mitigation measures NOISE-A through NOISE-D. However, over the entire period of construction, the aluminum cover alternative would create less noise than the proposed project because of the nature and duration of construction activities.
- Both the aluminum cover alternative and the proposed project would create a significant and unavoidable impact related to mobile noise sources during project construction along the haul route to/from Elysian Reservoir.
- The proposed project would create a less than significant impact related to noise during post-construction project operations. Because the aluminum cover alternative would generate no additional post-construction traffic or maintenance activity at the reservoir property from recreation use, it would create no impact related to noise during post-construction operations.

Transportation and Traffic

- Neither the aluminum cover alternative nor the proposed project would create a significant impact related to level of service at the study intersections during construction. However, the aluminum cover alternative would create substantially fewer average and peak construction-related daily vehicle trips compared to the proposed project.
- Both the aluminum cover alternative and the proposed project would create a significant impact to the level of service on two roadway segments when construction activity overlaps with games scheduled at Dodger Stadium. With the implementation of mitigation measures TRANS-A and TRANS-B, these impacts would be reduced to a less than significant level under both the aluminum cover alternative and the proposed project.
- Both the aluminum cover alternative and the proposed project would create significant impacts related to potential conflicts with park patrons during the peak period of construction traffic. With the implementation of mitigation measures TRANS-D through TRANS-F, these impacts would be reduced to a less than significant level under both the aluminum cover alternative and the proposed project. However, truck traffic during the peak of construction of the aluminum cover alternative would be substantially less than under the proposed project.

- Unlike the proposed project, the aluminum cover alternative would not create a significant impact to CMP facilities in the project vicinity during construction.
- The proposed project would create a less than significant impact related to traffic and parking during post-construction project operations. Because the aluminum cover alternative would generate no additional post-construction traffic or maintenance activity at the reservoir property from recreation use, it would create no impact related to traffic and parking during post-construction operations.

ES.7.3 Environmentally Superior Alternative

In accordance with Section 15126.6(e)(2) of the CEQA Guidelines, an EIR shall identify an environmentally superior alternative among the alternatives. Most impacts related to the floating and aluminum covers would be reduced compared to the proposed project because these alternatives involve substantially less ground disturbance, truck traffic, and construction time than the proposed project. These include impacts related to air quality/greenhouse gas emissions, biological resources, cultural resources, noise, and transportation/traffic. Impacts to aesthetics would be considered similar. Because no recreation element would be included under either the floating cover or aluminum cover alternative, both would avoid all impacts associated with the operation of this component of the proposed project; however, these impacts were also determined to be less than significant under the proposed project. Impacts related to air quality/greenhouse gas emissions, noise, and transportation/traffic would be somewhat less under the floating cover alternative than under the aluminum cover alternative due to the reduced scope of construction required. Further, the construction schedule and amount of equipment required for the floating cover alternative would be substantially reduced compared to the proposed project or the aluminum cover alternative. As such, the floating cover alternative is considered the environmentally superior alternative. The floating cover alternative would comply with updated water quality regulations, and it would maintain local drinking water storage capacity within the Elysian Reservoir service area. This alternative would not meet the secondary project objective of providing publicly-accessible open space at the Elysian Reservoir property. Table 5-17 in Chapter 5 provides a comparison of the impacts of the alternatives to the proposed project.

CHAPTER 1
INTRODUCTION

1.1 Summary of the Proposed Project

This Environmental Impact Report (EIR) has been prepared by the Los Angeles Department of Water and Power (LADWP) to evaluate potential environmental effects that may result from development of the proposed Elysian Reservoir Water Quality Improvement Project. This EIR has been prepared in conformance with the California Environmental Quality Act of 1970 (CEQA) statutes (Cal. Pub. Res. Code, Section 21000 et seq., as amended) and implementing guidelines (Cal. Code Regs., Title 14, Section 15000 et seq.). LADWP is the lead agency under CEQA.

To help ensure the quality, reliability, and stability of the City of Los Angeles drinking water supply and to ensure compliance with updated United States Environmental Protection Agency (EPA) water quality standards, LADWP proposes to construct a new buried concrete-covered reservoir to replace the existing uncovered Elysian Reservoir (proposed project). The new buried reservoir would be constructed in essentially the same location as the existing reservoir, although with a slightly reduced footprint. The buried reservoir would provide an equal amount of potable water storage (55 million gallons [MG]) as is available in the existing reservoir. A new 54-inch diameter underground inlet line connecting the buried reservoir to the existing Riverside Trunk Line would be constructed to replace the existing 67-year-old 36-inch inlet line. The area atop the buried reservoir would be developed for recreation uses. A shallow wildlife pond of not less than 0.5 acres in size would also be created at the northern end of the project site, but not atop the buried reservoir. After completion of project construction, the site would be open to the public as part of Elysian Park. Other than facilities related to water storage and distribution, the site would be maintained and operated by the Los Angeles Department of Recreation and Parks (LADRP).

Elysian Reservoir is located in Elysian Park, approximately 1.5 miles north of downtown Los Angeles. The park is owned by the City of Los Angeles and operated and maintained by LADRP, excluding the reservoir property, which is operated and maintained by LADWP.

1.2 CEQA Environmental Process

CEQA requires preparation of an EIR when there is substantial evidence supporting a fair argument that a project may have a significant effect on the environment. The purpose of an EIR is to provide decision makers, public agencies, and the general public with an objective informational document that discloses the potential environmental effects of the proposed project. The EIR process is intended to facilitate the objective evaluation of potentially significant direct, indirect, and cumulative impacts of the proposed project, and to identify potentially feasible mitigation measures and alternatives that would substantially reduce or avoid the proposed project's significant effects. In addition, CEQA specifically requires that an EIR identify those adverse impacts determined to be significant after mitigation.

In accordance with the CEQA Guidelines, an Initial Study was prepared and a Notice of Preparation (NOP) was distributed on June 23, 2008, to public agencies and organizations, as well as private organizations and individuals with a possible interest in the proposed project. The purpose of the NOP was to provide notification that the lead agency (LADWP) planned to prepare an EIR and to solicit input on the scope and content of the EIR. LADWP distributed over 27,000 postcards announcing the scoping meeting and the availability of the Initial Study. Over 30 copies of the Initial Study and 96 copies of the NOP were distributed to agencies, organizations and interested individuals. In response to the NOP, 10 written comment letters were received. These letters and the NOP/Initial Study are included in Appendix A of this EIR.

A public agency scoping meeting was held at Logan Street Elementary School in Echo Park on July 12, 2008. The purpose of the meeting was to seek input from public agencies and the general public regarding the environmental issues and concerns that may potentially result from the proposed project. Other than representatives of LADWP, including members of LADWP's EIR preparation team, approximately 10 people attended the scoping meeting. The following list summarizes the public comments or questions that were received at the scoping meeting:

- **Project Description.** What is the size of the existing reservoir? How many truck trips a day will be generated by the proposed project during construction? What does LADRP plan to do with the additional recreation area created by the proposed project? (see Chapter 2 Project Description)

- **Air Quality.** What are the existing air quality conditions in the project area? What is the impact of truck idling times on construction air quality? (see Chapter 3.2 Air Quality)

- **Noise.** What are the existing noise levels in the project area? What is the impact of truck idling on construction noise levels? (see Chapter 3.5 Noise)

- **Transportation and Traffic.** Will part of Riverside Drive be closed? Which part would be closed? How much traffic uses Stadium Way to cut across the park? The EIR should refer to the traffic calming measures in the Elysian Park Master Plan. The intersection of Stadium Way at the Grace E. Simons Lodge should have a traffic signal. (see Chapter 3.6 Transportation and Traffic)

This Draft EIR focuses on the environmental impacts identified as potentially significant during the scoping process, including the analysis contained in the Initial Study and comments received in response to the NOP. The issue areas analyzed in detail in this EIR include aesthetics, air quality/greenhouse gas emissions, biological resources, cultural resources, noise, and transportation and traffic. Other issue areas determined not to create significant effects are addressed in Section 4.2 of the EIR.

This Draft EIR is being circulated for 45 days for public review and comment. The timeframe of the public review period is identified in the Notice of Availability attached to this Draft EIR. During this period, comments from the general public, organizations, and agencies regarding environmental issues analyzed in the Draft EIR and the Draft EIR's accuracy and completeness may be submitted to the lead agency at the following address:

Ms. Julie Van Wagner
Department of Water and Power
City of Los Angeles
111 North Hope Street, Room 1044
Los Angeles, CA 90012
Phone: (213) 367-4466 (message box)

General questions about this EIR and the EIR process may also be directed to the phone number above. LADWP will prepare written responses to comments pertaining to environmental issues raised in the Draft EIR if they are submitted in writing and postmarked by the last day of the public review period identified in the Notice of Availability.

Prior to approval of the proposed project or an alternative to the proposed project, the City of Los Angeles Board of Water and Power Commissioners, as the decision making entity related to the project, is required to certify that this EIR has been completed in compliance with CEQA, that the EIR reflects the independent judgment of the lead agency, and that the information in this EIR has been considered during the review of the project. CEQA also requires the Board of Water and Power Commissioners to adopt "findings" with respect to each significant environmental effect identified in the EIR (Cal. Pub. Res. Code Section 21081; Cal. Code Regs., Title 14, Section 15091). For each significant effect, the approving agency must make one or more of the following findings:

- Alterations have been made to avoid or substantially lessen significant impacts identified in the Final EIR.
- The responsibility to carry out such changes or alterations is under the jurisdiction of another agency.
- Specific economic, legal, social, technological, or other considerations make infeasible mitigation measures or project alternatives identified in the Final EIR.

If the Board of Water and Power Commissioners concludes that the proposed project or an alternative to the proposed project will result in significant effects that have been identified in this EIR but cannot be substantially lessened or avoided by feasible mitigation measures and/or alternatives, it must adopt a "statement of overriding considerations" in order to approve the project (Cal Pub. Res. Code Section 21081 [b]). Such statements are intended under CEQA to provide a means by which the lead agency balances, in writing, benefits with significant and unavoidable environmental impacts. Where the lead agency concludes that the economic, legal, social, technological, or other benefits outweigh the unavoidable environmental impacts, the lead agency may find such impacts "acceptable" and approve the proposed project.

In addition, the Board of Water and Power Commissioners must also adopt a Mitigation Monitoring and Reporting Program describing the changes that were incorporated into the project or made a condition of approval in order to mitigate or avoid significant effects on the environment (Cal. Pub. Res. Code Section 21081.6). The Mitigation Monitoring and Reporting Program is adopted at the time of approval and is designed to ensure compliance during implementation. Upon approval of the proposed project or an alternative to the proposed project, the lead agency will be responsible for implementation of the Mitigation Monitoring and Reporting Program.

1.3 Organization of the EIR

This EIR is organized as follows:

The **Executive Summary** of this EIR provides an overview of the information provided in detail in subsequent chapters. It consists of an introduction; a brief description of the proposed project; a discussion of areas issues raised by the public and agencies relative to the project construction and operations; a table that summarizes the potential environmental impacts in each issue area, the significance determination for those impacts, mitigation measures, and significance after mitigation; and a comparative discussion of alternatives to the proposed project.

Chapter 1 provides a summary of the proposed project and an overview of the CEQA environmental review process and a section describing the organization of the EIR.

Chapter 2 provides a description of the proposed project. Project objectives are identified, and information on the proposed project characteristics and construction and operational scenarios is provided. This chapter also includes a description of the intended uses of the EIR and public agency actions.

Chapter 3 describes the potential environmental effects of implementing the proposed project. The discussion in Chapter 3 is organized by six environmental issue areas, as follows:

- Aesthetics
- Air Quality/Greenhouse Gas Emissions
- Biological Resources
- Cultural Resources
- Noise
- Transportation and Traffic

For each environmental issue, the analysis and discussion are organized into five subsections as described below:

Environmental Setting – This subsection describes, from a local and regional perspective, the physical environmental conditions in the vicinity of the proposed project. The environmental setting establishes the baseline conditions by which LADWP were used to determine whether specific project-related impacts are significant.

Thresholds of Significance – This subsection identifies thresholds by which the level of impact is determined.

Environmental Impacts – This subsection provides information on the environmental effects of the proposed project and whether the impacts of the proposed project would meet or exceed the established significance criteria.

Mitigation Measures – This subsection identifies feasible mitigation measures that would avoid or substantially reduce significant adverse project-related impacts.

Significance after Mitigation – This subsection indicates whether project-related impacts would be reduced to below a level of significance with implementation of the mitigation measures identified in the EIR. This subsection also identifies any residual significant and unavoidable adverse effects of the proposed project that would result even after the mitigation measures have been implemented.

Chapter 4 presents the other mandatory CEQA sections, including the following:

Unavoidable Significant Adverse Impacts – This subsection identifies and summarizes the unavoidable significant impacts described in greater detail in Chapter 3.

Effects Not Found to Be Significant – This subsection identifies and summarizes the issue areas that were determined to have no adverse environmental effect or a less than significant environmental effect given the established significance criteria.

Cumulative Impacts – This subsection addresses the potentially significant cumulative impacts that may result from the proposed project when taking into account related or cumulative impacts resulting from other past, present, and reasonably foreseeable future projects.

Irreversible Environmental Changes – This subsection addresses the extent to which the proposed project would result in a significant commitment of nonrenewable resources.

Growth-Inducing Impacts – This subsection describes the potential of the proposed project to induce economic or population growth or the construction of additional housing, either directly or indirectly, in the surrounding environment.

Chapter 5 describes and evaluates the comparative merits of a reasonable range of alternatives to the proposed project that would feasibly attain most of the basic objectives of the proposed project and avoid or substantially lessen potentially significant project-related impacts. The chapter also describes the preliminary site constraints analysis and rationale for selecting the range of alternatives discussed in the EIR and identifies the alternatives considered by LADWP that were rejected from further detailed analysis during the planning process. Chapter 5 also includes a discussion of the environmental effects of the No Project Alternative and identifies the environmentally superior alternative.

Chapter 6 provides a list of acronyms and abbreviations used in this EIR.

Chapter 7 provides a bibliography of reference materials used in preparation of this EIR.

Chapter 8 identifies those persons responsible for preparation of this EIR.

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CHAPTER 2
DESCRIPTION OF THE PROPOSED PROJECT

2.1 Overview of the Project

To help ensure the quality, reliability, and stability of the City of Los Angeles drinking water supply and to ensure compliance with updated EPA water quality standards, LADWP proposes to construct a new buried concrete-covered reservoir (buried reservoir) to replace the existing uncovered Elysian Reservoir. The new buried reservoir would consist of a reinforced concrete liner, concrete perimeter retaining walls, an extensive system of interior concrete shear walls and columns, and a concrete roof. The new buried reservoir would be constructed in essentially the same location as the existing reservoir, although with a slightly reduced footprint. This would necessitate the demolition of the existing reservoir bottom, sides, inlet structure, and outlet tower. A maximum depth of 3 feet of topsoil would be placed over the buried reservoir, and the area above would be developed for recreation uses. A new 54-inch diameter underground inlet line connecting the buried reservoir to the existing Riverside Trunk Line within Riverside Drive would also be constructed to replace the existing 67-year-old 36-inch inlet line. A shallow wildlife pond of not less than 0.5 acres in size would also be created at the northern end of the reservoir property, but not atop the buried reservoir itself. After completion of project construction, the site would be opened to the public as part of Elysian Park. Other than facilities related to water storage and distribution, the site would be maintained and operated by LADRP.

The buried reservoir analyzed as the proposed project in this EIR differs in several respects from the proposed project that was contained in the June 20, 2008, NOP and the associated Initial Study for the Elysian Reservoir Water Quality Improvement Project. In the NOP and during the EIR scoping meeting (July 2008) held in the Echo Park community of Los Angeles to provide project information and elicit public comment regarding potential environmental impacts and other project concerns, the proposed project was described as two separate underground cylindrical concrete tanks that would be constructed within the basic footprint of the existing reservoir. While this underground tanks option would achieve the objectives of the proposed project (see Section 2.5 below), it was preliminarily determined that it may also result in several potentially significant environmental impacts related to traffic, air quality, and noise, largely associated with extensive earthwork operations required to construct and fully bury the concrete tanks. It was preliminarily estimated that these operations would entail the excavation of approximately 480,000 cubic yards (CY) of earth material, which, due to limited available stockpile area on or near the project site, would need to be exported from the site, temporarily stockpiled at another facility in the region, and returned to the site when needed to construct the sub-base for the concrete tanks and to bury the concrete tanks when completed. The total volume of earthwork (including excavating, stockpiling, and re-importing material) would exceed 1.5 million CY. Roughly 100,000 truck trips would be required during the 32-month period when the export and import activities would take place, which would entail an average of over 150 truck trips per day. Because of restrictions related to loads on certain roads and bridges and to minimize impacts to local neighborhoods, the trucks would be required to follow a route through Elysian Park between the reservoir and Stadium Way to gain freeway access, which may have necessitated lengthy closures of some primary park roads.

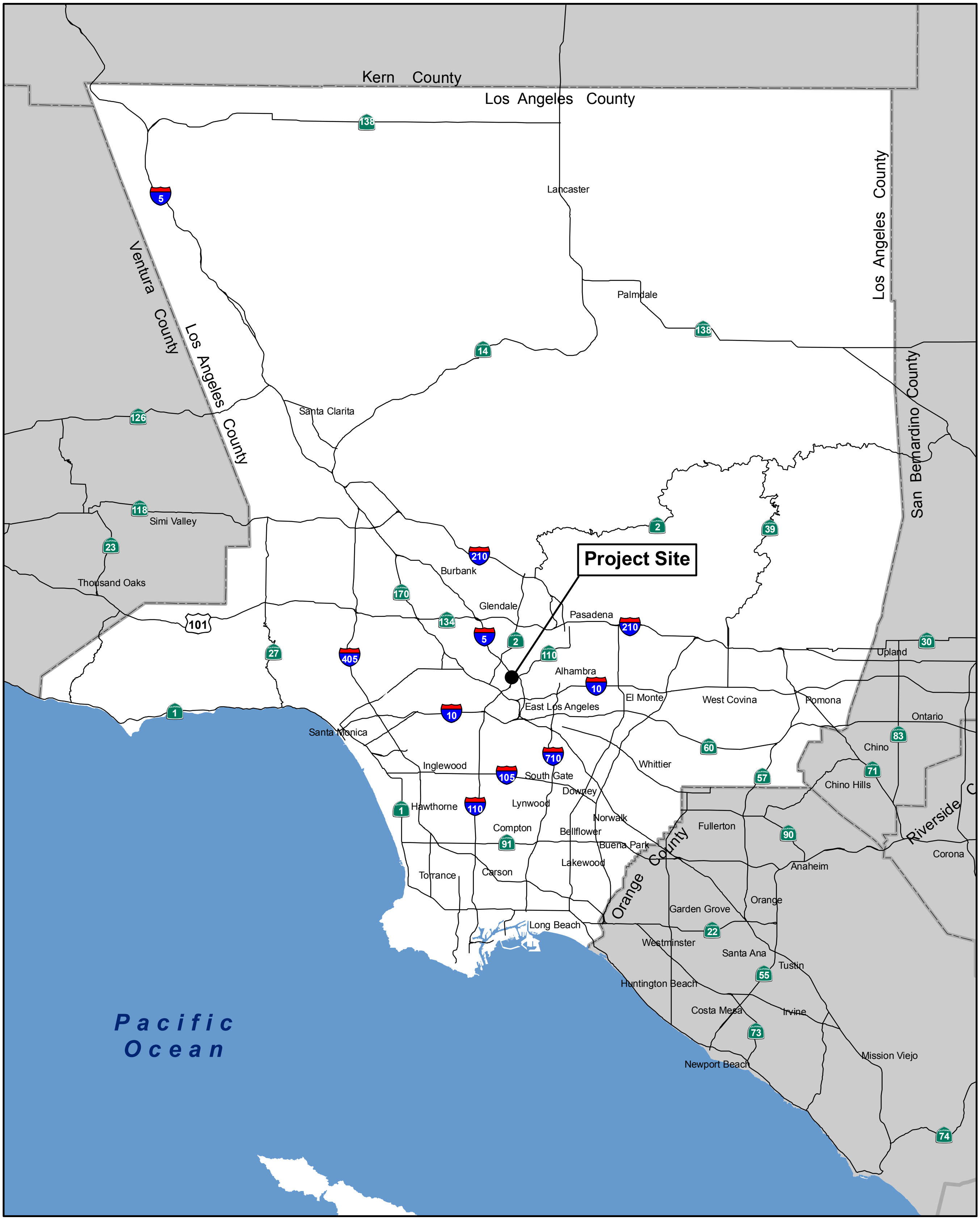
Consistent with the intent of CEQA to utilize the public disclosure and participation process as an influence on project definition and to prevent or reduce, where possible, environmental impacts associated with project implementation, LADWP, in response to community input and based on detailed investigations related to feasibility (including the reservoir dam integrity and safety), has developed the current buried reservoir concept as the proposed means to provide a water storage facility at Elysian Park. The buried reservoir would meet the primary and secondary objectives of the proposed project and would significantly lessen, although not necessarily eliminate, the potential environmental impacts associated with the previously proposed underground concrete tanks option, primarily by reducing the quantity of earthwork required and by confining most, but not all, construction activities to the reservoir property itself and adjacent areas within Elysian Park.

2.2 Project Location

Elysian Reservoir is located in Elysian Park, approximately 1.5 miles north of downtown Los Angeles. Dedicated in 1886 and consisting of approximately 575 acres, Elysian Park is the oldest and second largest park in the City. The park is owned by the City of Los Angeles and operated and maintained by LADRP, excluding the reservoir property, which is operated and maintained by LADWP. The reservoir itself lies northwest of and immediately adjacent to the Pasadena Freeway (State Route [SR] 110), between Dodger Stadium to the southwest and the Golden State Freeway (Interstate [I] 5) to the northeast. Elysian Reservoir is accessed off of Grand View Drive, which is a road located within the interior of Elysian Park. Figure 2-1 shows Elysian Reservoir in relation to the region, and Figure 2-2 shows the vicinity of the reservoir.

2.3 Historical Perspective and Current Operations of Elysian Reservoir

Dating back to the late 19^{th} century, property that is located near or within the boundaries of what is now Elysian Park has played a role in the drinking water supply of the City of Los Angeles. In 1869, the privately owned Los Angeles City Water Works Company constructed a reservoir in Buena Vista Meadows, southeast of the present-day Pasadena Freeway, to store water drawn from the adjacent Los Angeles River. In 1873, the company built the East Side Reservoir on a hill south of Buena Vista Meadows. Neither the Buena Vista nor East Side Reservoirs still exist. In 1903, shortly after the City of Los Angeles acquired the Water Works Company, the City constructed a 1-MG reservoir on a hill above present-day Dodger Stadium (at the site of the existing Solano Reservoir) and a 10.5-MG reservoir at the current location of Elysian Reservoir. In 1908, a timber roof was added to the original Elysian Reservoir, and in 1914 the roof was replaced with a structure supported by concrete columns. Although this original reservoir was considered enormous for its day, by 1940 demand for water in the surrounding area had exceeded the reservoir's capacity. In the early 1940s, the reservoir was enlarged to a capacity of 55 MG, and the downstream slope of the reservoir dam was incorporated into the embankment of the SR 110 extension, then under construction through Elysian Park. The high water elevation of the reservoir was raised from 443 feet to 462 feet, expanding and providing improved water pressure to the reservoir service area. In June 1943, the present-day Elysian Reservoir was put into service as an uncovered treated-water storage facility.



Source: California Geospatial Information Library (2003-5)

N

0 3 6 12 18 24 Miles

Figure 2-1
Regional Location Map

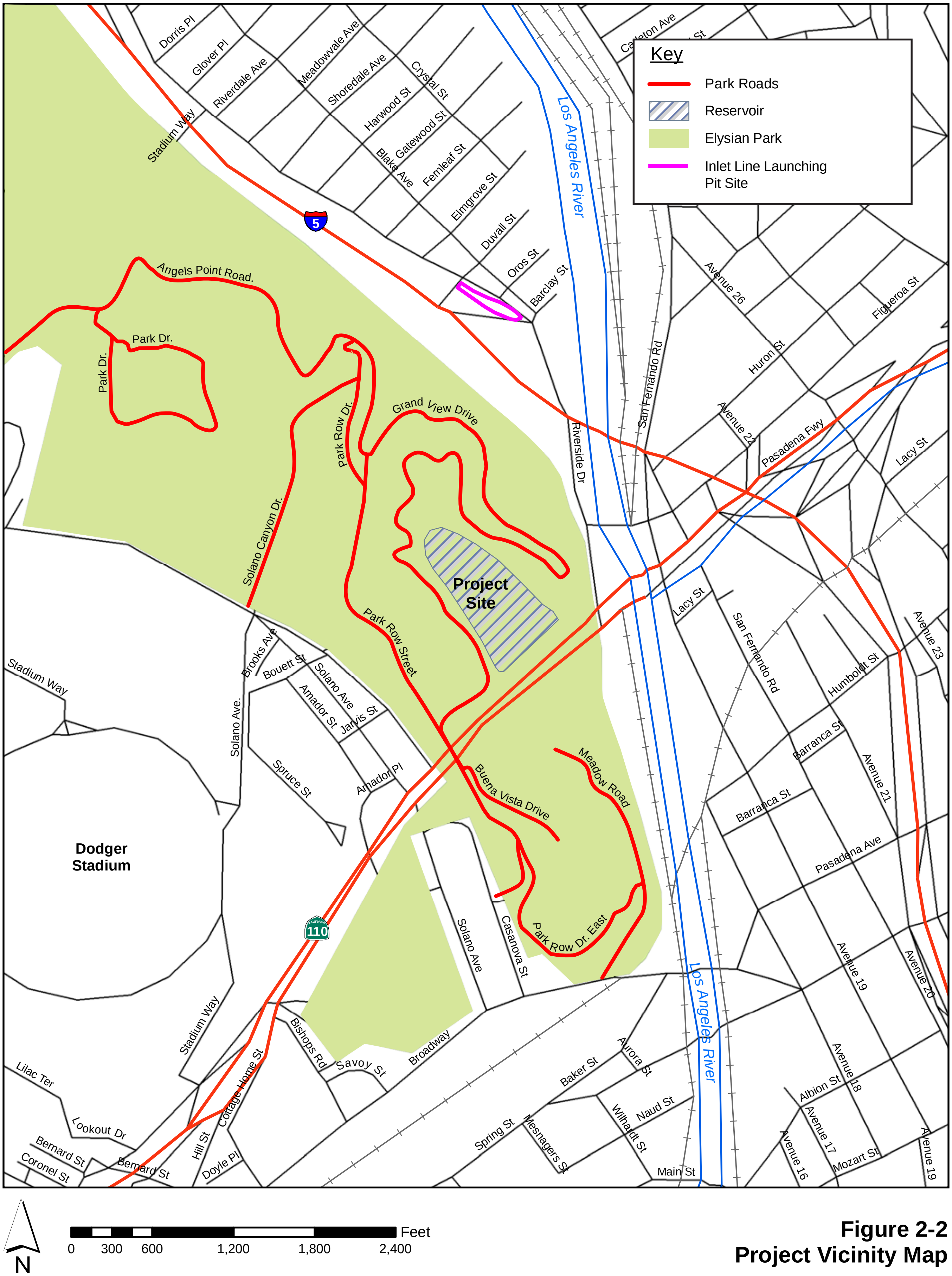


Figure 2-2
Project Vicinity Map

Historically, treated drinking water has been supplied to Elysian Reservoir primarily by pipelines originating at the Los Angeles Aqueduct Filtration Plant located at the Van Norman Complex in Granada Hills and groundwater wells located in the North Hollywood area. This water first passed through the Silver Lake-Ivanhoe Reservoir complex, located approximately 2 miles northwest of Elysian Reservoir, and then to the Fletcher Pump Station, which delivers water to Elysian Reservoir via the Riverside Trunk Line, which runs generally parallel to I-5. The inlet and bypass lines that serve Elysian Reservoir from the Riverside Trunk Line were installed as part of the reservoir construction in the early 1940s and consist primarily of riveted steel sections.

In an action unrelated to the proposed project, Elysian, Silver Lake, and Ivanhoe Reservoirs were recently drained because higher than normal levels of bromate were detected in reservoir water during routine testing. The bromate, a chemical compound that has been linked, when present at elevated levels in laboratory tests, to increased risks of certain types of cancer, is believed to have formed in the open reservoirs when bromide contained in the source groundwater interacted with chlorine in the presence of sunlight. This was the first time an occurrence like this had been observed. The reservoirs have been cleaned and refilled, but Silver Lake Reservoir has been removed from service as a drinking water supply and physically isolated from the system. With additional treatment, water from the Silver Lake Reservoir could be used in emergency circumstances or during exceptionally high demand periods. Groundwater use was discontinued, and Elysian Reservoir was, for a brief period, supplied through the Riverside Trunk Line by water mostly from the covered Eagle Rock Reservoir and a small amount from the Pollock Wells via the Pollock Regulating Station, located approximately 2.5 miles north of Elysian Reservoir, adjacent to the Los Angeles River. However, as an interim solution, both Ivanhoe Reservoir and Elysian Reservoir have now been temporarily covered with “shade balls” to shield the water from sunlight to prevent the formation of bromate. Ivanhoe Reservoir again receives water from the North Hollywood wells and the Los Angeles Aqueduct Filtration Plant, and Elysian Reservoir again receives water from Ivanhoe Reservoir via the Fletcher Pump Station.

Elysian Reservoir serves approximately 285,000 people in the greater downtown Los Angeles area. The service area covers approximately 24 square miles, including Echo Park, Chinatown, Mount Washington, Lincoln Heights, Boyle Heights, a large portion of Downtown, and areas south of Downtown. The reservoir provides crucial emergency storage and operational capacity that allows for the flexibility necessary to meet peaks in demand that could not be satisfied long term through other sources or the use of water distribution pipelines alone.

For two decades, LADWP has worked closely with the Elysian Reservoir Subcommittee of the Coalition to Preserve Open Reservoirs (CPOR) to determine the nature and extent of facility improvement alternatives at Elysian Reservoir that are required to meet federal and state drinking water standards. This process was an outgrowth of public meetings in the late 1980s between LADWP and numerous citizens groups in communities throughout the City related to proposed physical and operational changes at the City’s open reservoirs necessary to implement the Surface Water Treatment Rule, first promulgated by the EPA in 1989. In 1990, as a result of a lawsuit filed by the Citizens Committee to Save Elysian Park (CCSEP), the Los Angeles City Council directed that decisions regarding improvements at several open reservoirs (including those at Elysian) be conducted through a mediation process between LADWP and the CPOR committee associated with each reservoir. The Elysian Subcommittee of CPOR includes members of CCSEP, which strives to preserve Elysian Park open space areas for public use, including recreational activities. This includes taking advantage of potential opportunities to provide additional publicly accessible areas within the park. In relation to Elysian Reservoir, CPOR has played a primary role in advocating a buried structure (instead of implementing unburied reservoir covering options) as the only practical means to convert the 12-acre reservoir property into a publicly accessible recreation area.

2.4 Physical Setting

2.4.1 Existing Facility

The existing Elysian Reservoir has a storage capacity of approximately 55 MG. It has a maximum depth of 50 feet, a high water elevation of 462 feet, and a surface area of approximately 6 acres at the high-water elevation. The reservoir is approximately 900 feet long and approximately 400 feet wide at the maximum width near the dam at the southern end, tapering to approximately 170 feet wide near the inlet at the northern end. The materials and shape of Elysian Reservoir impart a clearly manmade appearance. The reservoir has continuous, straight edges and is roughly teardrop in shape. The bottom and sides of the reservoir are paved with asphaltic concrete. The water level in the reservoir can fluctuate considerably, exposing more or less of the asphalt side walls. As mentioned above, the surface of Elysian Reservoir is currently covered with 6-inch diameter black “shade balls” to help prevent the formation of bromate in the stored drinking water. However, this is a temporary situation pending permanent solutions, and the existing condition of the reservoir considered for the environmental analysis in this EIR is that of an open water surface. A concrete parapet wall (approximately 1.5 to 3.0 feet in height) is located several feet outside the upper edge of the reservoir side walls. The parapet wall is topped with a 7-foot tall chain link fence that encloses the entire reservoir. An approximately 12- to 16-foot wide paved road is located around the perimeter of the reservoir. The remainder of the 12-acre reservoir property is vegetated. The property is segregated from Elysian Park by a chain link fence, which is in addition to the fence that immediately surrounds the reservoir. A 15-foot diameter outlet tower is located in the southwest corner of the reservoir, projecting to a height approximately 15 feet above the water surface at the high water elevation. The tower is connected to the perimeter road by an approximately 160-foot long footbridge. Figure 2-3 shows the existing Elysian Reservoir site.

2.4.2 Surrounding Land Uses

The proposed project site is located at the bottom of an approximately 40-acre ravine within the boundaries of Elysian Park, which is designated as Open Space in the City’s General Plan. Land uses in the vicinity of the Elysian Park are primarily devoted to single- and multi-family residential uses. Dodger Stadium, also an Open Space land use designation in the City’s General Plan, is located southwest of and adjacent to Elysian Park. The Los Angeles Police Academy, located approximately 0.5 miles northwest of Elysian Reservoir, is largely surrounded by Elysian Park, although it technically lies outside of the park boundaries. Figure 2-4 shows the location of Elysian Reservoir within the boundaries of Elysian Park.

Source: Globexplorer 2007

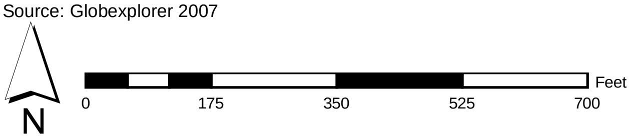


Figure 2-3
Elysian Reservoir Site

Source: LADRP, Final Draft Elysian Park Master Plan, 2006

Figure 2-4
Elysian Park Facilities

2.4.3 General Plan Designation and Zoning

Along with the surrounding parkland, the Elysian Reservoir property is designated as Open Space in the City of Los Angeles General Plan. The proposed project site is located within the Silver Lake-Echo Park-Elysian Valley Community Plan area. The zoning designation for Elysian Reservoir is OS (Open Space). The City of Los Angeles Municipal Code states that the purpose of the OS zone is to protect and preserve natural resources and natural features of the environment, provide outdoor recreation opportunities, and encourage the maintenance of open space uses on all publicly owned land that is essentially unimproved.

2.5 Project Objectives

The purpose of the proposed project is to maintain and improve the quality, reliability, and stability of the Elysian Reservoir service area drinking water supply in order to continue to meet customer demand.

The primary project objectives related to this purpose are to:

- Comply with updated water quality standards enacted by the EPA and, by extension, the California Department of Public Health, including the Stage 2 Disinfectants and Disinfection Byproducts Rule (D-DBPR), which establishes new regulations related to the formation of potentially carcinogenic disinfection byproducts that may result from certain drinking water chemical disinfection processes, and the Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR), which establishes new regulations related to the presence of microbial pathogens in drinking water supplies.
- Preserve local water storage capability to maintain reliability and flexibility to meet the Elysian Reservoir service area demand for drinking water at required distribution system pressures, including during emergency or planned outages of upstream supplies.

A secondary objective of the proposed project is to provide a publicly accessible recreation area at the Elysian Reservoir site.

Stage 2 Disinfectants and Disinfection Byproducts Rule

Based on 1996 amendments to the Federal Safe Drinking Water Act, the EPA has promulgated the Stage 2 D-DBPR to balance the risks related to microbial pathogens (i.e., disease-causing bacteria, viruses, and parasitic protozoa), which are normally largely inactivated and/or removed from drinking water by disinfection and filtration, against the production of disinfection byproducts in drinking water, which result from chemical reactions involving the use of chlorine as a disinfectant. The treatment of drinking water with disinfectants is considered one of the most important public health accomplishments of the past century, and it has significantly reduced the incidence of serious waterborne diseases, such as typhoid and cholera. The most common method of disinfection has been the addition of relatively small amounts of chlorine to drinking water. However, due to advances in the ability to detect chemical compounds in water, it is now known that reactions between chlorine and the relatively small amount of natural organic matter present in even treated drinking water can form disinfection byproducts. These disinfection byproducts are volatile organic compounds, such as trihalomethanes and haloacetic acids, which have now been linked, when present at elevated levels in laboratory tests, to potential increased risks of certain types of cancer.

Currently chlorine is used as a secondary residual disinfectant for water that has received primary treatment in the Los Angeles Aqueduct Filtration Plant, located at the Van Norman Complex in Granada Hills. In order to minimize the production of disinfection byproducts in accordance with the Stage 2 D-DBPR, LADWP intends to change over to the use of chloramines. Formed by a mixture of chlorine and ammonia, chloramines are less reactive than chlorine with natural organic matter. Chloramines will replace chlorine throughout the LADWP drinking water distribution system. This changeover to chloramines has already occurred in some drinking water service areas within the LADWP system.

Chloramines are much more stable than chlorine, providing a longer-lasting residual effect throughout the water delivery system and reducing the requirement for supplemental application along the water distribution route. Chloramines are not as potent as chlorine at killing microbial pathogens, but they still provide adequate disinfection to meet safe drinking water standards. This chloramination approach is consistent with EPA mandates to balance disinfection considerations with the requirement to reduce the level of chlorine-related disinfection byproducts in drinking water.

In addition to the disinfection byproducts regulated under the Stage 2 D-DBPR, the formation of bromate in the LADWP drinking water system has also become a concern related to the storage of treated drinking water in uncovered reservoirs. Like the trihalomethanes and haloacetic acids addressed in the Stage 2 D-DBPR, bromate is a chemical compound that has been linked, when present at elevated levels in laboratory tests, to increased risks of certain types of cancer. Bromate levels in drinking water are regulated by the California Department of Public Health. Bromate can be formed when naturally occurring bromide contained in source water interacts with chlorine in the presence of sunlight, as occurred in the recent past at Elysian Reservoir. The LADWP system-wide changeover to chloramines would also eliminate this potential interaction between bromide and chlorine that can create bromate.

However, field demonstrations conducted by LADWP have established that it is difficult in uncovered reservoirs to maintain the intended chloramine residual and optimal chlorine-to-ammonia ratio necessary to protect drinking water supplies. The demonstrations have indicated that chloramines degrade rapidly in open reservoirs, reducing residual disinfectant levels in drinking water. Chloraminated water supplies exposed to sunlight in uncovered reservoirs also then become susceptible to algae blooms. The application of additional chloramines to the reservoir after an algae bloom occurs has proven ineffective in reducing the large concentrations of algae contained in the bloom. The use of other chemicals, such as chlorine dioxide and copper sulfate, has also proven ineffective because of limitations on their allowable application rates. Adding chlorine, while more effective in controlling algae, would have the potential to generate disinfection byproducts, thereby defeating the intent of the Stage 2 D-DBPR that has prompted the change-over to chloramines.

Replacing the uncovered Elysian Reservoir with a buried reservoir would allow for the proper management of chloramine disinfectant levels and would prevent the exposure of the treated water to sunlight, which promotes the growth of algae. Because the system-wide changeover to chloramines is being implemented to comply with Stage 2 D-DBPR mandates (and to limit the potential formation of bromate), the ability to manage chloramine residual to safeguard drinking water supplies in the Elysian Reservoir service area is an essential aspect of the proposed project and alternatives to the proposed project.

Long Term 2 Enhanced Surface Water Treatment Rule

In conjunction with the Stage 2 D-DBPR, the EPA has also promulgated the LT2ESWTR to reduce the incidence of disease associated with certain pathogenic microorganisms that have the potential to exist in drinking water. This rule primarily addresses the treatment of drinking water that has surface water as its source, but it also applies to treated water stored in open reservoirs. The rule establishes limits for the presence of certain protozoan pathogens (especially Cryptosporidium) that cause gastrointestinal illness that can be severe or fatal for sensitive groups, such as the elderly, infants, or those with compromised immune systems. The LT2ESWTR requires that either uncovered treated water reservoirs be covered to limit exposure to the environment and prevent recontamination or that water from uncovered treated-water reservoirs be re-treated before entering the distribution system to achieve established limits for pathogens.

The water treatment system currently used at the Los Angeles Aqueduct Filtration Plant adequately destroys and/or removes Cryptosporidium protozoa during treatment using a multiple-barrier system. This includes the use of ozone, which has been found to be effective at reducing Cryptosporidium levels, followed by the successive use of coagulation, flocculation, and biologically active rapid-rate deep-bed filters, which effectively remove most Cryptosporidium protozoa prior to discharge of the water from the plant. However, regardless of this primary treatment, the LT2ESWTR also includes provisions to ensure that downstream uncovered treated-water storage facilities, such as Elysian Reservoir, are managed to maintain the microbial protection of the treated water they receive before the water is discharged from the storage facilities and enters the distribution system. Treated water stored in uncovered reservoirs can be contaminated from numerous sources that could come in contact with the open water surface, including incidental surface water runoff, bird and animal waste, and airborne deposition (including pollutants and bacteria). Because of potential operational limitations in adequately treating the sometimes large volumes of water at the point of discharge from Elysian Reservoir, it has been proposed that the existing uncovered reservoir be replaced with a buried reservoir to mitigate contamination risks, as required by the LT2ESWTR. Furthermore, if treatment at the point of discharge were practical to comply with LT2ESWTR requirements, leaving Elysian Reservoir uncovered would nonetheless contribute to the degradation of chloramine residual and the optimal chlorine-to-ammonia ratio necessary to maintain an appropriate disinfectant level in the drinking water supply. A solution that responds simultaneously to each water quality issue (i.e., the LT2ESWTR mandates and the maintenance of chloramine residual in relation to the Stage 2 D-DBPR mandates) is necessary. Compliance with the LT2ESWTR at Elysian Reservoir is an essential aspect of the proposed project and alternatives to the proposed project.

Local Water Storage Capability

Beginning in the 1970s, LADWP began efforts to address issues associated with the potential degradation of water quality at its 15 in-City uncovered water storage reservoirs. These reservoirs were dispersed throughout the water distribution system to provide critical local storage capability to meet fluctuations in demand within individual service areas and respond to situations when the primary upstream supply lines or facilities that feed the reservoir service areas may be temporarily out of service due to an unforeseen emergency or planned outage. To preserve this local storage capability while meeting increasingly stringent water quality requirements, a number of the smaller open reservoirs in the system have been covered or replaced with tanks.

In 1991, several of the largest reservoirs in the system, including Encino, Upper and Lower Hollywood, and Lower Stone Canyon, were determined by the California Department of Public Health, in accordance with the 1989 Surface Water Treatment Rule, to be susceptible to contamination from pathogens and pollutants contained in surface water runoff from adjacent hillsides. A number of options were considered to resolve the contamination concerns, including the installation of covers on the reservoirs and the disinfection and filtration of water as it was discharged from the reservoirs into the local distribution system. Based on many considerations, including extensive community involvement, cost and engineering concerns, the location and function of these reservoirs within the LADWP water supply system, and improvements being implemented to the City water distribution system, it was determined that to control potential contamination of the drinking water supply from surface water runoff, the four reservoirs mentioned above should be removed from service as potable water sources.

Although these reservoirs remain in place, most treated drinking water that previously reached the reservoirs is now diverted to the distribution system, including other local storage tanks or reservoirs. Small filtration plants operate at some of the reservoirs to treat water that must be discharged to manage the reservoir water level and quality, but the reservoirs provide storage for non-potable water that will be utilized as drinking water only during extreme emergencies. The removal of these larger reservoirs from service has eliminated approximately 8 billion gallons of treated water from the LADWP in-City storage system. Maintaining the capability to continue to provide water to local service areas was a key consideration in the removal of these reservoirs from service. Underground tanks have been installed at the Hollywood Reservoir site to partially replace the lost local storage capacity of the upper and lower reservoirs. The storage offered by Encino Reservoir has become less critical because of extensive upgrades to the water distribution system in the San Fernando Valley that have established significantly greater flexibility and redundancy in providing drinking water to the former Encino Reservoir service area. Water for the Stone Canyon service area continues to be provided from the 138-MG Upper Stone Canyon Reservoir, which, like Elysian Reservoir, must also be converted from an open reservoir to a covered storage facility to safeguard water quality and maintain critical local storage capability.

The centralization and reduction of water storage within the City has placed greater reliance on the fewer remaining facilities to meet fluctuations in demand and provide emergency storage within local service areas. As discussed above, Elysian Reservoir has traditionally been fed via the Silver Lake-Ivanhoe Reservoir Complex, which is located about 2 miles northwest of Elysian Reservoir and has historically provided approximately 263 MG of total operational storage capacity for the Elysian service area and other areas of the City. However, in an action related to maintaining water quality in regard to open reservoir storage, Silver Lake Reservoir has recently been removed from service as a primary supply of drinking water and will now only be used if necessary during emergency circumstances or unusually high demand periods, which would require additional treatment of the water stored in the reservoir. Furthermore, to permanently resolve water quality issues related to the Stage 2 D-DBPR and LT2ESWTR and open storage at the complex, both Silver Lake and Ivanhoe reservoirs will be entirely removed from service as drinking water storage facilities by 2015. The water storage functions provided by these reservoirs will be relocated at a reduced capacity of about 110 MG to a new facility located at the Headworks Spreading Grounds in Griffith Park, approximately 5 miles northwest of the Silver Lake-Ivanhoe Reservoir Complex. The Silver Lake-Ivanhoe Reservoir Complex relocation to Headworks, which was subject to a previous CEQA analysis (Silver Lake Reservoir Complex Storage Replacement Project EIR approved on May 16, 2006; State Clearinghouse Number 2003081133), is anticipated to be completed in 2015. This relocation and reduction in storage will remove substantial backup supplies for the Elysian Reservoir service area and place greater dependence on local storage capability at the Elysian property itself.

Elysian Reservoir is the primary source of water for the downtown district and numerous surrounding communities in the central part of the City. Installation of the new buried reservoir would maintain critical local supplies that provide drinking water to these areas to respond to temporary losses of upstream sources related to a line rupture or other facility outage until repairs or interim operational modifications to circumvent the breakdown could be implemented. It would also provide flexibility to conduct scheduled maintenance of upstream supply facilities as required and still provide water to the Elysian Reservoir service area at acceptable pressure levels even though the inflow to the reservoir may be temporarily interrupted. The proposed project would provide essentially the same volume of storage as the existing reservoir, which has a total capacity of approximately 55 MG. Maintaining local water storage capability in the Elysian Reservoir service area to respond to emergencies and other outages is an essential aspect of the proposed project and alternatives to the proposed project.

To physically accommodate the proposed buried reservoir and provide improved emergency service to portions of the Elysian Reservoir service area, the existing reservoir bypass line must be relocated and lowered in elevation. This would also necessitate the reconstruction of a portion of the existing 36-inch diameter reservoir inlet line in order to properly feed the relocated bypass line and the buried reservoir. The existing inlet line, which connects the reservoir to the Riverside Trunk Line in Riverside Drive, was installed in the early 1940s when the present-day reservoir was constructed. The line consists primarily of riveted steel, which is no longer utilized by LADWP for water main installations. As part of the Trunk Line Condition Assessment Program, LADWP has been replacing riveted steel lines throughout the City water distribution system to improve infrastructure reliability to avoid widespread leaks and breaks. While the existing Elysian Reservoir inlet line has not experienced any such breakage, because of its age and type of construction, it must be replaced to minimize the risk to the reservoir water supply and to maintain system reliability. Because portions of the inlet line must be reconstructed to accommodate the construction of the buried reservoir, replacing the line in its entirety is considered a key aspect of maintaining local water storage capability in the Elysian Reservoir service.

In addition to providing crucial supplies during a temporary loss of upstream sources of water, Elysian Reservoir plays a critical role in maintaining local water supplies that help accommodate the often wide fluctuations in demand experienced in the reservoir service area on a daily basis. To maintain operational stability, the storage provided by the reservoir supplements water supplies during high-use periods when the outflow from the reservoir generated by customer demand exceeds inflow from upstream supply lines. Without the operational flexibility provided by the reservoir, this peak use in the Elysian Reservoir service area would not be met solely by dependence on the distribution system and upstream supplies, which originate at the Van Norman Complex. Replacing the existing reservoir with a buried structure as a means to achieve the Stage 2 D-DBPR and LT2ESWTR mandates would allow for the continuation of this critical role of providing operational stability to meet fluctuations in demand. Reliability and flexibility required to provide water during peak demand periods is an essential aspect of the proposed project and alternatives to the proposed project.

A buried reservoir would also increase the stability of the service area drinking water supply by eliminating evaporation from the surface of the existing open-air reservoir. Based on the size of Elysian Reservoir and the general climatic conditions in the region, approximately 6.5 to 8 MG of water that would otherwise be lost to evaporation would be conserved each year by covering the reservoir. This volume of water would serve the average annual needs of approximately 40 to 50 households in the City.

Recreation Access

As mentioned above, the Elysian Subcommittee of CPOR includes members of CCSEP. CCSEP's main goal is the preservation and expansion of the Elysian Park property for the recreational enjoyment of the community. For many years, LADWP has worked with the Elysian Subcommittee of CPOR in relation to facility improvement alternatives at Elysian Reservoir to help achieve this goal while also achieving the requirements mandated by updated federal and state water quality regulations.

The use of existing public property to provide additional open space and recreation opportunities has been identified in the Los Angeles Department of City Planning Silver Lake-Echo Park-Elysian Valley Community Plan (2004). To provide for expansion of recreation functions while minimizing displacement of existing development, the plan encourages City departments, including LADWP, to utilize their properties for such functions wherever feasible. The Final Draft Elysian Park Master Plan (2006) also identifies opportunities for expansion of recreation areas at the Elysian Reservoir property if the existing Elysian Reservoir were to be replaced with an underground structure. Proposals for the reservoir property contained in the Elysian Park Master Plan are largely supported by CCSEP and generally involve passive recreation uses and the restoration of the property with primarily native vegetation. However, proposals to provide active recreation facilities, such as sports fields, have also been advanced by some groups to respond to an identified need in the community for such facilities. The determination of the nature of recreation functions to be provided at the Elysian Reservoir property would require a separate planning process that would involve community, LADRP, LADWP, and City Council office participation and would occur at a date closer in time to the implementation of any recreation improvements at the property (see Section 2.6.1, Reservoir Construction).

Based on a consideration of many factors, including the environmental assessment contained in this EIR, the City of Los Angeles Board of Water and Power Commissioners will make a discretionary decision regarding the proposed project, including the implementation of water quality and water storage related improvements, and the provision of public access and recreation use at the reservoir property. However, the planning process required to determine the actual nature of recreation development would not be completed prior to this decision by the LADWP Board of Commissioners. To appropriately support aspects of the Board of Commissioners' decision related to public access and recreation use prior to the final determination regarding the exact nature of these functions, the development of an active recreation facility is considered in this EIR for the purposes of impact analysis because such a facility would, in relative terms, possess the potential to create the greatest level of environmental impacts. This facility is further defined in Sections 2.6.1 and 2.6.2. Any recreation/open space development proposal equal to or less intensive in nature than the project considered in this EIR would generally result in an equal or reduced level of environmental impacts in relation to both construction and operations at the reservoir site. Upon completion of the recreation planning process, the City of Los Angeles Board of Recreation and Parks Commissioners would use this EIR to make a discretionary decision regarding the recreation facility at the reservoir property. Additional future action under CEQA by LADRP may also be required, depending on the exact nature of the recreation facility.

Among the feasible methods to achieve the primary water quality and water storage objectives of the proposed project, the buried reservoir proposal reflected in this EIR is considered the most reasonable means (in terms of cost and minimizing potential environmental impacts) to meet the secondary objective to allow for a publicly accessible recreation area at the reservoir property.

2.6 Project Description

As discussed above, to accomplish the objectives of the proposed project, the open-surface Elysian Reservoir would be replaced with a new buried concrete-covered reservoir. Figure 2-5 indicates the general limits of construction activity associated with construction at Elysian Reservoir itself. Other than manholes, hatches providing access to the interior of the buried reservoir, above ground vent structures, above ground electrical cabinets, and similar appurtenant facilities, water storage and distribution facilities would be essentially concealed underground after completion of construction. However, a paved road would still be required around the perimeter of the buried reservoir to provide vehicular access for maintenance and operations of the reservoir. This road would also serve as a maintenance access road for the park facilities, but would not be open to private vehicles.

Certain constraints prevent the direct placement of a concrete roof over the existing Elysian Reservoir, which was constructed nearly 70 years ago. These constraints include the limited bearing capacity of the existing reservoir (i.e., the inability of the current reservoir and the sub-grade upon which it rests to support the load of the concrete roof system and the soil cover placed over the roof); and dam integrity and safety that could be compromised by penetrating the upstream side of the existing earth dam with numerous columns required to support the concrete roof.

Therefore, to implement the proposed project, the existing reservoir, including the inlet structure, outlet tower, and liner (the reservoir bottom and sides), would need to be demolished; the sub-grade beneath the reservoir would need to be stabilized to provide an adequate base to structurally support the buried reservoir; and a new perimeter concrete retaining wall would be required to support the concrete roof. The south segment of the new retaining wall would be located upstream of but functionally integrated with the existing earth dam, which would remain in place. The proposed buried reservoir would also require an impermeable liner and an extensive system of interior shear walls and columns to adequately support the roof and soil cover.

The combined weight of the buried reservoir, the water within the reservoir, and the soil layer atop the reservoir would exert tremendous downward force. If the areas below the proposed reservoir were not properly drained and water collected beneath, the upward force of buoyancy caused by the fluid pressure of the collected water could in turn damage the structure. Therefore, a sub-drain system would be installed beneath the reservoir liner to prevent water from collecting underneath.

The final footprint of the proposed buried reservoir would be slightly smaller than and contained within the footprint of the existing reservoir, but because the side slopes and bottom would be reshaped to accommodate the required sub-grade drainage system, the total storage volume of the proposed reservoir would remain approximately the same as the existing reservoir (55 MG).

In addition to the buried reservoir itself, a new 54-inch diameter water supply bypass line would also be constructed to replace the existing 67-year-old 36-inch bypass line, which is located under the east side of the existing reservoir. Similar to the existing line, the new bypass line would provide the capability to divert water from upstream supply lines around the reservoir when necessary. However, in addition to replacing an aging supply line, the new bypass line would provide greater capacity and would be located to the west of the reservoir, which would not only allow for unimpeded water supply operations during the reservoir construction but would also provide greater accessibility to the line after construction was complete.

The proposed buried reservoir would be covered with a maximum of 3 feet of topsoil, and the property would be developed in accordance with a recreation plan prepared by LADRP. This development plan may provide for a range of passive or active recreation uses, but for the purposes of impact analysis in this EIR, the recreation facilities include up to three soccer fields; a skate plaza; playground; perimeter walking/jogging paths with exercise stations; recreation building(s) housing restrooms, concession areas, offices, and equipment storage areas; a maintenance storage facility; and the associated parking area. These elements would involve about 6 to 8 acres and would be contained within the existing reservoir property. Hard-surface roads to provide access for heavy equipment to the reservoir for maintenance and operations purposes would also need to be provided. A shallow, not less than 0.5-acre wildlife pond would also be constructed at the north end of the Elysian Reservoir property.

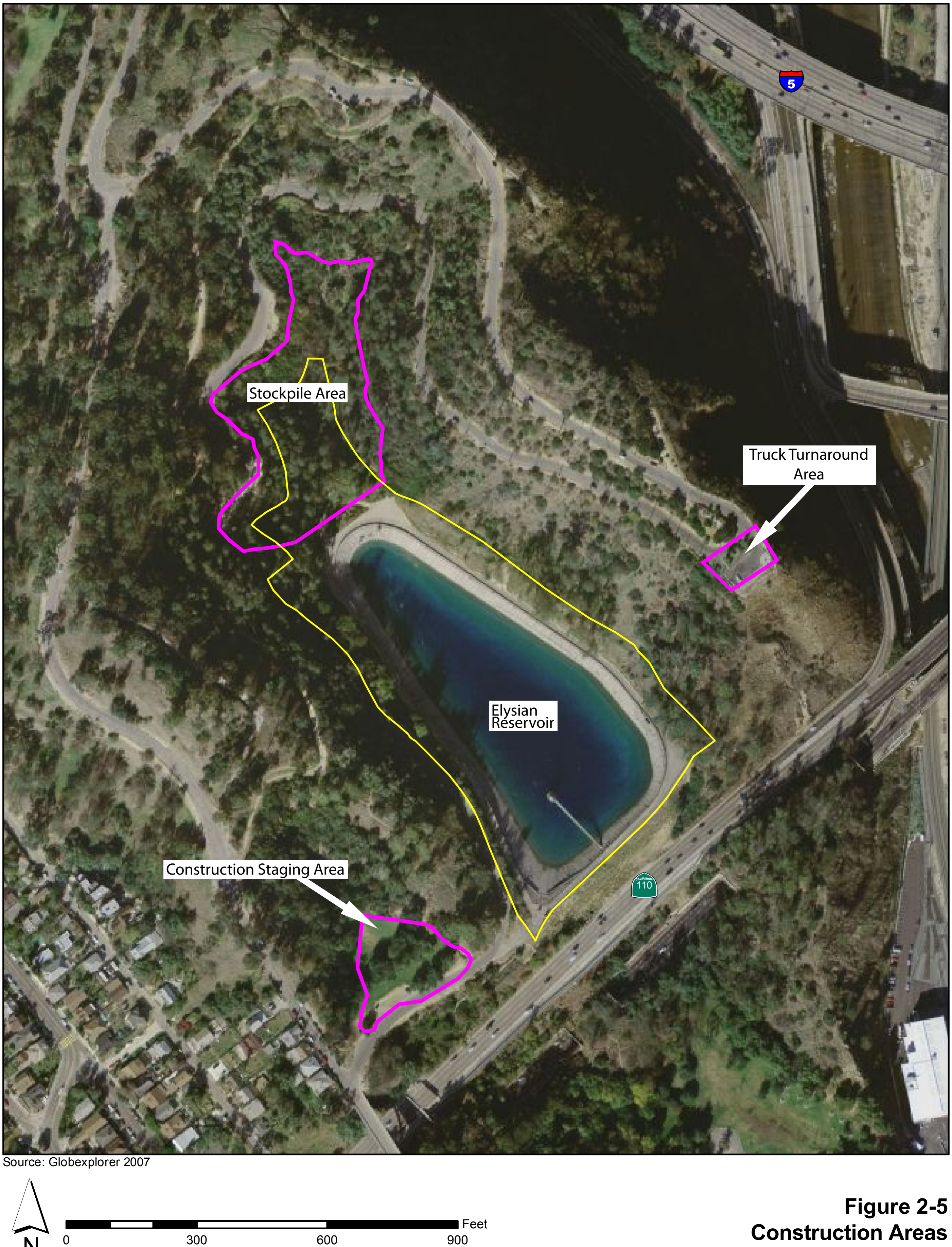
In addition to the reservoir elements and the recreation improvements above the reservoir, a new 54-inch diameter underground inlet line connecting the buried reservoir to the existing Riverside Trunk Line within Riverside Drive would be constructed to replace the existing 67-year-old 36-inch inlet line (Figure 2-6). This new inlet line would help maintain critical system reliability for the Elysian Reservoir service area and provide improved distribution system capability, which would otherwise be limited based on the diameter of the existing inlet line.

2.6.1 Project Construction

The proposed project construction activities would occur at two physically separate sites. Construction for the buried reservoir and the reservoir bypass line would occur essentially at the Elysian Reservoir property. Construction activity related to the new inlet line would take place essentially within the Caltrans island located adjacent to the west side of Riverside Drive between the freeway on-ramps opposite Duvall Street and Barclay Street, approximately 1,700 feet northwest of Elysian Reservoir and separated from the reservoir property by I-5 and the ridgeline that forms the eastern boundary of the ravine in which Elysian Reservoir is located (see Figure 2-7).

Elysian Reservoir Property Construction Activity

Construction of the proposed buried reservoir, including the active recreation area, would take approximately 5.5 years to complete, and the analysis contained in this EIR related to potential environmental impacts caused by construction activity is based on this assumption. However, given the magnitude and the complex nature of project construction, and therefore the potential for unforeseen delays, the actual construction period may continue for up to 6.5 years. It is anticipated that construction activities would start in early 2015 and, assuming no major delays, would be completed in late 2020.



Source: Globexplorer 2007

Figure 2-5
Construction Areas
Outside Reservoir Property

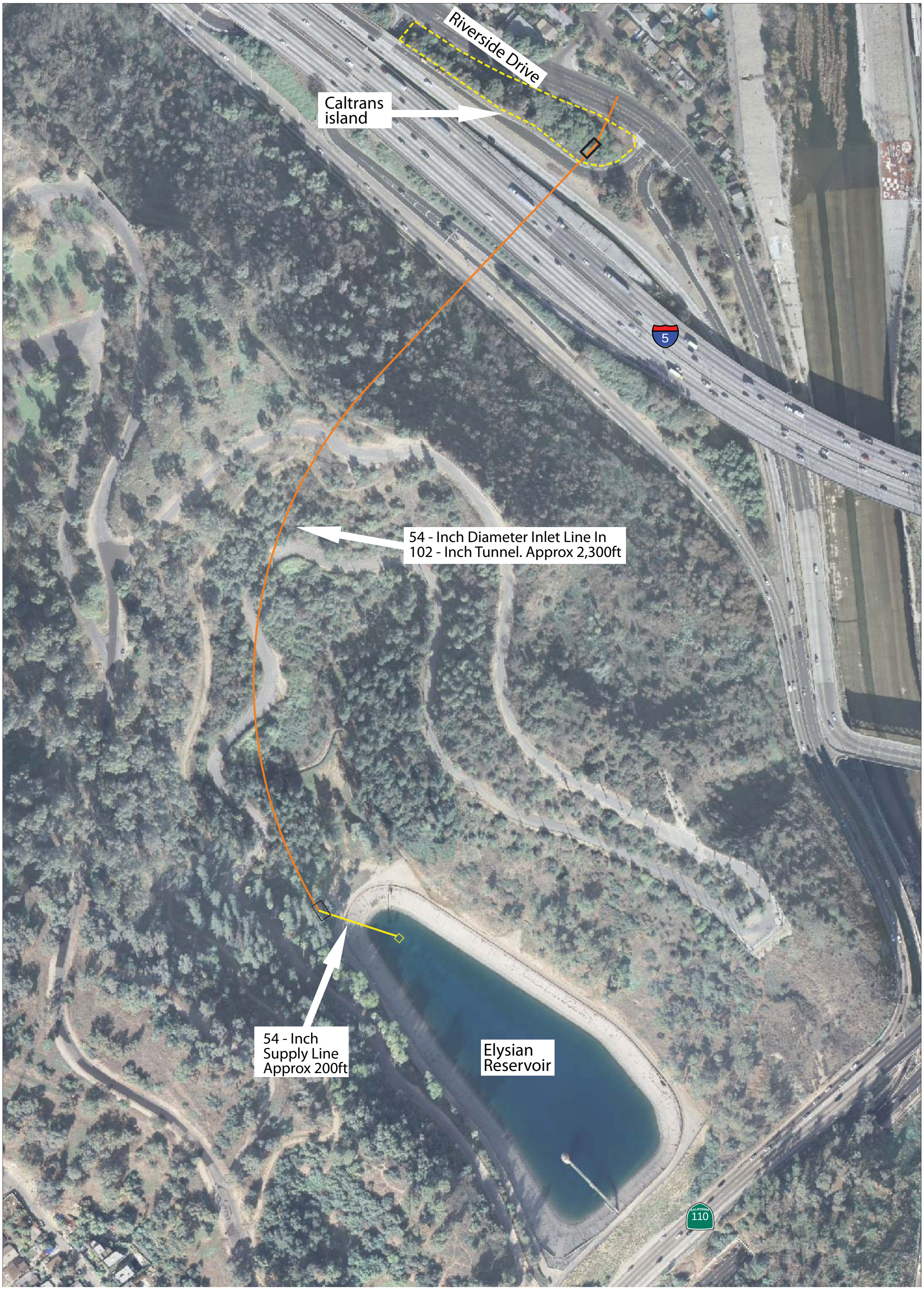


Figure 2-6
Inlet Line Tunnel Location

Source: Globexplorer 2007

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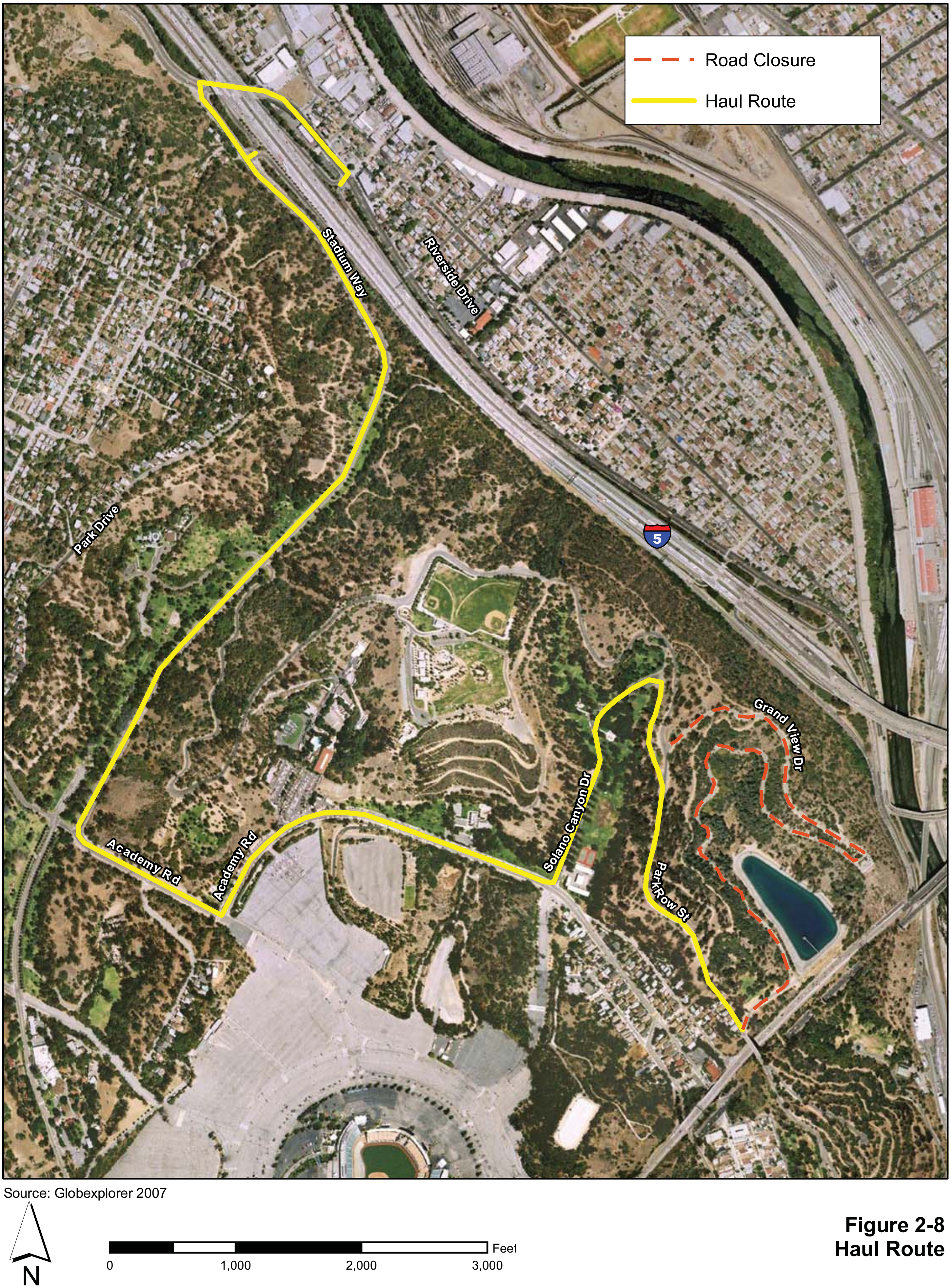
Figure 2-7
Inlet Line Construction Impact Area

For the purposes of estimating the calendar duration of the project and the monthly levels of activity related to personnel, truck deliveries, equipment operations, and earthwork, it has been assumed that, on average, 20 workdays would be available each month. This would generally account for holidays and rain days that would fall on weekdays and during which no construction activity would occur.

Because of the size and configuration of the reservoir property in relation to the footprint of the existing Elysian Reservoir and proposed buried reservoir, certain construction activities would be required to be conducted outside the reservoir property boundaries and within adjacent areas of Elysian Park. The canyon north of the reservoir, but below Grand View Drive, would be used to temporarily stockpile earth material excavated from the reservoir site until the material was needed to backfill around the completed reservoir. As the only relatively flat area near the reservoir site, the existing picnic grounds north of Grand View Drive between Park Row Street and the reservoir would be used as a construction staging area, including for temporary offices and other support facilities, equipment, and construction materials laydown (see Figure 2-5).

Throughout construction, Grand View Drive would be completely closed to ensure public safety and to provide for truck access and maneuvering, worker parking, and limited material and equipment staging areas. This road segment essentially surrounds the reservoir. It is located outside the reservoir property but entirely within the boundaries of Elysian Park. Because of restrictions related to loads on certain roads and bridges and to minimize impacts to local neighborhoods, the proposed truck delivery and haul route in the vicinity of the reservoir remains largely within the confines of Elysian Park. The inbound route would proceed from the I-5 Stadium Way exit, south along Stadium Way, east (left) on Academy Road (to the Dodger Stadium Gate), north (left) on Academy Road, north (left) on Solano Canyon Drive, south (right) on Park Row Drive to Park Row Street, and east (left) on Grand View Drive to the project site. Outbound traffic would follow the same route in reverse (see Figure 2-8). During certain periods of construction involving truck deliveries to and hauling from the site, parking restrictions would be required along Solano Canyon Drive, Park Row Drive, and Park Row Street to allow for the safe passage of trucks. Parking along the west side of Park Row Street in front of the existing residences near the Grand View Drive entry to the reservoir would be maintained; however, a flag person may be required in this segment to facilitate the safe passage of vehicles. Closures of park roads other than Grand View Drive may also be required during certain periods.

During construction, drinking water would continue to be provided to the Elysian Reservoir site from the Van Norman Complex in Granada Hills. During the initial phases of construction, it would continue to be fed to the service area from the existing Riverside Trunk Line via the existing inlet and bypass lines, and during the latter stages of construction, water would be fed through the new inlet and bypass lines. Water supplies would be further supplemented as necessary to help temporarily meet peak demand during construction (when the reservoir would be out of service) with additional purchases from the Metropolitan Water District.



Source: Globexplorer 2007

Figure 2-8
Haul Route

Construction of the buried reservoir would consist of several tasks, including mobilization; construction of the new bypass line; demolition of the existing reservoir; excavation and reshaping of the reservoir sides and bottom; construction of the concrete perimeter retaining walls and interior shear walls; installation of the concrete liner; construction of the concrete roof columns and roof; backfilling around and above the reservoir; and construction of the recreation facility above the new structure. Each of these tasks would require truck deliveries and/or haul trips and the operation of heavy equipment, including cranes, excavators, loaders, graders, dozers, and various types of trucks. Although the construction for the buried reservoir would be continuous, for descriptive purposes, tasks can be grouped together in phases based on the general timing of their occurrence and similarities in the type of work conducted. While the tasks and phases would generally be sequential in that some must precede others at a given location, a certain amount of overlap would likely occur in different locations within the project site as construction proceeds. However, the following description generally considers the tasks and phases separately as a means of describing the overall sequence of construction and establishing the general level of activity related to functions such as equipment operations, truck deliveries, worker commute trips, and earthwork in order to analyze potential environmental impacts related to the construction phase of the project. Spreadsheets that indicate the type, duration, and level of activities for the various construction tasks are included in Appendix B of this EIR.

Phase 1: Mobilization, Bypass Line Construction & Activation, and Reservoir Demolition (16 months)

The first phase of reservoir construction would consist of mobilizing for construction, constructing and activating the new reservoir bypass line, draining Elysian Reservoir, and demolishing the existing reservoir and appurtenant facilities. This phase would require approximately 16 months to complete. During Phase 1, the number of on-site workers per day based on a monthly average would range from a low of 17 during mobilization to a peak of 98 during concurrent bypass line construction and the initiation of Phase 2 activities. The number of truck deliveries or haul trips per day based on a monthly average would range from a low of 6 during the bypass line construction to a peak of 46 during concurrent bypass line construction and reservoir demolition. The number of full-time operating equipment per day based on a monthly average would range from a low of 6 during mobilization to a peak of 37 during concurrent bypass line construction and the initiation of Phase 2 activities.

Mobilization would entail widening and stabilizing existing on-site roads as necessary for truck access during construction, clearing and preparing construction materials laydown areas and vehicle and equipment parking areas, erecting temporary offices and other support facilities, and establishing temporary electrical power connections. Improvements to Grand View Drive at the intersection with Park Row Street would be required to facilitate outbound truck traffic from the reservoir site. This may include both grading and widening the road at the intersection. The trimming of some existing trees along Grand View Drive may be necessary to allow for truck passage. A truck turnaround area would be provided at Point Grand View, northeast of the reservoir (see Figure 2-5). This may require the removal of the parking island, including several palm trees, during construction to provide an adequate turning radius for trucks. However, it would eliminate the requirement to provide a turnaround elsewhere along Grand View Drive, which would require cutting and filling areas adjacent to the road. The parking island, including the trees, would be restored after construction. As discussed above, the laydown area would be located inside Elysian Park, but outside the reservoir property boundary in the existing picnic grounds located north of Grand View Drive between Park Row Street and the reservoir (see Figure 2-5). This area would provide approximately 1 acre of relatively flat ground for construction staging. In order to provide a functional area for storage and maneuvering, most of the existing trees in the picnic area may need to be removed. Trees that would not need to be removed to provide access and storage area would be protected during construction. All areas within Elysian Park disturbed during construction would be restored in accordance with LADRP requirements after completion of the project. The mobilization task would take approximately 1 month.

To minimize disruptions to the Elysian Reservoir service area water distribution system, the construction of the new bypass line would be substantially completed prior to the removal of the existing bypass line from service. The bypass line construction would entail the excavation of several vertical shafts and interconnecting tunnels that would route the line around Elysian Reservoir to the west and link the existing reservoir inlet line (northeast of the reservoir) and outlet line (at the southern end of the reservoir). The excavation of the shafts and tunnels would create approximately 5,000 CY of material, which would be hauled off site, requiring about 750 truck trips. Once the new bypass line is functioning, portions of the existing bypass line would be removed during Phase 2 of construction to make room for the proposed buried reservoir.

Draining the reservoir would initially be accomplished by normal consumption through the drinking water distribution system until the water level reached the lower limit of the normal operating range of the reservoir. Water below the normal operating range elevation would then be pumped into the outlet tower, continuing to supply the system. Any remaining water would be drained into the storm water system. To maintain the stability of the earth dam located at the southern end of the reservoir, the rate at which the water level would be lowered would be carefully controlled. At the controlled rate, the existing storm water facilities are adequately sized to accommodate the reservoir draining. After the water reaches the lower limit of the normal operating range, it would take approximately 2 weeks to drain the remaining water from the reservoir and an additional 2 to 3 weeks for the reservoir to dry out.

Demolition of the existing reservoir would include the removal of the reservoir's existing asphalt liner, the inlet structure and portions of the inlet line, the outlet tower and portions of the outlet lines, and the surrounding parapet wall and fence. In addition, numerous sub-grade concrete caisson foundations that were constructed within the reservoir to support a previously proposed but never completed aluminum cover would need to be removed to accommodate the proposed buried reservoir structure. Demolition would generate about 7,000 CY of debris, which would be hauled off site, requiring about 1,400 truck trips over a 2-month period.

Phase 2: Reservoir Rough Shaping, Retaining Wall Excavation, Sub-Grade Excavation and Preparation, and New Inlet and Outlet Structures (19 months)

The second phase of reservoir construction would involve the reservoir bottom rough shaping and excavating and preparing the sub-grade below the reservoir to adequately support the load of the concrete roof system and the soil cover. A new inlet structure and outlet structure for the reservoir would also be constructed during this phase. The entire phase would require approximately 19 months to complete. During Phase 2, the number of on-site workers per day based on a monthly average would range from a low of 37 to a peak of 91 during the concurrent sub-grade preparation and inlet/outlet structure construction. The number of truck deliveries or haul trips per day based on a monthly average would range from a low of 6 to a peak of 16 during the concurrent sub-grade preparation and inlet/outlet structure construction. The number of full-time operating equipment per day based on a monthly average would be about 38 throughout the phase.

In order for the sub-drain system installed beneath the reservoir to function properly, the bottom of the reservoir could not exceed a slope of five horizontal units to each vertical unit (5h:1v). This would require reshaping the outer portions of the existing reservoir bottom, which currently slope at approximately 2h:1v (over twice the maximum slope required for the sub-drain system to function properly). The reshaping of the reservoir bottom would create approximately 93,500 CY of excavated material, which would be placed in the stockpile area north of the reservoir until used during later phases of reservoir construction. The temporary stockpile area would be approximately 3-acres in size and would need to be cleared and properly engineered to stabilize slopes and provide for appropriate drainage. The stockpile would be protected throughout project construction by stabilizing exposed areas and providing barriers to minimize runoff, erosion, and sedimentation. The reservoir rough shaping task would actually be initiated during the final month of Phase 1 and would require a total of approximately 9 months to complete.

Approximately 29,000 CY of material would also be excavated to allow space for the construction of the reservoir perimeter retaining walls during Phase 3 of construction. This material would also be placed in the stockpile area until used during later phases of reservoir construction. This excavation task would require approximately 6 months to complete.

Elysian Reservoir rests on soil layers above bedrock, which are incapable of adequately supporting the proposed buried reservoir. Preparation of the sub-grade would include excavating these soil layers, mixing the excavated soil with cement, and placing the soil-cement mixture in the previously excavated areas to provide a structurally sound base for the new reservoir. This task would entail excavating, mixing, and returning approximately 44,500 CY of soil. This activity would occur entirely within the existing reservoir footprint, except for approximately 6,000 CY of unusable material, which would be placed in the stockpile area. In addition, approximately 60,000 CY of the excavated material previously placed in the stockpile area during rough shaping would be utilized to build up the reservoir bottom at the south end, where the new retaining wall would be functionally integrated with the existing earth dam. This fill material would also be mixed with cement to provide a solid base for the buried reservoir. The sub-grade preparation task would require approximately 5 months to complete. Approximately 500 truck trips would be required over that period to deliver the dry cement to the Elysian Reservoir site. This method of reinforcing the sub-grade eliminates the requirement to construct an extensive foundation system of drilled caissons to support the concrete roof and soil cover.

Phase 3: Concrete Reservoir and Sub-Drain System Construction (14 months)

The third phase of the project would involve the construction of the new concrete reservoir, including the perimeter retaining walls and interior shear walls, liner and sub-drain system, and column and roof assembly (see Figures 2-9 and 2-10). The entire phase would require approximately 14 months to complete. During Phase 3, the number of on-site workers per day based on a monthly average would range from a low of 63 to a peak of 92. The number of truck deliveries or haul trips per day based on a monthly average would range from a low of 23 to a peak of 57. The number of full-time operating equipment per day based on a monthly average would range from a low of 11 to a peak of 15.

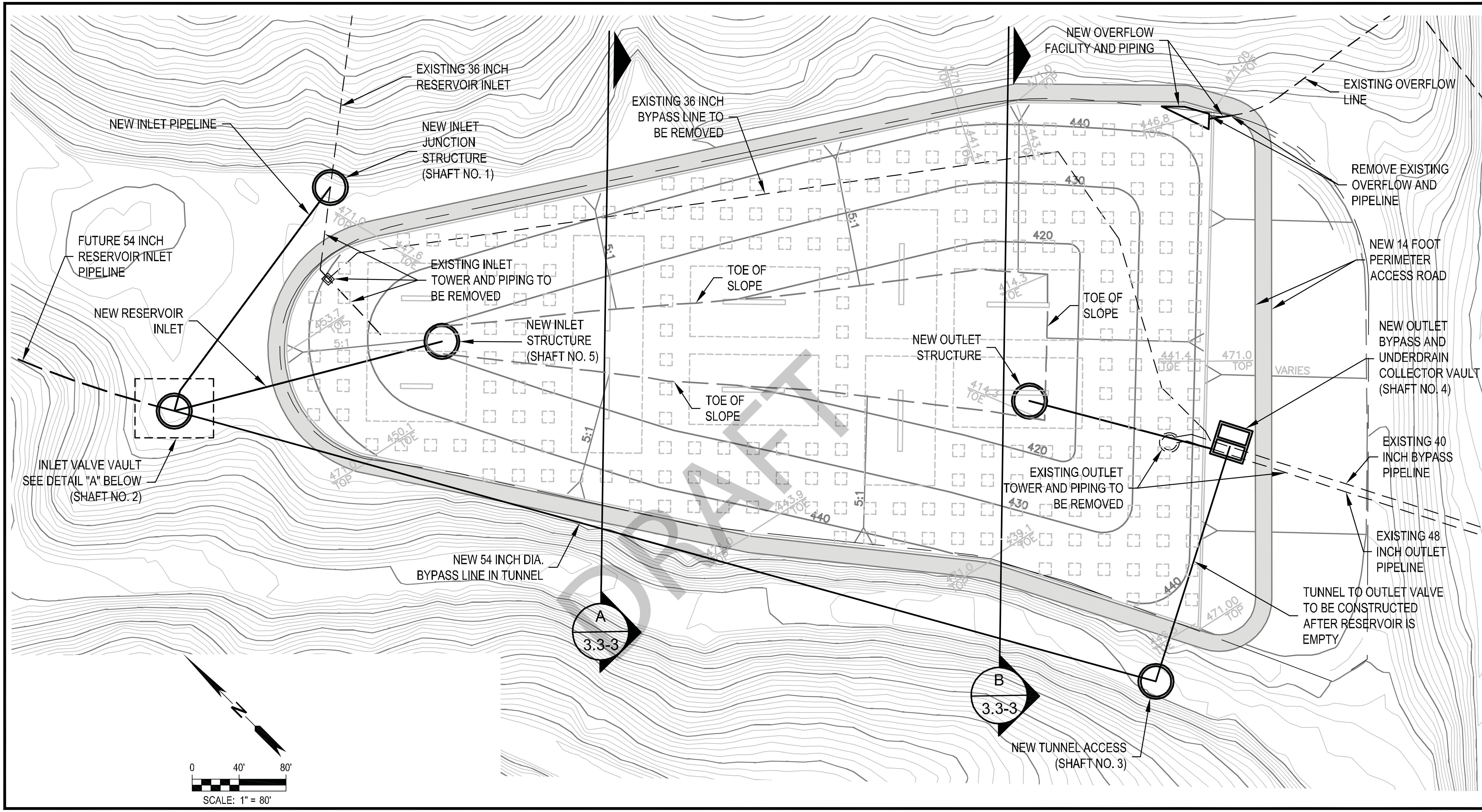


Figure 2-9
Elysian Reservoir Site Plan

Back of Figure 2-9

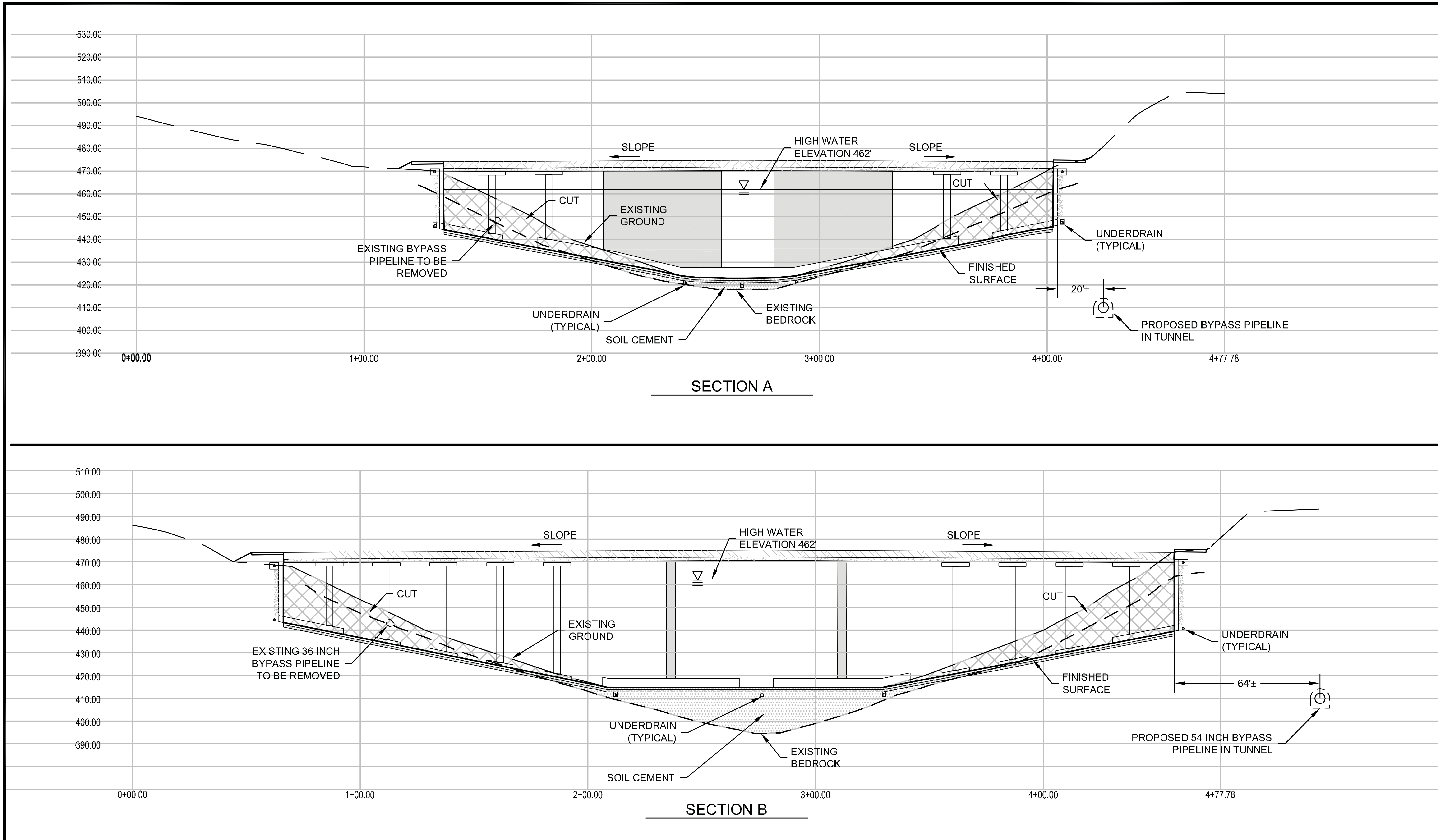


Figure 2-10
Elysian Reservoir Cross Sections

Back of Figure 2-10

Because the elevation of the outer portions of the bottom of the reservoir would be lowered during Phase 2 to allow for proper operation of the sub-drain system, new concrete retaining walls ranging from approximately 15 to 30 feet in height would be required around the entire perimeter of the reservoir to retain the water. These walls would generally follow a horizontal alignment along the upper edge of the existing reservoir. However, at the southern end of the reservoir, where the retaining wall would be functionally integrated with the existing earth dam, it would be located approximately 135 feet inward from the upper edge (top of dam) of the existing reservoir based on preliminary plans. (The area between the new retaining wall and the existing dam would be backfilled with soil during Phase 4 of construction.) Although this configuration of the retaining walls would reduce the overall footprint of the reservoir, the storage volume of the new structure would remain approximately 55 MG. This is because the reservoir sides and bottom would have been reshaped during Phase 2 to permit the sub-drain system to function properly. This configuration would allow for a greater balancing of cut and fill material on site than would be possible if the wall were located closer to the top of the existing dam.

In addition to the perimeter retaining walls, a series of shear walls would be constructed in the interior of the reservoir to help support the load of the concrete roof and soil cover and to resist inertial loads that may be created by seismic events. To adequately provide the structural support for the buried reservoir, the retaining and shear walls would be a minimum of 24-inch thick reinforced concrete. Together, the walls would require about 24,000 CY of concrete, which would be delivered to the site over an approximately 6-month period, requiring about 3,300 truck trips.

To help adequately support loads and prevent seepage, the liner of the buried reservoir would be 7.5-inch thick reinforced impermeable concrete. The liner would be constructed in 25-foot by 25-foot sections, with all joints between sections sealed with water-stop elements. The reservoir liner would require approximately 9,500 CY of concrete, which would be delivered to the site over an approximately 3-month period, requiring about 1,300 truck trips. Prior to constructing the liner, a sub-drain system consisting of multi-branched drain lines set within a 12-inch thick gravel bed would be installed beneath the entire reservoir. The drainage system would require approximately 9,000 CY of gravel, which would be delivered to the site over a 3-month period, requiring about 900 truck trips.

In addition to the perimeter and shear walls, an extensive system of columns would be required to support the roof and soil cover. The columns would be set in a grid pattern at 25 feet on-center within the reservoir. They would be cylindrical 2-foot diameter reinforced concrete, with a spread footing integrated into the reservoir liner and a concrete cap to support the roof. The roof would be 12-inch thick reinforced concrete constructed in 25-foot by 25-foot sections, centered over individual columns and with all joints between sections sealed with water-stop elements. The reservoir column and roof system would require approximately 11,500 CY of concrete, which would be delivered to the site over an approximately 5-month period, requiring about 1,600 truck trips.

During Phase 3, excavated material that would be unsuitable for use as compacted fill related to various purposes in the reservoir construction would be hauled off site and disposed. It is estimated that approximately 15 percent of all the material excavated during the various construction tasks would be unusable rock rubble. This would represent about 23,500 CY of material, the hauling of which would require approximately 2,800 truck trips over a 6-month period.

Phase 4: Backfilling and Covering the Concrete Reservoir (3 months)

The fourth phase of construction would consist of backfilling behind the retaining walls, including the area between the wall at the south end of the reservoir and the existing earth dam. This phase would also include covering the reservoir with topsoil. It would require 3 months to complete. The number of on-site workers per day would average about 45, the number of truck deliveries or haul trips per day would average about 126, and the number of full-time operating equipment per day would average about 34.

A portion of the soil placed in the on-site stockpile (approximately 60,000 CY) would have been previously used during Phase 2 to build up the reservoir bottom below the south end retaining wall and another portion (approximately 23,500 CY) would have been hauled off site during Phase 3 as material unusable for compacted fill. The balance of the on-site stockpile material (approximately 39,000 CY) would be used to backfill behind the retaining walls of the new reservoir. In addition, approximately 18,500 CY of imported material would be required to complete the backfilling, including the area between the new concrete retaining wall at the south end of the reservoir and the earth dam of the existing Elysian Reservoir. The imported backfill material would require a total of approximately 2,250 truck trips over the 2-month period of Phase 4. After completion of the backfilling, the reservoir would take approximately 1 month to refill.

Approximately 26,500 CY of imported topsoil would be required to provide a maximum of 3-feet of appropriate planting medium for the area above the reservoir. This topsoil importation would require approximately 2,650 truck trips over the 2-month period.

Phase 5: Recreation Improvements (12 months)

The final phase of the proposed project would involve the construction of the recreation facility and the wildlife pond and the restoration of areas within Elysian Park that were disturbed by project construction. Several conditions related to the reservoir property and the proposed drinking water storage facilities represent limiting factors related to recreation facility development. First, to avoid extensive grading of the hillsides surrounding the reservoir, which could require the construction of retaining walls and create permanent impacts to the existing park roads, recreation development would be limited to the level area that would exist after completion of the buried reservoir construction. This area is generally trapezoidal, approximately 500 feet along the southern edge, 200 feet along the northern edge, and 1,000 feet in length (along a northwest-southeast axis). The geometry and dimensions of this area may limit the space available for larger-scale elements, such as soccer fields. About 6 to 8 acres would be available for recreation purposes, including all parking and support elements.

Second, a road providing access for large emergency and maintenance vehicles must be maintained around the perimeter of the site, limiting the space available for facility development of certain types. Some roads may also be required in the interior of the site to provide access for maintenance and operations to certain components of the water storage facilities.

Third, large structural elements could not be located above the buried reservoir because of load bearing concerns and accessibility to the underground facilities. Such elements would include buildings and certain recreation functions, such as skate parks. Since the buried reservoir would consume approximately two-thirds of the property in the center of the site, the space available for such facilities would be essentially, although not entirely, limited to the areas outside the buried reservoir footprint.

Fourth, several types of above ground structures, such as manholes, access hatches, vents, and electrical cabinets, would be required in relation to the buried reservoir. While some flexibility would exist in the precise placement of these structures to avoid conflicts with recreation uses, certain limitations relative to infrastructure and minimum separation distances must be considered. Although the aboveground structures would be placed to the extent possible at the perimeter of the reservoir to minimize conflicts, the structures would be incompatible with and may, therefore, limit the flexibility in siting of certain recreation elements.

Fifth, a not less than 0.5-acre wildlife pond is a defined element of the proposed project based upon agreements between LADWP and CPOR. The pond would be located at the northern end of the property to avoid the buried reservoir and, based on its intended purpose, to establish a separation from more active recreation uses at the site.

As discussed above, the determination of the nature of recreation functions to be provided at the reservoir property would require a separate planning process involving community, LADRP, LADWP, and City Council office participation. This process would not be completed prior to the decision by the Board of Water and Power Commissioners regarding the proposed project, including the implementation of water-quality related improvements and the provision of public access and recreation use at the reservoir property. To maintain flexibility for the recreation planning process, LADRP has identified an intensive level of recreation development at the site that may include any or all of the following elements:

- Up to three soccer fields
- Skate plaza
- Playground
- Perimeter walking/jogging path with exercise stations
- Recreation support building(s) housing restrooms, concession areas, offices, and equipment storage areas
- Maintenance storage facility
- Parking for up to 200 vehicles
- Bus drop-off/turnaround area

Based on the constraints discussed above, it is unlikely that all of these elements could be accommodated within the reservoir property. However, this recreation program is nonetheless considered in this EIR for the purposes of impact analysis because, as discussed above, such a facility would, in relative terms, possess the potential to create the greatest level of environmental impacts. Due to site constraints, parking and building(s) would probably be limited to the southern end of the property (generally south of the proposed buried reservoir), near the Grand View Drive entrance gate. Open recreation functions, such as fields, would be sited north of the parking area, including over the buried reservoir.

Construction activities during this phase would include rough grading the pads for the sports fields, parking area, building(s), and access roads; constructing underground drainage systems, water supply lines, irrigation systems, and electrical conduits; fine grading the site and paving roads, parking areas, and pedestrian pathways; installing parking area and pathway lighting; constructing the recreation support building(s); installing fencing, bleachers, etc.; installing turf and other landscaping; and installing site entry gates and signs. The approximately 0.5-acre wildlife pond would also be constructed north of the reservoir during this phase. It would include a pump and filter system to maintain the water quality. In addition, the area north of the reservoir used for the temporary stockpiling of excavated material, the picnic area located north of Grand View Drive near Park Row Street used for construction staging, and the Point Grand View overlook used for a truck turnaround area would be restored during this phase. Park roads and other roads damaged during construction would also be repaired at the end of construction.

This phase of work would take approximately 12 months to complete. An average of 30 personnel would be on site throughout the phase. However, 45 personnel may be required during peak construction. Delivery trips to the site would not exceed 5 on any day. An average of approximately 15 pieces of equipment would be on site at any time, but 20 pieces of equipment may be required during peak construction.

Inlet Line Construction

The new inlet line construction would involve boring an approximately 2,300-foot long tunnel between the Riverside Trunk Line and a site just north of Elysian Reservoir, where the inlet line would connect to the reservoir bypass line at one of the vertical shafts previously established during the bypass line construction. From this point, the inlet line would also be connected to the new buried reservoir inlet structure (see Figure 2-6). The inlet line construction could occur concurrently with the reservoir construction because, as discussed above, the two construction sites are physically separated, with the primary inlet line construction site located within the Caltrans island on Riverside Drive northeast of the reservoir property (see Figure 2-7). The new inlet line must connect to the 40-inch diameter Riverside Trunk Line, which reduces to a smaller diameter pipe at the Riverside Drive bridge over the Los Angeles River, south of the proposed inlet line construction site. The inlet line site must be located in a relatively flat area of adequate dimension to accommodate construction activities, including the inlet line tunnel launching pit, and it must provide sufficient access and egress for construction-related traffic. The selected site within the Caltrans island located adjacent to the west side of Riverside Drive between the freeway on-ramps opposite Duvall Street and Barclay Street is the only such site within reasonable proximity to Elysian Reservoir that would also avoid direct impacts to either Riverside Drive itself or adjacent residential neighborhoods. The construction of the inlet line would take 23 months to complete, and would occur concurrently with Phase 1 and the initial part of Phase 2 of the reservoir construction. The number of on-site workers per day related to the inlet line construction, based on a monthly average, would range from a low of 6 to a peak of 18. The number of truck deliveries or haul trips per day based on a monthly average would range from a low of 1 to a peak of 19. The number of full-time operating equipment per day based on a monthly average would range from a low of 1 to a peak of 11.

The inlet line would be installed by means of tunneling, a construction technique in which a tunnel is excavated utilizing a boring machine or similar equipment, excess earth material is removed, and steel or concrete tunnel liners or supports are installed and grouted in-place to secure the excavated opening. Once the tunnel is completed, the inlet pipe itself is installed in segments, welded together, and placed in the tunnel. The installation is completed by grouting the space between the pipe and tunnel liner. This type of construction requires a pit from which to launch the boring machine and install the pipe sections. The pit also serves as the receiving area for the earth material excavated from the tunnel. In relation to the length of the Elysian Reservoir inlet line (2,300 feet), pipe tunneling would be the least intrusive method of construction, requiring no trenching or other surface openings other than the launching pit, which would eliminate disruption of traffic on I-5 and the transition roads between I-5 and SR

110. Although the inlet line tunnel would be located primarily within the boundaries of Elysian Park, pipe tunneling would avoid impacts to Elysian Park, since it would be completely subterranean.

Inbound construction traffic related to tunneling activities would generally proceed from southbound 1-5 to the Riverside Drive exit opposite Elmgrove Street and turn right (southbound) on Riverside Drive to the construction site. Outbound construction traffic would generally proceed southbound on Riverside Drive from the construction site and turn right at the northbound I-5 entrance opposite Barclay Street.

The first task of the inlet line construction would take approximately 3 months and would involve mobilization, site preparation, and tunnel pit installation. Essentially the entire Caltrans island area located along the west side of Riverside Drive between the southbound I-5/SR 110 on-ramp across from Duvall Street and the northbound I-5 on-ramp/off-ramp across from Barclay Street would be disturbed (see Figure 2-7). The approximately 1-acre Caltrans island would be used as a staging area and include employee parking, equipment and materials laydown, field offices, and the tunnel launching pit. The pit itself would be approximately 40 feet long, 15 feet wide, and 40 feet deep. The excavation of the pit and the surrounding work area would generate about 890 CY of material, which would be hauled off site. This would require about 135 truck trips over a 1-month period. The preparation of the staging area would also involve the construction of a 12-foot wide traffic lane that would parallel Riverside Drive but be located entirely within the Caltrans island, facilitating truck egress from and ingress to Riverside Drive during delivery and hauling activities. This would generally avoid the closure of Riverside Drive traffic lanes during tunnel construction.

The second task of the inlet line construction would take approximately 16 months and would entail the tunnel construction and inlet line installation. The tunnel would consist of 102-inch diameter concrete or steel casing. Boring the tunnel would generate approximately 5,000 CY of material, which would be hauled off site, requiring about 750 truck trips over a 6-month period. The pipe casing would require about 130 truck delivery trips over the same 6-month period. The actual water supply line to be placed within the tunnel after the tunneling operations are completed would be a 54-inch diameter steel pipe. It would also be installed from the launching pit on Riverside Drive and would require 90 truck deliveries over a 10-month period.

The third task of the inlet line construction would consist of installing approximately 150 feet of 54-inch pipeline from the launching pit located on the west side of Riverside Drive to connect to the Riverside Trunk Line, which runs along the east side of Riverside Drive. The pipe would be installed using traditional open trench construction techniques. This would require the temporary closure of traffic lanes on Riverside Drive. However, no more than one lane would be closed at any one time, and the overall disruption to traffic would be less than that which would be created by a tunneling installation, which would require the excavation of a receiving pit on Riverside Drive. Approximately 850 CY of excavated material would be generated, requiring about 130 haul trips. After the installation, the trench would be backfilled with a cement slurry mixture to within 12 inches of the road surface, and the road would be repaved. The launch pit would be backfilled with the slurry mixture to within 5 to 8 feet of the surface, and the balance of the pit would be backfilled with soil. About 190 truck trips would be required to deliver the backfill material. The installation of the pipe under Riverside Drive, the connection to the Riverside Trunk Line, and the backfilling of the trench and launch pit would take a total of approximately 1 month.

The final task of work would take approximately 3 months and would consist of demobilizing and restoring vegetation within the Caltrans island. Once the inlet line was completed, the existing inlet line would be removed from service, and water would be supplied to the new bypass line through the new inlet line.

2.6.2 Project Operations

The Elysian Reservoir property would remain under the ownership of the City of Los Angeles. The recreation function and the property maintenance (other than the water supply and distribution facilities) would be the responsibility of LADRP as an expansion of its Elysian Park operations. The new water storage facilities would not create the need for LADWP personnel to be located permanently on site. LADWP operations on site would involve maintenance of the reservoir, pipelines, and ancillary elements at a similar level of activity as current operations at Elysian Reservoir. These operations would generate minimal traffic to and from the site, similar to current levels.

Recreation functions would be conducted during daylight hours only, and no night lighting other than minimal parking lot and pathway security lighting would be provided. The peak parking demand at the site would occur during the overlap between arriving and departing participants for consecutively scheduled activities. During peak use periods on weekend days, it is anticipated that approximately 188 vehicle trips to and from the site could be generated by the recreation activity associated with the proposed facilities. Use of the athletic fields and other facilities would be scheduled through LADRP. A gate would be installed at the entrance to the site that would be opened in the morning and closed at dusk.

2.6.3 Best Management Practices

An appropriate combination of monitoring and resource impact avoidance would be employed during all phases of the proposed project, including implementation of the following Best Management Practices:

- The proposed project would implement Rule 403 dust control measures required by the South Coast Air Quality Management District (SCAQMD).
- Active grading areas would be watered at least twice daily and as necessary to reduce dust during construction activities.
- The construction contractor would develop and implement an erosion control plan and a Storm Water Pollution Prevention Plan for construction activities. Erosion control and grading plans may include but would not be limited to:
    1) minimizing the extent of disturbed areas and duration of exposure;
    2) stabilizing and protecting disturbed areas;
    3) keeping runoff velocities low;
    4) retaining sediment within the construction area.
- Construction erosion control Best Management Practices may include the following:
    1) temporary desilting basins;
    2) silt fences;
    3) gravel bag barriers;

4) temporary soil stabilization with mattresses or mulching;
5) temporary drainage inlet protection; and
6) diversion dikes and interceptor swales.

- Environmentally sensitive areas would be fenced and avoided except for those areas where project facilities or functions are planned, including those related to construction activities.
- The proposed project would comply with the Regional Water Quality Control Board's National Pollution Discharge Elimination System Phase II Rule.
- Construction would comply with the City of Los Angeles Noise Ordinance, which limits the hours of construction to between 7:00 a.m. and 9:00 p.m., Monday through Friday, and between 8:00 a.m. and 6:00 p.m. on Saturday. No construction would occur on Sundays or City holidays.
- The proposed project construction would incorporate source reduction techniques and recycling measures and maintain a recycling program to divert all waste in accordance with the Citywide Construction and Demolition Debris Recycling Ordinance.
- Residences and businesses near the project site and along delivery/haul routes would be notified prior to the start of construction (e.g., via flyers). The notices would include a telephone number for comments or questions related to construction activities.
- All proposed project structures would be designed in accordance with Americans with Disabilities Act (ADA), Uniform Building Code, and other necessary building code requirements.
- The proposed project would provide automatic fire sprinklers in structures; the building plan for any structures associated with the recreation function would be submitted to the Los Angeles Fire Department (LAFD) for review and approval.
- Water pressure for firefighting purposes would be provided in accordance with LAFD requirements.
- In accordance with the Standard Urban Storm Water Mitigation Plan, operation of the proposed project would include the following measures:
    1) All maintenance-related hazardous materials stored on site would be properly stored and secured in a covered, paved enclosure that prevents contact with runoff and is protected by secondary containment structures such as berms, dikes, or curbs.
    2) Trash storage areas would be properly screened or otherwise protected from water or wind to prevent off-site transport of trash material.
    3) Rooftop runoff would be directed to flow to permeable areas and avoid impervious areas such as paved roadways or parking lots.
- Project plans and designs would be submitted to the Greater Los Angeles Vector Control District for review and comment with respect to control of mosquito and other vectors associated with the wildlife pond. Upon consultation with the vector control district, appropriate vector management measures would be incorporated into the project design. Suggested management measures include, but are not limited to, the following:
    1) Design and/or manage to optimize water depths and flow patterns. For mosquito control, maintain water depths and encourage/provide water circulation. For

black fly control, minimize aeration of flowing water. If necessary, design water features to allow for periodic drying to desiccate vector larvae.

2) Work with the vector control district to stock ponds and other permanent water features with mosquitofish, as needed.
3) Install nesting or roosting boxes to attract insectivorous bats and/or birds (natural predators of mosquitoes).
4) Regularly consult with the vector control district to identify mosquito management problems, mosquito monitoring and abatement procedures, and opportunities to adjust water and vegetation management practices to reduce mosquito production.

2.7 Intended Uses of the EIR

An EIR is a public document used by a public agency to analyze the environmental effects of a project and to disclose possible ways to reduce or avoid significant environmental impacts, including alternatives to the proposed project (CEQA Guidelines Section 15121). As an informational document, an EIR does not make recommendations for or against approving a project. The main purpose of an EIR is to inform governmental decision makers and the public about potential environmental impacts of the project. This EIR will be used by LADWP, as the lead agency under CEQA, in making decisions with regard to the approval of the proposed project described above or an alternative to the proposed project, the subsequent construction and development of the project, and the related approvals described herein.

2.8 Project Approvals

LADWP is the project lead agency pursuant to CEQA Guidelines Section 15367. Numerous approvals and/or permits would be required to implement the Elysian Reservoir Water Quality Improvement Project. The environmental documentation for the proposed project would be used to facilitate compliance with federal and state laws and the granting of permits by various state and local agencies having jurisdiction over one or more aspects of the proposed project. These approvals and permits may include the following:

City of Los Angeles Department of Water and Power

- Certification by the Board of Water and Power Commissioners that the EIR was prepared in accordance with CEQA and other applicable codes and guidelines
- Approval of the proposed project or an alternative to the proposed project, including a No Project alternative
- Approval an agreement between LADWP and LADRP for the design, construction, operations, maintenance, and security for the recreation aspects of the reservoir property

City of Los Angeles Department of Recreation and Parks

- Approval by the Board of the Los Angeles City Department of Recreation and Parks of an agreement between LADWP and LADRP for the design, construction, operations, maintenance, and security for the recreation aspects of the reservoir property

- Approval to temporarily close and use a segment of Grand View Drive in Elysian Park during project construction
- Approval to close and temporarily use portions of Elysian Park outside the boundaries of the Elysian Reservoir property during project construction for construction staging and stockpiling of excavated material
- Approval to temporarily prohibit parking on certain road segments in Elysian Park during project construction
- Approval of the development plan for the recreation element of the proposed project, including any buildings
- Approval of a Grant-of-Right for the relocated inlet line, buried reservoir, and appurtenant facilities

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

- Excavation Permits

City of Los Angeles Department of Transportation

- Approval to temporarily close lanes on Riverside Drive

City of Los Angeles Department of Building and Safety

- Grading Permit
- Haul Route Permits
- Building Permits

City of Los Angeles Department of City Planning

- Conditional Use Permit for recreation support building(s)

City of Los Angeles Department of Public Works, Flood Control

- Discharge Permit for construction dewatering and hydrostatic test water discharge in storm system and channel

State of California Department of Water Resources, Division of Safety of Dams

- Approval of plans and specifications for the modification of a dam and reservoir

State of California Department of Transportation (Caltrans)

- Encroachment Permit for work in the vicinity of I-5
- Encroachment Permit for a utility crossing

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

- Underground Classification Permit for tunneling and jacking locations

State of California Los Angeles Regional Water Quality Control Board

- National Pollution Discharge Elimination System Permit for Construction Dewatering
- National Pollution Discharge Elimination System Permit for Hydrostatic Test Water Discharge

CHAPTER 3
ENVIRONMENTAL SETTING, IMPACTS AND MITIGATION

The following chapters of this EIR include an analysis, by issue area, of the proposed project's potential effects on the environment. Each environmental issue area chapter includes the following subsections:

- Environmental Setting
- Regulatory Setting (where appropriate)
- Environmental Impacts
- Mitigation Measures
- Significance after Mitigation

The mitigation measures provided in these chapters are proposed by LADWP, unless otherwise noted. The environmental issue areas analyzed in this EIR are as follows:

- Aesthetics (Chapter 3.1)
- Air Quality/Greenhouse Gas Emissions (Chapter 3.2)
- Biological Resources (Chapter 3.3)
- Cultural Resources (Chapter 3.4)
- Noise (Chapter 3.5)
- Transportation and Traffic (Chapter 3.6)

As identified in the Initial Study prepared in June 2008, the following are the environmental issue areas that were not found to be significantly impacted by the proposed project:

- Agriculture and Forestry Resources
- Geology and Soils
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Mineral Resources
- Population and Housing
- Public Services
- Recreation
- Utilities and Service Systems

Chapter 4 includes a brief discussion of impacts that were not found to be significant.

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CHAPTER 3.1
AESTHETICS

The purpose of this chapter is to identify and evaluate key aesthetic resources in the project site and surroundings and to determine the degree of impacts to such resources that would be attributable to the proposed project. The analysis describes the potential aesthetic effects of the proposed project on the existing natural and built environment, focusing on the compatibility of the proposed project with existing conditions and its potential effects on visual resources.

3.1.1 Environmental Setting

Project Setting

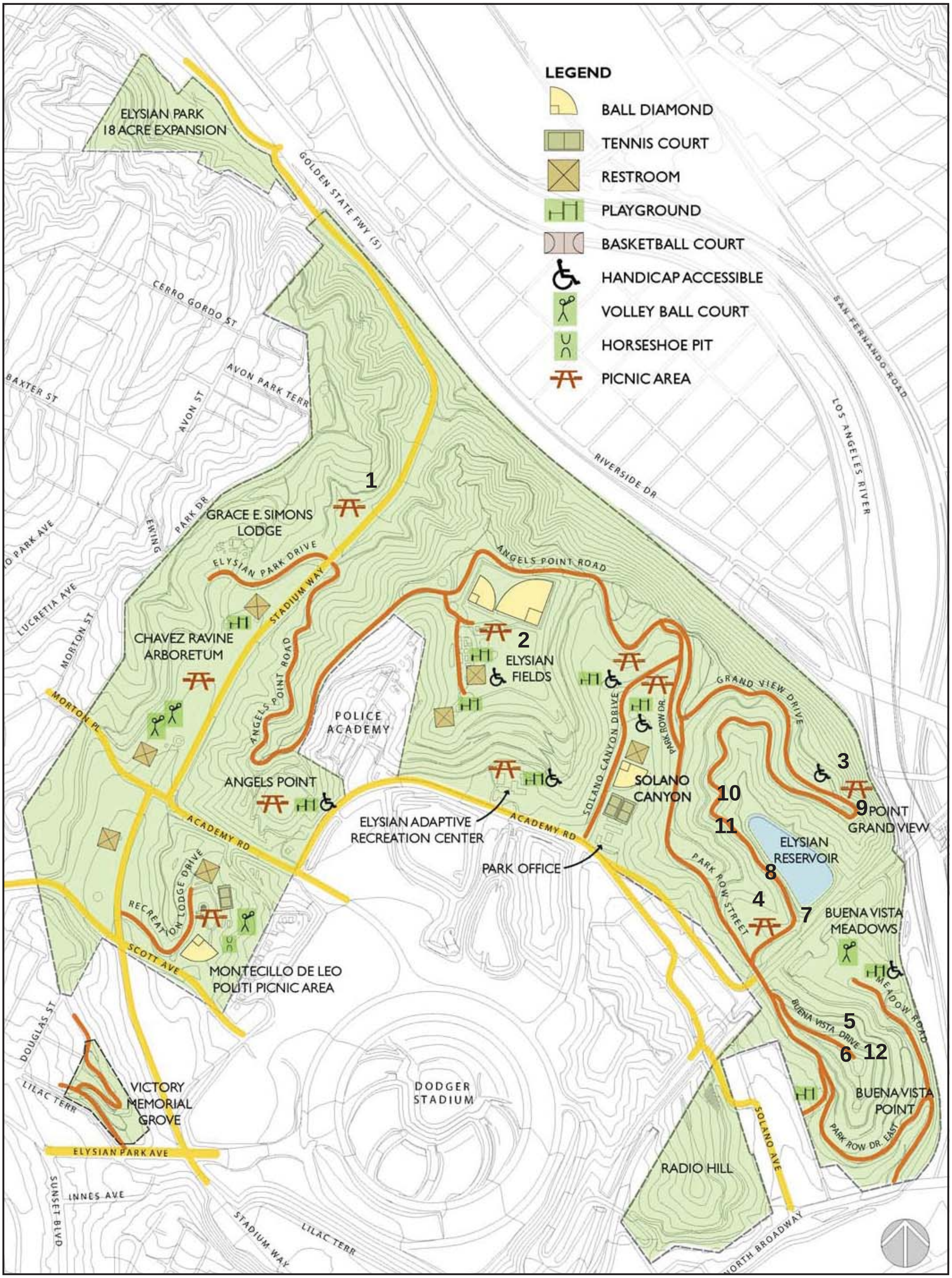
The proposed project is located within Elysian Park, which is approximately 575 acres in size,. Elysian Park itself is subdivided by several major public thoroughfares (including SR 110 adjacent to Elysian Reservoir) that physically and visually segregate various sections of the park.

Elysian Park provides a mix of active and passive recreation uses. The park contains picnic areas; hiking trails and walking paths; athletic fields, volleyball courts, and tennis courts; playgrounds; the Grace E. Simons Lodge community center; parking areas; and large areas of undeveloped open space. Figure 3.1-1 shows the location of the photographs of Elysian Park and Figures 3.1-2 through 3.1-7 show the photographs. Elysian Reservoir is located in the eastern portion of the park. The entry gate for Elysian Reservoir is located approximately 300 feet east of a picnic area located at the intersection of Park Row Street and Grand View Drive. The picnic area includes tables, an open lawn area, an unpaved parking area, and access to hiking trails. There are no views of the reservoir from this picnic area.

The closest residential uses to the reservoir project site are located on Park Row Street, approximately 550 feet southwest of the entry gate to Elysian Reservoir. However, no views of the reservoir itself are available from these residences.

Project Site

The approximately 12-acre Elysian Reservoir property is set within a ravine that is about 40 acres in size, 950 feet in width, and has side slopes that reach heights of approximately 150 feet above the reservoir's water surface to the southwest, northwest, and northeast of the reservoir. The southeast edge of the reservoir abuts the embankment of SR 110, which lies below the reservoir approximately 50 feet in elevation. The adjacent slopes, which lie partially within the reservoir property boundaries but primarily within Elysian Park proper, are relatively heavily vegetated, including extensive stands of cedar and eucalyptus trees and an understory of large shrubby growth. Fan palms are also prevalent in the ravine, used primarily as roadway accent planting. Although the vegetation consists of a mix of non-native and native plant material, the landscape character of the side slopes of the ravine creates a naturalistic (if not entirely natural) setting.



Source: LADRP, Final Draft Elysian Park Master Plan, 2006

Figure 3.1-1
Locations of Photographs

Figure 3.1-2 Photo 1: Picnic area located on Stadium Way

Figure 3.1-3 Photo 2: Active recreation area located in Elysian Fields

Figure 3.1-4 Photo 3: Picnic area located on Point Grand View

Figure 3.1-5 Photo 4: Picnic area located at Park Row Street and Grand View Drive

Figure 3.1-6 Photo 5: Hiking Trail

Figure 3.1-7 Photo 6: Buena Vista Drive

Public access to the ravine is provided by Grand View Drive, an interior park road that surrounds Elysian Reservoir to the southwest, northwest, and northeast. No public access is provided along the southeast edge of the Elysian Reservoir property, which abuts SR 110. A pedestrian trail crosses along the upper edge of the northwest side of the ravine (above Grand View Drive). Other than Point Grand View, a designated scenic overlook within Elysian Park located along Grand View Drive at the top of the ridge to the northeast of the reservoir, there are no recreation facilities, picnic areas, or other destination points located within the ravine. The Elysian Reservoir property itself is segregated from the park by an 8-foot tall chain link security fence, which is located a minimum of approximately 40 feet up to approximately 350 feet from the upper edge of the reservoir side walls, except along the southeastern edge, where the reservoir perimeter road abuts the SR 110 embankment.

Elysian Reservoir, constructed in its current form in the early 1940s, is entirely manmade in appearance in both materials and structure (see Figures 3.1-8 and 3.1-9). The reservoir has continuous, straight edges and is roughly teardrop in shape, tapering in width towards the northwest end. The reservoir is completely surrounded by asphalt road and parking aprons. The reservoir side walls slope to the bottom of the reservoir and are also paved with asphalt. The water level in the reservoir can fluctuate considerably, exposing or concealing more of the asphalt side walls. A low concrete parapet wall topped by a chain link fence is located at the upper edge of the reservoir side walls. The parapet wall fence is in addition to the fence that encloses the reservoir property. An outlet tower approximately 15 feet in diameter projects approximately 15 feet above the water surface near the southwest corner of the reservoir. The tower is connected to the reservoir perimeter road by an approximately 160-foot long footbridge. The reservoir facility consumes most of the reservoir property, and undeveloped areas surrounding the reservoir are generally relatively narrow.

Viewpoints

The chain link perimeter security fence enclosing the Elysian Reservoir property, along with vegetation within the property, generally precludes close-up visual access to the reservoir. In addition, due to the terrain, vegetation, and limited access provided in the ravine, no entirely unobstructed views of the reservoir (from outside the perimeter fence) are available. The most common public view of Elysian Reservoir is available from Point Grand View, northeast of the reservoir. Point Grand View includes a small parking lot (approximately 15 spaces) and a perimeter walkway that provides sweeping vistas from the downtown Los Angeles skyline, looking southwest, to the San Gabriel Mountains, looking northeast. Looking southwest towards the downtown central business district from the southwest corner of the Point Grand View overlook, Elysian Reservoir is partially visible in the foreground view (see Figure 3.1-10). Only the southern half of the reservoir can be seen, and the actual water surface is largely obstructed by trees located on the slopes between the overlook and the reservoir. The reservoir is not a dominant visual element within this vista, which is characterized by trees in the foreground, the hills of Elysian Park in the middleground, and the downtown skyline in the background.

Most other publicly available views of Elysian Reservoir are from Grand View Drive, as it circles the reservoir within the ravine. Grand View Drive in this segment is a relatively narrow and winding two-lane road with no formal turnouts for stopping, although a few clear areas along the shoulder have been informally created by vehicles pulling off the paved road surface. Because of the character and use of Grand View Drive, few opportunities for stationary views of the reservoir are possible along the road. In addition, because the general direction of view from a moving vehicle is in the direction of travel and because large stands of vegetation usually intervene between the road and Elysian Reservoir, views of the reservoir from the road are few, partially obstructed, and intermittent (see Figure 3.1-11). An unobstructed view of the southernmost one-quarter of the reservoir is available outside the entry gate in the southwest corner of the reservoir property, which is a generally non-public viewpoint from the reservoir property driveway located off of Grand View Drive.

Largely because of intervening vegetation, views of Elysian Reservoir from the pedestrian trail located above Grand View Drive in the northwest part of the ravine are also few and partially obstructed. However, because of the nature of travel on a pedestrian trail, stationary viewpoints are more available than from along Grand View Drive (see Figure 3.1-12).

More distant views of the reservoir are available from Buena Vista Point, located in Elysian Park approximately 0.25 miles south of the reservoir and SR 110. However, these views are relatively distant, often obstructed by vegetation, and provide a low-angle vantage point of the reservoir situated above SR 110 (see Figure 3.1-13). Due to elevation and terrain, other views of Elysian Reservoir from outside the ravine are unavailable, including from the adjacent SR 110 and nearby I-5 freeways.

Figure 3.1-8 Photo 7: View of reservoir from southwest corner within the property

Figure 3.1-9 Photo 8: View of reservoir from west side within the property

Figure 3.1-10 Photo 9: Existing view from Point Grand View

Figure 3.1-11 Photo 10: Pedestrian view from roadside on Grand View Drive

Figure 3.1-12 Photo 11: Existing view from hiking trail

Figure 3.1-13 Photo 12: View of Elysian Reservoir from Buena Vista Point

3.1.2 Environmental Impacts

Thresholds of Significance

As part of the Initial Study (see Appendix A), it was determined that the proposed project would not substantially damage scenic resources within a state scenic highway; create a new source of substantial light or glare that would adversely affect day or nighttime views in the area; or create a new source of substantial shade and shadow that would adversely affect daytime views in the area. Accordingly, these issues are not further analyzed in the EIR.

However, pursuant to the CEQA Guidelines, the proposed project would have a significant effect on aesthetic resources if it would:

- Have a substantial adverse effect on a scenic vista; or
- Substantially degrade the existing visual character or quality of the site and its surroundings.

Methodology for Assessing Visual Impact

A sequence of steps was followed to assess the proposed project's potential to create significant adverse aesthetic impacts. First, primary public viewpoints of the reservoir site were established based on accessibility to the viewpoints, the general visibility of the reservoir from the viewpoints, and the reservoir's contribution to the scenic quality of the view from the viewpoints (see Figure 3.1-1). Second, computer generated photo-simulations of the proposed project development were prepared to depict the appearance of the proposed project from selected public viewpoints. Third, based on the simulations, the level of impact to the visual environment was determined in relation to the CEQA significance criteria.

Impact Analysis

VIS-1 *The proposed project would not have a substantial adverse effect on a scenic vista.*

The project site is visible from two designated viewpoints within Elysian Park, Buena Vista Point and Point Grand View. As described in the Final Draft Elysian Park Master Plan (LADRP 2006), views from Buena Vista Point are primarily to the south and west, encompassing the Monterey Hills, the Los Angeles River, and the downtown Los Angeles skyline. Although it is possible to gain a low-angle view of the southern end of Elysian Reservoir by looking north from limited vantage points on Buena Vista Point, the reservoir itself is not generally included within the scenic vista of the viewpoint.

Views from Point Grand View are primarily to the south and east, also encompassing the skyline of downtown Los Angeles, the Los Angeles River, the Monterey Hills, and, in the far distance, the San Gabriel Mountains. Although the southern end of Elysian Reservoir is partially visible from the southwest corner of Point Grand View, the actual water surface is largely obstructed, and the reservoir is not a focal point in the scenic vista looking southwest, which is characterized by trees in the foreground, the hills of Elysian Park in the middleground, and the downtown skyline in the background.

Implementation of the proposed project would alter the view from Point Grand View by removing the limited view of open water and replacing it with a recreation area consisting primarily of athletic fields and appurtenant uses, such as a parking lot. However, to the limited extent that the recreation area could be seen from Point Grand View, it would be visually compatible with other parts of Elysian Park. In addition, from a vantage point located at the southwest corner of Point Grand View, the primary focal elements of the scenic vista (downtown, the Los Angeles River, Monterey Hills, and San Gabriel Mountains) would remain unchanged. The recreation area itself, largely screened from view by intervening trees and other vegetation, would not represent a dominant aspect of the scenic vista, and it would not have a substantial adverse affect on the scenic vista (see Figures 3.1-14 and 3.1-15). The impact would be less than significant.

VIS-2 *The proposed project would not substantially degrade the existing visual character or quality of the site and its surroundings.*

The proposed project would alter the visual character of the Elysian Reservoir site by removing the existing open reservoir and replacing it with a recreation area consisting primarily of athletic fields. Appurtenant uses that would contribute to the visual character of the site may include parking areas; a recreation support building for administrative, restroom, storage, and concession functions; and a not less than 0.5-acre wildlife pond.

As discussed above, publicly available views of Elysian Reservoir from the ravine and surrounding area are few, intermittent, and partially obstructed by vegetation and terrain. In addition, the manmade institutional character of the reservoir may be deemed to diminish its value as a significant element in the visual environment of Elysian Park. Nonetheless, regardless of the manmade attributes of Elysian Reservoir and the relatively few available views of the reservoir, its removal may still be considered a change in the visual environment.

However, the proposed project would establish a predominantly open space recreation area in place of the reservoir (i.e., primarily athletic fields with some appurtenant facilities, such as a parking lot and support building). Views of the proposed project from outside the recreation area would be similar in nature to existing views of Elysian Reservoir in that they would remain few, intermittent, and partially obstructed by surrounding vegetation and terrain. From viewpoints outside the proposed project boundaries, the recreation area would not be a dominant element in the visual environment. The proposed project would nonetheless be physically and visually compatible with the overall setting of Elysian Park (see Figures 3.1-16 through 3.1-19). The proposed project would also provide previously unavailable view opportunities from within the Elysian Reservoir property not only of the project site itself, but also of the surrounding hillsides within the park and scenic vistas to the south. Because the proposed project would provide a visually compatible open space element within Elysian Park, it would not substantially degrade the existing visual character or quality of the site and its surroundings. The impact to aesthetics would be less than significant.

3.1.3 Mitigation Measures

No mitigation measures are required.

3.1.4 Significance After Mitigation

The impact would be less than significant without the implementation of mitigation.

Figure 3.1-14 Existing view from Point Grand View

Figure 3.1-15 Proposed view from Point Grand View

Figure 3.1-16 Existing pedestrian view from roadside on Grand View Drive

Figure 3.1-17 Proposed pedestrian view roadside on Grand View Drive

Figure 3.1-18 Existing view from hiking trail

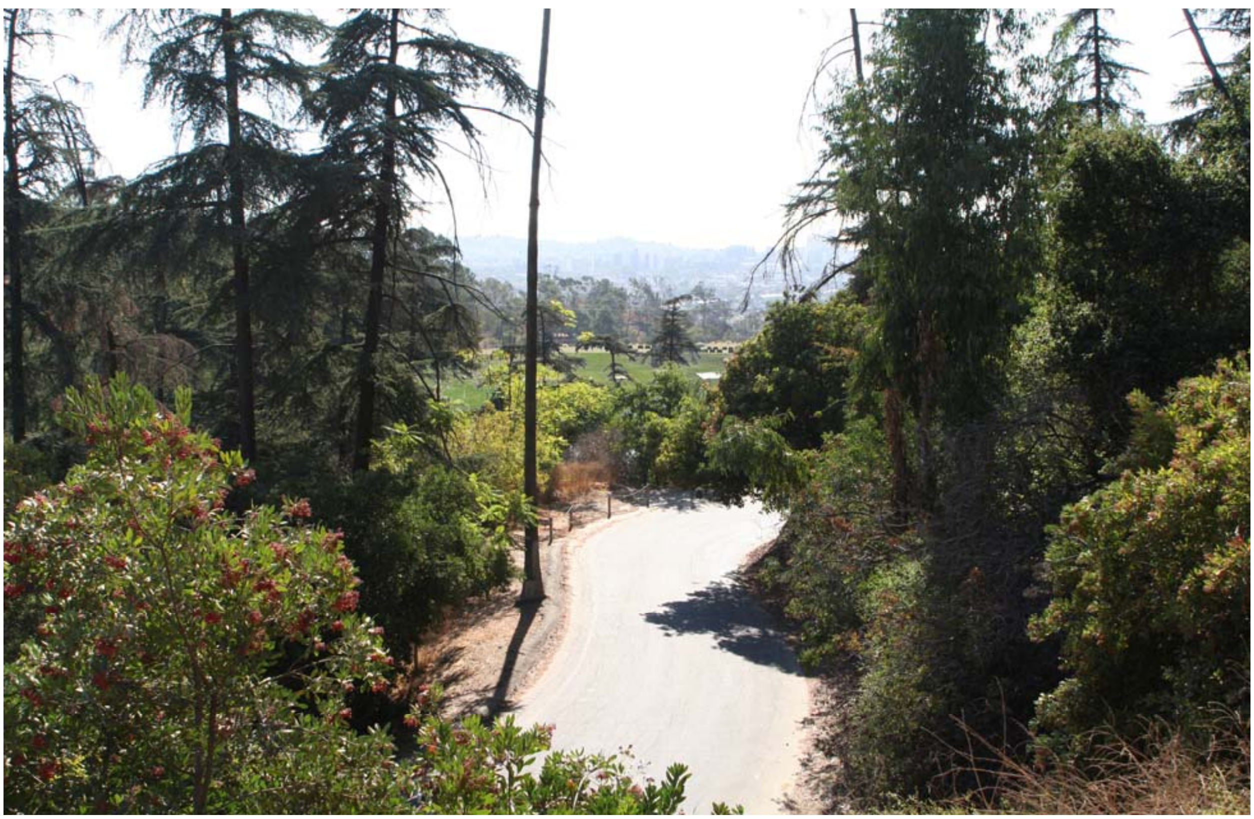


Figure 3.1-19 Proposed view from hiking trail

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CHAPTER 3.2
AIR QUALITY/GREENHOUSE GAS EMISSIONS

This chapter examines the degree to which the proposed project may result in significant adverse changes to air quality, including greenhouse gas emissions. Both short-term emissions occurring from construction activities, such as site grading and haul truck trips, and long-term effects related to the ongoing operation of the proposed project are discussed in this chapter. This analysis focuses on air pollution from two perspectives: daily emissions and pollutant concentrations. “Emissions” refer to the quantity of pollutant released into the air, measured in pounds per day. “Concentrations” refer to the amount of pollutant material per volumetric unit of air, measured in parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$). The air quality technical report is included as part of Appendix C of this EIR.

3.2.1 Pollutants and Effects

Criteria air pollutants are defined as pollutants for which the federal and state governments have established ambient air quality standards for outdoor concentrations to protect public health. The federal and state standards have been set at levels above which concentrations could be harmful to human health and welfare. These standards are designed to protect the most sensitive persons from illness or discomfort. Pollutants of concern include carbon monoxide (CO), ozone (O_3), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter 2.5 microns or less in diameter ($PM_{2.5}$), particulate matter 10 microns or less in diameter (PM_{10}), and lead (Pb). These pollutants are discussed below and in more detail in Appendix D.

Carbon Monoxide. CO is a colorless and odorless gas formed by the incomplete combustion of fossil fuels. CO is emitted almost exclusively from motor vehicles, power plants, refineries, industrial boilers, ships, aircraft, and trains. In urban areas such as the project location, vehicle exhaust accounts for the majority of CO emissions. In terms of health, CO competes with oxygen, often replacing it in the blood, thus reducing the blood’s ability to transport oxygen to vital organs. The results of excess CO exposure can be dizziness, fatigue, and impairment of central nervous system functions.

Ozone. O_3 is a colorless gas that is formed in the atmosphere when reactive organic gases (ROG), which includes volatile organic compounds (VOCs), and nitrogen oxides (NO_X) react in the presence of sunlight. The primary sources of ROG and NO_X, the components of O_3, are vehicle exhaust and industrial sources. Short-term exposure (lasting for a few hours) to O_3 at levels typically observed in Southern California can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes.

Nitrogen Dioxide. NO_2, like O_3, is not directly emitted into the atmosphere but is formed by an atmospheric chemical reaction between nitric oxide (NO) and atmospheric oxygen. NO and NO_2 are collectively referred to as NO_X and are major contributors to O_3 formation. NO_2 also contributes to the formation of PM_{10}. It results in a brownish-red cast to the atmosphere with reduced visibility. High concentrations of NO_2 can cause breathing difficulties. There is some indication of a relationship between NO_2 and chronic pulmonary fibrosis. Some increase of bronchitis in children (two and three year olds) has also been observed at concentrations below 0.3 ppm.

Sulfur Dioxide. SO_2 is a colorless, pungent gas formed primarily by the combustion of sulfur-containing fossil fuels. The main sources of SO_2 are coal and oil used in power plants and industries. Generally, the highest levels of SO_2 are found near large industrial complexes. In recent years, SO_2 concentrations have been reduced by the increasingly stringent controls placed on stationary source emissions of SO_2 and limits on the sulfur content of fuels. SO_2 is an irritant gas that attacks the throat and lungs. It can cause acute respiratory symptoms and diminished lung function in children.

Particulate Matter. Particulate matter pollution consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter also forms when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. Fine particulate matter, or $PM_{2.5}$, is 2.5 micrometers or less in diameter, roughly 1/28th the diameter of a human hair. $PM_{2.5}$ results from fuel combustion (e.g. motor vehicles, power generation, and industrial facilities), residential fireplaces, and wood stoves. In addition, $PM_{2.5}$ can be formed in the atmosphere from gases such as SO_2, NO_X, and VOC. Inhalable particulate matter, or PM_{10}, is 10 micrometers or less in diameter, about 1/7th the thickness of a human hair. The major sources of PM_{10} include crushing or grinding operations; dust stirred up by vehicles traveling on roads; wood burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions. $PM_{2.5}$ and PM_{10} pose a greater health risk than larger-size particles. When inhaled, these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract. $PM_{2.5}$ and PM_{10} can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections.

Lead. Pb in the atmosphere occurs as particulate matter. Sources of lead include the manufacture of batteries, paint, ink, ceramics, and ammunition, as well as secondary lead smelters. Health effects associated with exposure to lead include gastrointestinal disturbances, anemia, kidney disease, and in severe cases, neuromuscular and neurological dysfunction.

Toxic Air Contaminants. A substance is considered toxic if it has the potential to cause adverse health effects in humans. A toxic substance released into the air is considered a toxic air contaminant (TAC). TACs are identified by state and federal agencies based on a review of available scientific evidence.

Greenhouse Gases. Greenhouse gas (GHG) emissions refer to a group of emissions that are generally believed to affect global climate conditions. The greenhouse effect compares the Earth and the atmosphere surrounding it to a greenhouse with glass panes. The glass panes in a greenhouse let heat from sunlight in and reduce the amount of heat that escapes. GHGs, such as carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), keep the average surface temperature of the Earth close to 60 degrees Fahrenheit (°F). In addition to CO_2, CH_4, and N_2O, GHGs include hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and water vapor. Of all the GHGs, CO_2 is the most abundant gas that contributes to climate change through fossil fuel combustion. CO_2 comprised 83.3 percent of the total GHG emissions in California in 2002 (California EPA 2006). 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 mass of CO_2, denoted as CO_2e. In addition, there are a number of human-made pollutants, such as CO, NO_X, non-methane VOC, and SO_2, that have indirect effects on terrestrial or solar radiation absorption by influencing the formation or destruction of other climate change emissions.

3.2.2 Existing Environmental Setting

Air Pollution Climatology

The project site is located within the Los Angeles County portion of the South Coast Air Basin. Ambient pollution concentrations recorded in Los Angeles County are among the highest in the four counties comprising the South Coast Air Basin.

The South Coast Air Basin 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, resulting in a mild climate tempered by cool sea breezes with light average wind speeds. The South Coast Air Basin 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. The South Coast Air Basin 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.

The South Coast Air Basin experiences frequent temperature inversions. Air 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 partially 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 photochemical 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 due to CO and NO_2 emissions. CO concentrations are generally worse in the morning and late evening. In the morning, CO levels are relatively high due to cold temperatures and the large number of vehicles traveling. High CO levels during the late evenings (around 10:00 p.m.) are a result of stagnant atmospheric conditions trapping CO in the area. Since CO emissions are produced almost entirely from vehicles, the highest CO concentrations in the South Coast Air Basin are associated with heavy traffic. NO_2 concentrations are also generally higher during fall and winter days.

Local Climate

The mountains and hills within the South Coast Air Basin contribute to the variation of rainfall, temperature, and winds throughout the region. Within the project site and its vicinity, the average wind speed, as recorded at the Downtown Los Angeles Wind Monitoring Station, is approximately 5 mph, with calm winds occurring approximately 8 percent of the time. Wind in the vicinity of the project site predominately blows from the southwest.

The annual average temperature in the project area is 65°F (Western Regional Climate Center 2010). The project area experiences an average winter temperature of approximately 58°F and an average summer temperature of approximately 72°F. Total precipitation in the project area averages approximately 15 inches annually. Precipitation occurs mostly during the winter and relatively infrequently during the summer. Precipitation averages approximately 10 inches during the winter, approximately 4 inches during the spring, approximately 2 inches during the fall, and less than one inch during the summer (Western Regional Climate Center 2010).

Air Monitoring Data

The South Coast Air Quality Management District (SCAQMD) monitors air quality conditions at 37 locations throughout the South Coast Air Basin. The project site is located in SCAQMD's Coastal Air Monitoring Subregion, which is recorded at the Los Angeles North Main Street Monitoring Station, located 0.8 miles south of the project site in downtown Los Angeles. Historical data from the Los Angles North Main Street Monitoring Station was used to characterize existing conditions in the vicinity of the project area.

Table 3.2-1 shows pollutant levels, the state and federal standards, and the number of exceedances recorded at the Los Angles North Main Street Monitoring Station compared to the highest figures derived from the Metropolitan General Forecast Area from 2007 to 2009. Criteria pollutants CO, NO_2, and SO_2 did not exceed the California Ambient Air Quality Standards during the 2007 to 2009 period. The one-hour state standard for O_3 was exceeded 3 to 5 times per year during this period. The 24-hour state standard for PM_{10} was exceeded 2 to 5 days per year. The annual state standard for $PM_{2.5}$ was also exceeded between the 2007 to 2009 period.

Table 3.2-1 2007-2009 Ambient Air Quality in the Project Vicinity

Pollutant	Pollutant Concentration & Standards	Number of Days Above State Standard					
		Central Los Angeles County Subregion			Metropolitan General Forecast Area[1]		
		2007	2008	2009[2]	2007	2008	2009[4]
Ozone	Maximum 1-hr Concentration (ppm) Days > 0.09 ppm (state 1-hr standard) Days > 0.12 ppm (federal 1-hr standard)	0.12 4 0	0.11 5 0	0.14 3 1	0.12 4 1	0.11 5 0	-
Carbon Monoxide	Maximum 1-hr concentration (ppm) Days > 20 ppm (state1-hr standard)	3 0	3 0	n/a n/a	6 0	4 0	-
	Maximum 8-hr concentration (ppm) Days > 9.0 ppm (state 8-hr standard)	2.2 0	2.1 0	2.2 0	3.4 0	2.5 0	-
Nitrogen Dioxide	Maximum 1-hr Concentration (ppm) Days > 0.18 ppm (state 1-hr standard)	0.10 0	0.12 0	0.12 0	0.09 0	0.10 0	-
PM_{10}	Maximum 24-hr concentration ($\mu g/m^3$) Days > 50 $\mu g/m^3$ (state 24-hr standard)	78 5	66 2	70 4	78 5	66 2	-
$PM_{2.5}$	Annual Arithmetic Mean ($\mu g/m^3$) Exceed state Standard (12 $\mu g/m^3$)	17 Yes	16 Yes	16 Yes	16 Yes	16 Yes	-
Sulfur Dioxide	Maximum 24-hr Concentration (ppm) Days > 0.04 ppm (state 24-hr standard)	<0.01 0	0.01 0	<0.01 0	<0.01 0	<0.01 0	-

[1] The Metropolitan Forecast Area includes the Central Los Angeles County, Southeast Los Angeles County, South Central Los Angeles County, and North Orange County air monitoring areas of the SCAQMD.
[2] 2009 data provided by CARB Air Quality Data Statistics. Los Angeles North Main Street air monitoring station data was used for each pollutant, except SO_2, $PM_{2.5}$, and PM_{10} which used the Burbank air monitoring station. Available at http://www.arb.ca.gov/adam/index.html, accessed September 21, 2010.
[4] Data not available when this report was completed.
Source: SCAQMD 2010.

Greenhouse Gases

Table 3.2-2 shows 2002 to 2004 average emissions and estimates for projected emissions in 2020 without any GHG reduction measures (business-as-usual case). The 2020 business-as-usual forecast does not take any credit for reductions from measures included in the California Assembly Bill 32 Scoping Plan, including the Pavley GHG emissions standards for vehicles, full implementation of the Renewables Portfolio Standard beyond current levels of renewable energy, or solar measures. The Transportation sector – largely the cars and trucks that move goods and people – is the largest contributor with 38 percent of the state's total GHG emissions. Table 3.2-2 shows that if no action is taken, GHG emissions in the Transportation sector are expected to grow by approximately 25 percent by 2020 (an increase of 46 million metric tons of CO_2e).

Table 3.2-2 Average Emissions and 2020 Projected Emissions (Business-As-Usual)

Sector	2002 to 2004 Average Emissions	Projected 2020 Emissions
	Million Metric Tons of CO_2e	
Transportation	179.3	225.4
Electricity	109.0	139.2
Commercial and Residential Energy	41.0	46.7
Industry	95.9	100.5
Recycling and Waste	5.6	7.7
High Global Warming Potential	14.8	46.9
Agriculture	27.7	29.8
Forest Net Emissions	(4.7)	0.0
Emissions Total	*469*	*596*

Source: CARB 2008.

In December 2007, CARB approved a GHG emissions target for 2020 equivalent to the state's calculated GHG emissions level in 1990. CARB developed the 2020 target after extensive technical work and a series of stakeholder meetings. The 2020 target of 427 million metric tons of CO_2e requires a reduction of 169 million metric tons of CO_2e, or approximately 30 percent, from the state's projected 2020 emissions of 596 million metric tons of CO_2e (business-as-usual) and a reduction of 42 million metric tons of CO_2e, or almost 10 percent, from 2002 to 2004 average emissions.

Sensitive Receptors

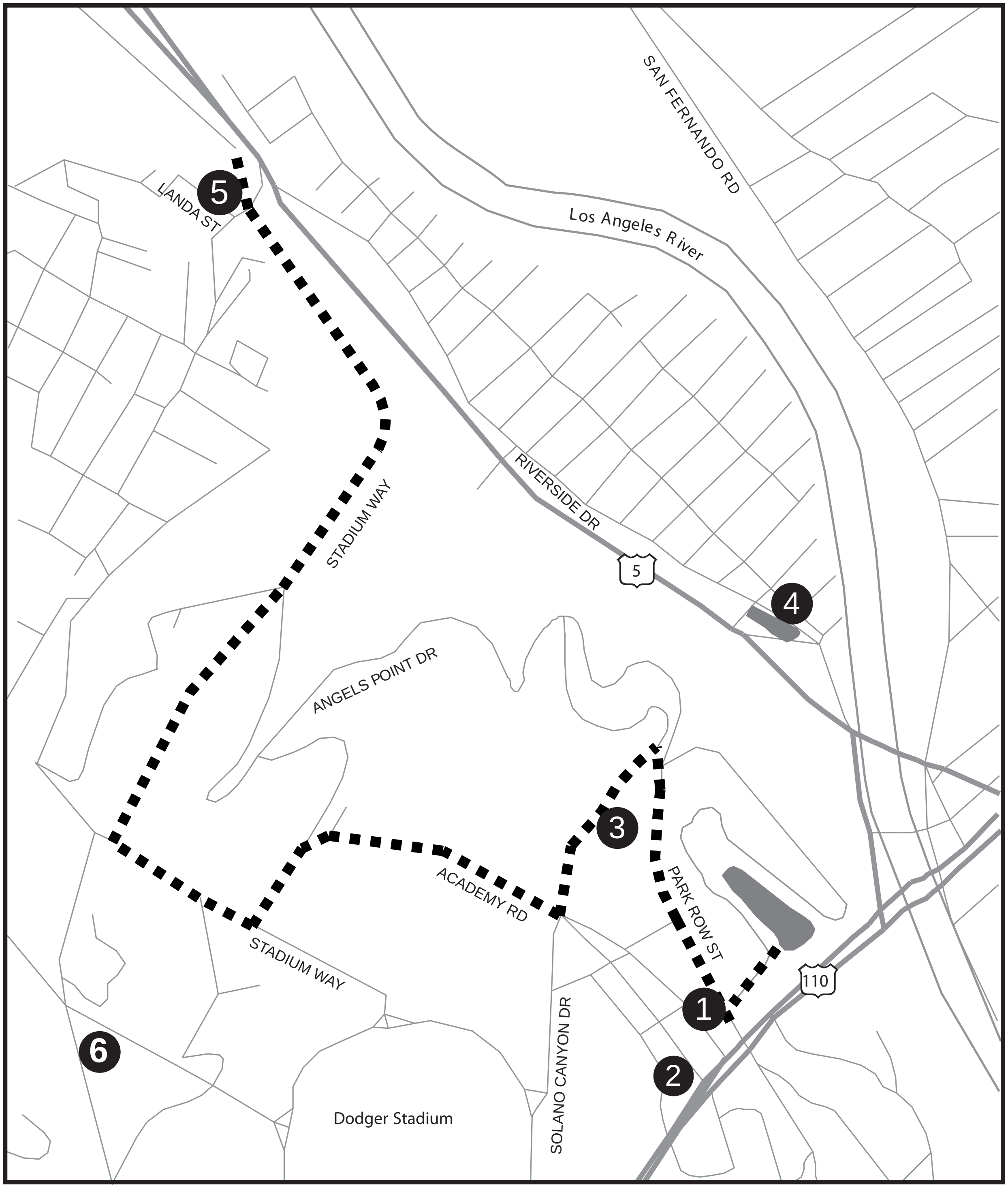
Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. CARB has identified the following typical groups who are most likely to be affected by air pollution: children under 14, the elderly over 65 years of age, athletes, and people with cardiovascular and chronic respiratory diseases. According to the SCAQMD, sensitive receptors include residences, schools, playgrounds, child care centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. As shown in Figure 3.2-1, sensitive receptors in the project area include the following:

Elysian Reservoir

- Single-family residences along Park Row Street located approximately 600 feet to the south
- Solano Avenue Elementary School located approximately 925 feet to the southwest
- Solano Canyon recreation facilities located approximately 1,200 feet to the west

Inlet Line/Caltrans Island

- Single-family residences along Riverside Drive located approximately 70 feet to the east



LEGEND: Project Site | Haul Route

SOURCE: TAHA 2010

\# Sensitive Receptors

1. Single-Family Residences on Park Row Street
2. Solano Avenue Elementary School
3. Solano Canyon Recreation Facilities
4. Single-Family Residences on Riverside Drive
5. Single-Family Residences on Landa Street
6. Barlow Respiratory Hospital

APPROX. SCALE

0 480 720 FEET

N

Figure 3.2-1
Location of Air Quality Sensitive Receptors

Haul Truck Route

- Single- and multi-family residences along Riverside Drive
- Single-family residences along Landa Street
- Barlow Respiratory Hospital on Stadium Way

These sensitive receptors represent the nearest sensitive receptors with the potential to be impacted by air emissions. Additional sensitive receptors are located in the surrounding community and may be impacted by air emissions.

3.2.3 Regulatory Setting

Federal Clean Air Act

The Federal Clean Air Act governs air quality in the U.S. The EPA is responsible for enforcing the Clean Air Act. The EPA is also responsible for establishing the National Ambient Air Quality Standards, which are required under the 1977 Clean Air Act and subsequent amendments. The EPA regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain types of locomotives. The EPA has jurisdiction over emission sources outside state waters (e.g., beyond the outer continental shelf), and establishes various emission standards, including those for vehicles sold in states other than California. Automobiles sold in California must meet stricter emission standards established by CARB.

As required by the Clean Air Act, National Ambient Air Quality Standards have been established for seven major air pollutants: CO, NO_2, O_3, $PM_{2.5}$, PM_{10}, SO_2, and Pb. The Clean Air Act requires the EPA to designate areas as attainment, nonattainment, or maintenance (previously nonattainment and currently attainment) for each criteria pollutant based on whether the National Ambient Air Quality Standards have been achieved. The federal standards are summarized in Table 3.2-3. The EPA has classified the South Coast Air Basin as nonattainment for O_3, $PM_{2.5}$, and PM_{10}.

California Clean Air Act

In addition to being subject to the requirements of the Federal Clean Air Act, air quality in California is also governed by more stringent regulations under the California Clean Air Act. The California Clean Air Act 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. CARB is responsible for administering the California Clean Air Act and establishing the California Ambient Air Quality Standards. The California Clean Air Act, as amended in 1992, requires all air districts in the state to endeavor to achieve and maintain the California Ambient Air Quality Standards, which are generally more stringent than the corresponding federal standards and incorporate additional standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. CARB regulates mobile air pollution sources, such as motor vehicles. CARB is also responsible for setting emission standards for vehicles sold in California and for other emission sources, such as consumer products and certain off-road equipment. CARB established passenger vehicle fuel specifications, which became effective in March 1996. The state standards are also summarized in Table 3.2-3.

Table 3.2-3 State and National Ambient Air Quality Standards and Attainment Status for the South Coast Air Basin

Pollutant	Averaging Period	California		Federal	
		Standards	Attainment Status	Standards	Attainment Status
Ozone (O_3)	1-hour	0.09 ppm (180 µg/m^3)	Nonattainment	--	--
	8-hour	0.070 ppm (137 µg/m^3)	n/a[1]	0.075 ppm (147 µg/m^3)	Nonattainment
Respirable Particulate Matter (PM_{10})	24-hour	50 µg/m^3	Nonattainment	150 µg/m^3	Nonattainment
	Annual Arithmetic Mean	20 µg/m^3	Nonattainment	--	--
Fine Particulate Matter ($PM_{2.5}$)	24-hour	--	--	35 µg/m^3	Nonattainment
	Annual Arithmetic Mean	12 µg/m^3	Nonattainment	15.0 µg/m^3	Nonattainment
Carbon Monoxide (CO)	8-hour	9.0 ppm (10 mg/m^3)	Attainment	9 ppm (10 mg/m^3)	Unclassified[2]
	1-hour	20 ppm (23 mg/m^3)	Attainment	35 ppm (40 mg/m^3)	Unclassified[2]
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)	Nonattainment	53 ppb (100 µg/m^3)	Unclassified[2]
	1-hour	0.18 ppm (338 µg/m^3)	Nonattainment	100 ppb (190 µg/m^3)	n/a[1]
Sulfur Dioxide (SO_2)	24-hour	0.04 ppm (105 µg/m^3)	Attainment	--	--
	3-hour	--	--	--	--
	1-hour	0.25 ppm (655 µg/m^3)	Attainment	75 ppb (196 µg/m$^{3)}$	Attainment
Lead (Pb)	30-day average	1.5 µg/m^3	Nonattainment	--	--
	Calendar Quarter	--	--	0.15 µg/m^3	Attainment

[1] n/a = not available, which means that the attainment status has not been determined for these pollutants. This is not an official designation.

[2] Unclassified means the data are incomplete and do not support a designation of attainment or nonattainment. Unclassified is an official designation.

Source: CARB 2010.

The California Clean Air Act requires CARB to designate areas within California as either attainment or nonattainment for each criteria pollutant based on whether the California Ambient Air Quality Standards have been achieved. Under the California Clean Air Act, areas are designated as nonattainment for a pollutant if air quality data show that a state standard for the pollutant was violated at least once during the previous three calendar years. Exceedances that are affected by highly irregular or infrequent events are not considered violations of a state standard and are not used as a basis for designating areas as nonattainment. Under the California Clean Air Act, the Los Angeles County portion of the South Coast Air Basin is designated as a nonattainment area for O_3, $PM_{2.5}$, and PM_{10}, NO_2, and Pb (CARB 2010).

1977 Lewis Air Quality Management Act

The 1977 Lewis Air Quality Management Act created the SCAQMD to coordinate air quality planning efforts in Southern California. This act merged four county air pollution control agencies into one regional district to better address the issue of improving air quality in Southern California. Under the act, renamed the Lewis-Presley Air Quality Management Act in 1988, the SCAQMD is the agency principally responsible for comprehensive air pollution control in the region. Specifically, the SCAQMD is responsible for monitoring air quality, as well as planning, implementing, and enforcing programs designed to attain and maintain state and federal ambient air quality standards in the district. Programs that were developed include air quality rules and regulations relating to stationary sources, area sources, point sources, and certain mobile source emissions. The SCAQMD is also responsible for establishing stationary source permitting requirements and for ensuring that new, modified, or relocated stationary sources do not create net emission increases.

The South Coast Air Basin is a subregion of the SCAQMD and covers an area of 6,745 square miles. The South Coast Air Basin includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties. The South Coast Air Basin 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.

Air Quality Management Plan

All areas designated as nonattainment under the California Clean Air Act are required to prepare plans showing how the area will meet the state air quality standards by its attainment dates. The Air Quality Management Plan (AQMP) is the SCAQMD plan for improving regional air quality. It addresses Clean Air Act and California Clean Air Act requirements and demonstrates attainment with state and federal ambient air quality standards. The AQMP is prepared by SCAQMD and the Southern California Association of Governments (SCAG). The current AQMP was adopted by the SCAQMD on June 1, 2007. The AQMP provides policies and control measures that reduce emissions to attain both state and federal ambient air quality standards by their applicable deadlines. Environmental review of individual projects within the South Coast Air Basin must demonstrate that daily construction and operational emissions thresholds, as established by the SCAQMD, would not be exceeded. The environmental review must also demonstrate that individual projects would not increase the number or severity of existing air quality violations.

Greenhouse Gas Emissions

Assembly Bill 1493 and Executive Order S-3-05

In September 2002, Assembly Bill 1493 was enacted, requiring the development and adoption of regulations to achieve "the maximum feasible reduction of greenhouse gases" emitted by noncommercial passenger vehicles, light-duty trucks, and other vehicles used primarily for personal transportation in the state. California Governor Arnold Schwarzenegger announced, on June 1, 2005, through Executive Order S-3-05, the following GHG emission reduction targets: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; and by 2050, reduce GHG emissions to 80 percent below 1990 levels.

Global Warming Solutions Act of 2006

In September 2006, Governor Arnold Schwarzenegger signed the California Global Warming Solutions Act of 2006, also known as Assembly Bill 32, into law. Assembly Bill 32 focuses on reducing GHG emissions in California, and requires CARB to adopt rules and regulations that would achieve by 2020 GHG emissions equivalent to statewide levels in 1990. To achieve this goal, Assembly Bill 32 mandates that CARB establish a quantified emissions cap, institute a schedule to meet the cap, implement regulations to reduce statewide GHG emissions, and develop tracking, reporting, and enforcement mechanisms to ensure that reductions are achieved. Because the intent of Assembly Bill 32 is to limit 2020 emissions to the equivalent of 1990, it is expected that the regulations would affect many existing sources of GHG emissions and not just new general development projects.

Assembly Bill 32 charges the CARB with the responsibility to monitor and regulate sources of GHG emissions in order to reduce those emissions. CARB has determined that the total statewide aggregated 1990 GHG emissions level and 2020 emissions limit is 427 million metric tons of CO_2e. The 2020 target reductions are currently estimated to be 174 million metric tons of CO_2e. The CARB Assembly Bill 32 *Scoping Plan* contains the main strategies to achieve the 2020 emissions cap. The GHG reduction strategies contained in the *Scoping Plan* include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms such as a cap-and-trade system. The measures in the *Scoping Plan* adopted by CARB will be developed and put in place by 2012.

Senate Bill 97

California Senate Bill 97 required the Governor's Office of Planning and Research to develop CEQA guidelines "for the mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions." The CEQA Guidelines amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in CEQA documents.

Senate Bill 375

California Senate Bill 375, passed September 30, 2008, provides a means for achieving Assembly Bill 32 goals through regulation of cars and light trucks. Senate Bill 375 also aligns three critical policy areas of importance to local government: (1) regional long-range transportation plans and investments; (2) regional allocation of the obligation for cities and counties to zone for housing; and (3) a process to achieve GHG emission reduction targets for the transportation sector. Senate Bill 375 establishes a process for CARB to develop the GHG emission reduction targets for each region (as opposed to individual local governments or households).

CARB GHG Guidance

CARB has published draft guidance for setting interim GHG significance thresholds (October 24, 2008). The guidance is the first step toward developing the recommended statewide interim thresholds of significance for GHG emissions that may be adopted by local agencies for their own use. The guidance does not attempt to address every type of project that may be subject to CEQA, but instead focuses on common project types that are responsible for substantial GHG emissions (i.e., industrial, residential, and commercial projects). CARB believes that thresholds in these important sectors will advance climate objectives, streamline project review, and encourage consistency and uniformity in the CEQA analysis of GHG emissions throughout the state.

SCAQMD GHG Guidance

The SCAQMD has convened a GHG CEQA Significance Threshold Working Group to provide guidance to local lead agencies on determining significance for GHG emissions in their CEQA documents. Members of the working group include government agencies implementing CEQA and representatives from various stakeholder groups that will provide input to the SCAQMD staff on developing GHG CEQA significance thresholds. On December 5, 2008, the SCAQMD Governing Board adopted the staff proposal for an interim GHG significance threshold for industrial projects where the SCAQMD is lead agency. The SCAQMD has not adopted guidance for CEQA projects under other lead agencies.

3.2.4 Environmental Impacts

Methodology

Construction

This air quality analysis is consistent with the methods described in the SCAQMD *CEQA Air Quality Handbook* (1993 edition), as well as the updates to the *CEQA Air Quality Handbook*, as provided on the SCAQMD website (SCAQMD 2010).

The localized construction analysis followed guidelines published by the SCAQMD in the *Localized Significance Methodology for CEQA Evaluations (SCAQMD Localized Significance Threshold [LST] Guidance Document)* (SCAQMD 2008).

Health Risk Assessment

A health risk assessment was completed using emissions factors from EMFAC2007 and OFFROAD2007 emissions inventory models for haul truck and on-site heavy equipment emissions, respectively. AERMOD dispersion modeling software was used to determine the concentrations of diesel particulate matter generated from haul truck trips and heavy equipment used in and around the project site.

The Health Risk Assessment was prepared based on emissions from haul trucks and diesel-powered construction equipment. The first step was to calculate the mass emissions from these sources. Construction activity would generate about 47,300 one-way truck trips, either inbound to or outbound from the reservoir site. In addition, the inlet line construction would generate about 5,650 one-way truck trips, either inbound to or outbound from the Caltrans island. On-road truck emissions were calculated based on the haul route from either of the project sites to

I-5 and emission rates from the EMFAC2007 model. It was assumed that each truck would idle on the project site for 15 minutes, and the idle emission rate was also obtained from the EMFAC2007 model. Equipment emissions were obtained from the OFFROAD model.

The truck and equipment emission rates were input into the AERMOD dispersion model to obtain annual exposure concentrations. The model is a steady state Gaussian plume model for estimating ground level impacts from point, area, and volume sources in simple and complex terrain. The model offers additional flexibility by allowing the user to assign initial vertical and lateral dispersion parameters for stationary sources. Truck emissions were modeled based on SCAQMD *Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis* (August 2003). Idle emissions were treated as an area source with a five-meter release height. On-road emissions along the haul route were input as a line source with a release height of five meters.

Operations

URBEMIS2007 Version 9.2.4 emission modeling software was used to calculate operational mobile source emissions. URBEMIS incorporates EMFAC2007 emissions rates, which are the latest emission inventory for motor vehicles operating on roads in California. This reflects the CARB's current understanding of how vehicles travel and how much they pollute. The URBEMIS model can be used to show how California motor vehicle emissions have changed over time and are projected to change in the future.

Greenhouse Gas Emissions

For the purpose of this analysis, GHG emissions were quantified from construction and from mobile sources related to operations of the facility. GHG emissions were estimated using the same methodology presented above for construction and operational emissions.

Thresholds of Significance

As part of the Initial Study (see Appendix A), it was determined that the proposed project would not conflict with or obstruct implementation of the applicable AQMP or create objectionable odors. Accordingly, these issues are not further analyzed in the EIR.

Pursuant to the CEQA Guidelines, the proposed project would have a significant effect on air quality if it would:

- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations;
- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or

- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

The following are the significance criteria SCAQMD has established to determine project impacts.

Construction Phase Significance Criteria

The proposed project would have a significant impact if:

- Daily regional construction emissions were to exceed SCAQMD construction emissions thresholds for VOCs, NO_X, CO, SO_X, $PM_{2.5}$, or PM_{10}, as presented in Table 3.2-4;
- Localized concentrations of CO exceed the one-hour standard of 20 ppm or the 8-hour standard of 9.0 ppm;
- Localized concentrations of NO_2 exceed the one-hour standard of 0.18 ppm;
- Localized concentrations of $PM_{2.5}$ or PM_{10} exceed 10.4 $\mu g/m_3$;
- The proposed project would generate TAC emissions that generate a health risk that exceeds 10 persons in one million.

Table 3.2-4 SCAQMD Daily Construction Emissions Thresholds

Criteria Pollutant	Regional Emissions (Pounds Per Day)
Volatile Organic Compounds (VOCs)	75
Nitrogen Oxides (NO_X)	100
Carbon Monoxide (CO)	550
Sulfur Oxides (SO_X)	150
Fine Particulates ($PM_{2.5}$)	55
Particulates (PM_{10})	150

Source: SCAQMD 2010.

Operations Phase Significance Criteria

The proposed project would have a significant impact if:

- Daily operational emissions were to exceed SCAQMD operational emissions thresholds for VOCs, NO_X, CO, SO_X, $PM_{2.5}$, or PM_{10}, as presented in Table 3.2-5;
- Project-related traffic causes CO concentrations at study intersections to violate the California Ambient Air Quality Standards for either the one- or 8-hour period (20 ppm and 9.0 ppm, respectively);
- The proposed project would generate significant emissions of TACs.

Table 3.2-5 SCAQMD Daily Operational Emissions Thresholds

Criteria Pollutant	Regional Emissions (Pounds Per Day)
Volatile Organic Compounds (VOCs)	55
Nitrogen Oxides (NO_X)	55
Carbon Monoxide (CO)	550
Sulfur Oxides (SO_X)	150
Fine Particulates ($PM_{2.5}$)	55
Particulates (PM_{10})	150

Source: SCAQMD 2010.

<u>*Greenhouse Gas Significance Criteria*</u>

A proposed project must demonstrate if GHG emissions would have a significant impact on the environment and if it would conflict with an applicable plan, policy or regulation adopted for the purpose of reducing GHG emissions. The SCAQMD has adopted GHG a significance threshold of 10,000 metric tons CO_2e per year consisting of construction emissions amortized over 30 years combined with operational emissions. In addition, a significant impact would result if GHG emissions conflict with any applicable climate change policy or regulation previously discussed.

Impact Analysis

AIR-1 *During the construction phase, the proposed project would violate the air quality standards for NO_x and contribute substantially to an existing or projected air quality violation. In addition, the proposed project would result in a cumulatively considerable net increase in NO_x during construction.*

<u>*Construction Phase*</u>

Construction of the proposed project has the potential to create air quality impacts through the use of heavy-duty construction equipment, including off-site truck trips, and through vehicle trips generated by construction workers traveling to and from the project sites. Fugitive dust emissions would primarily result from demolition and site preparation (e.g., excavation) activities. NO_X emissions would primarily result from the use of construction equipment. The assessment of construction air quality impacts considers each of these potential sources. Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation and, for dust, the prevailing weather conditions.

Table 3.2-6 shows the estimated daily emissions associated with each construction phase. Construction of the inlet line would occur concurrently with Phase 1 and the early part of Phase 2 of the buried reservoir construction. The worst-case construction emissions occur during construction of Phase 1 of the buried reservoir and Task 1 of the Inlet Line Construction. Daily NO_X emissions would exceed the SCAQMD regional threshold during Phases 1, 2, and 4. It is mandatory for all construction projects in the South Coast Air Basin to comply with SCAQMD Rule 403 for Fugitive Dust. Specific Rule 403 control requirements include, but are 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, and maintaining effective cover over exposed areas. Compliance with Rule 403 would reduce $PM_{2.5}$ and PM_{10} emissions associated with construction activities by approximately 61 percent (SCAQMD 2007). The emissions reduction was taken into account in the unmitigated estimated regional daily construction emissions. Therefore, the proposed project would result in a significant impact related to regional construction emissions. In addition to compliance with SCAQMD Rule 403, implementation of mitigation measures AIR-A through AIR-E is required.

Table 3.2-6 Estimated Peak Regional Daily Construction Emissions – Unmitigated

Construction Phase	Pounds Per Day					
	VOCs	**NO_X**	**CO**	**SO_X**	**$PM_{2.5}$**[1]	**PM_{10}**[1]
Buried Reservoir Construction						
Phase 1	16	134	64	<1	12	38
Phase 2	14	115	59	<1	4	10
Phase 3	8	63	37	<1	2	3
Phase 4	16	127	66	<1	5	5
Phase 5	6	37	26	<1	7	26
Inlet Line Construction						
Task 1	10	80	40	<1	8	28
Task 2	8	64	31	<1	8	28
Task 3	8	63	33	<1	3	6
Task 4	3	27	13	<1	1	1
Maximum Regional Total[2]	26	214	104	<1	20	66
Significance Threshold	*75*	*100*	*550*	*150*	*55*	*150*
Exceed Threshold?	No	Yes	No	No	No	No

[1] Emissions for fugitive dust were adjusted to account for a 61 percent control efficiency associated with SCAQMD Rule 403.
[2] Maximum emissions would occur during concurrent construction of Phase 1 of the buried reservoir and Task 1 of the Inlet Line.
Source: Terry A. Hayes & Associates 2010.

Operational Phase

During project operation, worker trips to the proposed project site would not increase compared to existing conditions. However, development of a recreation area over the top of the buried reservoir would generate new vehicle trips to and from the site. These motor vehicles would be the predominate source of long-term emissions associated with the project. Operation of the proposed project would generate approximately 564 average weekend daily trips and 235 average weekday daily trips. Mobile source emissions were estimated using URBEMIS2007 based on the estimated number of vehicle trips. Weekend operational emissions are shown in Table 3.2-7. Regional emissions would not exceed SCAQMD significance thresholds during project operations. The impact would be less than significant.

Table 3.2-7 Estimated Regional Daily Operations Emissions

Emission Source	Pounds per Day					
	VOCs	**NO_X**	**CO**	**SO_X**	**$PM_{2.5}$**	**PM_{10}**
Mobile Sources	2	3	26	<1	2	9
Significance Threshold	*55*	*55*	*550*	*150*	*55*	*150*
Exceed Threshold?	No	No	No	No	No	No

Source: Terry A. Hayes & Associates 2010.

AIR-2 *The proposed project would expose sensitive receptors to substantial pollutant concentrations from on-site emissions of criteria pollutants and TACs during construction. The proposed project would not create a CO hotspot.*

Localized Impacts

Construction Phase

The SCAQMD requires that construction projects include an analysis of localized emissions. Project sites larger than five acres are required to complete dispersion modeling. The proposed project site is larger than 5 acres; therefore, in accordance with SCAQMD methodology, the Industrial Source Complex-Short Term dispersion model was used to determine localized impacts. Results of the dispersion modeling are shown in Table 3.2-8.

Table 3.2-8 Estimated Localized Peak Construction Emissions – Unmitigated

Pollutant	Estimated Emissions (lbs/day)	Concentration at nearest sensitive receptor	Significance Threshold	Significant Impact?
$PM_{2.5}$	19 - 20	80 μg/m^3	10.4 μg/m^3	Yes
PM_{10}	63 - 68	315 μg/m^3	10.4 μg/m^3	Yes
NO_2	18 - 20	0.10 ppm	0.18 ppm	No
CO (1-Hour)	96 - 99	<1 ppm	20 ppm	No
CO (8-Hour)	96 - 99	<1 ppm	9 ppm	No

Source: Terry A. Hayes & Associates 2010.

Dispersion modeling indicates that the maximum localized pollutant concentrations would occur at the Riverside Drive residences near the Caltrans island due to the proximity of the source and the receptor (approximately 70 feet). Maximum localized particulate matter concentrations would exceed the significance thresholds at residential land uses near the Caltrans island. Localized particulate matter concentrations would also exceed the significance thresholds at the residences near the reservoir on Park Row Street and at Solano Avenue Elementary School from construction at the reservoir site. Therefore, the proposed project would result in a significant impact related to localized construction emissions. Implementation of mitigation measures AIR-A through AIR-E is required.

Operational Phase

An exceedance of the state CO standards at an intersection is referred to as a CO hotspot. The SCAQMD recommends a CO hotspot evaluation of potential localized CO impacts when volume to capacity (V/C) ratios are increased by 2 percent at intersections with a level of service (LOS) ranking of D or worse. The SCAQMD also recommends a CO hotspot evaluation when an intersection decreases in LOS by one level beginning when LOS changes from C to D.

During project operations related primarily to recreation use, no identified project intersections with a LOS of D or worse would increase by 2 percent. Additionally, no project intersections would decrease by one or more levels from a LOS C to D. No further analysis is necessary. Therefore, the proposed project would have a less than significant impact related to operational localized emissions.

Toxic Air Contaminants

Construction Phase

The greatest potential for TAC emissions during construction would be from diesel particulate emissions associated with heavy equipment operations at the construction sites and haul truck trips during the import and export of materials to the sites. The haul truck route for the reservoir site construction travels along Stadium Way, Academy Road, Solano Canyon Drive, Park Row Drive, Park Row Street, and Grand View Drive, all which are road segments adjacent to or within Elysian Park. The haul trucks for the inlet line construction site travel along Riverside Drive. A health risk assessment for the construction period was completed based on the SCAQMD *Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis*. According to this document, the cancer risks from diesel particulate matter associated with heavy equipment operations and motor vehicles occur exclusively through the inhalation pathway. According to the SCAQMD methodology, health effects from carcinogenic air toxics are usually described in terms of individual cancer risk. This risk is a measurement of the probability that a person would contract cancer during a 70-year lifetime based upon a given exposure to TACs.

The proposed project would generate about 47,300 one-way truck trips during construction of the reservoir, either inbound to or outbound from the reservoir site, and about 5,650 one-way truck trips during construction of the inlet line, either inbound to or outbound from the Caltrans island. Construction at both sites would also involve the extensive operation of heavy diesel equipment. The exposure level was adjusted to account for 8 hours per day, 5 days per week, 50 weeks per year, and 5.5 years for the reservoir construction. The inlet line construction would have a similar work schedule, but it would occur over 2 years rather than 5.5 years. The results of the HRA indicated that construction at the reservoir site would not exceed the estimated carcinogenic risk of 10 persons in one million threshold at the nearby sensitive receptors, including the residences on Park Row Street, Solano Avenue Elementary School, and Barlow Respiratory Hospital. However, the estimated carcinogenic risk over a 70-year lifetime would exceed the 10 persons in one million threshold at the residences on Riverside Drive near the Caltrans island (17 persons in one million). Therefore, construction of the proposed project would result in a significant impact related to TACs. Implementation of mitigation measures AIR-A through AIR-E is required.

Operational Phase

The SCAQMD recommends that health risk assessments be conducted for substantial sources of diesel particulate emissions (e.g., truck stops and warehouse distribution facilities) and has provided guidance for analyzing mobile source diesel emissions (SCAQMD 2002). The proposed project would establish recreational uses on the project site, which would not generally generate diesel emissions. Maintenance of the buried reservoir would not require additional diesel truck trips to and from the site beyond existing conditions. Based on the limited activity of TAC sources, the proposed project would not warrant the need for a health risk assessment associated with on-site post-construction activities.

Typical sources of acutely and chronically hazardous TACs include industrial manufacturing processes and automotive repair facilities. The proposed project would not include any of these potential sources. Thus, operation of the proposed project would not release substantial amounts of TACs. The operational impact would be less than significant.

AIR-3 *The proposed project would not generate GHG emissions, either directly or indirectly, that would have a significant impact on the environment or conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.*

GHG emissions were calculated for construction activity and for on-road vehicle operations associated with the recreational use of the site. Based on the SCAQMD guidance, the emissions summary includes construction emissions averaged over a 30-year span. As shown in Table 3.2-9, the proposed project would generate approximately 1,435 metric tons of CO_2e per year. GHG emissions would not exceed the 10,000 metric tons of CO_2e per year significance threshold. The impact would be less than significant. In addition, construction activity would incorporate source reduction techniques and recycling measures to divert waste from landfills, further reducing GHG emissions produced during construction.

Table 3.2-9 Estimated Annual Greenhouse Gas Emissions

Source	Carbon Dioxide Equivalent (Metric Tons per Year)
Construction Phase 1	2,829
Construction Phase 2	2,459
Construction Phase 3	2,029
Construction Phase 4	4,077
Construction Phase 5	1,216
Inlet Line Task 1	1,637
Inlet Line Task 2	1,261
Inlet Line Task 3	1,475
Inlet Line Task 4	611
Total Construction Emissions	17,594
Total Construction Emissions Amortized[1]	586
Operational Mobile Source Emissions	849
Total Annual Emissions	1,435
Significance Threshold	*10,000*
Exceed Threshold?	No

[1] Based on SCAQMD guidance, the emissions summary includes construction emissions amortized over a 30-year span.

Source: Terry A. Hayes & Associates 2010.

Power usage, a primary contributor of GHG emissions, would not increase significantly during operation of the proposed project. The proposed project would include recreational land uses that would not constitute a significant source of operational emissions. The operations of the proposed project would not conflict with any state or local climate change policy or regulation. The impact would be less than significant.

3.2.5 Mitigation Measures

AIR-A Heavy-duty equipment operations shall be suspended during first and second stage smog alerts.

AIR-B Equipment and vehicle engines shall be maintained in good condition and in proper tune per manufacturers' specifications.

AIR-C Based on a 2015 start of construction, all off-road construction diesel engines not registered under CARB's Statewide Portable Equipment Registration Program and that have a rating of 50 horsepower (hp) or more shall meet, at a minimum, the Tier 4 California Emission Standards for Off-Road Compression-Ignition Engines as specified in California Code of Regulations, Title 13, Section 2423(b)(1) unless such engine is not available for a particular item of equipment. In the event a Tier 4 engine is not available for any off-road equipment larger than 100 hp, that equipment shall be equipped with a Tier 3 engine. Equipment properly registered under and in compliance with CARB's Statewide Portable Equipment Registration Program shall be considered in compliance with this mitigation measure.

AIR-D Electricity shall be utilized from power supply sources rather than temporary gasoline or diesel power generators, as feasible.

AIR-E Heavy-duty trucks shall be prohibited from idling in excess of five minutes, both on and off site, except as follows:

- When verifying that the vehicle is in safe operating condition, or
- When the vehicle is positioning or providing a power source for equipment or operations, or
- While operating defrosters, heaters, air conditioning, or any other device to prevent a health or safety emergency.

3.2.6 Significance After Mitigation

Construction Phase

Compliance with SCAQMD Rule 403 requirements, which is assumed to be part of the project, would ensure that fugitive dust emissions would be reduced by approximately 61 percent. A five percent reduction in construction equipment exhaust was used to estimate emissions reductions due to the implementation of mitigation measures AIR-A through AIR-E. As shown in Table 3.2-10, construction emissions of NO_X would still exceed SCAQMD significance thresholds. Therefore, the proposed project would result in a significant and unavoidable impact related to regional construction emissions.

Table 3.2-10 Estimated Peak Daily Regional Construction Emissions – Mitigated

Construction Phase	Pounds Per Day					
	VOCs	**NO_X**	**CO**	**SO_X**	**$PM_{2.5}$[1]**	**PM_{10}[1]**
Buried Reservoir Construction						
Phase 1	15	128	61	<1	11	38
Phase 2	14	109	56	<1	4	10
Phase 3	7	60	35	<1	2	3
Phase 4	15	120	63	<1	5	5
Phase 5	5	37	25	<1	7	26
Inlet Line Construction						
Task 1	10	76	38	<1	8	28
Task 2	8	61	30	<1	8	28
Task 3	8	60	31	<1	3	6
Task 4	3	26	13	<1	1	1
Maximum Regional Total[2]	25	204	99	<1	19	66
Significance Threshold	*75*	*100*	*550*	*150*	*55*	*150*
Exceed Threshold?	No	Yes	No	No	No	No

[1] Emissions for fugitive dust were adjusted to account for a 61 percent control efficiency associated with SCAQMD Rule 403.
[2] Maximum emissions would occur during concurrent construction of Phase 1 of the buried reservoir and Task 1 of the Inlet Line.
Source: Terry A. Hayes & Associates 2010.

As shown in Table 3.2-11, mitigated localized construction emissions would continue to exceed the SCAQMD localized thresholds for $PM_{2.5}$ and PM_{10}. Therefore, the proposed project would result in a significant and unavoidable impact related to localized construction emissions.

Table 3.2-11 Estimated Localized Peak Construction Emissions – Mitigated

Pollutant	Estimated Emissions (lbs/day)	Concentration at nearest sensitive receptor	Significance Threshold	Significant Impact?
$PM_{2.5}$	18 - 20	79 μg/m^3	10.4 μg/m^3	Yes
PM_{10}	63 - 68	314 μg/m^3	10.4 μg/m^3	Yes
NO_2	17 - 19	0.09 ppm	0.18 ppm	No
CO (1-Hour)	83 - 94	<1 ppm	20 ppm	No
CO (8-Hour)	84 - 94	<1 ppm	9 ppm	No

Source: Terry A. Hayes & Associates 2010

Mitigation measures AIR-A through AIR-E, although difficult to quantify, would reduce TAC exposure. However, heavy-duty trucks would continue to emit diesel particulate matter resulting in an increased health risk to nearby sensitive land uses located on Park Row Drive and Riverside Drive. Construction TAC emissions would still result in a significant and unavoidable impact.

Operational Phase

As discussed above, operational air quality impacts would be less than significant without the implementation of mitigation.

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CHAPTER 3.3
BIOLOGICAL RESOURCES

This chapter evaluates existing biological resources at the project sites (and surrounding areas as necessary) and potential impacts to those resources associated with implementation of the proposed project. Information in this chapter was gathered through literature review, examination of available databases, and field reconnaissance. Biological Survey Reports, including methods, types of surveys, survey dates, personnel, and all survey results, were prepared for the proposed project and are included as Appendix D of the EIR. Potential impacts to biological resources associated with the proposed project were determined from the results presented in the Biological Survey Reports.

3.3.1 Environmental Setting

Vegetation

The biological survey areas consisted of all portions of the project site and adjacent areas that could potentially be disturbed during construction. The survey areas include the laydown and stockpile areas located north of the reservoir, Grand View Drive, the truck turnaround area at Point Grand View, the construction staging area north of Grand View Drive at Park Row Street, the northeast and northwest slopes surrounding the reservoir, and the Caltrans island on Riverside Drive. The reservoir itself is asphalt lined and does not contain any vegetation or habitat. Since it contains only treated drinking water, no aquatic surveys were conducted.

Laydown Area

The laydown area is an approximately 0.30-acre flat, graded, and partially paved area at the northwest edge of Elysian Reservoir. Unpaved portions have partial cover of ruderal plant species. As evidenced by tire ruts and the low growth of plants, this area appears to be disturbed regularly. The laydown area is accessed from the perimeter road surrounding Elysian Reservoir.

Ruderal vegetation in the laydown area includes black mustard (*Brassica nigra*), tree tobacco (*Nicotiana glauca*), Russian thistle (*Salsola tragus*), horseweed (*Conyza canadensis*), jimsonweed (*Datura wrightii*), fan palm (*Washingtonia filifera*), and eucalyptus seedlings and saplings (*Eucalyptus* sp.).

The laydown area is surrounded by vegetated slopes on all sides except the southern edge, which faces the reservoir. Surrounding vegetation is similar to that within the laydown area; however, the fan palms and eucalyptus trees are mature.

Stockpile Area

The stockpile area is a sloped, disturbed vegetated area located just north of the laydown area at the northwestern edge of the Elysian Reservoir property. This area is entirely vegetated. The natural vegetation in this area appears to have been supplemented at one time with ornamental species. The area appears to have been disturbed by human activity more recently, as evidenced by trash and a large number of unauthorized trails.

The vegetation in the stockpile area is a mix of native, ornamental, and invasive species. Native species include blue elderberry (*Sambucus Mexicana*), toyon (*Heteromeles arbutifolia*), sugarbush (*Rhus ovate*), holly-leafed cherry (*Prunus ilicifolia*), poison oak (*Toxicodendron diversilobum*), and wild cucumber (*Marah sp.*). Ornamental species include deodar cedar (*Cedrus deodara*), golden wattle (*Acacia pycnantha*), and fan palm. Invasive species include tree of heaven (*Ailanthus altissima*), a variety of eucalyptus species, tree tobacco (*Nicotania glauca*), silver wattle (*A. retinoides*), wild oat (*Avena fatua*), and ripgut (*Bromus diandrus*).

Surrounding Slopes

A biological survey conducted in 2004 (Bonterra 2005) encompassed the areas immediately surrounding the reservoir and the surrounding slopes to a distance of approximately 100 feet from the reservoir edge. The following cover types were identified within the survey area: oak woodland/ornamental, ornamental, mixed sage scrub/annual grassland, ruderal, and developed. Much of the "habitat has been disturbed in the past, and either has been restored, allowed to recover naturally, or planted with ornamental species…[vegetation] immediately adjacent to the chain link fence surrounding the reservoir was cleared or has been substantially cut back" (Bonterra 2005). It was determined that no special status habitats occur in this area.

Construction Staging Area

The construction staging area is an approximately 0.73 acre picnic area and parking lot. The staging area is graded and contains a grass lawn, 10 to 15 somewhat evenly spaced carob trees (*Ceratonia siliqua*), and scattered picnic tables. The southeast portion of staging area, adjacent to Grand View Drive, consists of a dirt graded parking area. Access to the staging area is via Grand View Drive.

The staging area is surrounded by vegetated slopes on all sides except at its southeast end adjacent to Grand View Drive. Vegetation on the slopes is a mixture of native, ornamental, and ruderal plants. Native vegetation includes toyon, laurel sumac (*Malosma laurina*), and holly-leaf cherry, as well as at least two coast live oak trees (*Quercus agrifolia*). Ornamental species include olive (*Olea eurpea*), acacia (*Acacia redolens*), jacaranda (*Jacaranda mimosifolia*), and eucalyptus. Many small carob trees occur on the slopes as well. Ruderal plants include tree of heaven and black mustard.

Grand View Drive

Grand View Drive, between Park Row Street and Point Grand View, is a paved park road that is open to the public. Access to Grand View Drive is via Park Row Street from the west and via Angels Point Drive (an interior park road) from the east.

Densely vegetated slopes are located on either side of Grand View Drive. The vegetation is a mixture of native and ornamental species. Native species include mulefat (*Baccharis salicifolia*), blue elderberry, laurel sumac, sugarbush, poison oak, wild cucumber, holly-leaf cherry, California walnut (*Juglans californica*), toyon, and coast live oak. Non-native ornamental or weedy species include tree of heaven, cape plumbago (*Plumbago auriculata*), silver wattle, black mustard, and eucalyptus. Many trees and shrubs hang over the road, including native toyon, sugarbush, laurel sumac, and coast live oak and non-native cape plumbago and silver wattle.

Point Grand View

Elysian Park contains an overlook area to the east of the reservoir, along Grand View Drive, called Point Grand View. This area consists of a paved parking lot and a vegetated planter between the parking area and Grand View Drive. The planted island does not contain any native habitat. Ornamental species in the overlook include: mature fan palm trees, rosemary (*Rosmarinus officinalis*), and lantana (*Lantana camara*).

Caltrans Island

The Caltrans island is a heavily vegetated median between Riverside Drive and an I-5 on-ramp. This area contains a dense mixture of native, ornamental, and invasive species. The native vegetation appears to have been at one time supplemented with ornamental species, possibly to block the view and noise of the freeway from Riverside Drive. The area is surrounded by a chain link fence with a locked gate.

Native species in the Caltrans island include laurel sumac, western sycamore (*Plantanus racemosa*), blue elderberry, and coast live oak. Ornamental species include passion fruit (*Passiflora edulis*), oleander (*Nerium oleander*), Peruvian pepper tree (*Schinus molle*), bottle brush (*Callistemon* sp.), pomegranate (*Punica granatum*), and eucalyptus. The area also contains invasive tree of heaven and a variety of non-native grasses and annuals.

Common Wildlife

Urban park settings provide habitat for common wildlife species typically adapted to disturbed areas and human presence. Native and disturbed habitat found within areas directly affected by and adjacent to the project sites (including the Caltrans island), as well as throughout Elysian Park provide suitable habitat for a variety of nesting birds and potential habitat for certain species of roosting bats. Sixteen species of bird and one mammal species were observed on site and are typically associated with such urban park settings. These species include common raven (*Corvus corax*), house finch (*Carpodacus mexicanus*), house sparrow (*Passer domesticus*), lesser goldfinch (*Carduelis psaltria*), wrentit (*Chamaea fasciata*), spotted towhee (*Pipilo maculates*), California towhee (*Pipilo crissalis*), black phoebe (*Sayornis nigricans*), white-throated swift (*Aeronautes saxatalis*), cliff swallow (*Petrochelidon pyrrhonota*), mourning dove (*Zenaida macroura*), kingbird (*Tyrannus* sp.), western-scrub jay (*Aphelocoma californica*), mallard (*Anas platyrhynchos*), hooded oriole (*Icterus cucullatus*), and California ground squirrel (*Spermophilus beecheyi*). Additionally, a red-tailed hawk (*Buteo jamaicensis*) was detected in the project vicinity.

Sensitive Biological Resources

Special status plant and wildlife species, commonly referred to as sensitive species, include species that are legally protected under the Federal Endangered Species Act, the California Endangered Species Act, the California Native Plant Protection Act, or local conservation ordinances. Included are plant species listed by the California Native Plant Society and wildlife species that are of special concern to the California Department of Fish and Game.

A literature review was conducted to determine sensitive plant species, animal species, and vegetation communities with the potential to occur in the project vicinity. The California Department of Fish and Game's *California Natural Diversity DataBase RareFind 3 program* (2010) and the California Native Plant Society *Inventory of Rare and Endangered Plants* (2010) were reviewed for any information on known occurrences of sensitive species and communities within the Los Angeles and Hollywood U.S. Geological Survey topographic 7.5 minute quadrangles. Based on the California Natural Diversity DataBase query, 16 sensitive plant species and 11 sensitive wildlife species were identified as having the potential to occur within the vicinity of the project sites (including Elysian Park and a radius ranging from 2 to 8 miles out from Elysian Park). Sensitivity status, general habitat requirements, and potential habitat presence or absence within the project sites for the species identified during the literature review are provided in Appendix D. Reconnaissance surveys were conducted by qualified biologists to determine the potential for sensitive species to occur within the project area. Survey methods and results are detailed in Appendix D.

Sensitive Plant Species

The California Natural Diversity DataBase query results and an assessment of habitat requirements for each species were used to determine target species with the potential to occur within the project sites. See Appendix D for information on habitat affinities and notes describing the potential of sensitive plant species to occur within the project sites. The soils in the project area are greatly disturbed and do not present suitable habitat for sensitive plant species. Although Greata's aster (*Symphyotrichum greatae*) is reported to have occurred in Elysian Park in 1932, the reservoir property does not contain any potentially suitable habitat. No sensitive plants were observed within the project sites during general surveys performed by AECOM (2008 and 2010) or BonTerra Consulting (2005).

Sensitive Wildlife Species

The California Natural Diversity DataBase query results and an assessment of habitat requirements for each species were used to determine target species with the potential to occur within the project site. See Appendix D for information on habitat affinities and notes describing the potential of sensitive wildlife species to occur on the property. Due to the highly disturbed nature of the project sites and the lack of suitable habitat, no sensitive wildlife species were observed during the surveys or are likely to occur.

Sensitive Habitats

Sensitive habitats include those that are considered rare within the region, that support sensitive flora and/or fauna, or that function as linkages for wildlife movement. No sensitive habitats were detected during surveys for the project sites or are likely to occur.

Wildlife Corridors and Habitat Linkages

In an urban context, a wildlife migration corridor can be defined as a linear landscape feature of sufficient width to allow animal movement between two patches of comparatively undisturbed habitat, or between a patch of habitat and some vital resources. Regional corridors are defined as those linking two or more large areas of natural open space, and local corridors are defined as those allowing resident animals to access critical resources (food, cover, and water) in a smaller area that might otherwise be isolated by urban development.

Wildlife migration corridors are essential, especially in urban settings, for the sustenance of healthy and genetically diverse animal communities. At a minimum, they promote colonization of habitat and genetic variability by connecting fragments of like habitat, and they help sustain individual species distributed in and among habitat fragments. Habitat fragments, by definition, are separated by otherwise foreign or inhospitable habitats, such as urban/suburban development tracts. Isolation of populations can have many harmful effects and may contribute significantly to local species extinction.

A viable wildlife migration corridor consists of more than a path between habitat areas. To provide food and cover for transient species, as well as resident populations of less mobile animals, a wildlife migration corridor must also include pockets of vegetation.

Elysian Park is not part of a major contiguous linkage between two or more large areas of open space and is separated from other open spaces by urban areas and major thoroughfares, including I-5 and SR 110. There are no adjacent large open space areas bordering Elysian Park. Thus, Elysian Park does not serve as a regional wildlife corridor. Several noncontiguous open spaces near Elysian Park contain suitable habitat for a variety of wildlife. These include Echo Park (less than one mile west), Mt. Washington (one mile northeast), Arroyo Seco Park (2 miles northeast), Griffith Park (5 miles northwest), and Angeles National Forest (10 miles north). The proposed project would take place within only a relatively small portion of Elysian Park; the remainder of the park would not be affected.

Elysian Reservoir provides a source of water for local and migratory birds and possibly bats. Other sources of water in the vicinity of Elysian Reservoir include the Los Angeles River, Echo Park Lake, and Silver Lake Reservoir, located approximately 0.25 miles east, one mile west, and 2 miles northwest of Elysian Reservoir, respectively. Resident non-avian wildlife species are not expected to use the reservoir because it is enclosed by a tall chain link fence barring their entrance.

3.3.2 Regulatory Setting

The following provides a general description of the applicable regulatory requirements for the project. Since no sensitive species or habitats were observed or likely to occur within the project sites, consultation with the United States Fish and Wildlife Service or the California Department of Fish and Game is not required. Regulatory requirements related to impacts to Sections 404 and 401 of the Clean Water Act and Sections 1600-1707 of California Fish and Game Code are not included because there are no wetlands or riparian habitat within the project sites.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918, as amended in 1972, makes it unlawful, unless permitted by regulations, to “pursue; hunt; take; capture; kill; attempt to take, capture or kill; possess; offer for sale; sell; offer to purchase; purchase; deliver for shipment; ship; cause to be shipped; deliver for transportation; transport; cause to be transported; carry or cause to be carried by any means whatever; receive for shipment, transportation, or carriage; or export, at any time, or in any manner, any migratory bird, included in the terms of this Convention …for the protection of migratory birds … or any part, nest, or egg of any such bird” (16 USC 703). In 1972, the Migratory Bird Treaty Act was amended to include protection for migratory birds of prey (e.g., raptors). Six families of raptors occurring in North America were included in the amendment: *Accipitridae* (kites, hawks, and eagles); *Cathartidae* (New World vultures); *Falconidae* (falcons and caracaras); *Pandionidae* (ospreys); *Strigidae* (typical owls); and *Tytonidae* (barn owls).

City of Los Angeles Native Tree Protection Ordinance

The City of Los Angeles Ordinance No. 177404 (City of Los Angeles Municipal Code Section 17.05.R) prohibits damage or removal of southern California black walnut (*Juglans californica* var. *californica*), western sycamore, California bay (*Umbellularia californica*), and any trees of the oak genus (*Quercus*), excluding scrub oak (*Quercus dumosa*), without a permit. Protected trees are those that measure 4 inches or more in cumulative diameter at 4.5 feet above the ground level at the base of the tree. Removal includes any act which would cause a protected tree to die, including but not limited to acts which inflict damage upon the root system or other part of the tree by fire, application of toxic substances, operation of equipment or machinery, or by changing the natural grade of land by excavation or filling in the drip line area around the trunk.

City of Los Angeles Urban Forest Program Tree Care Policy

The LADRP Urban Forest Program provides direction for the care of trees within City parkland. LADRP recognizes and implements regulatory procedures for trees specified in the Tree Preservation Policy. The Tree Preservation Policy regulates protection of trees in four categories: Trees Protected by LA City Ordinances, Heritage Trees, Special Habitat Value Trees, and all other Common Park Trees. The Urban Forest Program *Tree Care Manual* (2004) describes all regulations, standards, and specifications for implementation of the Tree Preservation Policy. Pruning of park trees must adhere to the recommendations described in Section 3.10 of the Urban Forest Program *Tree Care Manual*. The Tree Removal Procedure (Appendix J of the Urban Forest Program *Tree Care Manual*) must be followed for the removal of any park trees.

3.3.3 Environmental Impacts

Thresholds of Significance

Direct and indirect impacts to biological resources that would result from implementation of the proposed project are discussed in this chapter. Direct impacts are quantified by comparing the proposed project footprint with the biological resources within the project area.

Indirect impacts are not easily quantifiable; they include short-term indirect impacts related to construction and/or long-term indirect impacts associated with the location of development or activities in proximity to biological resources. During construction of the proposed project, short-term indirect impacts may include soil erosion and runoff, which could impact plant species, or dust and noise, which could temporarily disrupt habitat and species health. As discussed in Chapter 2, all project grading and construction would be subject to the standard restrictions and requirements that address erosion and runoff, including compliance with the federal Clean Water Act, the National Pollutant Discharge Elimination System Permit process, and the requirements for preparation of a Storm Water Pollution Prevention Plan. Long-term indirect impacts include increased park use, noise, increased opportunity of invasion by exotic plant and wildlife species, soil erosion, and litter.

As part of the Initial Study (see Appendix A), it was determined that the proposed project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Accordingly, this issue is not further analyzed in the EIR.

Per the CEQA Guidelines, the proposed project would have a significant impact on biological resources if it would:

- 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 United States Fish and Wildlife Service;

- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or United States Fish and Wildlife Service;

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

- 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; or

- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

Impact Analysis

BIO-1: *The proposed project would have a substantial adverse effect, either directly or through habitat modifications, on species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or United States Fish and Wildlife Service.*

As discussed above, the project area does not contain suitable habitat for species protected under the Federal Endangered Species Act, California Endangered Species Act, the California Native Plant Protection Act, local conservation agencies or organizations, the California Native Plant Society, or California Department of Fish and Game. However, suitable conditions to support nesting migratory native birds protected under the Migratory Bird Treaty Act exist within and adjacent to the project sites. Significant direct impacts to these species would occur associated with tree removal and/or vegetation clearance which could result in impacts to nests or through the direct removal of nests if these activities occur during the nesting/breeding bird season. Implementation of mitigation measure BIO-A is required.

BIO-2: *The proposed project would have a substantial adverse effect on riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or United States Fish and Wildlife Service.*

The survey areas do not contain any sensitive vegetation communities; therefore, no impacts to sensitive vegetation communities would occur.

Indirect impacts would potentially occur to native vegetation adjacent to the areas of disturbance, including coast live oak trees located along Grand View Drive and on the slopes above the materials staging area. Indirect impacts would include fugitive dust deposition on native vegetation during construction and increased soil erosion during and after construction. The indirect impact to adjacent sensitive vegetation communities could be significant. Indirect impacts to adjacent habitats during construction would be avoided or minimized through the use of appropriate Best Management Practices, implementation of the environmental commitments listed in the project description, and mitigation measure BIO-B.

BIO-3: *The proposed project would not have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.*

The project area does not contain any federally protected wetlands; therefore, no impacts would occur. No mitigation is required.

BIO-4: *The proposed project would not interfere substantially with the movement of 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.*

Elysian Park is not part of a major contiguous linkage between two or more large areas of open space, and thus does not serve as a regional wildlife corridor. The proposed project would drain Elysian Reservoir, a source of water for local and migratory birds and bats. The proposed project, however, would include the installation of a shallow pond no less than 0.5 acres in size. A source of water for birds and bats in Elysian Park would be lost as a result of project construction. However, this would not be considered a significant impact because there are adequate water sources near to Elysian Park, including the Los Angeles River, Echo Park Lake, and Silver Lake Reservoir, located approximately one quarter mile east, one mile west, and two miles northwest of Elysian Reservoir, respectively. No mitigation is required.

BIO-5: *The proposed project would conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.*

The Caltrans island contains at least one coast live oak that would be removed as part of the proposed project, and coast live oaks along Grand View Drive and adjacent to Point Grand View may require trimming. Oak trees, among others, are protected from removal and damage by the City of Los Angeles Native Tree Protection Ordinance (Los Angeles Municipal Code Section 46.00), enforced by the Los Angeles Department of Public Works Bureau of Street Services. For pruning of trees protected by the Ordinance (branches larger than 2 inches in diameter), LADRP requires a permit from the Board of Public Works (Urban Forest Program *Tree Care Manual*, Section 3.10). Any permitted pruning must be done in compliance with the Oak Tree Pruning Standards set forth by the Western Chapter of the International Society of Arboriculture. The stockpile area contains several small southern California walnut trees that may be large enough to be protected by the Native Tree Protection Ordinance, and the Caltrans island contains at least one western sycamore that is protected by the ordinance. Removal of a protected tree requires a removal permit from the Board of Public Works. Impacts to protected trees would conflict with the City's tree protection ordinance, and the impact would be significant. Implementation of mitigation measures BIO-C and BIO-D are required.

No Heritage Trees would be impacted by the proposed project because none exist within the project area. The stockpile area contains several toyon plants. LADRP recognizes toyon as a Special Habitat Value Tree, and as such they may only be pruned or removed with the approval of LADRP. LADRP also regulates protection of mature exotic park trees, referred to as Common Park Trees, under its Tree Preservation Policy. Ornamental trees in the stockpile area may or may not be considered Common Park Trees. Common Park Trees may be removed with the recommendation of LADRP's Forestry Arborist. Removal of toyon trees and mature exotic park trees would conflict with City's tree protection programs, and the impact would be significant. Implementation of mitigation measure BIO-E is required.

3.3.4 Mitigation Measures

BIO-A Project-related activities such as tree removal or vegetation clearance that would be likely to have the potential to disturb suitable bird nesting habitat shall be prohibited from February 15 through September 15 unless a qualified biologist surveys the project sites prior to disturbance to confirm the absence of active nests. Disturbance shall be defined as any activity that physically removes and/or damages vegetation or habitat. Surveys shall be conducted weekly, beginning no earlier than 30 days and ending no later than 3 days prior to the commencement of disturbance. If an active nest is discovered, disturbance within a buffer area surrounding the nest site shall be prohibited until nesting is complete; the buffer distance shall be determined by the biological monitor in consideration of species sensitivity and existing nest site conditions. Limits of the buffer area shall be demarcated with flagging or fencing. Once a flagged nest is determined to be no longer active, the biological monitor shall remove all flagging and allow construction activities to proceed.

BIO-B Prior to the start of construction, to minimize incidental impacts to adjacent vegetation, the construction contractor shall place construction fencing (chain link, silt fencing, or other fencing as appropriate) along the construction limits of work. The City of Los Angeles Department of Water and Power shall be responsible for hiring a qualified biologist to inspect the fencing upon installation and monthly thereafter for the duration of the project. The construction contractor shall be responsible for any improvements or repairs deemed necessary by the biologist.

BIO-C If it is determined that trimming of coast live oak trees along Grand View Drive is necessary, the City of Los Angeles Department of Water and Power shall follow the procedures and recommendations described in the Los Angeles Department of Recreation and Parks Urban Forest Program *Tree Care Manual*. The City of Los Angeles Department of Water and Power shall apply for a permit from the Board of Public Works and obtain approval prior to pruning of trees. Any pruning shall be performed in compliance with the Oak Tree Pruning Standards set forth by the Western Chapter of the International Society of Arboriculture.

BIO-D All coast live oak, western sycamore, and southern California black walnut trees that are removed shall be replaced at a minimum 2:1 ratio of the same species with a minimum 15-gallon specimen measuring one inch or more in diameter at a point one foot above the base, and not less than 7 feet in height, measured from the base.

BIO-E Prior to removal of any toyon plants, the City of Los Angeles Department of Water and Power shall obtain a recommendation for action from the City of Los Angeles Department of Recreation and Parks arborist that has been approved by the Department of Recreation and Parks General Manager. Upon completion of construction activities, any removed toyon shall be replaced in accordance with Los

Angeles City Landscape Policy (Urban Forest Program *Tree Care Manual*, Appendix M).

3.3.5 Significance After Mitigation

As discussed in impact BIO-1, project construction may adversely impact migratory birds if tree removal and/or vegetation clearance occurs during the migratory bird nesting season. With implementation of mitigation measure BIO-A, direct and indirect impacts to nesting migratory birds would be less than significant.

The proposed project would indirectly impact sensitive vegetation communities during construction, as discussed in impact BIO-2. Indirect impacts to adjacent habitats during construction would be avoided or minimized through the use of appropriate best management practices, implementation of the environmental commitments listed in the project description, and mitigation measure BIO-B.

As discussed in impacts BIO-3 and BIO-4, impacts to wetland and riparian habitat would be less than significant because there are no wetlands or riparian habitat located within the project sites.

To mitigate for impacts to protected coast live oak, western sycamore, and/or California walnut trees, as discussed in impact BIO-4, implementation of mitigation measures BIO-C and BIO-D are required. Pruning or other impacts to oak trees would occur only upon approval of a permit from the Board of Public Works, and any permitted pruning would be done in compliance with the pruning standards described in the Urban Forest Program *Tree Care Manual*. Further, protected trees that must be removed would be replaced at a minimum ratio of 2:1. With implementation of mitigation measures BIO-C and BIO-D, impacts to protected trees would be reduced to a less than significant level. Similarly, to mitigate impacts to protected toyon plants, mitigation measure BIO-E is required. With implementation of mitigation measure BIO-E, impacts to toyon would be less than significant.

CHAPTER 3.4
CULTURAL RESOURCES

A Phase I Cultural Resources Assessment was prepared for the proposed project in November 2008 and updated in October 2010 (see Appendix E). The Paleontological Assessment was prepared in September 2008 (also included in Appendix E). This chapter summarizes the results and conclusions presented in these reports.

3.4.1 Prehistoric Setting

Soils in the project vicinity have been most recently mapped as Puente Formation. The Puente Formation is Late Miocene, dating between 11.6 and 5.3 million years old. In the proposed project area, the Puente Formation consists of light tan, coarser grained sandstone beds infringed with buff white, laminated, fissile, finer grained sands and silts. In places, the bedding is interrupted by coarse sands and pebbles. The Puente Formation is well known for producing fossil resources in the Los Angeles area. Fossils discovered are primarily marine and include invertebrates, fish, and marine mammals, although they can also include terrestrial animal and plant fossils.

History of the Project Area

The Late Prehistoric period, spanning from approximately 1,500 years before present to the mission era, is the period during which the contemporary Native American group known as the Gabrielino flourished (Wallace 1955). Coming ashore near Malibu Lagoon or Mugu Lagoon in October of 1542, Juan Rodriguez Cabrillo was the first European to make contact with the Gabrielino Indians. Occupying the southern Channel Islands and adjacent mainland areas of Los Angeles and Orange counties, the Gabrielino are reported to have been second only to their Chumash neighbors in terms of population size, regional influence, and degree of sedentism (Bean and Smith 1978). The Gabrielino are estimated to have numbered around 5,000 in the pre-contact period (Kroeber 1925), and maps produced by early explorers indicate that at least 26 Gabrielino villages were within close proximity to the Los Angeles River, while an additional 18 villages were within reasonably close proximity to the river (Gumprecht 1999). Subsistence consisted of hunting, fishing, and gathering. The primary plant resources were the acorn, gathered in the fall and processed in mortars and pestles, and various seeds that were harvested in late spring and summer and ground with manos and metates. The seeds included chia and other sages, various grasses, and islay or holly leafed-cherry (Reid 1939 [1852]).

The Gabrielino were virtually ignored between the time of Cabrillo's visit and the Spanish Period, which began in 1769 when Gaspar de Portola and a small Spanish contingent began their exploratory journey along the California coast from San Diego to Monterey. Passing through the Los Angeles area, they reached the San Gabriel Valley on August 2 and traveled west through a pass between two hills where they encountered the Los Angeles River and camped on its east bank near the present-day North Broadway Bridge entrance to Elysian Park. This location has been designated California Historic Landmark Number 655, the Portola Trail Campsite, and is located approximately 0.5 miles south of Elysian Reservoir.

Gabrielino villages are reported by early explorers to have been abundant near the Los Angeles River. Among those villages were Maawnga in the Glendale Narrows; Totongna and Kawengna, in the San Fernando Valley; Hahamonga, northeast of Glendale; and Yangna, under present day downtown Los Angeles.

The exact location of Yangna within downtown Los Angeles continues to be debated, although some believe it to have been located under the present-day Civic Center (McCawley 1996). Other proposed locations are near the present day Union Station (Chartkoff and Chartkoff 1972:64), to the south of the old Spanish Plaza, and near the original site of the Bella Union Hotel located on the 300 Block of North Main Street (Robinson 1963:83, as cited in Dillon 1994:30). Local sources, such as the Echo Park Historical Society, report that when Gaspar de Portola and Father Juan Crespi camped on the river bank opposite the North Broadway Bridge entrance to Elysian Park, they were served refreshment by Yangna villagers from the current location of the Los Angeles Police Academy (Echo Park Historical Society 2008). The Los Angeles Police Academy is located in the central portion of Elysian Park, which is not a hypothesized location of Yangna. It is possible, however, that the local histories are actually referring to the village of Maawnga, which was reported to have been originally located within the Rancho de los Felis. This rancho originally encompassed Griffith Park and extended south to the northern portion of Elysian Park. The village of Maawnga, also recorded as Maungna, is believed to have been located “high on a bluff overlooking Glendale Narrows in the hills now occupied by Elysian Park” (Gumprecht 1999).

On September 4, 1781, twelve years after Crespi’s initial visit, the El Pueblo de la Reina de los Angeles was established not far from the site where Portola and his men camped. Watered by the river’s ample flow and the area’s rich soils, the original pueblo consisted of a public land grant of 28 square miles and included a central square, surrounded by 12 houses, and a series of 36 agricultural fields occupying 250 acres, plotted to the east between the town and the river (Gumprecht 1999).

An irrigation system that would carry water from the river to the fields and the pueblo was the community’s first priority and was constructed almost immediately. The main irrigation ditch, or Zanja Madre, was completed by the end of October 1781. It was constructed in the area of present-day Elysian Park and carried water south (roughly parallel to what is presently Spring Street) to the agricultural lands situated just east of the pueblo (Gumprecht 1999). By 1786, the flourishing pueblo attained self-sufficiency, and funding by the Spanish government ceased. Fed by a steady supply of water and an expanding irrigation system, agriculture and ranching grew, and by the early 1800s the pueblo produced 47 cultigens (Gumprecht 1999).

When the Southern Pacific Railroad extended its line from San Francisco to Los Angeles in 1876, newcomers poured into Los Angeles and the population nearly doubled between 1870 and 1880. More settlers continued to head west, and the demand for real estate skyrocketed. As real estate prices soared, land that had been farmed for decades outlived its agricultural value and was sold to become residential communities. The subdivision of the large ranchos took place during this time. The City’s population rose from 11,000 in 1880 to 50,000 by 1890 (Meyer 1981).

As a result of growing population and the increasing diversion of water, the once plentiful water supply provided by the Los Angeles River began to dwindle. The once extensive flood plain dried up, the landscape had been cleared for construction materials and fuel, and the tens of thousands of head of cattle, horses, and sheep owned by ranchers had decimated the local grasses (Gumprecht 1999). A number of waterworks projects were underway during the second half of the 19th century in an effort to increase water flow and water retention. Projects included the construction of the Buena Vista Reservoir (within present-day Elysian Park, near the project site), the Silver Lake Reservoir, and the further expansion of the Zanja Madre irrigation ditches.

History of Elysian Park

In 1883, City officials decided to create Elysian Park on a 746-acre piece of land west of the Los Angeles River (Gumprecht 1999), within a hill area known as the Rock Quarry Hills (Echo Park Historical Society 2008). The Rock Quarry Hills area was beyond the reach of the zanjas and the City's domestic water supply system, and as such, the land was considered worthless because, at the time, land was valued based on the available water supply, not on the land itself (Gumprecht 1999:78). Reduced from its original size, Elysian Park currently covers approximately 575 acres, second in size within the City only to Griffith Park. Elysian Park is the last remaining large piece of the original Pueblo of Los Angeles public land grant (Echo Park Historical Society 2008). In 1893, the Los Angeles Horticultural Society established the arboretum and botanical gardens within the park. In 1967, the Chavez Ravine Arboretum was declared Los Angeles City Historical-Cultural Monument No. 48. The Avenue of the Palms was planted on what is now Stadium Way, with a rare specimen of wild date palms in 1895 (Echo Park Historical Society 2008).

The CCSEP was formed in 1965 in an attempt to preserve the park from the encroachment of development. Prior to CCSEP's founding, SR 110 had divided the park, Dodger Stadium had been constructed within portions of the park, and several other developments, including water supply facilities, were constructed. The CCSEP is still active and continues efforts to preserve the Elysian Park lands as open space (Jamison 2008).

Elysian Park Water System

In 1869, as part of the ongoing City-wide water supply improvements, three small reservoirs on Eternity Street were replaced by a small earthen dam across a ravine in the Elysian Hills, which created a larger storage facility for Los Angeles River water (Gumprecht 1999). This structure eventually became known as Buena Vista Reservoir. This was the first water storage facility completed by the Los Angeles City Water Works Company (LADWP 2008). The reservoir was enlarged in 1884 from one MG to 13 MG. The reservoir has since been drained and removed from service; the former site is a small section of Elysian Park called Buena Vista Meadows, lying between SR 110 and North Broadway Street (Gumprecht 1999).

Three years later, in 1873, the East Side Reservoir was built south of the Buena Vista structure within Elysian Park. This structure was abandoned around 1887. Over the ensuing years, several associated buildings, structures, and support features were added to the system, including tunnels, ditches, and pumping plants. In 1903, in an effort to expand its reservoir system, the City of Los Angeles constructed both the Solano Reservoir and the Elysian Reservoir in Elysian Park. The Elysian Reservoir was formed by a rolled earth-filled dam constructed across a small canyon in the southeasterly part of Elysian Park. The reservoir was designed and built under the direction of William Mulholland.

Elysian Reservoir, with an original capacity of 10.5 MG, was becoming inadequate by 1940 due to a growing population and increasing water demands. Enlargement plans were drawn up in conjunction with the State Highway Department, which was seeking to construct SR 110 through the area. The enlargement would result in an increase of reservoir capacity to 55 MG and an increase of the high water elevation from 443 feet to 462 feet (LADWP 1957).

Existing Conditions

Records Search

Archival research for the proposed project was conducted on August 25, 2008, at the South Central Coastal Information Center housed at California State University, Fullerton. The research focused on the identification of previously recorded cultural resources within a 0.5-mile radius of the project site. The archival research involved review of archaeological site records, historic maps and historic sites, and building inventories. Additional historic research to develop a historical context for Elysian Reservoir was conducted at a number of archival repositories and local agency archives. Archives searched include the Los Angeles Public Library; the City of Los Angeles Bureau of Engineering Vault; and plans, photos, and historical narratives provided by LADWP. Documents searched during the course of the research include book publications, historic newspaper articles, historic photographs, historic maps, and engineering plans.

The records search revealed that a total of 16 cultural resource investigations were previously conducted within a 0.5-mile radius of the project site (see Table 3.4-1). These cultural resource investigations include: seven cultural resource assessments, four historic bridge evaluations, two determinations of eligibility, two monitoring reports, and one Finding of Effect document. The entire Elysian Reservoir site has been previously surveyed as one of the 16 previous investigations (LA-1747).

The records search indicated that a total of three cultural resources were previously recorded within the 0.5-mile radius records search (see Table 3.4-2). These three resources include two historic structures and one historic archaeological refuse deposit. No cultural resources have been previously recorded within the project sites.

Sacred Lands File Search

A letter requesting a Sacred Lands File search was sent to the Native American Heritage Commission on July 21, 2008. The response from the Native American Heritage Commission dated July 23, 2008, indicated “the presence of Native American cultural resources in the immediate Project area.” Anthony Morales, a representative of the Gabrielino-Tongva tribe, was contacted on October 29, 2008, to obtain further information. While Mr. Morales had no information about specific Native American archaeological sites within Elysian Reservoir or the vicinity, he stated that the project site is located within a “very sensitive area” and that Native American resources have been uncovered at construction sites located within a 0.5-mile radius.

Table 3.4-1 Previous Surveys Conducted within 0.5-mile of the Project Sites

Author	Report (LA-)	Description	Date
Anonymous	2950	Consolidated Report: Cultural Resource Studies for the Proposed Pacific Pipeline Project	1992
Anonymous	4386	Cultural Resources Overview Los Angeles County Metropolitan Transportation Authority's Interstate Commerce Commission Abandonment Exemption Pasadena-Los Angeles Light Rail Transit Project	1993
Anonymous	4044	Environmental Impact Report: Seismic Retrofit of Olympic Boulevard and North Broadway Bridges Over the Angeles River	1995
Anonymous	4389	Metro Pasadena Project Preliminary Engineering Structural Feasibility for the Los Angeles River Crossing	1992
Arrington, Cindy and Nancy Sikes	8255	Cultural Resources Final Report of Monitoring and Findings for the Qwest Network Construction Project State of California: Volumes I and II	2006
Blodgett, Leslie M.	1747	Archaeological Resources Assessment and Impact Analysis for the Proposed Elysian Reservoir Roof Project, City of Los Angeles, California	1989
Borg, Roger	6362	Finding of Effect on Historic Properties Arroyo Seco Parkway and Four Level Interchange	1994
Greenwood, Roberta S.	6837	Cultural Resources Monitoring: Northeast Interceptor Sewer Project	2003
Hatheway, Roger G.	4452	Determination of Eligibility Report Chinatown	1982
Lapin, Philippe	4741	Cultural Resources Assessment for Pacific Bell Mobil Services Facility LA 702-03, County of Los Angeles, California	1999
Lee, Portia	4218	Seismic Retrofit of North Broadway Bridge over the Los Angeles River	n.d.
McLean, Deborah K.	3960	Archaeological Assessment for Pacific Bell Mobile Services Telecommunications Facility LA 108-01, 2000 North Figueroa Street, City and County of Los Angeles, California	1998
Moffatt & Nichol	4390	Arroyo Seco Bridge Reconstruction Preliminary Design and Seismic Retrofit	1993
Slawson, Dana N.	4624	Historical Resources Assessment for the Proposed Rehabilitation of the Lincoln Heights Youth Center and Boxing Gymnasium	1999
Snyder, John W.	8252	Request for Determination of Eligibility for Inclusion in the National Register of Historic Places	1986
Sylvia, Barbara	6345	Highway Project Description to grind and cold plane existing asphalt and concrete pavement, place rubberized asphalt concrete and replace existing lane stripes with thermoplastic striping on the Northbound Route 110 to Northbound Route 5 connector	2001

Table 3.4-2 Previously Recorded Cultural Resource Site within 0.5-mile of the Project Sites

P-Number (P-19-)	Description	Date Recorded
003685	Deposit of commercial and industrial refuse	7/23/2003
186859	The Arroyo Seco Flood Control Channel	3/26/2003 6/11/2003
188229	Buena Vista Viaduct	8/18/1986

Cultural Resources Survey

A cultural resources field survey of Elysian Reservoir was conducted on September 22, 2008. A second cultural resources field survey was conducted on August 13, 2010, of the construction staging north of Grand View Drive at Park Row Street, the stockpile area north of Elysian Reservoir, and the inlet line location at the Caltrans island on Riverside Drive. Areas surveyed include those that would be disturbed during construction and operation of the proposed project. The cultural resources survey included all archaeological investigations and the documentation of historic architectural and landscape resources.

Archaeological Survey

The Elysian Reservoir property itself was surveyed as part of the historic architectural portion of the survey. The archaeological survey involved the investigation of the reservoir perimeter, edges of the roadway surrounding the reservoir, an open space area to the north of the reservoir, where the proposed wildlife pond would be constructed (this area is to be used for materials and equipment staging during construction), the stockpile area within the canyon north of the reservoir, and the launching jacking pit for the new inlet line tunnel within the Caltrans island on Riverside Drive. The archaeological survey also included the construction staging area located west of Elysian Reservoir, northeast of the intersection of Park Row Street and Grand View Drive.

Although paved, the road surrounding the reservoir was surveyed, with attention paid to the edges of the road. Along the western edge of the road, a vertical cut was visible consisting of sandstone bedrock sediments described as light tan coarse grained beds. Visibility of the ground surface along the edges of the road was between 20 percent (in areas of dense vegetation) to 100 percent (in the area of the sandstone cut).

The wildlife pond/staging area, located on the northwest end of the reservoir property, appeared to have been recently mowed or cleared of some vegetation. Visibility of the ground surface in this area was approximately 50 percent. There were piles of concrete mix that had been deposited in this area, obscuring the surface. Surveyors focused on areas not obscured by vegetation or concrete mix to identify any possible archaeological resources. The stockpile area located to the north of the northwest end of the reservoir within the canyon was densely vegetated with a slope of 40 degrees. Visibility in this area was less than 10 percent.

The picnic area north of Grand View Drive at Park Row Street to be used for construction staging is located within Elysian Park and is landscaped mainly with trees and lawn. Open areas were inspected for cultural resources. The area had a visibility of approximately 80 percent.

The truck turnaround area located at Point Grand View within Elysian Park is completely developed as a viewpoint and parking area. It includes a traffic island to separate the parking area from Grand View Drive. As it is completely paved, ground visibility was zero with the exception of the traffic island, which was inspected for cultural resources. This is a modern traffic island with immature palm trees and is not a historic-era feature of Elysian Park.

The primary site for the inlet line construction would be located within the Caltrans island adjacent to the on-ramp to the northbound I-5 along the west side of Riverside Drive, roughly between Barclay Street and Duvall Street. The ground surface of this island is almost completely obscured by very dense vegetation. A chain link fence line runs from east to west along the north edge of the island, parallel to Riverside Drive. A small strip of gravel-covered ground surface was visible on either side of the fence. This area was inspected for cultural resources. Overall visibility of the island was less than 5 percent.

Historic Architectural Resources Survey

Elysian Reservoir is an uncovered asphalt-lined basin approximately 900 feet long and 400 feet wide. It has a maximum depth of 50 feet and an area of 6.16 acres at elevation 462 above mean sea level (the high-water elevation). The sides of the reservoir slope at 1 (vertical) to 3 (horizontal) from the bottom of the structure to elevation 440, and 1 vertical to 2 horizontal from elevation 440 to the top of the slope. A narrow foot bridge with square-shaped concrete piers leads to a reinforced concrete circular outlet tower with a cone-shaped octagonal roof located in the southern portion of the reservoir. The tower has an overall height of 79 feet, excluding the corbel. When the reservoir is full (high water level is 462 feet), the tower projects approximately 15 feet above the surface. The bridge deck is lined with wood planks and includes metal truss railings. Concrete stairs, located southwest of the bridge, provide access to the water. Water is supplied through the Elysian Tunnel, located on the northeast side of the reservoir. A spillway tunnel of reinforced concrete is located on the southeast side of the reservoir. The total length of the spillway is 1,100 feet, with a drop in elevation of 145 feet. The reservoir is enclosed by a chain link fence, which sits atop a concrete parapet wall. Other historic-era Elysian Reservoir features include concrete-lined ditches located on the southern end of the reservoir and sections of road. Table 3.4-3 shows the dates of improvements to the Elysian Reservoir.

Table 3.4-3 Timeline of Events and Improvements for Elysian Reservoir

Modification	Date
Elysian Reservoir Constructed	1903
Elysian Reservoir Inlet Tunnel Added	Built – 1908
High Gravity 30 inch Steel Conduit in Tunnel	Added – 1908
30 inch Steel Conduit Replaced by 40 inch Welded Steel	1929
Portion of Elysian Tunnel Abandoned	1937
New Section Added to Elysian Tunnel	Added – 1940
Spillway Tunnel Added	Built – 1942
Inlet Control Shaft Added	Added – 1942
Outlet Tower and Footbridge Added	Built – 1943
Reservoir Wall Added	Ca. 1943
Paved Roadway at Southern end of Reservoir	Built – 1943
Enlarged Reservoir Placed Back in Service	1943
Surface of Reservoir and Roadway Repaved with Asphaltic Concrete	Ca. 1946
Resurfaced a Portion of the Reservoir at the Inlet Structure	1966
Caissons added to support Proposed Roof	1986

Source: LADWP 2008.

Paleontological Records Search

A paleontological records search was conducted at the Natural History Museum of Los Angeles County Departments of Vertebrate and Invertebrate Paleontology, with the Museum of Paleontology at the University of California at Berkeley, and in existing literature. One vertebrate locality was located in Elysian Park proper (it is not known if this locality is within the reservoir property), 12 others were located in close proximity (McLeod 2008). A certified paleontologist performed a pedestrian survey of the proposed project area on September 25, 2008. The complete copy of this research is included in Appendix D.

Of particular note are locality LACM 4967, which includes holotypes of a new species of herring (*Clupea teifei*), and LACM 3882, which includes the holotype of a new baleen whale (*Mixocetus elysius*). Aside from LACM 4967, which was recovered from Elysian Park, the two closest localities (LACM 7507 and LACM 1880) produced deep water fish. Seven invertebrate localities were found near Elysian Reservoir in the Puente Formation, although only one locality included data on fossils recovered (Los Angeles County Museum Department of Invertebrate Paleontology 2008).

3.4.2 Regulatory Setting

National Historic Preservation Act

Enacted in 1966, the National Historic Preservation Act established the National Register of Historic Places (National Register) program under the Secretary of the Interior, authorized funding for state programs with provisions for pass-through funding and participation by local governments, created the Advisory Council on Historic Preservation, and provided for a review process for protecting cultural resources. The National Historic Preservation Act provides the legal framework for most state and local preservation laws.

The National Register program is maintained by the Keeper of the Register, within the National Park Service division. The National Register program also includes National Historic Landmarks, which are limited only to properties of significance to the nation. A building, district, site, structure, or object is eligible for listing in the National Register if it possesses integrity of location, design, setting, materials, workmanship, feeling, and association and meets at least one of the following criteria:

A. It is associated with events that have made a significant contribution to the broad patterns of our history;
B. It is associated with the lives of persons significant in our past;
C. It embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components may lack individual distinction; or
D. It has yielded, or may be likely to yield, information important in prehistory or history.

All resources that are eligible for listing on the California Register of Historic Places (California Register) qualify for listing on the National Register.

California Register of Historic Places

A cultural resource is considered "historically significant" under CEQA if the resource meets one or more of the criteria for listing on the California Register. The California Register was designed to be used by state and local agencies, private groups, and citizens to identify existing cultural resources within the state and to indicate which of those resources should be protected, to the extent prudent and feasible, from substantial adverse change. The following criteria have been established for the California Register (Pub. Res. Code Section 5024.1, Title 14 CCR, Section 4852). A resource is considered significant under CEQA if it:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
2. Is associated with the lives of persons important in our past;
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; and/or
4. Has yielded, or may be likely to yield, information important in prehistory or history.

In addition to meeting one or more of the above criteria, historic resources eligible for listing in the California Register must retain enough of their historic character or appearance to be able to convey the reasons for their significance. Such integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association.

3.4.3 Environmental Impacts

Thresholds of Significance

As part of the Initial Study (see Appendix A), it was determined that the proposed project would not disturb any human remains, including those interred outside of formal cemeteries. Accordingly, this issue is not further analyzed in the EIR.

The CEQA Guidelines establish that a proposed project would have a significant effect on cultural resources if it would:

- Cause a substantial adverse change in the significance of a historical resource (Cal. Code Regs., Title 14, Section 15064.5);

- Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5; or

- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

Impact Analysis

CR-1 *The proposed project would not cause a substantial adverse change in the significance of a historical resource.*

Elysian Reservoir was evaluated for its eligibility in the California Register, and therefore the National Register. The reservoir was originally constructed in 1903. Between 1940 and 1943, components were added to the reservoir system, and the reservoir itself was substantially modified and enlarged. No major alterations have been made since the 1940s, and the reservoir continues to function in the same capacity, providing water storage and service for surrounding neighborhoods. As described below, the reservoir was found not to be eligible under any of the California Register criteria.

In order to determine the potential eligibility of the Elysian Reservoir, as part of this study, a cultural resources survey of the project area and an archival research were conducted. This information included, but was not necessarily limited to:

- Construction plans for Elysian Reservoir, on file at LADWP, Los Angeles, California
- Field Engineer Notes – Elysian Reservoir, on file at LADWP, Los Angeles, California
- Sanborn Fire Insurance Maps, available online
- Historical photographs of Elysian Reservoir, on file at LADWP, Los Angeles, California
- Historic topographic maps, various dates, available online
- Various secondary sources on Los Angeles water history, on file at the Los Angeles Public Library

For a water system to be considered eligible under Criterion 1 of the California Register, it must be found to be associated with specific important events or patterns of events. The significance of the documented association must be an important association in and of itself, not mere coexistence. Elysian Reservoir was one of the first reservoirs constructed by the City of Los Angeles after the City established control of its water works system. Along with other reservoirs from that time, Elysian Reservoir played a key role in the City's ability to deliver water to Los Angeles' growing population. However, due to the numerous modifications undertaken on the reservoir over the years, such as the reservoir enlargement between 1940 and 1943, it has lost a significant degree of historic integrity to that time period. While the reservoir does retain integrity of location and setting, it has lost integrity of materials, design, workmanship, feeling, and association. The reservoir is associated with an important local historic event; however, its loss of historic integrity from its period of significance overrides its potential eligibility. While rare or unusual properties are sometimes allowed a greater number of alterations (U.S. Department of Interior 1995), Elysian Reservoir does not fall into this category of properties. It was not the first reservoir in the region, nor did it involve innovative construction techniques. Instead, it relied upon existing, proven technologies. The renovated and enlarged dam was partially completed as a Works Project Administration (WPA) project; however, much of the work was done by LADWP after the WPA abandoned the project. The WPA abandonment was due to the shortage of manpower resulting from the United States' entry into World War II. The dam, therefore, does not appear to retain a high degree of association as a WPA-completed project. As such, Elysian Reservoir does not appear to meet eligibility Criterion 1 for California Register listing.

For eligibility under Criterion 2, a property must be associated with an important person's productive life and must be the property that is most closely associated with that person. Water-related systems are rarely found eligible under Criterion 2; however, a water system could be found eligible under this criterion if an important person's association with the system is strong and no other properties closely associated with that person remain. In terms of Criterion 2, the highest potential for eligibility of Elysian Reservoir is its association with William Mulholland, who died in 1935. A preliminary assessment of Elysian Reservoir in 2005 indicated the possibility of eligibility under California Register Criterion 2 through its association with Mulholland. This potential eligibility suffers, however, from the facility's extensive loss of integrity. Further research on the property conducted as part of this study revealed several major alterations and modifications, undertaken predominately in the 1940s after Mulholland's death, that have compromised its historic integrity. The reservoir no longer maintains a sense of place and time to Mulholland's original design. This lack of integrity is especially problematic within the specific context of Mulholland, in that there are other, better known water-related properties with associations to him, such as the Los Angeles Aqueduct. Elysian Reservoir, therefore, does not appear to be eligible under Criterion 2.

Water-related systems can be determined eligible for the California Register under Criterion 3 for their engineering or design values. Properties eligible under this criterion may have unique features, or they may be good examples of a particular type of property. As previously noted, Elysian Reservoir has undergone several modifications that have removed its original historic features. While it is generally recognized when assessing a property's integrity that historic resources can undergo nominal changes without destroying integrity, it is necessary for the property to retain enough historic features to convey its original historic appearance (U.S. Department of Interior 1995). In its present condition and configuration, Elysian Reservoir does not resemble its original historic design or appearance due to the subsequent enlargement of the facility in the 1940s and other ad-hoc alterations. Because of this substantial loss of integrity, this property does not appear to meet eligibility Criterion 3 for California Register listing.

Eligibility under Criterion 4 hinges on the ability of the property, as contained in artifacts and objects, to further address issues of scientific importance to the period of significance. These data are primarily derived from archaeological sites and rarely buildings and structures themselves. Archaeological features or deposits may provide new information not available elsewhere regarding the kinds of documented or undocumented activities in the area. While buildings and structures can sometimes provide important information regarding historic construction techniques, these techniques may also be well documented in both written and visual sources, and the building or structure itself may not yield new primary information. Elysian Reservoir has been documented in several primary and secondary sources; therefore, the structure does not appear to possess the potential to answer important scientific questions or yield previously unknown information. The research value of Elysian Reservoir has been realized through these previous studies and documentation. This property does not appear to be eligible for listing under California Register Criterion 4.

Other historic-era features located within the project site and associated with Elysian Reservoir (e.g., ditches, roads) do not appear eligible for California Register listing. Most of the features were constructed during the reservoir enlargement, after the period of significance, and do not themselves embody distinctive characteristics or have important associations. Because of the facility's extensive loss of integrity, Elysian Reservoir does not appear to be eligible for listing under the California Register or the National Register. Removal of Elysian Reservoir would result in a less than significant impact to historic resources.

CR-2 *The proposed project could cause a substantial adverse change in the significance of an archaeological resource.*

The age of Elysian Reservoir heightens the likelihood that archaeological resources may be encountered during construction. The proposed project is anticipated to excavate approximately 167,000 CY of material from the existing reservoir during construction of the proposed project. The project site lies in close proximity to the original Pueblo of the City of Los Angeles, as well as the Los Angeles River.

The possible close proximity of the Native American village Maawgna to the project site, as well as over 100 years of history of Elysian Reservoir itself, increases the likelihood that prehistoric and/or historic archaeological resources may be present within the project site. In addition to potentially uncovering Native American cultural resources, the possibility of unearthing buried and abandoned tunnels, pipelines, and other components of the various water conveyance systems placed in the project site is possible. The results of the archival research and the Sacred Lands File search demonstrate the possibility that prehistoric and/or historic archaeological resources may be present within the Elysian Reservoir property. Such resources may lie beneath the surface, obscured by pavement, vegetation, or other reservoir features. Therefore, ground disturbing activities have the potential to uncover previously unknown resources, the impact of which would be significant. Implementation of mitigation measure CR-A is required.

CR-3 *The proposed project could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.*

Paleontological resources are considered to be significant if they provide new data on fossil animals, distribution, evolution, or other scientifically important information. The paleontological records search determined that one vertebrate locality was located within Elysian Park proper, and 12 others were located in close proximity to the reservoir property. The survey also confirmed the presence of fossils in the Puente Formation within the reservoir property. Fossils observed included beds of plant remnants and scattered marine mammal coprolites. No fossils were readily identifiable past the generic identifications of “plant” and “coprolite.” No material was collected. Because of this, the Elysian Reservoir site has high paleontological sensitivity. The impact would be significant, and implementation of mitigation measure CR-B is required.

3.4.4 Mitigation Measures

CR-A Because the potential to encounter archaeological resources exists within the Elysian Reservoir property, qualified archaeological and Native American monitors shall perform monitoring during all ground disturbing activities, including but not limited to, excavation, trenching, boring, and grading at the Elysian Reservoir site. In the event that potential archaeological materials are encountered during construction, all construction activity in the area of the find shall cease until the discovery can be evaluated by a qualified archaeologist in accordance with the provisions of CEQA Guidelines Section 15064.5. The archaeological monitor shall have the authority, in coordination with the construction manager, to temporarily re-direct construction equipment in the event potential archaeological resources are encountered until appropriate action to protect the resource has occurred.

CR-B Because the Elysian Reservoir site has high paleontological sensitivity, a qualified paleontological monitor shall perform monitoring during the grading and excavation phases of construction. Monitoring shall include inspection of exposed surfaces and microscopic examination of matrix. In the event that potential significant fossil localities are encountered during construction, all construction activity in the area of the find shall cease until the discovery can be evaluated by a qualified paleontologist. The paleontological monitor shall have authority, in coordination with the construction manager, to temporarily divert grading away from exposed resources until action to protect the resource has occurred. Fossils recovered shall be prepared, identified, and catalogued before donation to the federally accredited repository designated by the lead agency.

3.4.5 Significance After Mitigation

Impacts to historic resources would be less than significant without implementation of mitigation.

Because the potential to encounter archaeological resources exists for the proposed project (as described in CR-2), archaeological and Native American monitoring is required during all ground disturbing activities at the Elysian Reservoir site in accordance with mitigation measure CR-A. In the event that potential archaeological materials are encountered during construction, all construction activity in the area of the find would cease until the discovery can be evaluated by a qualified archaeologist. Materials would be recovered and curated, as appropriate. Impacts to archaeological resources would be reduced to a less than significant level with implementation of mitigation measure CR-A.

Similarly, monitoring for paleontological resources would be required for all ground disturbing activities in accordance with mitigation measure CR-B. Any significant materials that are discovered during construction would be cataloged and stored at an approved curation facility. Impacts to paleontological resources would be reduced to a less than significant level with implementation of mitigation measure CR-B.

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CHAPTER 3.5
NOISE

This chapter evaluates noise and vibration impacts associated with the implementation of the proposed project. The analysis in this chapter assesses existing noise and vibration conditions at the project site and in its vicinity and the short-term construction and long-term operational noise and vibration impacts associated with the proposed project. The noise technical report is included as part of Appendix C of this EIR.

3.5.1 Environmental Setting

Noise Characteristics and Effects

Characteristics of Sound

Sound is technically described in terms of the loudness (amplitude) and frequency (pitch) of the sound. The standard unit of measurement for sound is the decibel (dB). The human ear is not equally sensitive to sound at all frequencies. The "A-weighted scale," abbreviated dBA, reflects the normal hearing sensitivity range of the human ear. On this scale, the range of human hearing extends from approximately 3 to 140 dBA. Figure 3.5-1 provides examples of A-weighted noise levels from common sounds.

Noise Definitions

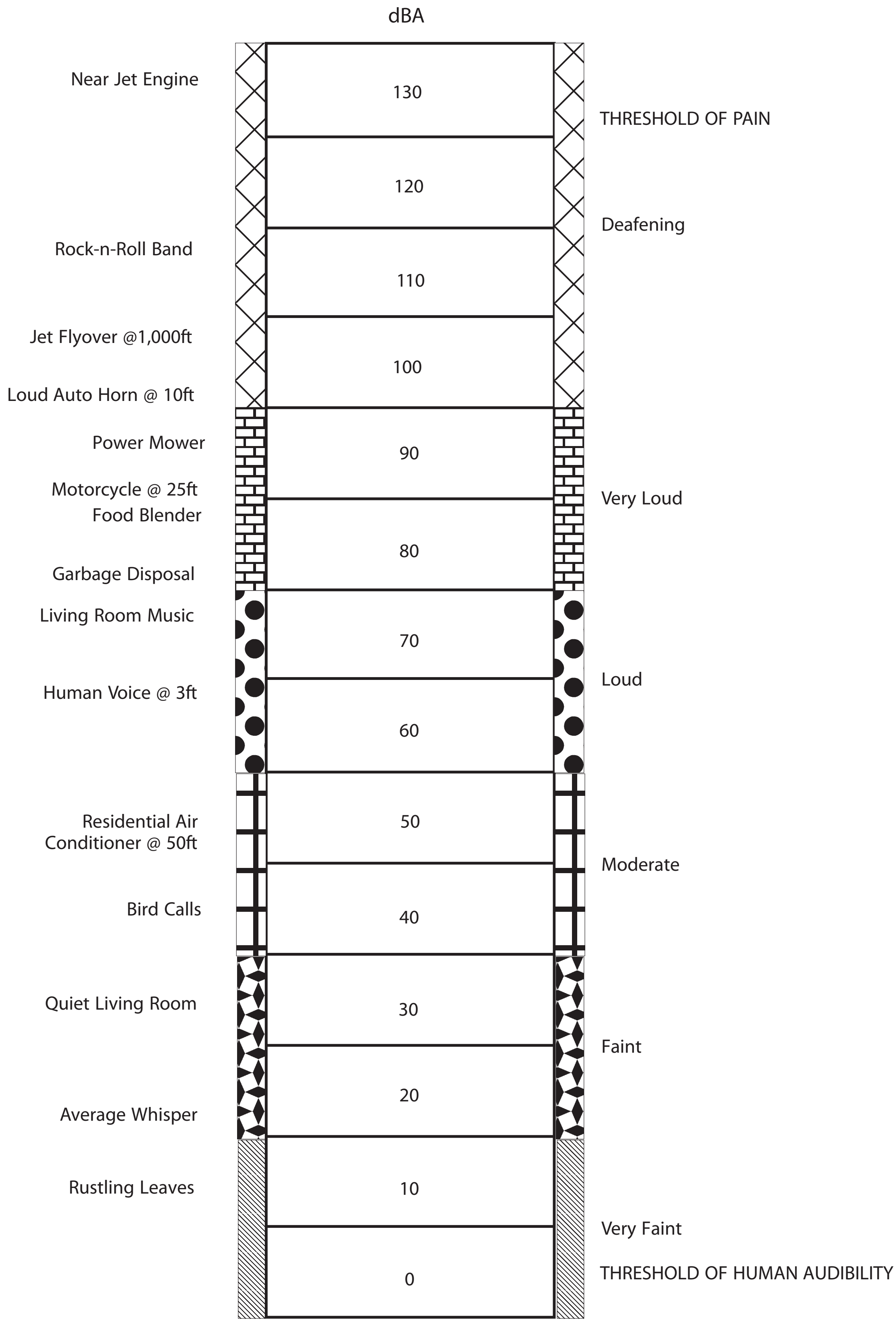
This noise analysis discusses sound levels in terms of Equivalent Noise Level (L_{eq}). L_{eq} is the average noise level on an energy basis for any specific time period. The L_{eq} for one hour is the energy average noise level during the hour. The average noise level is based on the energy content (acoustic energy) of the sound. L_{eq} can be thought of as the level of a continuous noise which has the same energy content as the fluctuating noise level. The equivalent noise level is expressed in units of dBA.

Effects of Noise

Noise is generally defined as unwanted sound. The degree to which noise can impact the human environment ranges from levels that interfere with speech and sleep (annoyance and nuisance) to levels that cause adverse health effects (hearing loss and psychological effects). Human response to noise is subjective and can vary greatly from person to person. Factors that influence individual response include the intensity, frequency, and pattern of noise, the amount of background noise present before the intruding noise, and the nature of human activity that is exposed to the noise source.

Audible Noise Changes

Studies have shown that the smallest perceptible change in sound level for a person with normal hearing sensitivity is approximately 3 dBA. A change of at least 5 dBA would be noticeable and may evoke a community reaction. A 10-dBA increase is subjectively heard as a doubling in loudness and would likely cause a community response.



Source: TAHA 2010

Figure 3.5-1
A-Weighted Decibel Scale

Noise levels decrease as the distance from the noise source to the receiver increases. Noise generated by a stationary noise source, or “point source,” would decrease by approximately 6 dBA over hard surfaces and 7.5 dBA over soft surfaces 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, over a hard surface. Noise generated by a mobile source would decrease by approximately 3 dBA over hard surfaces and 4.5 dBA over soft surfaces for each doubling of the distance.

Generally, noise is most audible when traveling by direct line-of-sight. Line-of-sight is an unobstructed visual path between the noise source and the noise receptor. Barriers, such as walls, berms, natural terrain, 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 or around the barrier (diffraction). Sound barriers can reduce sound levels by up to 20 dBA. However, if a barrier is not high or long enough to break the line-of-sight from the source to the receiver, its effectiveness is greatly reduced.

Vibration Characteristics and Effects

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 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 is defined as the maximum instantaneous peak of the vibration signal. The peak particle velocity is most frequently used to describe vibration impacts to buildings and is usually measured in inches per second. The root mean square amplitude is most frequently used to describe the affect of vibration on the human body. The root mean square amplitude is defined as the average of the squared amplitude of the signal. Decibel notation is commonly used to measure root mean square. The decibel notation acts to compress the range of numbers required to describe vibration (Federal Transit Administration 2006).

Effects of Vibration

High levels of vibration may cause physical personal injury or damage to buildings. However, ground-borne vibration levels rarely affect human health. Instead, most people consider groundborne vibration to be an annoyance that may affect concentration or disturb sleep. In addition, high levels of groundborne vibration may damage fragile buildings or interfere with equipment that is highly sensitive to ground-borne vibration (e.g., electron microscopes). To counter the effects of groundborne vibration, the Federal Transit Administration has published guidance relative to vibration impacts. According to the Federal Transit Administration, fragile buildings can be exposed to groundborne vibration levels of 0.3 inches per second without experiencing structural damage (2006).

Perceptible Vibration Changes

In contrast to noise, groundborne vibration is not a phenomenon that most people experience every day. The background vibration velocity level in residential areas is usually 50 root mean square or lower, well below the threshold of perception for humans, which is around 65 root mean square (Federal Transit Administration 2006). Most perceptible indoor vibration is caused by sources within buildings, such as the operation of mechanical equipment, movement of people, or slamming of doors. Typical outdoor sources of perceptible groundborne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If the roadway is smooth, the vibration from traffic is rarely perceptible.

3.5.2 Existing Environmental Setting

Existing Noise Environment

The existing noise environment of the project site and the vicinity is characterized by vehicular traffic and other sources of noises typical to a single-family residential and recreational area. Sound measurements were taken using a SoundPro DL Sound Level Meter between 11:30 a.m. and 1:00 p.m. on Tuesday, September 28, 2010, to determine existing ambient daytime noise levels at and in the vicinity of the project construction sites (i.e., Elysian Reservoir and the Caltrans island on Riverside Drive). These readings were used to establish existing ambient noise conditions and to provide a baseline for evaluating construction and operational noise impacts from stationary sources (i.e., construction and recreation activity at the project sites). The existing noise environment at Elysian Reservoir is characterized by vehicular traffic along SR 110 and local roadways. The existing noise level at the reservoir itself is less than 58 dBA L_{eq}. The existing noise environment near the Caltrans island is characterized by vehicle traffic along Riverside Drive and vehicles accessing I-5. The existing noise level at the inlet line construction site is approximately 57 dBA L_{eq}.. As shown in Table 3.5-1, existing ambient sound levels for these surrounding locations range between 41.7 and 65.2 dBA L_{eq}.

Table 3.5-1 Existing Noise Levels in Vicinity of Project Sites

#	Noise Monitoring Location	Distance from Project Site (feet)	Sound Level (dBA, L_{eq})
1	Single-family residences on Park Row Street	600[1]	58.4
2	Solano Avenue Elementary School	925[1]	60.8
3	Elysian Park Recreation Area	1,200[1]	41.7
4	Single-family residences on Riverside Drive	70[2]	65.2

[1] Distance from Elysian Reservoir.
[2] Distance from Caltrans island.
Source: Terry A. Hayes & Associates 2010.

Existing Vibration Environment

Similar to the environmental setting for noise, the existing vibration environment is very quiet, with little or no vibration. Heavy-duty truck travel is minimal, and occasional medium- or light-duty maintenance trucks access the reservoir. Medium-duty trucks can generate some ground-borne vibrations that vary depending on vehicle type, weight, and pavement conditions. As heavy trucks typically operate on major streets, existing groundborne vibration in the project vicinity is largely related to sparse medium-duty truck traffic on the surrounding roadway network. Vibration levels from adjacent roadways, SR 110, and I-5 are not perceptible at the project sites.

Sensitive Receptors

Noise- and vibration-sensitive land uses are locations where people reside or where the presence of unwanted sound would adversely affect the use of the land. Residences, schools, hospitals, guest lodging, libraries, and some passive recreation areas would be considered noise- and vibration-sensitive and may warrant unique measures for protection from intruding noise.

As shown in Figure 3.5-2, sensitive receptors near Elysian Reservoir include the following:

- Single-family residences along Park Row Street located approximately 600 feet to the southwest of the project site.
- Solano Avenue Elementary School located approximately 925 feet southwest of the project site.
- Solano Canyon recreation facilities located approximately 1,200 feet to the west

Sensitive receptors near the Caltrans island include the following:

- Single-family residences along Riverside Drive, located approximately 70 feet to the east

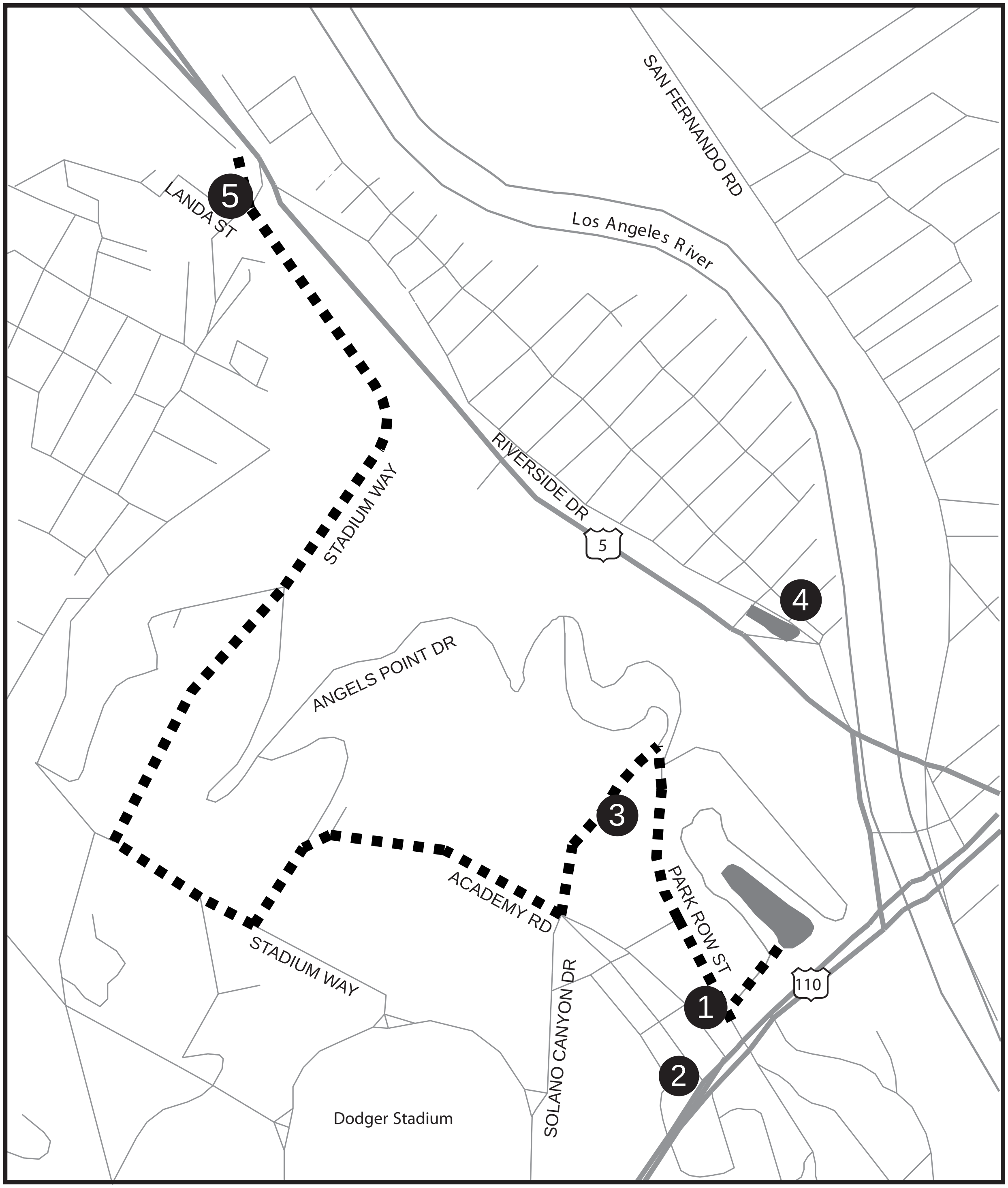
Sensitive receptors near the haul truck route include the following:

- Single-family residences along Park Row Street near Elysian Reservoir
- Solano Canyon recreation facilities
- Single- and multi-family residences along Landa Street and Riverside Drive

The above sensitive receptors represent the nearest noise-sensitive land uses with the potential to be impacted by the proposed project or haul truck route. Additional single- and multi-family residences are located in the surrounding community within one-quarter mile of the project sites and haul truck routes.

Vehicular Traffic

Vehicular traffic is the predominant noise source in the vicinity of the project sites. Using existing traffic volumes provided by the traffic consultant and the Traffic Noise Model Look-Up Program, the L_{eq} was calculated for various roadway segments in the project area. Existing weekday and weekend mobile noise levels are shown in Table 3.5-2.



LEGEND: Project Site | Haul Route | SOURCE: TAHA, 2010

\# Noise Monitoring Positions

1. Single-Family Residences on Park Row Street
2. Solano Avenue Elementary School
3. Solano Canyon Recreation Facilities
4. Single-Family Residences on Riverside Drive
5. Single-Family Residences on Landa Street

APPROX. SCALE 0 480 720 FEET

N

Figure 3.5-2
Locations of Noise Sensitive Uses

Table 3.5-2 Existing Estimated Mobile Noise Levels

Roadway Segment	Estimated L_{eq} (dBA)
Park Row Street between Grand View Drive and SR-110	54.4
Solano Canyon Drive between Park Row Drive and Academy Road	54.0
Academy Road between Solano Canyon Drive and Stadium Way	61.3
Stadium Way between Elysian Park Drive and Landa Street	67.0
Riverside Drive between Gail Street and Eads Street	68.5
Riverside Drive between Oros Street and I-5 Ramps	67.4

Source: Terry A. Hayes & Associates 2010.

As shown in Table 3.5-2, existing peak-hour mobile noise levels range from 54.0 to 68.5 dBA $L_{eq.}$ Modeled vehicle noise levels are typically lower than the noise measurements along similar roadway segments as modeled noise levels do not take into account additional noise sources (e.g., sirens, reflected noise, and non-vehicular noise).

3.5.3 Regulatory Setting

City of Los Angeles Noise Ordinance

The City of Los Angeles has established policies and regulations concerning the generation and control of noise that could adversely affect its citizens and noise sensitive land uses. Regarding construction, the Los Angeles Municipal Code (Chapter IV, Article 1, Section 41.40 and Chapter XI, Article 2, Section 112.04) indicates that no construction or repair work shall be performed on weekdays between the hours of 9:00 p.m. and 7:00 a.m. the following day, since such activities can generate loud noises and disturb persons occupying sleeping quarters in any adjacent dwelling, hotel, apartment, or other place of residence. No construction or repair work shall be performed before 8:00 a.m. or after 6:00 p.m. on any Saturday or on a federal holiday, or at any time on Sunday. Under certain conditions, the City may grant a waiver to allow limited construction activities to occur outside of the limits described above.

The LAMC (Chapter XI, Article 2, Section 112.05) also specifies the maximum noise level for the following powered equipment: crawler-tractors, dozers, rotary drills and augers, loaders, power shovels, cranes, derricks, motor graders, paving machines, off-highway trucks, ditchers, trenchers, compactors, scrapers, wagons, pavement breakers, compressors and pneumatic or other powered equipment. According to Section 112.05, noise from construction activity shall not exceed the noise limits established by the federal government for various powered tools and pieces of operating equipment

The City does not have adopted standards for groundborne vibration.

3.5.4 Environmental Impacts

Methodology

The noise analysis considers construction and operational sources for noise and vibration. Construction noise level thresholds are based on information obtained from the *L.A. CEQA Thresholds Guide* (City of Los Angeles 2006). The noise level during the construction period at each receptor location was calculated by (1) making a distance adjustment to the construction source sound level and (2) logarithmically adding the adjusted construction noise source level to the ambient noise level. Operational noise levels were calculated based on information provided in the traffic study and stationary noise sources that would be located on the project sites (e.g., mechanical equipment). Vibration levels were estimated based on information provided by the Federal Transit Administration (2006).

Thresholds of Significance

As part of the Initial Study (see Appendix A), it was determined that the proposed project would not expose persons to excessive noise from public or private airports. Accordingly, these issues are not further analyzed in the EIR.

Pursuant to the CEQA Guidelines, the proposed project would have a significant effect on noise if it would:

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

- Expose persons to or generate excessive groundborne vibration or groundborne noise levels;

- Create a substantial permanent increase in ambient noise levels in the vicinity of the project above levels without the project; or

- Create a substantial temporary or periodic increase in ambient noise levels in the vicinity of the project, in excess of noise levels existing without the project.

To establish definitive thresholds for noise impact, the *L.A. CEQA Thresholds Guide* (City of Los Angeles 2006) was utilized. According to the guide, the proposed project would result in significant construction noise impacts if:

- Construction activities lasting more than one day would exceed existing ambient noise levels by 10 dBA or more at a noise sensitive use;
- Construction activities lasting more than 10 days in a 3-month period would exceed existing ambient noise levels by 5 dBA or more at a noise sensitive use; and/or
- Construction activities would exceed the ambient noise level by 5 dBA at a noise sensitive use between the hours of 9:00 p.m. and 7:00 a.m. Monday through Friday, before 8:00 a.m. or after 6:00 p.m. on Saturday, or anytime on Sunday.

During operation, the proposed project would result in a significant noise impact if:

- Mobile noise causes a 10-dBA or more increase in noise level; and/or
- Stationary noise causes a 5-dBA or more increase in noise level.

There are no adopted state or City groundborne vibration standards. Based on federal guidelines, a significant construction or operational vibration impact would result if:

- Construction or operational activity would expose buildings to the Federal Transit Administration building damage threshold level of 0.3 inches per second.

Impact Analysis

NOISE-1 *Construction of the proposed project would expose persons to or generate noise levels in excess of City standards and create a substantial temporary increase in ambient noise levels in the vicinity of the project site.*

Construction of the proposed project would result in temporary increases in ambient noise levels in the vicinity of the project sites on an intermittent basis. The increase in noise would occur during certain periods of the approximately 5.5-year construction schedule. 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.

Construction activities typically require the use of equipment, such as pneumatic impact equipment, excavation and grading equipment, and trucks. Typical noise levels from various types of equipment that may be used during construction are listed in Table 3.5-3. The table shows noise levels at distances of 50 and 100 feet from the construction noise source.

Table 3.5-3 Maximum Noise Levels of Common Construction Machines

Noise Source	Noise Level (dBA)	
	50 Feet	100 Feet[1]
Front Loader	80	72.5
Trucks	89	81.5
Cranes (derrick)	88	80.5
Jackhammers	90	82.5
Generators	77	69.5
Back Hoe	84	76.5
Tractor	88	80.5
Scraper/Grader	87	79.5
Paver	87	79.5
Impact Pile Driving	101	93.5
Auger Drilling	77	69.5

[1] Assumes a 6-dBA drop-off rate for noise generated by a point source and traveling over hard surfaces. Actual measured noise levels of the equipment listed in this table were taken at distances of 10 and 30 feet from the noise source.

Source: City of Los Angeles 2006; Terry A. Hayes & Associates 2010.

The noise levels shown in Table 3.5-4 take into account the likelihood that more than one piece of construction equipment would be in operation at the same time and lists the typical overall noise levels that would be expected for each phase of construction. These noise levels are based on surveys conducted by the EPA in the early 1970s. Since 1970, regulations have been enacted to improve noise generated by certain types of construction equipment to meet worker noise exposure standards. However, many older pieces of equipment are still in use. Thus, the construction phase noise levels indicated in Table 3.5-4 represent worst-case conditions. As the table shows, the highest noise levels are expected to occur during the grading/excavation phase of construction. A typical piece of equipment is assumed to be active for 40 percent of the 8-hour workday (consistent with the EPA studies of construction noise), generating a maximum noise level of 89 dBA at a reference distance of 50 feet.

Table 3.5-4 Maximum Noise Levels of Common Construction Phases

Construction Phase	Noise Level at 50 feet (dBA)
Ground Clearing	84
Grading/Excavation	89
Foundations	78
Structural	85
Finishing	89

Source: City of Los Angeles 2006.

On-site Construction Equipment Noise

Some construction activity for the proposed project would occur inside the drained reservoir or underground during the tunneling, both of which would further attenuate the construction noise because noise levels are directly related to the "line-of-sight" or the visibility factor of the noise source. For example, depending on the location of the sensitive receptors in relation to the construction area, when inside the drained reservoir, construction activities within the subterranean area may not be visible to street-level sensitive receptors. The below grade construction activity inside the reservoir would attenuate construction noise levels by at least 5 dBA. However, for the purposes of providing a conservative analysis, a reduction for below ground construction was not taken into account in the determination of impact. The peak construction noise is therefore assumed to be 89 dBA at a distance of 50 feet from the construction. On site construction noise levels are shown in Table 3.5-5 below.

Table 3.5-5 On-site Construction Noise Levels – Unmitigated

Sensitive Receptor	Distance (feet)[1]	Maximum Construction Noise Level (dBA)[2]	Existing Ambient (dBA, L_{eq})[3]	New Ambient (dBA, L_{eq})[4]	Increase
Reservoir Construction					
Single-Family Residences on Park Row Street	600	62.0	58.4	63.6	5.2
Solano Avenue Elementary School	925	57.3	60.8	62.4	1.6
Solano Canyon Recreation Facilities	1,200	44.5	41.7	46.3	4.6
Inlet Line Construction					
Single-Family Residences on Riverside Drive	70	86.1	65.2	86.1	20.9

[1] Distance of noise source from receptor.
[2] Construction noise source's sound level at receptor location.
[3] Pre-construction activity ambient sound level at receptor location.
[4] New sound level at receptor location during construction period, including noise from construction activity.
Source: Terry A. Hayes & Associates 2010.

Table 3.5-5 shows that construction activity within the reservoir property may temporarily and intermittently increase daytime ambient noise levels by as much as 5.2 dBA as experienced at nearby sensitive receptors in the vicinity of Elysian Reservoir. Further, construction activity at the Caltrans island may temporarily and intermittently increase daytime ambient noise levels by as much as 20.9 dBA as experienced by the residences on Riverside Drive. These numbers take into account dissipation of noise based on distance from the source. As shown in Table

3.5-5, sensitive receptors located on Park Row Street and near the Caltrans island on Riverside Drive would experience an increase in ambient noise levels greater than the 5-dBA significance threshold. The impact would be significant, and implementation of mitigation measures NOISE-A through NOISE-E is required.

Off-site Construction Mobile Noise

For construction activities associated with the reservoir, haul trucks would follow a route through Elysian Park, including road segments that pass adjacent to residences on Park Row Street near its intersection with Grand View Drive. For the construction associated with the inlet line, trucks would use a portion of Riverside Drive between Elmgrove Street and Barclay Street as a haul route. The proposed project is estimated to generate about 32 peak hour truck trips associated with the reservoir construction. The inlet line would create an additional 19 peak daily trips and 4 peak hour trips. Table 3.5-6 presents the estimated noise levels at receptors located along the haul route.

Table 3.5-6 Off-Site Construction Haul Truck Noise Levels (2019)

Scenario and Roadway Segment	Baseline[1] (dBA, L_{eq})	Construction (dBA, L_{eq})	Increase (dBA, L_{eq})
Stadium Way between Landa Street & Elysian Park Drive	68.1	68.7	0.6
Stadium Way between Elysian Park Drive & Academy Road	68.3	68.8	0.5
Academy Road between Boylston Street & Dodger Stadium	63.2	64.8	1.6
Academy Road west of Solano Canyon Drive	62.0	64.0	2.0
Solano Canyon Drive between Academy Road & Park Row Drive	54.0	60.7	6.7
Park Row Drive/Street between Solano Canyon Drive & SR 110 Ramp	54.4	60.8	6.4
Riverside Drive between Gail Street & Eads Street	69.2	69.7	0.5
Riverside Drive between Oros Street & I-5	68.6	68.7	0.1

[1] The baseline noise level differs from the existing mobile noise levels indicated in Table 3.5-2 because it takes into account the projected increase in ambient traffic that would occur in the area prior to project construction.
Source: Terry A. Hayes & Associates 2010.

As shown in Table 3.5-6, haul route truck noise would exceed the 5-dBA significance threshold at Solano Canyon Drive between Academy Road and Park Row Drive in Elysian Park and at Park Row Drive/Street between Solano Canyon Drive and the SR 110 Ramp. Residential and park land uses would experience a significant increase in ambient noise levels. Therefore, the proposed project would result in a significant impact related to off-site haul truck noise.

NOISE-2 *Operation of the proposed project would not expose persons to noise levels in excess of City standards or create a substantial permanent increase in ambient noise levels.*

Vehicular Noise

The predominant noise source for the proposed project operation is vehicular traffic associated with recreation at the reservoir site. The proposed project would generate 188 peak hour trips. No additional maintenance trips related to the water storage function would occur as a result of the proposed project. To determine off-site noise impacts, traffic was modeled under future year "Without Project" and "With Project" conditions utilizing FHWA RD-77-108 noise calculation formulas. Table 3.5-7 shows the project-related noise increase during operation of the proposed project.

Table 3.5-7 Off-site Mobile Noise Impact

Roadway Segment	Estimated dBA, L_{eq}		
	Without Project	With Project	Increase
Riverside Drive between Elmgrove & Harwood Streets	68.4	68.9	0.5
Stadium Way between Landa Street & Elysian Park Drive	68.1	68.6	0.5
Stadium Way between Elysian Park Drive & Academy Road	68.3	68.7	0.4
Academy Road between Boylston Street & Dodger Stadium	63.2	64.6	1.4
Academy Road west of Solano Canyon Drive	62.0	63.7	1.7
Solano Canyon Drive between Academy Road & Park Row Drive	54.0	59.8	5.8
Park Row Drive/Street between Solano Canyon Drive & SR 110 Ramp	54.4	60.2	5.8
Riverside Drive between Gail Street & Eads Street	69.2	69.6	0.4
Riverside Drive between Oros Street & I-5	68.6	69.0	0.4

Source: Terry A. Hayes & Associates 2010.

As shown in Table 3.5-7, there would be 5.8 dBA L_{eq} along Solano Canyon Drive between Academy Road and Park Row Drive, and on Park Row Street between Solano Canyon Drive and the SR 110 ramp. This would not exceed the 10-dBA significance threshold for mobile noise sources. Therefore, operation of the proposed project would result in a less than significant impact related to mobile noise.

Recreation Noise

The Elysian Reservoir site would operate as an outdoor recreation area following completion of the buried reservoir. Outdoor activity could include skateboarding, jogging, walking, and use of the playfields for soccer and other sports. Recreation activity would generate a noise level of approximately 74 dBA L_{eq} at a distance of 50 feet (Los Angeles Unified School District 2002). The nearest sensitive receptor to the recreation area would be the residences on Park Row Street. These residences would experience a 0.3 dBA L_{eq} increase as a result of recreational activities, which is well below the 5-dBA threshold. Therefore, the impact of outdoor activity noise would be less than significant impact.

Parking Lot Noise

The proposed project would include up to 200 parking spaces for the recreational facilities. Automobile parking activity typically generates a noise level of approximately 58.1 dBA L_{eq} at 50 feet (e.g., tire noise and horns). The monitored noise level along Park Row Street was 56.3 dBA L_{eq}. The ambient noise level increase would be less than 0.1 dBA. Thus, the noise impact from parking lot activity would be less than significant.

NOISE-3 *Construction and operation of the proposed project would not expose people to excessive groundborne vibration.*

Construction

Table 3.5-8 indicates vibration levels associated with construction activities. On-site construction equipment would generate a vibration level of approximately 0.089 inches per second peak particle velocity at a distance of 25 feet. In addition, there would be added truck traffic along the construction haul route; however, truck vibration is not typically perceptible. The nearest residential structures to the Caltrans island would be the residential uses on Riverside Drive, which would be located approximately 70 feet from heavy equipment activity, and would experience vibration levels of approximately 0.02 inches per second. The nearest residential structures to the Elysian Reservoir site would be the residential uses on Park Row Street, which are located approximately 600 feet from occasional heavy equipment activity, and would experience vibration levels of approximately 0.001 inches per second. Vibration levels at these receptors would not exceed the potential building damage threshold of 0.3 inches per second. Use of on-site construction equipment would result in a less than significant vibration impact.

Table 3.5-8 Vibration Velocities for Construction Equipment

Equipment	Peak Particle Velocity at 25 feet (inches per second)[1]
Large Bulldozer	0.089
Loaded Trucks	0.076

[1] Fragile buildings can be exposed to ground-borne vibration levels of 0.3 inches per second peak particle velocity without experiencing structural damage.
Source: Federal Transit Administration 2006.

Operation

The proposed project would not include significant stationary sources of groundborne vibration, such as heavy equipment operations. Similar to existing conditions, project-related vibration levels would not be perceptible by sensitive receptors. Thus, operational vibration would result in a less than significant impact.

3.5.5 Mitigation Measures

NOISE-A All mobile construction equipment shall be equipped with properly operating mufflers or other noise reduction devices.

NOISE-B Grading and construction contractors shall use quieter equipment as opposed to noisier equipment (such as rubber-tired equipment rather than metal-tracked equipment), to the extent possible.

NOISE-C The construction contractor shall use on-site electrical sources to power equipment rather than diesel generators where feasible.

NOISE-D The construction contractor shall implement sound barriers or blankets on the Riverside Drive perimeter of the Caltrans island. The sound barriers or blankets shall be capable of blocking at least 15 dB of construction noise. The barriers or blankets shall be placed to the extent possible such that the line-of-sight between ground-level construction activity and sensitive land uses is blocked.

3.5.6 Significance After Mitigation

Construction

As discussed above, on-site construction activities would generate noise levels in excess of City standards and would expose sensitive receptors to a substantial temporary increase in ambient noise levels near both Elysian Reservoir and the Caltrans island. Implementation of mitigation measure NOISE-A would reduce on-site construction noise levels by approximately 3 dBA. While difficult to quantify, mitigation measures NOISE-B and NOISE-C would assist in attenuating construction noise levels. Table 3.5-9 shows the mitigated noise levels. As shown, construction noise levels would be reduced adjacent to Elysian Reservoir to below the City's 5-dBA significance threshold.

Mitigation measure NOISE-D would reduce noise exposure at residences along Riverside Drive by approximately 15 dBA. As shown in Table 3.5-9, mitigated construction noise levels at sensitive receptors near the Caltrans island would not exceed the 5-dBA significance threshold at single-family residences located on Riverside Drive. It is acknowledged that trucks arriving and departing the inlet line construction site would generate audible noise at the nearby sensitive receptors. However, truck activity would be short-term and intermittent (i.e., normally less than one truck trip per hour on average and approximately 3 trucks per hour during the 1-month peak of activity) and associated noise levels are not considered to be significant. Therefore, the proposed project would result in a less than significant impact related to on-site construction noise at the Caltrans island with implementation of mitigation.

Table 3.5-9 On-site Construction Noise Levels – Mitigated

Sensitive Receptor	Distance (feet)[1]	Maximum Construction Noise Level (dBA)[2]	Existing Ambient (dBA, L_{eq})[3]	New Ambient (dBA, L_{eq})[4]	Increase
Reservoir Construction					
Single-Family Residences on Park Row Street	600	59.0	58.4	61.7	3.3
Solano Avenue Elementary School	925	54.3	60.8	61.7	0.9
Elysian Park Recreation Area	1,200	41.5	41.7	44.6	2.9
Inlet Line Construction					
Single-Family Residences on Riverside Drive	70	68.1	65.2	69.9	4.7

[1] Distance of noise source from receptor.
[2] Construction noise source's sound level at receptor location
[3] Pre-construction activity ambient sound level at receptor location.
[4] New sound level at receptor location during construction period, including noise from construction activity.
[5] An incremental noise level increase of 5 dBA or more would result in a significant impact.
Source: Terry A. Hayes & Associates 2010.

There are no feasible mitigation measures to reduce on-road haul truck noise at Park Row Street near the intersection with Grand View Drive or along Solano Canyon Drive within Elysian Park itself. Sound barriers along these road segments would be infeasible because of setback distances to residences, the adjacent recreation functions, and/or the length of the barriers required. This impact would remain significant and unavoidable.

As discussed in NOISE-3 above, construction-generated groundborne vibration would not exceed acceptable levels. The impact would be less than significant.

Operation

As discussed above, both operational noise impacts and groundborne vibration impacts would be less than significant without the implementation of mitigation.

Chapter 3.6
Transportation and Traffic

The scope of work for the traffic study was developed in conjunction with the City of Los Angeles Department of Transportation (LADOT). The baseline assumptions, technical methodologies, and geographic coverage of the study area were identified as part of the study approach. The study, which analyzes the potential project-generated traffic impacts on the street system during construction and operation of the proposed project, assumes commencement of construction in 2015 and completion of the proposed project in 2020. Roadway segment impacts are analyzed during both the peak phase of construction and during post-construction operation. A copy of the technical report is included in Appendix F.

3.6.1 Environmental Setting

A comprehensive data collection effort was undertaken to develop a detailed description of existing conditions within the study area. The assessment of conditions relevant to this study includes an inventory of the street system, traffic volumes on these streets, and operating conditions at the study intersections.

In conjunction with LADOT, a total of six intersections were identified, including:

- Stadium Way at Riverside Drive
- Stadium Way at Landa Street/I-5 Southbound On- and Off-Ramps
- Riverside Drive at Eads Street/I-5 Northbound On-Ramp and SR 110 Northbound Off-Ramp
- Academy Road (major) at Academy Road (minor)
- Academy Road at Solano Canyon Drive

One of the six study intersections (Academy Road major at Academy Road minor) is stop-sign controlled, while the remaining five intersections are signalized. In addition, seven roadway segments were identified for analysis, including:

- Stadium Way between Riverside Drive and I-5 Southbound On- and Off-Ramps
- Riverside Drive between Gail Street and Eads Street
- Riverside Drive between Fernleaf Street and Elmgrove Street
- Riverside Drive between Oros Street and I-5 Northbound On- and Off-Ramps
- Stadium Way north of Academy Road
- Academy Road (major)
- Academy Road north (minor)

The locations of the study intersections and roadway segments are shown on Figure 3.6-1 and the study intersection geometries and lane configurations are shown on Figure 3.6-2.

Local Roadway Characteristics

The following roadway segments in the vicinity of the project site were selected for inclusion as study area roadways in consultation with LADOT (see Figure 3.6-1):

- Riverside Drive
- Stadium Way
- Academy Road
- Solano Avenue
- Amador Street
- Solano Canyon Drive
- Park Row Street/Drive
- Grand View Drive

Riverside Drive in the project vicinity is a 4-lane roadway bordered by office and storage land uses between Gail Street and I-5. There is no posted speed limit, and on-street parking is prohibited.

Stadium Way is primarily a 6-lane roadway within the study area, located between Riverside Drive and Academy Road. The land uses adjacent to this segment are predominantly parkland. On-street parking is prohibited. The posted speed limit is 35 mph on this street segment.

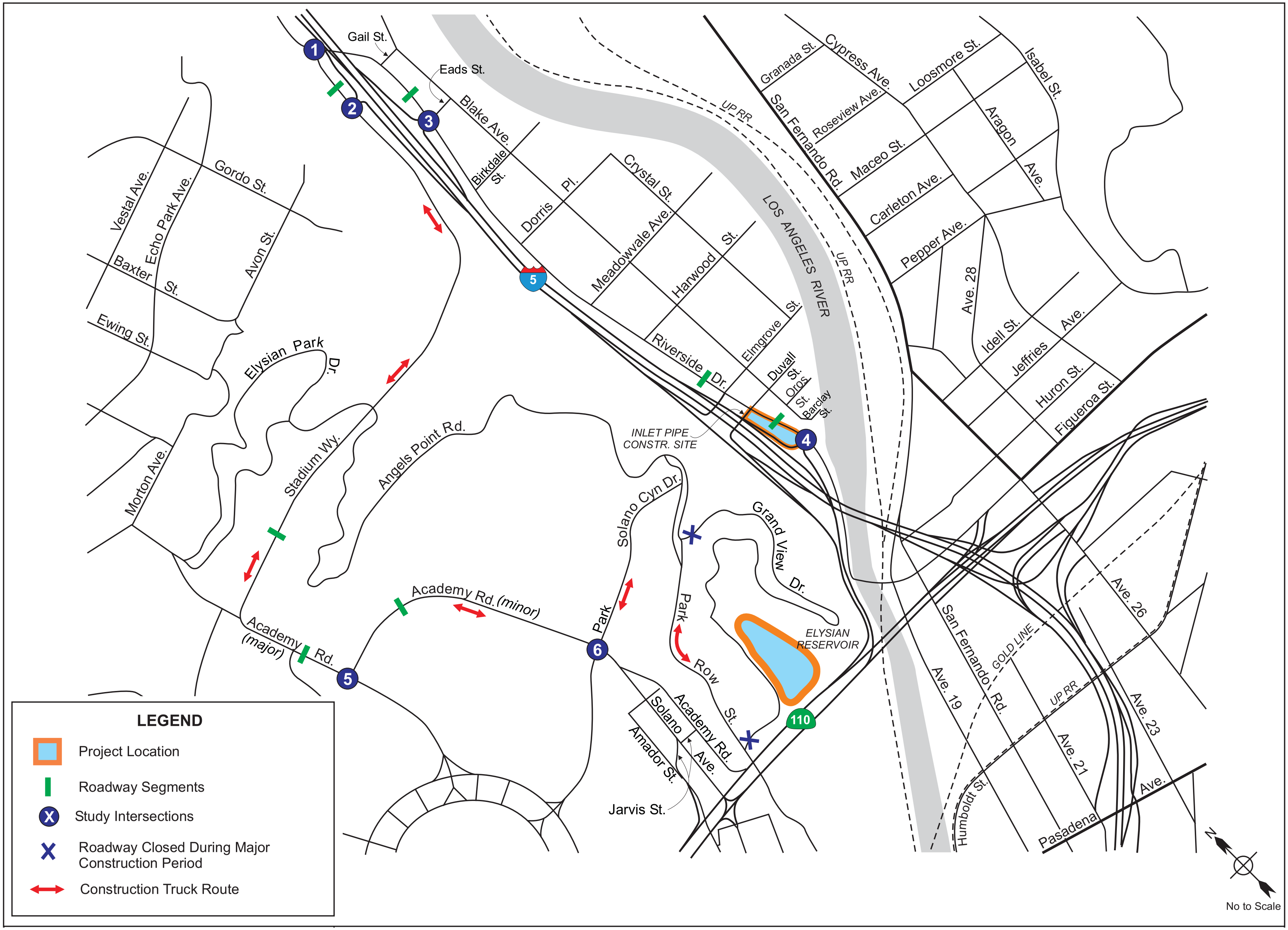
Academy Road, in the project vicinity, has variable lane configurations. There are no posted speed limits on these roadway segments. The adjacent area is a mix of parkland, parking lots, and, between Solano Canyon Drive and SR 110, residential uses. Parking is generally prohibited, except along the residential segment.

- Between Stadium Way and Boylston Street has 3 northbound lanes and 2 southbound lanes.
- Between Dodger Stadium and Solano Canyon Drive has 2 northbound lanes and one southbound lane.
- Between Solano Canyon Drive and SR 110 has one northbound lane and one southbound lane.

Solano Avenue, between Jarvis Street and SR 110, provides one northbound lane and one southbound lane. The posted speed limit on this segment is 25 mph. The adjacent land uses are primarily residential, and parking restrictions are enforced along the east side of the roadway adjacent to Solano Avenue Elementary School. Parking is generally permitted on other segments of this roadway. Solano Avenue provides one lane in each direction between SR 110 and Broadway, with a 25 mph posted speed limited. Parking is generally permitted on this segment.

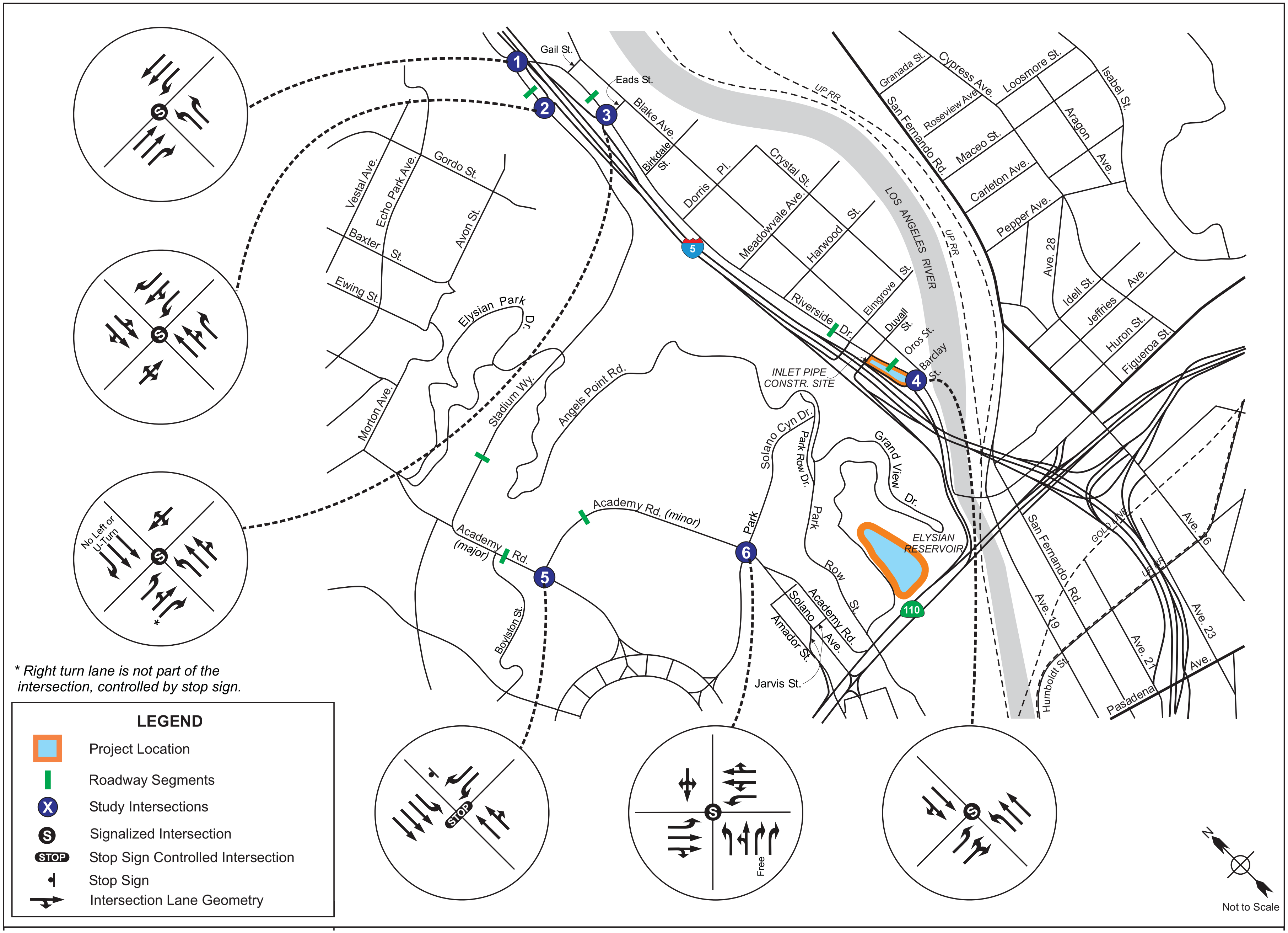
Amador Street, between Jarvis Street and SR 110, traverses a residential neighborhood and provides 2 southbound lanes and one northbound lane. The speed limit is 25 mph. There are no parking restrictions on the east side of this roadway segment, but parking is prohibited at all times on the west side.

Solano Canyon Drive is an unstriped 2-lane roadway within Elysian Park between Academy Road (minor) and Park Row Drive. It has no posted speed limit. The land adjacent to this roadway segment is parkland, and there are no posted parking restrictions. There are two small off-street parking areas along this segment.



Source: KOA Corporation 2010

Figure 3.6-1
Location of Study Roadway Segments and Intersections



Source: KOA Corporation 2010

Figure 3.6-2
Intersection Geometries and Lane Configurations

Park Row Drive/Street, as a continuous road segment, is a 2-lane roadway bordered primarily by parkland. There is, however, some residential development along the south side of the street, west of SR 110, near the intersection with Grand View Drive. On-street parking is prohibited, except in the residential area west of SR 110.

Grand View Drive is an unstriped 2-lane interior park road located to the north of Park Row Street. The road provides access to the area surrounding Elysian Reservoir. The adjacent land is parkland, except for Elysian Reservoir itself. There are no posted parking restrictions or speed limits.

Area Freeway Characteristics

I-5 (Golden State Freeway) is an 8-lane north-south interstate highway located to the northeast of Elysian Reservoir. This facility runs throughout the State of California. Locally, it provides access between downtown Los Angeles on the south and the San Fernando Valley on the north.

SR 110 (Arroyo Seco Parkway) is a 6-lane north-south local highway that is located southeast of Elysian Reservoir, defining the southeastern edge of the reservoir property. Truck traffic is prohibited along the older section of the freeway corridor, which extends north of US Route 101 (US 101, Hollywood Freeway). To the south of Interstate 10 in downtown Los Angeles, the freeway is designated Interstate 110 (I-110, Harbor Freeway). The I-110/SR 110 corridor provides access between San Pedro on the south and Pasadena on the north.

Existing Area Transit Services

The vicinity of the proposed project site is served by a public transit bus line operated by the County of Los Angeles Metropolitan Transportation Authority. Line 96 is the only route that serves the study area, with stops along Riverside Drive. The approximate service frequency of Line 96 is 28 minutes during the weekday morning and evening peak hours. Transit service is not provided along Stadium Way or Academy Road.

Existing Traffic Volumes and Levels of Service

The following discussion presents the existing peak hour turning movement traffic volumes for each of the study intersections and roadway segments analyzed in the traffic study, describes the methodology used to assess the traffic conditions at each intersection and roadway segment, and analyzes the resulting operating conditions at each intersection and roadway segment studied, indicating volume-to-capacity (V/C) ratios and levels of service (LOS).

Level of Service Methodology

Measurements for traffic operations are based on a ratio of average daily volume on a roadway segment or at an intersection versus the volume that is calculated to be the design capacity. The efficiency of traffic operations at a location is measured in terms of LOS. LOS measures average operating conditions during an hour. It is based on a V/C ratio, or delay. LOS ranges from A to F, with A representing excellent (free-flow) conditions and F representing extreme congestion. The delay at an intersection or on a street segment corresponds to a LOS value, which describes the traffic conditions. Roadway segments with vehicular volumes that are at or near capacity experience greater congestion and longer vehicle delays. Table 3.6-1 provides descriptions of general roadway operations for each LOS value for signalized intersections, as defined within the 2000 *Highway Capacity Manual* (published by the Transportation Research Board).

Table 3.6-1 Level of Service Definitions

LOS	Flow Condition	V/C Ratio
A	LOS A describes primarily free-flow operations at average travel speeds, usually about 90 percent of the free-flow speed for the arterial classification. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Stopped delay at signalized intersections is minimal.	0.00 - 0.60
B	LOS B represents reasonably unimpeded operations at average travel speeds, usually about 70 percent of the free-flow speed for the arterial classification. The ability to maneuver within the traffic stream is only slightly restricted and stopped delays are not bothersome. Drivers are not generally subjected to appreciable tension.	0.61 - 0.70
C	LOS C represents stable operations; however, the ability to maneuver and change lanes in mid-block locations may be more than at LOS B, and longer queues, adverse signal coordination, or both may contribute to lower average speeds of about 50 percent of the average free-flow speed for the arterial classification. Motorists will experience appreciable tension while driving.	0.71 - 0.80
D	LOS D borders on a range in which small increases in flow may cause a substantial increase in delay and hence decreases in arterial speed. LOS D may be due to adverse signal progression, inappropriate signal timing, high volumes, or some combination of these factors. Average travel speeds are about 40 percent for free-flow.	0.81 - 0.90
E	LOS E is characterized by significant delays and average travel speeds of one-third the free-flow speed or less. Such operations are caused by some combination of adverse progression, high signal density, high volumes, extensive delays at critical intersections, and inappropriate signal timing.	0.91 - 1.00
F	LOS F characterizes arterial flow at extremely low speeds below one-third to one-fourth of the free-flow speed. Intersection congestion is likely at critical signalized locations, with high delays and extensive queuing. Adverse progression is frequently a contributor to this condition.	Over 1.00

Existing Intersection Level of Service

Traffic counts were collected on Thursday, September 16, and Friday, September 17, 2010. The collected traffic counts provide conservative traffic count totals to establish an existing baseline for the area because a Los Angeles Dodgers baseball game was scheduled at nearby Dodger Stadium on one of the days the counts were taken.

Based on the traffic counts conducted at the study intersections, a LOS and the corresponding V/C ratio was determined for each of the study intersections. The Critical Movement Analysis (CMA) methodology, also known as the Circular 212 Planning methodology, was used to conduct these calculations. LADOT provided spreadsheets that were used to finalize these calculations. Table 3.6-2 provides the LOS and V/C values for existing (2010) conditions during the morning and evening peak periods.

Table 3.6-2 Existing Weekday Intersection LOS

#	Study Intersection	Game Day Scenario	Weekday AM Peak		Weekday PM Peak	
			V/C	LOS	V/C	LOS
1	Stadium Way/Riverside Drive	Non-Game Game	0.651 0.568	B A	0.660 0.725	B C
2	Stadium Way/Landa Street	Non-Game Game	0.565 0.611	B B	0.517 0.619	A B
3	Riverside Drive/Eads Street	Non-Game Game	0.435 0.380	A A	0.368 0.456	A A
4	Riverside Drive/Northbound I-5 Ramps	Non-Game Game	0.265 0.244	A A	0.309 0.354	A A
5	Academy Road (major) at Academy Road (minor)	Non-Game Game	Excluded from AM Peak Analysis[1]		8.7 9.0	A A
6	Academy Road/Solano Canyon Drive	Non-Game Game	Excluded from AM Peak Analysis[1]		0.065 0.102	A A

Note: Study intersection 5 Academy Road (major) at Academy Road (minor) is a stop-controlled intersection. LOS for signalized intersections is measured on a scale of 0.0 to 100.0, whereas signalized intersections are measured on a scale of 0.000 to 1.000.
[1] Intersection excluded from the a.m. peak period analysis due to minimal morning traffic activity in the area.
Source: KOA Corporation 2010.

As shown in Table 3.6-2, all of the study intersections are currently operating at LOS C or better during the weekday peak hours on a scheduled Dodgers game day, and at LOS B or better on a non-game day. The differences in V/C ratios for game and non-game scenarios during the morning peak hour are based on differences in general traffic levels on both days and not the presence of substantial Dodger Stadium traffic.

Existing Roadway Segment Volumes

Traffic counts for the study roadway segments were conducted in September 2010. A summary of the traffic volumes is shown in Table 3.6-3.

Table 3.6-3 Existing Weekday Roadway Segment Volumes

Study Roadway Segment	Non-Game Day Volumes[1]	Game Day Volumes[1]
Stadium Way between Riverside Drive & I-5 Southbound Ramps	12,586	15,464
Riverside Drive between Gail Street & Eads Street	17,778	20,229
Riverside Drive between Fernleaf Street & Elmgrove Street	15,228	15,833
Riverside Drive between Oros Street and I-5 Northbound Ramps	13,879	13,780
Stadium Way north of Academy Road	13,586	19,010
Academy Road (major)	3,295	9,805
Academy Road (minor)	3,497	3,776

[1] Volumes represent the total daily vehicle trips counted in a 24-hour period.
Source: KOA Corporation 2010.

As shown in Table 3.6-3, the highest daily vehicle volumes on both game and non-game days is on Riverside Drive, between Gail Street and Eads Street, north of the I-5 northbound on- and off-ramps. The detailed level of service worksheets and figures are provided in Appendix F.

Los Angeles County Congestion Management Program

The Congestion Management Program (CMP) was created statewide as a result of Proposition 111 and has been implemented locally by the Metropolitan Transportation Authority. The CMP requires that the traffic impact of individual projects of potential regional significance be analyzed. The CMP system comprises a specific set of arterial roadways and all freeways. A total of 164 arterial intersections are identified for monitoring on the system in Los Angeles County. The nearest CMP mainline freeway monitoring locations to the project sites are I-5 and SR 110. In addition, the I-5 on- and off-ramps in the project area are nearby CMP arterial monitoring locations.

3.6.2 Environmental Impacts

Methodology

The transportation and traffic impact analysis is based on the following approach:

- *Existing Conditions:* The analysis of existing traffic conditions provides a basis for the remainder of the study. The existing conditions analysis includes an assessment of streets, traffic volumes, and operating conditions.

- *Future Without Project Conditions:* Future traffic conditions are projected without the proposed project during the peak phase of construction (2019) and during operation (2020). The objective of this portion of the analysis is to predict future traffic growth and operating conditions that could be expected to result from growth in the vicinity of the project site in order to provide an appropriate baseline condition upon which to base the analysis of potential project impacts.

- *Future With Project Conditions:* This is an analysis of future traffic conditions with the traffic expected during the peak phase of construction (phase of construction involving the greatest number of vehicle trips to and from the site), which occurs during Phase 4 in 2019, added to the predicted future base traffic forecasts without the proposed project. Similarly, for project operation, the analysis includes traffic expected to be generated during peak use of the proposed recreational facilities combined with predicted future background traffic in the area. Thus, the impacts of the proposed project on future traffic conditions can then be identified.

Thresholds of Significance

As part of the Initial Study (see Appendix A), it was determined that neither the construction nor operation of the proposed project would result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks; result in inadequate emergency access; or conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks). Accordingly, these issues are not further analyzed in the EIR.

The CEQA Guidelines establish that a proposed project would have a significant effect on transportation and traffic if it would:

- Conflict with an applicable plan, ordinance, or policy for establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, street segments, highways and freeways, pedestrian and bicycle paths, and mass transit;

- Conflict with an applicable congestion management program, including, but not limited to level of service standards established by the county congestion management agency for designated roads or highways;

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

- Result in inadequate parking capacity.

Traffic impacts are identified if the proposed project would result in a significant change in traffic conditions at a study intersection or roadway segment. LADOT has established specific thresholds for project-related increases in the V/C of signalized study intersections, as shown in Table 3.6-4 below.

Table 3.6-4 LADOT Signalized Intersection Thresholds

LOS	Final V/C	Project-Related V/C Increase
C	< 0.70 – 0.80	Equal to or greater than 0.040
D	< 0.80 – 0.90	Equal to or greater than 0.020
E and F	0.90 or more	Equal to or greater than 0.010

Note: Final V/C is the V/C ratio at an intersection, considering impacts from the project, ambient and related project growth, and without proposed traffic impact mitigations.

Significant impacts related to roadway segment were defined based on a worsening of peak hour LOS conditions to LOS E or F.

In conformance with the CMP Transportation Impact Analysis Guidelines, a traffic impact analysis was conducted at:

- CMP arterial monitoring intersections, including freeway on-ramps or off-ramps, where the project would add 50 or more vehicles during either the morning or afternoon weekday peak hours.
- CMP mainline freeway monitoring locations where the project would add 150 or more trips, in either direction, during either the morning or afternoon weekday peak hours.

Impact Analysis

TRANS-1 *The proposed project would conflict with an applicable plan, ordinance, or policy for establishing measures of effectiveness for the performance of the circulation system on study street segments during construction.*

Construction

Impacts to the study intersections and roadway segments were determined by comparing future without project conditions to future with project conditions. Phase 4 of construction, which would occur in 2019, is anticipated to require the greatest number of vehicle trips.

Future Without Project Conditions

To evaluate the potential impact of construction of the proposed project on local traffic conditions, it is necessary to develop a forecast of future traffic volumes in the study area under conditions without the proposed project. This provides a basis against which to measure the potential significant impacts of the proposed project. Future traffic growth is made up of ambient traffic growth and cumulative project growth, which are described below.

Ambient Traffic Growth is traffic growth that would occur in the study area due to general employment growth, housing growth, and growth in regional through trips in Southern California. Even if there is no change in housing or employment in the region, it is anticipated that there will be some background (ambient) traffic growth. In order to forecast baseline traffic volumes for the future without project traffic volumes in the year 2019, year-2010 peak-hour traffic count volumes from the existing conditions scenario were increased by an ambient growth rate of 1 percent per year (a compounded factor of 1.0937). The application of these annual rates is consistent with sub-regional traffic growth data defined by the CMP guidelines.

Cumulative Project Growth is due to specific, known development projects in the vicinity that may affect traffic circulation in the study area. A list of past, present, and reasonably foreseeable future development projects occurring within the area was developed in conjunction with LADOT. Two 1.5-mile radius lines, from both the Reservoir and inlet line construction sites, were used to define a capture area for approved and pending projects (cumulative projects). A total of 12 projects were identified. The related projects for the purposes of the traffic analysis are listed in Table 3.6-5.

Table 3.6-5 Cumulative Project List for Traffic

Location	Description
900 North Broadway Street	223 condominiums, 22,008 sf retail, 175,000 sf restaurant, 7,000 sf cultural center
500 North Bunker Hill Avenue	17,000 sf supermarket, 4,200 sf retail
San Fernando Road and Division Street	2,295-seat high school, 540-seat adult school
Cesar Chavez Avenue and North Broadway Street	280 apartment units, 22,000 sf retail
1101 North Main Street	300 condominiums
1855 North Main Street	550-seat elementary school, 230-seat middle school
1555 San Fernando Road	164 apartment units, 290 condominiums, 25,000 sf retail
720 West Cesar Chavez Avenue	272 condominiums, 6,431 sf retail, 8,000 sf restaurant
3000 North Verdugo Avenue	45 apartment units, 175-seat early education center
715 North Yale Street	65 apartment units
1000 West Elysian Park Avenue	23,750 sf retail, 38,490 sf restaurant, 35,570 sf museum, 18,565 sf office
920 North Vignes Street	217 bus operations and maintenance facility

Source: KOA Corporation 2010.

To analyze future conditions (2019) without the proposed project, intersection turn volumes with ambient growth and trips generated by cumulative projects were analyzed using the same methodology used for the existing conditions analysis. Table 3.6-6 shows the future without project LOS calculations for the study intersections.

Table 3.6-6 Future Without Project (2019) Study Intersection LOS

#	Study Intersection	Game Day Scenario	Weekday AM Peak		Weekday PM Peak	
			V/C	LOS	V/C	LOS
1	Stadium Way/Riverside Drive	Non-Game Game	0.751 0.659	C B	0.754 0.824	C D
2	Stadium Way/Landa Street	Non-Game Game	0.728 0.680	C B	0.568 0.704	A C
3	Riverside Drive/Eads Street	Non-Game Game	0.492 0.432	A A	0.409 0.490	A A
4	Riverside Drive/Northbound I-5 Ramps	Non-Game Game	0.452 0.427	A A	0.403 0.452	A A
5	Academy Road (major) at Academy Road (minor)	Non-Game Game	Excluded from AM Peak Analysis[1]		8.8 9.1	A A
6	Academy Road/Solano Canyon Drive	Non-Game Game	Excluded from AM Peak Analysis[1]		0.070 0.112	A A

Note: Study intersection 5 Academy Road (major) at Academy Road (minor) is a stop-controlled intersection. LOS for signalized intersections is measured on a scale of 0.0 to 100.0, whereas signalized intersections are measured on a scale of 0.000 to 1.000.

[1] Intersection excluded from the a.m. peak period analysis due to minimal morning traffic activity in the area.

Source: KOA Corporation 2010.

As shown in Table 3.6-6 above, all of the study intersections would continue to operate at LOS D or better during the weekday peak hours on game days. On non-game days, all of the study intersections would operate at LOS C or better.

In addition, the future conditions (year 2019) without the proposed project on study roadway segments volumes were calculated. Table 3.6-7 shows the future roadway segment volumes without the proposed project.

Table 3.6-7 Future Without Project (2019) Weekday Roadway Segment Volumes

Study Roadway Segment	Non-Game Day Volumes	Game Day Volumes
Stadium Way between Riverside Drive & I-5 Southbound Ramps	16,285	19,444
Riverside Drive between Gail Street & Eads Street	21,076	23,756
Riverside Drive between Fernleaf Street & Elmgrove Street	17,631	18,293
Riverside Drive between Oros Street and I-5 Northbound Ramps	18,234	18,126
Stadium Way north of Academy Road	16,993	22,295
Academy Road east of Stadium Way	5,298	12,418
Academy Road north of Academy Road east-west Segment	4,047	4,352

Source: KOA Corporation 2010.

As shown in Table 3.6-7, the highest daily vehicle volumes on both game and non-game days is on Riverside Drive, between Gail Street and Eads Street, north of the I-5 northbound on- and off-ramps. This is similar to existing conditions. The detailed level of service worksheets are provided in Appendix F.

Project Construction Trip Generation Forecasts

To evaluate the worst-case scenario for construction trip generation, the phase of construction anticipated to generate the greatest amount of vehicle trips was used in this impact analysis (Phase 4). In addition, although physically separated in space and potentially occurring at different times, the combined vehicle traffic associated with construction activities within the Elysian Reservoir site and at the Caltrans island on Riverside Drive were combined and evaluated in 2019.

To determine trip generation during construction, it is assumed that each employee would drive to and from work without carpooling. In converting trucks to passenger car equivalents, a factor of 2.5 was assumed. This factor is consistent with other studies that include trips generated by trucking activities and is based on the most conservative factor defined by SCAG Heavy Duty Truck Model.

The proposed project would be constructed in five phases over a period of approximately 5.5 years. Trip generation for employees and trucks would vary depending on the phase of construction. As discussed above, Phase 4 would generate the greatest number of vehicle trips between employee trips and truck deliveries. The trip generation calculations are shown in Table 3.6-8.

Table 3.6-8 Elysian Reservoir Construction Peak Daily One-Way Trip Generation Calculations

Generator	Daily	Weekday AM Total	Weekday AM In	Weekday AM Out	Weekday PM Total	Weekday PM In	Weekday PM Out
Employee[1]	90	45	45	0	45	0	45
Delivery Truck[2]	630	79	40	39	79	40	39
Total	720	124	85	39	124	40	84

[1] Employee trips = 1 employee per vehicle
[2] Delivery truck trips = 2.5 passenger car equivalent X truck trips
Source: KOA Corporation 2010.

The number of employee trips was based on the assumption that all 45 employees would arrive within the a.m. peak hour and depart within the p.m. peak hour. The number of truck trips was based on a typical 8-hour shift, with delivery truck trips distributed evenly throughout the day. Based on a daily total of 630 truck trips (252 truck trips at the 2.5 passenger car equivalent factor), 79 truck trips (32 truck trips at the 2.5 passenger car equivalent factor) would occur during both the morning and evening peak hours. The total construction trip generation for work with the Elysian Reservoir property would be 720 daily trips, of which 124 trips would occur during each of the peak periods.

In addition to construction activity occurring within the Elysian Reservoir property, other construction workers and delivery trucks would travel to the inlet line installation site in the Caltrans island located on Riverside Drive. Table 3.6-9 provides the peak hour trip generation calculations for the inlet line construction activities, based on the number of on-site employees and the number of daily truck trips.

Table 3.6-9 Inlet Line Construction Peak Daily One-Way Trip Generation Calculations

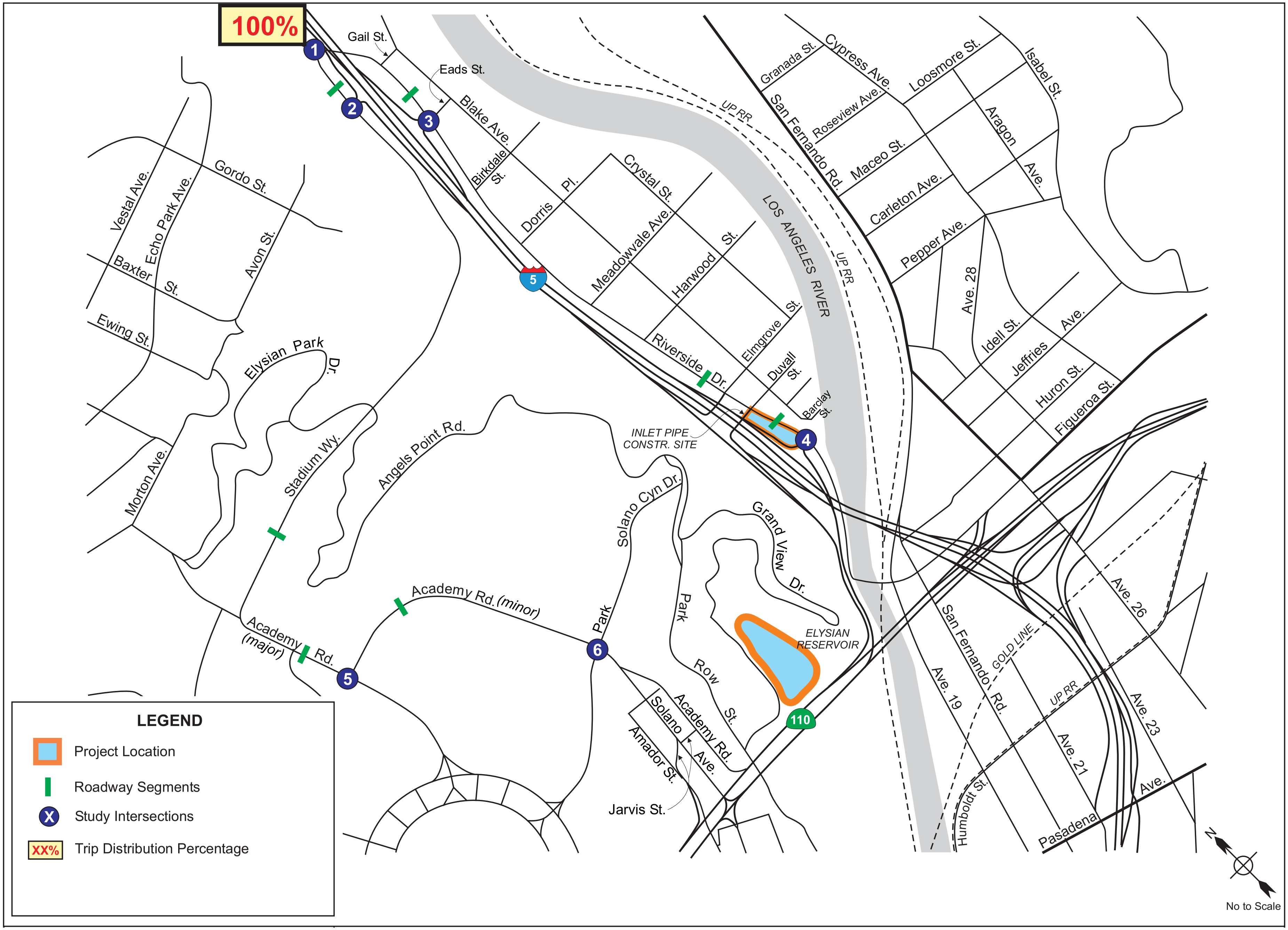
Generator	Daily	Weekday AM Total	Weekday AM In	Weekday AM Out	Weekday PM Total	Weekday PM In	Weekday PM Out
Employee[1]	20	10	10	0	10	0	10
Delivery Truck[2]	95	12	6	6	12	6	6
Total	115	22	16	6	22	6	16

[1] Employee trips = 1 employee per vehicle
[2] Delivery truck trips = 2.5 passenger car equivalent X truck trips
Source: KOA Corporation 2010.

Based on a daily total of 95 truck trips (38 truck trips at the 2.5 passenger car equivalent factor), 12 truck trips (5 truck trips with the 2.5 passenger car equivalent factor) would occur during both the morning and evening peak periods associated with the inlet line construction.

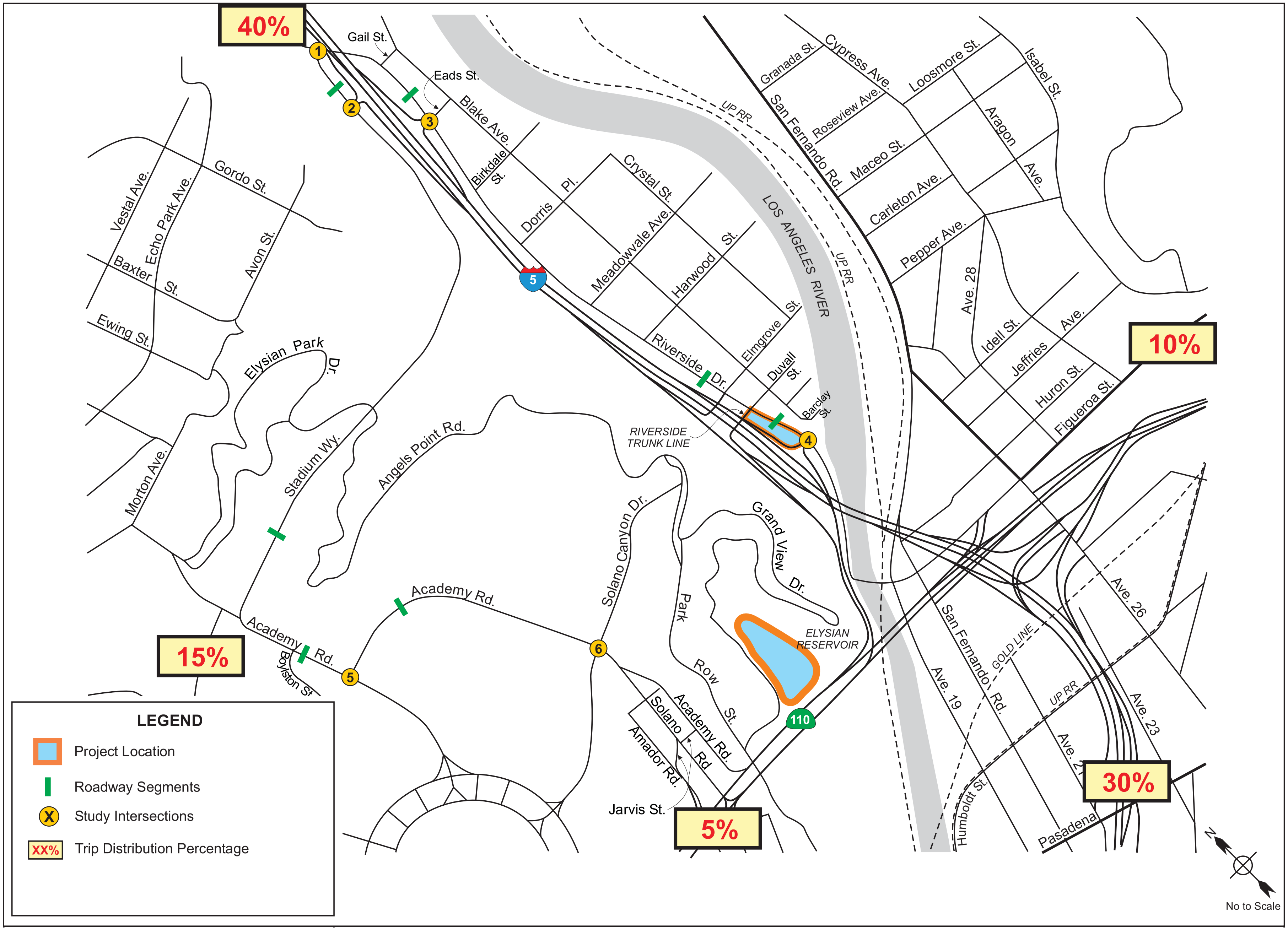
Project Construction Trip Distribution Assumptions

Figures 3.6-3 and 3.6-4 show the trip distribution patterns for construction vehicles and worker trips, respectively. The distribution of construction truck trips was assumed to be primarily freeway-oriented.



Source: KOA Corporation 2010

Figure 3.6-3
Construction Delivery Truck Trip Distribution



Source: KOA Corporation 2010

Figure 3.6-4
Construction Worker Trip Distribution

For the I-5 freeway to the north of the study area, 100 percent of the truck trips were assigned to that corridor and roadways between the project site and the applicable I-5 interchanges. Trucks would enter the Elysian Reservoir property via Grand View Drive, which would be closed during construction. The inlet line construction site truck access would occur via a nearby southbound I-5 off-ramp to Riverside Drive (located north of the Caltrans island), and egress would occur via a nearby northbound on-ramp from Riverside Drive (located south of the Caltrans island), both located on Riverside Drive.

The distribution pattern for analyzed employee trips assumed that employees would arrive on-site from all directions. A total of 70 percent was distributed to the I-5 freeway, with 40 percent distributed to the north of the study area and 30 percent to the south. For the remaining 30 percent, it was assumed that employees would arrive at the site through local streets to avoid peak-period traffic or to reach the site from nearby local neighborhoods and via SR 110.

Elysian Reservoir Intersection Analysis

Traffic impacts created during project construction were calculated by subtracting the V/C ratios under the Future Without Project heading from the totals under the Future With-Project heading. Table 3.6-10 provides a summary of intersection impact analysis in 2019 for the proposed project during the morning peak period. Table 3.6-11 shows the intersection impact analysis during the evening peak period. The LOS calculation worksheets for this analysis scenario are provided in Appendix F.

Table 3.6-10 Future With Project Construction (2019) Study Intersection LOS – AM Peak Hour

#	Intersection	Game Day Scenario	Existing (2010)		Future Without Project (2019)		Future With Project (2019)		Diff.	Sig. Impact?
			V/C	LOS	V/C	LOS	V/C	LOS		
1	Stadium Way/ Riverside Drive	Non-Game Game	0.651 0.568	B A	0.751 0.659	C B	0.767 0.676	C B	0.016 0.017	No No
2	Stadium Way/ Land Street	Non-Game Game	0.565 0.611	B B	0.728 0.680	C B	0.757 0.709	C C	0.029 0.029	No No
3	Riverside Drive/ Eads Street	Non-Game Game	0.435 0.380	A A	0.492 0.432	A A	0.498 0.438	A A	0.006 0.006	No No
4	Riverside Drive/ Northbound I-5 Ramps	Non-Game Game	0.265 0.244	A A	0.452 0.427	A A	0.454 0.429	A A	0.002 0.002	No No
5	Academy Road (major) at Academy Road (minor)	Non-Game Game	Excluded from AM Peak Analysis[1]							
6	Academy Road/ Solano Canyon Drive	Non-Game Game	Excluded from AM Peak Analysis[1]							

Note: Study intersection 5 Academy Road (major) at Academy Road (minor) is a stop-controlled intersection. LOS for signalized intersections is measured on a scale of 0.0 to 100.0, whereas signalized intersections are measured on a scale of 0.000 to 1.000.
[1] Intersection excluded from the a.m. peak period analysis due to minimal morning traffic activity in the area.
Source: KOA Corporation 2010.

Table 3.6-11 Future With Project Construction (2019) Study Intersection LOS – PM Peak Hour

#	Study Intersection	Game Day Scenario	Existing (2010)		Future Without Project (2019)		Future With Project (2019)		Diff.	Sig. Impact?
			V/C	LOS	V/C	LOS	V/C	LOS		
1	Stadium Way/ Riverside Drive	Non-Game Game	0.660 0.725	B C	0.754 0.824	C D	0.758 0.829	C D	0.004 0.005	No No
2	Stadium Way/ Land Street	Non-Game Game	0.517 0.619	A B	0.568 0.704	A C	0.605 0.721	B C	0.037 0.017	No No
3	Riverside Drive/ Eads Street	Non-Game Game	0.368 0.456	A A	0.409 0.490	A A	0.446 0.492	A A	0.037 0.002	No No
4	Riverside Drive/ Northbound I-5 Ramps	Non-Game Game	0.309 0.354	A A	0.403 0.452	A A	0.408 0.457	A A	0.005 0.005	No No
5	Academy Road (major) at Academy Road (minor)	Non-Game Game	8.7 9.0	A A	8.8 9.1	A A	9.1 9.3	A A	- -	- -
6	Academy Road/ Solano Canyon Drive	Non-Game Game	0.065 0.102	A A	0.070 0.112	A A	0.141 0.202	A A	0.071 0.090	No No

Note: Study intersection 5 Academy Road (major) at Academy Road (minor) is a stop-controlled intersection. LOS for signalized intersections is measured on a scale of 0.0 to 100.0, whereas signalized intersections are measured on a scale of 0.000 to 1.000.
Source: KOA Corporation 2010.

As shown in Tables 3.6-10 and 3.6-11, construction of the proposed project would not create a significant impact at any of the study intersections. Further, all the study intersections would operate at LOS D or better under this scenario on game days and at LOS C or better on non-game days. The impact to the study intersections would be less than significant.

Elysian Reservoir Roadway Segment Analysis

The daily volumes on the study roadway segments, for conditions with and without construction of the proposed project, are provided in Table 3.6-12. Volume percentage increases due to project construction are provided for reference purposes. As shown in Table 3.6-12, Academy Road (major) would have the highest percentage of daily vehicle trips during project construction, related primarily to game day events at Dodger Stadium.

Peak hour traffic impacts were analyzed at the study roadway segments to determine potential significant impacts at these locations. Table 3.6-12 summarizes the peak-hour volumes from the daily counts. It should be noted that the peak-hour volumes may not necessarily occur during typical peak-hour periods between 7:00 a.m. to 9:00 a.m. and between 4:00 p.m. to 6:00 p.m. Based on the results provided in Table 3.6-12, the study roadway segments would operate at LOS C or better during non-game days. However, the following two roadway segments would operate at LOS E or F during on a typical game day:

- Riverside Drive between Gail Street and Eads Street (LOS E)
- Academy Road (major) (LOS F)

The decrease in LOS to E and F on game days during construction would result in a significant impact. Implementation of mitigation measures TRANS-A and TRANS-B is required.

Table 3.6-12 Weekday Peak Hour Roadway Segment Volumes Summary During Construction (2019)

Study Roadway Segment	Game Day Scenario	Base Volumes								Proposed Project			
		Existing			Ambient Growth	Area Projects	Future Base			Project Only	Future With Project		
		Volume	V/C	LOS			Volume	V/C	LOS		LOS	V/C	LOS
Stadium Way between Riverside Drive & I-5 Southbound Ramps	Non-Game Game	1,494 1,586	0.598 0.634	A B	9% 9%	264	1,898 1,999	0.759 0.800	C C	64	1,962 2,063	0.785 0.825	C D
Riverside Drive between Gail Street & Eads Street	Non-Game Game	1,678 2,014	0.671 0.806	B D	9% 9%	157	1,992 2,360	0.797 0.944	C E	60	2,052 2,420	0.821 0.968	D E
Riverside Drive between Fernleaf Street & Elmgrove Street	Non-Game Game	1,357 1,740	0.543 0.696	A B	9% 9%	115	1,599 2,018	0.640 0.807	B D	11	1,610 2,029	0.644 0.812	B D
Riverside Drive between Oros Street and I-5 Northbound Ramps	Non-Game Game	1,352 1,405	0.541 0.562	A A	9% 9%	331	1,810 1,868	0.724 0.747	C C	20	1,830 1,888	0.732 0.755	C C
Stadium Way north of Academy Road	Non-Game Game	1,973 2,312	0.438 0.514	A A	9% 9%	162	2,320 2,691	0.516 0.598	A A	117	2,437 2,808	0.542 0.624	A B
Academy Road (major)	Non-Game Game	563 2,838	0.180 0.908	A E	9% 9%	75	691 3,179	0.221 1.017	A F	123	814 3,302	0.260 1.057	A F
Academy Road (minor)	Non-Game Game	490 350	0.363 0.259	A A	9% 9%	10	546 393	0.404 0.291	A A	123	669 516	0.496 0.382	A A

Source: KOA Corporation 2010.

Operations

At completion of construction of the buried reservoir, the new water storage facilities would not create the need for LADWP personnel to be located permanently on site. LADWP activities would continue to involve maintenance at a similar level of activity as currently occurs at Elysian Reservoir. For the purposes of the traffic analysis and this EIR, active recreation uses have been assumed. Recreation functions at the project site would be available to the public during daylight hours only, and no nighttime lighting other than minimal security lighting for the parking lot and pathways would be provided. A gate would be installed at the entrance of the site that would be opened at dawn and closed at dusk. Depending on the final design of the recreation component, up to 3 soccer fields would be provided at the project site. Trip generation would be created by the establishment of soccer fields, as well as the additional park acreage that would be available to the public at the project site.

Recreation Trip Generation Analysis

A trip generation study was conducted for the total additional park area that would be created as part of the proposed project. Based on current area programs for the American Youth Soccer Organization (AYSO), team sizes range from 11 to 18 players. A conservative assumption of 18 players per team was used for the soccer field trip generation calculations. Although Elysian Park has some surrounding residential areas, the park is a regional facility. Therefore, all players are assumed to arrive by car. A rate of 1.5 players per car was used. Therefore, the soccer fields would be expected to generate 12 cars per team, or 24 cars per field, for a total of 72 cars when 3 games occur simultaneously.

In/out trip rates were assumed to be 100 percent in and about 30 percent out at the start of games. This means that all 72 cars would enter the project site and approximately 30 percent, or 22 cars, would only drop off players and immediately leave the site. These 22 vehicles would be expected to return to the site to retrieve their players at the end of the soccer game, and then all 72 cars would leave the site. In addition, under peak conditions, one set of simultaneous soccer games would end and another set of simultaneous soccer games would be expected to start approximately 30 minutes later. Thus, there would be peak circumstances in which vehicles are leaving one set of soccer games while vehicles are entering the site to park and drop off players for the next set of soccer games. The resulting trip generation was combined to represent the peak-period during the turnover between sets of games and different teams. Using these assumptions, operation of the soccer fields would generate a maximum of 188 vehicle trips during the peak weekday and weekend periods. Table 3.6-13 shows the recreation trip generation totals during project operation.

Table 3.6-13 Weekend Peak Soccer Fields Trip Generation Rates

Fields	Players (per shift)	Vehicles (per shift)	Ending (Shift 1)	In	Out	Starting (Shift 2)	In	Out	Total (Overlap)
3	108	72	94	22	72	94	72	22	188

Assumptions: 18 players per team and 1.5 players per car; 30 percent of vehicles per shift drop off players.
Source: KOA Corporation 2010.

To analyze the proposed operational condition as an active recreation area, vehicle trips that would be generated by the soccer fields were added to intersection turn volumes with growth and area project trips. Tables 3.6-14 and 3.6-15 provide the morning and evening peak-hour intersection analysis during project operation.

Table 3.6-14 Future With Project Operations Phase LOS – AM Peak Hour

#	Intersection	Game Day Scenario	Existing (2010)		Future Without Project (2020)		Future With Project (2020)		Diff.	Sig. Impact?
			V/C	LOS	V/C	LOS	V/C	LOS		
1	Stadium Way/ Riverside Drive	Non-Game Game	0.651 0.568	B A	0.751 0.659	C B	0.751 0.659	C B	0.000 0.000	No No
2	Stadium Way/ Landa Street	Non-Game Game	0.656 0.611	B B	0.728 0.680	C B	0.729 0.680	C C	0.001 0.000	No No
3	Riverside Drive/ Eads Street	Non-Game Game	0.435 0.380	A A	0.492 0.432	A A	0.492 0.432	A A	0.000 0.000	No No
4	Riverside Drive/ Northbound I-5 Ramps	Non-Game Game	0.265 0.244	A A	0.452 0.427	A A	0.452 0.427	A A	0.000 0.000	No No
5	Academy Road (major) at Academy Road (minor)	Non-Game Game	Excluded from AM Peak Analysis[1]							
6	Academy Road/ Solano Canyon Drive	Non-Game Game	Excluded from AM Peak Analysis[1]							

Note: Intersection 5 Academy Road (major) at Academy Road (minor) is a stop-controlled intersection. LOS for signalized intersections is measured on a scale of 0.0 to 100.0, whereas signalized intersections are measured on a scale of 0.000 to 1.000.

[1] Intersection excluded from the a.m. peak period analysis due to minimal morning traffic activity in the area.

Source: KOA Corporation 2010.

Table 3.6-15 Future With Project Operations Phase LOS – PM Peak Hour

#	Study Intersection	Game Day Scenario	Existing (2010)		Future Without Project (2019)		Future With Project (2019)		Diff.	Sig. Impact?
			V/C	LOS	V/C	LOS	V/C	LOS		
1	Stadium Way/ Riverside Drive	Non-Game Game	0.660 0.725	B C	0.754 0.824	C D	0.761 0.839	C D	0.007 0.015	No No
2	Stadium Way /Landa Street	Non-Game Game	0.517 0.619	A B	0.568 0.704	A C	0.578 0.714	A C	0.010 0.010	No No
3	Riverside Drive/ Eads Street	Non-Game Game	0.368 0.456	A A	0.409 0.490	A A	0.414 0.495	A A	0.005 0.005	No No
4	Riverside Drive/ Northbound I-5 Ramps	Non-Game Game	0.309 0.354	A A	0.403 0.452	A A	0.405 0.454	A A	0.002 0.002	No No
5	Academy Road (major) at Academy Road (minor)	Non-Game Game	8.7 9.0	A A	8.8 9.1	A A	8.9 9.2	A A	- -	- -
6	Academy Road/ Solano Canyon Drive	Non-Game Game	0.065 0.102	A A	0.070 0.112	A A	0.043 0.102	A A	0.075 0.090	No No

Note: Intersection 5 Academy Road (major) at Academy Road (minor) is a stop-controlled intersection. LOS for signalized intersections is measured on a scale of 0.0 to 100.0, whereas signalized intersections are measured on a scale of 0.000 to 1.000.

Source: KOA Corporation 2010.

As shown in Tables 3.6-14 and Table 3.6-15, all of the study intersections would operate at LOS D or better during the weekday peak hours on game days. On non-game days, all of the study intersections would operate at LOS C or better. However, the project-related V/C ratio increase would not exceed the thresholds of significance established by LADOT at any of the study intersections. The impact to the study intersections during project operations would be less than significant.

TRANS-2 *Construction activity would exceed the level of service standards established by the county congestion management agency for designated roads or highways.*

As discussed in the environmental setting, I-5 and SR 110 within the vicinity of the project site are CMP mainline freeway monitoring locations. Project trucks would not be permitted on SR 110 due to truck restrictions on the adjacent segment of this freeway. Therefore, the analysis of CMP impacts is focused on I-5, which is located in the northern portion of the study area.

The nearest CMP monitoring locations to the project site are the I-5 on/off ramps on Stadium Way to the south of Riverside Drive and on Riverside Drive at Eads Street. Construction at Elysian Reservoir during the peak phase of activity (Phase 4) and during the peak traffic hour would add 54 trips to the I-5 southbound off-ramp at Stadium Way through a combination of delivery truck trips and worker vehicle trips. The impact would be significant. Implementation of mitigation measure TRANS-C is required.

During the peak phase of construction of the inlet line from the Caltrans island on Riverside Drive, fewer than 50 peak hour trips would be added to the I-5 on- and off-ramps during peak construction. The CMP impact for the inlet line would be less than significant, and no mitigation is required.

The proposed project would not add more than 150 new trips per hour in either direction to any freeway segments near the project site at Elysian Reservoir or the Caltrans island. Therefore, impact analysis at CMP freeway monitoring stations is not required. The impact would be less than significant.

TRANS-3 *The proposed project would create a safety hazard during construction in Elysian Park associated with incompatible uses.*

As discussed in TRANS-1, construction within Elysian Reservoir could generate up to 630 daily truck trips. Construction traffic would traverse a large part of Elysian Park and use interior park roads to access the reservoir. It is acknowledged that construction traffic on local roadways may slow down vehicle travel and pose a nuisance to park patrons. Further, heavy vehicle traffic on interior park roads would inherently conflict with the use of Elysian Park for recreation purposes and could pose a safety hazard to park patrons during construction. Therefore, the impact to park safety would be significant. Implementation of mitigation measures TRANS-D through TRANS-F would be required to reduce traffic-related impacts during construction.

TRANS-4 *The proposed project would not result in inadequate parking capacity.*

Recreation activities at the project site could overlap with other recreational activities occurring within Elysian Park. Thus, all parking for project-related uses would be provided on site. The maximum recreation development scenario includes 3 soccer fields, a skate plaza, exercise stations, and playground facilities. As discussed in TRANS-1 above, soccer games are expected to generate 72 vehicle trips. Even though some of these trips are assumed to be drop-off, all vehicles would require a parking space. Based on an assumption of a 50 percent overlap between successive sets of games, a maximum of 108 parking spaces would be required to accommodate soccer activities (72 + 36). The proposed project would provide up to 200 parking spaces. Thus, there would be ample parking available during soccer functions, and an additional 92 parking spaces would be available to accommodate other park uses, such as for the skate plaza, exercise stations, and playgrounds, as well as parking for soccer officials and additional spectators. The proposed project would not result in a parking shortage, and the impact would be less than significant.

3.6.3 Mitigation Measures

TRANS-A During construction when games or other events are scheduled at Dodger Stadium, the Los Angeles Department of Water and Power shall coordinate with the Los Angeles Department of Transportation to establish manual traffic control at established major intersections along the Stadium Way-Academy Road route to and from the stadium. If manual control cannot be provided, construction traffic shall not be allowed on the haul route from the hour before through the hour after a major event at Dodger Stadium.

TRANS-B Traffic on non-park roads shall be controlled during construction by adhering to the guidelines contained in Standard Specifications for Public Works Construction and Caltrans' Traffic Manual, Chapter 5, "Manual of Traffic Controls for Construction and Maintenance Work Zones" and applicable City requirements. These guidelines provide methods to minimize construction effects on traffic flow.

TRANS-C During construction, the construction contractor shall space truck trips destined to the north and arriving from the north via Interstate 5 to avoid caravans of trucks on the on- and off-ramps.

TRANS-D Prior to construction, a construction traffic control plan shall be prepared by the Los Angeles Department of Water and Power for review and approval by the Los Angeles Department of Transportation and the Los Angeles Department of Recreation and Parks. The plan shall include, at a minimum, advanced signing on Stadium Way and Riverside Drive alerting motorists to construction and an increase in construction vehicle movements; signage to alert motorists to temporary or limited access points to adjacent properties; appropriate barricades for road closures; construction speed limit signage along the haul route; other appropriate signage along the haul route to warn park users of construction equipment and vehicles; flag persons at road closure locations, blind spots, other sharp turns to direct construction and other vehicle traffic; temporary crosswalks for park users; and parking restrictions during construction.

TRANS-E Prior to the start of construction, and periodically during construction, as necessary, the construction contractor shall provide all construction drivers with safety training to minimize conflicts between construction activities and park users. Training shall include adherence to posted speed limits, discussion of haul routes, and explanation of the construction traffic control plan.

TRANS-F The Los Angeles Department of Water and Power shall coordinate with the Los Angeles Department of Recreation and Parks and the Los Angeles Department of Transportation to prohibit on-street parking during peak phases of construction on the following street segments: Academy Road (minor); Solano Canyon Drive; and Park Row Drive/Street. Parking would still be maintained for residents on the west side of Park Row Street at the Grand View Drive entrance to the reservoir project site.

3.6.4 Significance After Mitigation

Implementation of mitigation measures TRANS-A and TRANS-B would improve traffic flow on the study roadway segments during games or other events at Dodger Stadium during construction at the Elysian Reservoir site. The impacts would be reduced to a less than significant level.

Implementation of mitigation measure TRANS-C would avoid caravans of construction trucks stacking up on the I-5 on- and off-ramps at Stadium Way during peak phases of construction at Elysian Reservoir. The impact would be reduced to a less than significant level.

Implementation of mitigation measures TRANS-D through TRANS-F would minimize incompatibility issues between construction vehicles and recreation users within Elysian Park during construction. The safety hazard would be reduced to a less than significant level.

Impacts related to parking supply would be less than significant. There would be no operational impacts to the study intersections or CMP facilities.

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CHAPTER 4
IMPACT OVERVIEW

This chapter provides an overview of the environmental effects of the proposed project, including significant unavoidable adverse impacts, impacts not found to be significant, cumulative impacts, significant irreversible environmental changes, and growth-inducing impacts. Cross-references are made throughout this chapter to other chapters of the EIR where more detailed discussions of the impacts of the proposed project can be found.

4.1 Significant Unavoidable Adverse Impacts

This chapter is prepared in accordance with Section 15126.2(b) of the CEQA Guidelines, which requires the discussion of any significant environmental effects that cannot be avoided if a project is implemented. These include impacts that can be mitigated, but cannot be reduced to a less than significant level. An analysis of environmental impacts caused by the proposed project has been conducted and is contained in this EIR in Chapter 3. Six issue areas were analyzed in detail in Chapter 3. According to the environmental impact analysis, the proposed project would result in significant unavoidable adverse impacts related to construction air quality (Chapter 3.2) and construction noise (Chapter 3.5).

Even with implementation of mitigation, construction activities for the proposed project would generate regional pollutant emissions in excess of the SCAQMD daily emissions thresholds for NO_x. In addition, localized emissions of PM_{10} and $PM_{2.5}$ would exceed the SCAQMD daily emissions thresholds during construction. Although the proposed project would not create noise impacts related to construction or operations activities at the project sites (i.e., Elysian reservoir and the Caltrans island on Riverside Drive), the noise along the construction haul truck route for the Elysian Reservoir site would exceed acceptable levels on both Park Row Street near the Elysian Reservoir Property and on Solano Canyon Drive within Elysian Park.

4.2 Effects Not Found to be Significant

Section 15128 of the CEQA Guidelines requires the identification of impacts of a project that were determined not to be significant and that were not discussed in detail in the impact chapters of the EIR. These issues were eliminated from further review during the Initial Study process (see Appendix A). The following section presents a brief discussion of environmental issues that were not found to be significant for this project, including agriculture and forestry resources, geology and soils, hazards and hazardous materials, hydrology and water quality, land use planning, mineral resources, population and housing, public services, recreation, and utilities and service systems.

4.2.1 Agriculture and Forestry Resources

Elysian Reservoir is located within Elysian Park in central Los Angeles in an area that is zoned [Q]OS-1XL (Open Space). The proposed project is located in an existing urban area on a site owned by the City of Los Angeles and operated by LADWP and used for drinking water storage.

The project site is not zoned for agricultural purposes and is not used for agricultural purposes. There is no Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) on or in the vicinity of the proposed project site. Therefore, there would be no potential for construction or operation of the proposed project to convert Farmland, either directly or indirectly, to non-agricultural use. No Williamson Act contract applies to the site. Thus, the proposed project would not conflict with existing zoning for agricultural use or a Williamson Act contract. Replacing the existing open reservoir with a new buried reservoir would not result in the conversion of Farmland to non-agricultural use.

The project site is not zoned forestland, timberland, or timberland production and is not used for forestry purposes. There is no forestland, timberland, or timberland production on or within the vicinity of the proposed project site. Thus, the construction of a buried reservoir and use of the site for recreation would not result in the conversion of forest land to non-forest use.

4.2.2 Geology and Soils

As with most of Southern California, the project site is located in a seismically active region. The proposed project site is not located within an Alquist-Priolo Earthquake Fault Zone or within a Fault Rupture Study Area, as mapped by the City of Los Angeles and the California Geological Survey. The closest known fault to the proposed project site, the Elysian Fault, is located approximately 1,500 feet to the east. Therefore, as with all of Los Angeles County, the project area is susceptible to high-intensity ground shaking that affects all structures in the City. However, the buried reservoir and recreation support structures, such as restrooms, would be constructed in accordance with seismic requirements of the City of Los Angeles and California Building Code and the standards of the California Department of Water Resources, Division of Safety of Dams for seismic safety. Compliance with established standards would reduce risks of structural failure or collapse to a less than significant level. According to the City of Los Angeles Safety Element, the project site is not located in a liquefaction zone; however it is located in area that is subject to seismically induced landslides. Any work in hillside areas would comply with the City Hillside Grading Ordinance, and the slopes would be stabilized as necessary to prevent landslides. Compliance with established standards would reduce risks associated with landslides to a less than significant level.

The proposed project is not located on soils that are expansive, as described in Table 18-1B of the Uniform Building Code. The proposed project has the potential to result in soil erosion or the loss of topsoil during ground disturbing activities. However, most ground disturbing activities would be limited to the existing reservoir. Since the proposed project site is greater than one acre, LADWP’s construction contractor must prepare and comply with a Storm Water Pollution Prevention Plan, which would include erosion control measures. In addition, LADWP’s construction contractor must comply with the Storm Water Construction Activities General Permit and obtain a National Pollution Discharge Elimination System Permit. Compliance with existing regulations would reduce impacts due to soil erosion to a less than significant level. After construction of the buried reservoir, the project site would be stabilized and landscaped to provide a recreation area. All other areas disturbed during construction would be landscaped and/or revegetated to match the existing condition. Thus, no significant soil erosion or loss of topsoil is expected to occur.

4.2.3 Hazards and Hazardous Materials

Although construction may involve the transport, storage, use, or disposal of some hazardous materials, such as on-site fueling/servicing of construction equipment, construction activities would be short-term. Such transport, use, storage, and disposal would not be expected to create a significant hazard to workers or the community. In addition, all construction activities involving hazardous materials would be subject to federal, state, and local health and safety requirements involving their transport, use, storage, and disposal. As under current conditions, the buried reservoir would be used for the storage of treated drinking water. If additional disinfection is required, trained water treatment personnel would add standard water treatment chemicals to the reservoir. Similarly, chemicals would be applied to the reservoir when it is cleaned. These water treatment operations would be subject to federal, state, and local health and safety requirements. Operation of the proposed recreation area may involve the use of pesticides, herbicides, and fertilizers, which would be subject to federal, state, and local health and safety requirements as currently occurs throughout Elysian Park. No reasonably foreseeable upset or accident conditions that could involve the release of hazardous materials into the environment are anticipated during construction or operation of the proposed project. The proposed project is not contained on lists compiled pursuant to Section 65962.5 of the Government Code.

The proposed project would not impair or physically interfere with an adopted emergency response plan or a local, state, or federal agencies emergency evacuation plan. During project construction, Grand View Drive surrounding the project site would be closed to public traffic. Because this segment of Grand View Drive is located entirely within Elysian Park and alternate routes within the park would remain available, this temporary closure is not anticipated to interfere with an adopted emergency response plan. During project operation, Grand View Drive would again be open to access. Similarly, construction activities related to the installation of the new inlet line connecting the Riverside Trunk Line to Elysian Reservoir may require the closure of lanes on Riverside Drive. However, only one lane of Riverside Drive would be closed at any one time to limit interference with traffic flow. Impacts to adopted emergency response plans or emergency evacuation plans would be less than significant.

According to the City of Los Angeles General Plan Safety Element, no Fire Hazard Districts or Fire Buffer Zones occur within the project site. As such, construction and operation of the proposed project would not expose any people or structures to a significant risk of loss, injury or death involving wildland fires. In accordance with the Los Angeles Public Safety Code, fire prevention procedures during project construction would include such measures as fire safety training of all construction workers, on-site water truck for rapid response, and equipping construction equipment with spark arresters. During operation, the project site would continue to be maintained to comply with the Los Angeles Public Safety Code to minimize the risk of fire. Compliance with existing regulations would ensure a less than significant impact.

4.2.4 Hydrology and Water Quality

Construction of the proposed project would result in ground surface disturbance during excavation and grading that could create the potential for erosion and impacts to water quality to occur. However, most ground disturbing activities would be limited to the existing reservoir. Since the proposed project site is greater than one acre, LADWP’s construction contractor must prepare and comply with a Storm Water Pollution Prevention Plan, which would include erosion control measures. In addition, LADWP’s construction contractor must comply with the Storm Water Construction Activities General Permit and obtain a National Pollution Discharge

Elimination System permit. Compliance with existing regulations would reduce impacts due to soil erosion and water quality contamination to a less than significant level. After construction of the buried reservoir, the project site would be stabilized and landscaped to provide a recreation area. Further, all other disturbed areas would be landscaped and/or revegetated. Thus, no significant runoff or soil erosion is expected to occur that would negatively impact water quality.

Prior to draining the reservoir into the storm water system before commencement of construction, any chlorine residual in the water would be allowed to dissipate, and the discharge would be conducted pursuant to National Pollution Discharge Elimination System permit requirements or exemptions. In the event that dewatering of the site is required during project construction, all discharges would be carried out in accordance with applicable requirements of the Regional Water Quality Control Board, including compliance with the National Pollution Discharge Elimination System permit regulations. The proposed project would not substantially alter the existing drainage pattern of the project site or the area. The proposed project would continue to discharge storm water runoff into the existing storm drainage system. The amount of storm water runoff during construction or operation of the proposed project would not be expected to exceed the capacity of the existing storm water system. Therefore, construction and operation of the proposed project would not create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff.

The proposed project site is not located within a 100-year flood hazard area as mapped on the federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map. The proposed project site is not located in an area susceptible to inundation from failure of upstream dams. The proposed project would remove an open reservoir and replace it with a buried reservoir, thereby reducing the potential for inundation of downstream areas. As such, the construction and operation of the proposed project would not increase the risk from flood or inundation.

4.2.5 Land Use and Planning

Removal of the existing reservoir to replace it with a buried reservoir and developing the site for recreational use would not divide an established community. The proposed project would not create a physical barrier.

The proposed project site is designated as Open Space in the City of Los Angeles General Plan. The proposed project site is located within the Silver Lake-Echo Park-Elysian Valley Community Plan area. The zoning designation for Elysian Reservoir is [Q]OS-1XL (Open Space). The City of Los Angeles Municipal Code The City of Los Angeles Municipal Code states that the purpose of the OS zone is to protect and preserve natural resources and natural features of the environment, provide outdoor recreation opportunities, and encourage the maintenance of open space uses on all publicly owned land that is essentially unimproved. The proposed project would bury the existing open reservoir and provide new recreational space as part of Elysian Park. Operation of the proposed project site as a recreation area may require construction of accessory structures, such as restroom facilities, a concession stand, and equipment storage building. Such facilities are allowable accessory structures within the OS zone, under the provisions of a Conditional Use Permit. Thus, the proposed project would not conflict with an applicable land use plan upon obtaining the necessary Conditional Use Permit.

4.2.6 Mineral Resources

The proposed project site is located in an area where urban development has already occurred and the surrounding recreation and residential uses would likely preclude mining in the area. Locally important mineral resources are not located on or near the site. There are no known mineral deposits of economic importance underlying the project site (California Geological Survey 2006). Development of the proposed project would not result in the loss of availability of any mineral resource.

4.2.7 Population and Housing

The proposed project is intended to ensure the reliability and safety of the existing water supply. The project does not involve increasing the amount of water that can be stored on site such that additional water supplies would be available. As such, the project would not induce substantial population growth in the area, either directly or indirectly. Construction and operation of the proposed project would occur within and adjacent to the LADWP Elysian Reservoir property and within a Caltrans island along Riverside Drive. There is no existing housing within the reservoir property or on the Caltrans island, and the project does not require the removal of housing. Therefore, construction and operation of the proposed project would not impact the number or availability of existing housing in the area and would not necessitate the construction of replacement housing elsewhere.

4.2.8 Public Services

Fire service to the project site is provided by the City of Los Angeles Fire Department. Police protection services are provided by the City of Los Angeles Police Department. In addition, LADWP currently has security staff stationed on site. Operation of the proposed project would not require additional fire or police protection such that new or expansion of existing fire or police protection facilities would be required, the construction of which could cause significant environmental impacts.

The primary objective of the proposed project is to ensure the safety and reliability of the drinking water supply in accordance with updated EPA rules regarding surface water treatment and disinfection byproducts associated with current drinking water disinfection processes. No population increase in the project area would result from construction and operation of a buried structure in place of Elysian Reservoir. No new housing or businesses would be constructed as part of the proposed project to induce population growth. The proposed project would have the beneficial impact of increasing the amount of recreation space available in Elysian Park. No substantial adverse physical impact to local schools, parks, or other public facilities would occur.

4.2.9 Recreation

The proposed project is the replacement of Elysian Reservoir with a buried reservoir and development of the site for recreational use. The proposed project would have the beneficial impact of increasing the amount of recreation space available in Elysian Park. It would not increase the use of existing park areas or other recreation facilities such that substantial physical deterioration of Elysian Park or other nearby parks would occur or be accelerated. While no impacts to recreation per se would occur, the potential for impacts to aesthetics, air quality, biological resources, cultural resources, noise, and traffic related to the construction and operation of the recreation area are addressed in their respective chapters of this EIR.

4.2.10 Utilities and Service Systems

The proposed project would not result in changes to facilities or operations at existing wastewater treatment facilities. Construction and operation of the proposed project would generate only minor amounts of wastewater. Restroom facilities would be constructed at the site and connected to the existing sewer line in Academy Road. However, the relatively small volume of wastewater generated at these facilities would not require the construction of new water or wastewater treatment facilities or expansion of existing facilities. No impact to wastewater treatment requirements of the applicable would occur.

The proposed project includes the replacement of Elysian Reservoir with a buried reservoir and the development of the site for recreational use. The buried reservoir would have essentially the same storage capacity as the existing reservoir. During project construction, the reservoir would be out of service for approximately five years. Potable water would be provided to the Elysian Reservoir service area through a bypass line from existing LADWP supplies. LADWP would supplement its water supply with additional purchased water from the Metropolitan Water District during the construction period to ensure that there would be adequate supply to meet peak demand. No shortage of water supply would be expected. During operation, the proposed project would require increased water supply for the wildlife pond, irrigation of the recreation area, and operation of the restroom facilities. This water would be supplied from a 6-inch main in Park Row Street. According to LADWP, the increase in water demand would be minimal in relation to the total available supply.

Construction debris would be recycled or transported to a landfill site and disposed appropriately. In accordance with the Citywide Construction Debris and Demolition Ordinance, LADWP’s construction contractor would work to ensure that source reduction techniques and recycling measures are incorporated into project construction and operation. The amount of debris generated during project construction is not expected to significantly impact landfill capacities. Operation of the proposed project would not result in an increase in personnel at the project site in relation to the water storage functions. The site would be used for recreation, which would generate relatively small additional quantities of waste that would not significantly impact landfill capacities. During construction and operation of the proposed project, LADWP would comply with all City and state solid waste diversion, reduction, and recycling mandates, including compliance with the County-wide Integrated Waste Management Plan and the City of Los Angeles Municipal Code.

4.3 Cumulative Impacts

According to Section 15355 of the CEQA Guidelines, cumulative impacts refer to:

> “two or more individual effects which, when considered together are considerable or which compound or increase other environmental effects. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.”

According to Section 15130 (b)(1)(A) of the CEQA Guidelines, a list of past, present, and probable future projects producing related or cumulative impacts may be used as the basis of the cumulative impacts analysis. Because construction of the proposed project would not begin until 2015, a list approach for the cumulative impact analysis was used for air quality/greenhouse gas emissions, noise, and transportation and traffic (see Table 3.6-5).

4.3.1 Aesthetics

The proposed project site is located at the bottom of a 40-acre ravine within the boundaries of Elysian Park. As discussed in Chapter 3.1, Aesthetics, the proposed project would change the visual quality of the site by replacing the open water surface with a recreation area similar to other portions of Elysian Park; therefore, the proposed project would have a less than significant impact on scenic vistas and the character of the site and its surroundings. New development is not expected to occur in the project vicinity because it is designated open space and governed by the Elysian Park Master Plan. All new development within Elysian Park would be consistent with the Elysian Park Master Plan and would likely consist of new or replacement of existing recreational facilities and structures. The proposed project site is not visible from areas outside the ravine in which it is located, and it would therefore not contribute to a cumulatively significant impact to aesthetic resources related to other projects in the vicinity outside the park boundaries.

4.3.2 Air Quality/Greenhouse Gas Emissions

Cumulative air quality impacts are considered on a regional basis taking into account background growth and cumulative projects. As such, Table 3.2-6 indicates analysis reflecting cumulative air quality considerations related to project construction. The proposed project would result in a regionally significant impact during construction relative to NO_X emissions. It is anticipated that some reasonably foreseeable past, present, and future projects would also result in significant air quality impacts. While SCAQMD-required mitigation measures would reduce air quality impacts, it is anticipated that the construction of the related projects may result in a regionally significant cumulative impact.

As with construction emissions, operational air quality emissions take into account background growth and cumulative projects. As shown in Table 3.2-7, the proposed project would not result in a significant air quality impact during operation. Therefore, cumulative operational air quality would be less than significant.

As shown in Table 3.2-9, the proposed project would not generate GHG emissions above the 10,000 metric tons of CO_2e threshold over a 30-year period. Because GHG emissions are considered cumulative by nature, the cumulative impact would be less than significant.

4.3.3 Biological Resources

As discussed in Chapter 3.3, Biological Resources, implementation of the proposed project would impact migratory bird species, may require trimming and/or removal of trees protected under the City’s Tree Protection Ordinance, and result in the removal of landscape trees and other non-native vegetation. These project-level impacts would be mitigated to less than significant level. Reasonably foreseeable past, present, and future development could impact similar species within the park. Thus, the proposed project and any related project involving tree removal would have the potential to adversely impact migratory bird species. However, all projects would be required to comply with the Migratory Bird Treaty Act. Similarly, any project involving tree removal would be subject to the City's Tree Protection Ordinance and the LADRP Urban Forest Program. Because impacts to biological resources are site-specific, implementation of the proposed project in conjunction with other projects in the area (including the incorporation of the identified mitigation measures) would not contribute to a significant cumulative impact to biological resources.

4.3.4 Cultural Resources

The proposed project would not result in cumulative impacts to historic resources in the area. As discussed in Chapter 3.4, Cultural Resources, Elysian Park and the surrounding area is associated with the original settlement of the City of Los Angeles. Archaeological resources have been documented in cultural resources surveys and discovered during construction projects in the area. In addition, the area is located within the Puente Formation, which is known to yield paleontological resources. Thus, reasonably foreseeable past, present, and future development projects in the area would be required to determine the potential for the projects to impact archaeological and paleontological resources. As with the proposed project, all projects in the vicinity would be required to comply with CEQA Section 15064.5. These other project sites would be studied for their potential to contain archaeological resources and paleontological resources, and mitigation measures similar to those imposed on the proposed project would be required. Because impacts to archaeological and paleontological resources are site-specific and because other projects in the vicinity of Elysian Reservoir would be required to determine if they would impact such resources and mitigate any identified impacts, the proposed project would not contribute to a significant cumulative impact to archaeological resources.

4.3.5 Noise

When calculating future traffic impacts, nine cumulative projects were taken into consideration (see Table 3.6-5). Since noise impacts for the project are generated directly from the traffic analysis results, the future without project and future with project noise impacts described in Chapter 3.5, Noise, already reflect cumulative impacts. Thus, there would be a cumulatively considerable noise impact during construction associated with the haul trucks along Solano Canyon Drive between Academy Road and Park Row Drive, and on Park Row Street between Solano Canyon Drive and the SR 110 Ramp from construction at Elysian Reservoir.

Similar to construction noise, operational noise sources takes into consideration cumulative impacts from the nine other related projects. As shown in Table 3.5-7, although there would be an increase in mobile noise sources associated with the operation of the recreation area, this would not exceed the 10-dBA significance threshold for mobile noise. Therefore, the proposed project would not contribute to a cumulatively considerable impact related to noise during operation.

Vibration impacts associated with construction activities are extremely localized because they are groundborne. Groundbourne vibration generated by construction equipment spreads through the ground and diminishes greatly in magnitude with increases in distance. As such, groundbourne vibration associated with the proposed project would not be heightened due to the related projects because of their distance from the project site. Consequently, no cumulative impacts from vibration would result. During operation, the proposed project would create no impacts related to vibration, and thus, would not add to a cumulative vibration impact in the area.

4.3.6 Transportation and Traffic

As discussed in Chapter 3.6, Transportation and Traffic, the future traffic conditions take into account nine cumulative projects and ambient growth in traffic volumes in the area that could potentially affect traffic circulation through the study area. With the addition of construction vehicle trips generated by the proposed project combined with background traffic growth, the study intersections would operate at LOS D or better on game days at Dodger Stadium and LOS C or better during non-game days. Further, the study roadway segments would continue to operate at D or better during non-game days. However, two study roadway segments would operate at LOS E and F during game days. Thus, the short-term cumulative construction impact would be significant and implementation of mitigation measure TRANS-A would be required. With implementation of mitigation, the cumulative impact would be reduced to a less than significant level.

During operation of the proposed project, the addition of recreational users' vehicle trips to and from the project site during peak periods of activity added to background traffic growth would not cause LOS values to change on any of the study roadway segments. Thus, long-term project-related traffic would not contribute to a significant cumulative impact. In addition, operational uses at the project site would provide ample parking to accommodate the on-site uses. As such, the proposed project would not contribute to a significant cumulative parking shortage in Elysian Park or the surrounding area.

4.4 Significant Irreversible Environmental Changes

Public Resources Code Section 21100(b)(2)(B) and Section 15126.2(c) of the CEQA Guidelines require that an EIR analyze the extent to which the proposed project's primary and secondary effects would impact the environment and commit nonrenewable resources to uses that future generations will not be able to reverse. Construction and operation of the proposed project would result in the use of nonrenewable resources during construction, including fossil fuels, natural gas, water, and building materials, such as concrete and steel. However, the proposed project is not anticipated to consume substantial amounts of energy or use other resources in a wasteful manner. Although the project would result in the consumption of nonrenewable resources, the impact would not be considered significant.

4.5 Growth-Inducing Impacts

According to Section 15126.2 (d) of the CEQA Guidelines, growth-inducing impacts of the proposed project shall be discussed in the EIR. Growth-inducing impacts are those effects of the proposed project that might foster economic or population growth or the construction of new housing, either directly or indirectly, in the surrounding environment. According to CEQA, increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects.

Induced growth is any growth that exceeds planned growth and results from new development that would not have taken place without the implementation of the proposed project. Typically, the growth-inducing potential of a project would be considered significant if it results in growth or population concentration that exceeds those assumptions included in pertinent master plans, land use plans, or projections made by regional planning authorities. However, the creation of growth-inducing potential does not automatically lead to growth, whether it would be below or in exceedance of a projected level. The environmental effects of induced growth are secondary or indirect impacts of the proposed project. Secondary effects of growth could result in significant, adverse environmental impacts, which could include increased demand on community or public services, increased traffic and noise, degradation of air and water quality, and conversion of agricultural land and open space to developed uses.

Implementation of the proposed project is not expected to induce growth. The proposed project involves the replacement of Elysian Reservoir with a buried reservoir in order to meet water quality standards. The proposed project is intended to ensure the reliability and safety of the existing water supply. The project does not involve substantially increasing the amount of water that can be stored on site such that additional water supply would be available to support growth. As such, the project would not induce substantial population growth in the area, either directly or indirectly. No impact would occur.

CHAPTER 5
ALTERNATIVES TO THE PROPOSED PROJECT

5.1 Overview

Alternatives to the proposed project have been considered in this EIR to explore potential means to mitigate or avoid the significant environmental impacts associated with implementation of the project while still achieving the primary objectives of the project. According to Section 15126.6(a) of the CEQA Guidelines, "an EIR shall describe a range of reasonable alternatives to the proposed project, or to the location of the proposed project, which would feasibly attain most of the basic objectives of the proposed project, but would avoid or substantially lessen any of the significant effects of the proposed project, and evaluate the comparative merits of the alternatives." The CEQA Guidelines state that an EIR should not consider alternatives that are deemed infeasible. Under CEQA, factors other than physical achievability that can determine feasibility are site suitability, economic limitations, availability of infrastructure, General Plan consistency, other plan or regulatory limitations, and jurisdictional boundaries. In addition, according to the CEQA Guidelines, "an EIR need not consider every conceivable alternative to a project." Instead, an EIR should present a reasonable range of feasible alternatives that will support informed decision making and public participation regarding the potential environmental consequences of a project and possible means to address those consequences. An EIR need not consider alternatives whose effects cannot be reasonably ascertained and whose implementation is remote or speculative. However, the alternatives analysis must include an evaluation of the No Project Alternative per Section 15126.6(e) of the CEQA Guidelines to determine the consequences of not implementing the proposed project or another alternative to the project. Through the identification and evaluation of alternatives, the relative advantages and disadvantages of each alternative compared with the proposed project can be determined.

Impacts of the Proposed Project

The proposed project was found to result in temporary but significant environmental impacts related to air quality/greenhouse gas emissions, biological resources, cultural resources, noise, and traffic from construction activity for the project. The temporary impacts to air quality/greenhouse gas emissions and noise cannot be practically mitigated to a less than significant level based on thresholds of significance established in CEQA or other regulatory guidelines. Impacts related to biological resources, cultural resources, and transportation/traffic would be reduced to a less than significant level with implementation of mitigation measures. The operations related to the buried reservoir and associated water storage facilities themselves would result in no significant impacts to the environment. Impacts related to post-construction recreation activity at the Elysian Reservoir site would also be less than significant. The alternatives presented in this section were considered to provide a range of reasonable options to the proposed project that might address the identified impacts.

Project Objectives

By definition, alternatives to the proposed project must achieve most of the basic project objectives. The purpose of the proposed project is to maintain and improve the quality, reliability, and stability of the Elysian Reservoir service area drinking water supply in order to continue to meet customer demand.

The primary project objectives related to this purpose are to:

- Comply with updated water quality standards enacted by the EPA and, by extension, the California Department of Public Health, including the Stage 2 D-DBPR, which establishes new regulations related to the formation of potentially carcinogenic disinfection byproducts that may result from certain drinking water chemical disinfection processes, and the LT2ESWTR, which establishes new regulations related to the presence of microbial pathogens in drinking water supplies.
- Preserve local water storage capability to maintain reliability and flexibility to meet the Elysian Reservoir service area demand for drinking water at required distribution system pressures, including during emergency or planned outages of upstream supplies.

A secondary objective of the proposed project is to provide a publicly accessible recreation area at the Elysian Reservoir site.

A complete discussion of these objectives is provided in Section 2.5 of this EIR.

Alternatives Development

Most of the alternatives presented in this section of the EIR derive from a planning process conducted by LADWP involving representatives of the Elysian Subcommittee of CPOR and open to members of the general public. This process was conducted prior to the identification of the buried concrete reservoir as the proposed project to be analyzed in the EIR. Therefore, not all the alternatives identified during the earlier public participation process are appropriate in relation to addressing potential environmental impacts that would be created by the proposed project. However, these alternatives reflect the input of the participants and, consistent with CEQA, are presented in the EIR to provide a range of approaches to attaining the primary project objectives related to water quality and water storage, including various means of covering the drinking water supply currently stored in Elysian Reservoir; relocating the water storage function of Elysian Reservoir to an alternative protected site; employing methods to disinfect the water that has been stored in the reservoir (rather than covering the reservoir); and providing water to the Elysian service area through improvements to the water distribution system as a functional substitute for Elysian Reservoir.

5.2 Alternatives Considered but Dismissed from Further Analysis

Many alternatives developed during the planning process involving the Elysian community were not considered for further detailed analysis in this EIR because, based on the currently proposed project, the alternatives either did not meet the most of the basic project objectives; were deemed to be infeasible; and/or would not substantially lessen the predicted environmental impacts of the proposed project or would result in additional significant impacts not created by the proposed project. The alternatives that were not further considered in detail are summarized below, including a brief description of the alternative, a determination of its feasibility, and, where appropriate, an assessment of the alternative’s achievement of the basic project objectives and its potential environmental impacts.

5.2.1 Covered Storage Alternatives

Several alternatives were considered, but dismissed from further analysis, that would cover the treated drinking water currently stored in Elysian Reservoir in order to meet the updated EPA water quality requirements related to the LT2ESWTR and the Stage 2 D-DBPR and maintain local storage capacity. Not all these covered storage alternatives would allow for physical access to the site for public recreation use.

Bladder Storage

Under this alternative, numerous individual large-scale neoprene or hypalon bladders would be used to store treated drinking water at the Elysian Reservoir site. The bladders would be anchored to the bottom of the reservoir in a single layer and submerged underwater, basically retaining the current visual character of the reservoir. The bladders would be interconnected by an extensive piping system to allow water to move between bladders and to a common discharge line. The water in the reservoir itself (outside the bladders) would not be potable, but would be retained for aesthetic reasons. This alternative would require some excavation of the bottom of the reservoir to create a suitable surface on which to place the bladders. The bladders could not be stacked in layers because this would prevent monitoring of and access to the bladders for maintenance and repair activities necessary to ensure water quality. Because the bladders are available in a maximum size of 250,000 gallons and because a maximum of 19 such bladders could be seated on the reservoir bottom, only approximately 4.8 MG of total storage would be provided, well short of the 55 MG capacity of the existing reservoir and the proposed project. In addition, because the water in the bladders would be confined to the bottom of the reservoir, an insufficient hydraulic grade would be established to provide adequate operating pressure to the service area.

A secondary containment and monitoring system that meets with California Department of Public Health approval would be required to help prevent mixing between potable and non-potable water sources. However, water stored in the bladders could still be subject to contamination from the non-potable water stored in the reservoir itself, which could enter the bladders even through small holes that would be difficult to detect because the bladders would be submerged underwater. Due to the risk of contamination to the drinking water supply, the Elysian Reservoir property would remain secured, and no public access for recreation purposes would be provided. Because of the relatively small storage capacity provided, insufficient operating pressures, and the potential for contamination of the drinking water supply, this alternative is considered infeasible and was dismissed from further analysis.

Buried Concrete Tanks

Under this alternative, both the primary and secondary objectives of the proposed project would be achieved by constructing and completely burying concrete tanks in place of the existing Elysian Reservoir. A maximum of 3 feet of soil cover would be placed over the buried tanks, and the area above would be developed for recreational uses, limited by load bearing restrictions. As discussed in Section 2.1 of this EIR, the proposed project described in the original June 2008 NOP and Initial Study for the Elysian Reservoir Water Quality Improvement Project reflected this alternative, consisting of two separate underground cylindrical concrete tanks that would be constructed within the basic footprint of the existing reservoir. Tanks differ from the buried reservoir currently under consideration in the EIR as the proposed project in that they consist of an essentially flat floor and vertical side walls, and they require a taller structure to provide the necessary storage volume. The tanks would be constructed of cast-in-place concrete and pre-stressed using a wire coil wrapping system. In order to build the tanks, the reservoir and all appurtenant facilities would need to be entirely demolished, including the reservoir's asphalt lining; the inlet works; the outlet tower and line; and the surrounding road, parapet wall, and fence. Similar to the proposed project, the existing reservoir 36-inch diameter bypass and inlet lines would be replaced with new 54-inch lines.

The buried concrete tanks alternative would fulfill the primary water quality objective of the proposed project related to the Stage 2 D-DBPR and LT2ESWTR because it would entirely enclose the Elysian Reservoir water supply, allowing for the proper management of chloramine disinfectant levels and limiting contamination by pathogenic microorganisms. The buried tanks alternative would fulfill the primary water storage objective of the proposed project because it would preserve the local storage capability of approximately 55 MG to maintain reliability and flexibility to meet the Elysian Reservoir service area demand for drinking water. Because this alternative would allow for the complete burial of the water supply facilities (with the exception of minor aboveground appurtenant elements), it would also fulfill the secondary objective of the proposed project by permitting a publicly accessible recreation area at the Elysian Reservoir property. As under the proposed project, the concrete tanks could support a maximum of 3 feet of soil cover, but large structural elements could not be located above the tanks because of load bearing concerns and accessibility to the underground facilities.

Although the buried tanks alternative would be feasible and would meet all the project objectives, it would require a considerably greater amount of earthwork activity than the proposed buried reservoir because of the configuration and required depth of the tanks. This earthwork activity would involve excavating approximately 480,000 CY of earth material, which, due to limited available stockpile area on or near the project site, would need to be exported from the site, temporarily stockpiled at another facility in the region, and returned to the site to bury the concrete tanks when completed. The total volume of earthwork (including excavating, stockpiling, and re-importing material) would exceed 1.5 million CY. Roughly 100,000 truck trips would be required during the 32-month period when these export and import activities would take place. This would entail an average of over 150 truck trips per day during this period. Compared to the proposed project, the earthwork for the buried tanks alternative would increase the temporary but significant environmental impacts related to air quality, traffic, and noise and possibly those related to biological and cultural resources. Because none of the environmental impacts associated with the proposed project would be avoided or substantially lessened under the buried tanks alternative, it has been dismissed from further detailed analysis in this EIR.

5.2.2 Elysian Reservoir Functional Relocation Alternatives

In order to preserve Elysian Reservoir in essentially its current appearance and provide public access to the site, five alternatives were considered that would relocate the storage capability of the reservoir to a new covered facility to meet the EPA water quality requirements related to the LT2ESWTR and the Stage 2 D-DBPR. Under each of these alternatives, Elysian Reservoir would be preserved but removed from service as a drinking water storage facility. The reservoir property would be opened for public access as part of Elysian Park under the operation of LADRP. Since the continual inflow and outflow of water would no longer occur, a filtration, recirculation, and aeration system would be required to maintain the quality of the water retained in the reservoir to an acceptable level for a publicly accessible non-potable water feature. Because little runoff would reach the reservoir from the surrounding hillsides, the reservoir would continue to be fed as necessary to maintain the water level. This would require modifications to the reservoir inlet to prevent cross-contamination between the non-potable reservoir water and the potable water distribution system. The reservoir outlet to the distribution system would also be appropriately modified or severed to prevent cross-contamination. For safety and liability reasons, the outlet tower access bridge would also need to be demolished. The reservoir would drain to the storm water system as necessary to control the water level. Because of the depth of the reservoir (approximately 50 feet) and the relatively steep incline of the reservoir side walls, creating a naturalistic aquatic environment would probably be difficult without extensive demolition and/or filling, and the reservoir would retain a generally manmade appearance.

Ascot Tank and Hazard Reservoir

Under this alternative, the storage function of Elysian Reservoir would be replaced by facilities at the LADWP Ascot Tank and Hazard Reservoir sites. Ascot Tank, located approximately 2.5 miles east of Elysian Reservoir, is an underground cylindrical tank that has replaced the larger Ascot Reservoir. The tank has approximately 10 MG of storage used to provide service to the surrounding area, and it therefore cannot function as a replacement for Elysian Reservoir. Room to construct an additional tank of approximately the same size as the existing tank (10 MG) may be available within the original reservoir footprint, but expansion beyond the reservoir footprint is limited without substantial earthwork because of the topography of the Ascot property. Because the elevation of the Ascot site, at approximately 620 feet, is significantly above the high-water elevation of Elysian Reservoir (462 feet), pressure would greatly exceed acceptable limits in most of the Elysian service area without the addition of a regulating station to sufficiently reduce pressure.

Hazard Reservoir is a covered storage facility located approximately 2 miles southeast of Elysian Reservoir, adjacent to Hazard Park. The reservoir has approximately 2.7 MG of storage used to provide service to the surrounding area, and therefore, like Ascot Tank, it cannot function as a replacement for Elysian Reservoir. Some limited area exists adjacent to the reservoir and outside the boundaries of Hazard Park itself to expand water storage functions, potentially providing a maximum of 10 MG additional storage at the site. At a high-water elevation of 444 feet, the Hazard Reservoir site provides insufficient pressure to effectively supply most of the Elysian service area without the addition of a pumping station to adequately increase the hydraulic grade. The combined capacity of the new tanks at Ascot and Hazard (20 MG) would be substantially less than the storage provided by the existing Elysian Reservoir and the proposed project (55 MG).

In addition, the Ascot and Hazard facilities receive water from Eagle Rock Reservoir, which is located approximately 5 miles northeast of Elysian Reservoir. Eagle Rock Reservoir water supplies are provided by Metropolitan Water District and do not originate at the Los Angeles Aqueduct Filtration Plant, as do the supplies that currently feed Elysian Reservoir. This would place increased demand on the Eagle Rock Reservoir supplies and greater long-term dependence on Metropolitan Water District sources to provide for the Elysian service area.

Impacts from construction of tanks at Ascot and Hazard would be anticipated to be similar in nature to those associated with the proposed project at Elysian, although reduced in proportion relative to the smaller scale of construction. Unlike the proposed project, construction at Ascot would require removal of 1 to 2 acres of sensitive coastal sage scrub habitat originally planted when the reservoir was taken out of service. The Hazard Reservoir site is located adjacent to the Los Angeles County-USC Medical Center, which could contribute to impacts to sensitive receptors in relation to noise and air pollution from construction activities. New distribution lines would also be required to adequately provide water from new tanks at Ascot and Hazard to the

Elysian service area, likely creating additional environmental impacts to the affected neighborhoods. Because of relatively limited storage capacity, excessive or insufficient operating pressure differentials, and the potential for increased environmental impacts associated with distribution line upgrades, this alternative was dismissed from further analysis.

Tunnel Storage

Under this alternative, the storage function of Elysian Reservoir would be replaced by a large-diameter pipe, which would be located in an underground tunnel. The actual length of the tunnel in this alternative would depend on the diameter of the pipe used. A 10-foot diameter pipe would require a tunnel of approximately 18 miles in length to provide 55 MG of storage. This is nearly the distance between Elysian Reservoir and the Los Angeles Aqueduct Filtration Plant in Granada Hills, the primary source of water for the reservoir. A 12-foot diameter pipe would require a tunnel of over 12 miles in length. Given the magnitude of construction related to such a tunneling project, the potential environmental impacts related to traffic, air quality, noise, land use, and other specifically unpredictable factors would likely exceed those associated with the proposed project. This alternative is also considered essentially infeasible because of the improbability of constructing a tunnel of such length at the appropriate elevation required to provide acceptable operating pressures to the Elysian Reservoir service area.

Dodger Stadium Storage Tanks

Under this alternative, the storage function of Elysian Reservoir would be replaced by new tanks sited in the Dodger Stadium parking lot, located adjacent to Elysian Park, southwest of Elysian Reservoir. In one option under this alternative, the tanks would be constructed in the main parking lot of Dodger Stadium, where enough space would exist to provide a total volume of 55 MG of storage. Because the elevation of the main parking lot is a minimum of approximately 510 feet (compared to the 462-foot high-water elevation of Elysian Reservoir), the tanks would need to be buried 40 to 50 feet beneath the surface or a regulating station would be required to maintain acceptable operating pressures in the Elysian service area. This would entail substantial construction not required under the proposed project. Interconnecting the new tanks to the distribution system to provide water to the Elysian service area would require approximately 3.25 miles of new pipeline from the Fletcher Pump Station (through which Elysian Reservoir is supplied) to Dodger Stadium and approximately 1.5 miles of new pipeline from Dodger Stadium to the Buena Vista Pump Station (which is currently supplied by Elysian Reservoir). The construction of the tanks in the Dodger Stadium parking lot and the additional pipelines would be expected to create environmental impacts equal to or greater than the proposed project. Furthermore, because neither LADWP nor the City maintains ownership or control of the Dodger Stadium property, a purchase or lease agreement would be required to implement this alternative. However, this may be considered infeasible because of the disruption that would be caused by project construction and because the project would permanently displace several hundred parking spaces at Dodger Stadium, which would be generally unacceptable to the Dodger organization at a time when redevelopment projects are under consideration at the stadium. Removal of a significant number of parking spaces could also create additional impacts to the community related to stadium event traffic and parking.

Under a second option at Dodger Stadium, the tanks would be constructed in an auxiliary parking lot located at Stadium Way and Lilac Terrace, southwest of and adjacent to the main parking lot. Because of limited area at this site, only a total of 47 MG of storage would be provided, somewhat less than the 55 MG that would be provided by the existing Elysian Reservoir and the proposed project. Because the elevation of the auxiliary parking lot is approximately 400 feet (compared to the 462-foot high-water elevation of Elysian Reservoir), the tanks would need to be constructed aboveground to provide adequate operating pressures in the Elysian service area. A pumping station may also be required, or the tanks may need to be further elevated to ensure adequate pressure. Similar to the main parking lot tank option, approximately 3.25 miles of new pipeline from the Fletcher Pump Station to the tanks and approximately 1.5 miles of new pipeline from the tanks to the Buena Vista Pump Station would be required. The construction of the tanks in the overflow parking lot and the additional pipelines would be expected to create environmental impacts equal to or greater than the proposed project. Although this alternative would remove only an auxiliary parking lot, rather than area in the main parking lot of Dodger Stadium, it may still be considered unacceptable to the stadium operators and could create additional impacts to the community related to stadium event traffic and parking.

Because of excessive or insufficient operating pressure differentials, potentially increased environmental impacts when compared to the proposed project, and potentially unacceptable conflicts with Dodger Stadium operations, this alternative was dismissed from further analysis.

Silver Lake Meadow

Under this alternative, the storage function of Elysian Reservoir would be replaced by new tanks located adjacent to the eastern edge of Silver Lake Reservoir, approximately 2.25 miles northwest of Elysian Reservoir. This site has been designated as Silver Lake Meadow. It is owned by LADWP as part of the Silver Lake-Ivanhoe Reservoir Complex. Due to limited space, only approximately 20 MG of regulatory storage (water available to the Elysian service area at normal operating pressures) and 36 MG of total storage would be provided at the Silver Lake Meadow site. This would be well short of the storage volume that would be provided by the existing Elysian Reservoir and the proposed project (55 MG). In addition, because the elevation of Silver Lake Meadow is approximately 450 feet (compared to the 462-foot high-water elevation of Elysian Reservoir) and because of the distance between Silver Lake and Elysian, the tanks would need to be constructed at least partly aboveground to provide adequate operating pressures in the Elysian service area. To interconnect the tanks to the distribution system to provide water to the Elysian service area, approximately 0.5 miles of new pipeline from the Fletcher Pump Station to Silver Lake Meadow and approximately 3.5 miles of new pipeline from Silver Lake Meadow to the Buena Vista Pump Station would be required. The construction of the tanks in Silver Lake Meadow and the additional pipelines would be expected to create environmental impacts equal to or greater than the proposed project.

The Silver Lake Meadow site is located along Silver Lake Boulevard, immediately adjacent to relatively dense residential neighborhoods, which would likely result in short-term environmental impacts related to construction of the tanks and long-term visual impacts in relation to the existing setting. In addition, this alternative may be considered infeasible because although the property is owned by LADWP, it has recently been opened for public access as a passive neighborhood park under an agreement with LADRP. Because of appreciably reduced regulatory storage capacity and potentially increased environmental impacts when compared to the proposed project, and because of likely land use conflicts with existing recreation uses at Silver Lake Meadow, this alternative was dismissed from further analysis.

Headworks Spreading Grounds

Under this alternative, the storage function of Elysian Reservoir would be relocated to a new tank at the Headworks Spreading Grounds in Griffith Park, approximately 7 miles northwest of Elysian Reservoir. The Headworks Spreading Grounds is the site for a planned 110-MG water storage tank to replace the Silver Lake and Ivanhoe Reservoirs (Silver Lake Reservoir Complex Storage Replacement Project EIR approved on May 16, 2006, State Clearinghouse Number 2003081133). To relocate Elysian Reservoir's storage function to Headworks, this proposed tank would have to be expanded. Such an expansion of the proposed Headworks facility could substantially delay the implementation of the currently planned Silver Lake-Ivanhoe Reservoir Complex Storage Replacement Project, which has been in planning and design for numerous years. An expanded tank at Headworks would also reduce the size of a wetland restoration area provided under the Silver Lake-Ivanhoe replacement project by approximately 3 acres.

Due to space limitations, only 36 MG of additional storage could be accommodated at Headworks, providing an equivalent amount of regulatory storage (water available to the Elysian service area at normal operating pressures). The additional 19 MG of emergency reserve for the Elysian Reservoir service area that would be provided by the proposed project would need to be accommodated from Eagle Rock Reservoir, which is located approximately 5 miles northeast of Elysian. To deliver the relocated Headworks supply and the Eagle Rock Reservoir supply to the Elysian service area, a new 66-inch diameter pipeline of approximately 3.5 miles in length, paralleling the existing Riverside Trunk Line, would be required to bypass Elysian Reservoir. Three new regulating stations would also be required along this new trunk line to control distribution system operating pressures in the Elysian service area from supplies originating at Eagle Rock Reservoir. The construction of the pipeline and regulating stations would likely create greater environmental impacts than would the proposed project related to traffic, air quality, noise, land use, and other specifically unpredictable factors in the affected neighborhoods.

By relocating the regulatory and reserve storage functions of Elysian Reservoir to more remote locations at the Headworks Spreading Grounds and Eagle Rock Reservoir, this alternative would essentially remove local storage capacity from the Elysian service area. This would increase the risk of loss of supplies to the service area in the event of an upstream line rupture or other facility damage. It would also decrease the flexibility to conduct periodic maintenance of facilities located between the Headworks site and the Elysian service area. In addition, by relocating Elysian Reservoir's storage as well as Silver Lake and Ivanhoe Reservoirs' storage to Headworks, system-wide risk would be increased by the further centralization of City drinking water supplies.

Because of likely delays in the implementation of the Silver Lake-Ivanhoe Reservoir Complex Storage Replacement Project, likely increased environmental impacts when compared to the proposed project, and decreased reliability of drinking water supplies for the Elysian service area and the City, this alternative was dismissed from further analysis.

5.2.3 Treatment and Filtration

Under this alternative, the water in Elysian Reservoir would not be contained in a buried concrete reservoir or otherwise covered. Instead, water from upstream supplies would be stored in the existing open reservoir to meet the primary water storage objective of the proposed project by preserving local storage capability to meet the Elysian service area demand. However, to comply with the LT2ESWTR mandates, the water would receive additional treatment after it was discharged from the reservoir and before it entered the service area distribution system. A new treatment facility, either a filtration plant or an ultraviolet light disinfection plant, would need to be located downstream of the reservoir. In order to provide water to portions of the service area, the facility would need to be located upstream of the Buena Vista Pump Station. In addition to the treatment facilities themselves, a new booster pump station, chlorine and ammonia injection stations, and chemical storage facilities would be required. These facilities would require the use of a large portion of Elysian Park in the Buena Vista Meadows area, south of SR 110, adversely impacting existing open space and recreation resources. This would also require the construction of new pipelines beneath SR 110.

Since Elysian Reservoir would remain as an uncovered treated water reservoir under this alternative, the reservoir property itself would continue to be secured and would not be available for recreation access. In addition, based on the future LADWP system-wide implementation strategy for the Stage 2 D-DBPR, the water delivered to Elysian Reservoir (which would remain uncovered under this alternative) would be treated with chloramines for the purposes of residual disinfection instead of chlorine, the use of which will have been discontinued to avoid the production of carcinogenic chlorine-related disinfection byproducts. While treatment of the reservoir water at the point of discharge may meet the requirements of the LT2ESWTR to reduce the incidence of certain microbial pathogens, leaving Elysian Reservoir uncovered would contribute to the degradation of chloramine disinfectant residual and increase the potential for algal blooms. A solution that responds simultaneously to each water quality issue (i.e., the LT2ESWTR mandates and the maintenance of chloramine residual in relation to the Stage 2 D-DBPR mandates) is an essential aspect of any feasible alternative. Since the Stage 2 D-DBPR mandates would not be satisfied, this alternative is considered essentially infeasible and was dismissed from further analysis.

5.2.4 Distribution System Upgrades and Increased Metropolitan Water District Supplies

Under this alternative, Elysian Reservoir would be removed from service as a drinking water storage facility, and drinking water would be provided to the Elysian service area through increased purchases of Metropolitan Water District supplies. The reservoir property would be opened for public access as part of Elysian Park under the operation of LADRP. Since the continual inflow and outflow of water would no longer occur, a filtration, recirculation, and aeration system would be required to maintain the quality of the water retained in the reservoir to an acceptable level for a publicly accessible non-potable water feature. Because little runoff would reach the reservoir from the surrounding hillsides, the reservoir would continue to be fed as necessary to maintain the water level. This would require modifications to the reservoir inlet to prevent cross-contamination between the non-potable reservoir water and the potable water distribution system. The reservoir outlet to the distribution system would also be appropriately modified or severed to prevent cross-contamination. For safety and liability reasons, the outlet tower access bridge would also need to be demolished. The reservoir would drain to the storm water system as necessary to control the water level. Because of the depth of the reservoir (approximately 50 feet) and the relatively steep incline of the reservoir side walls, creating a naturalistic aquatic environment would probably be difficult without extensive demolition and/or filling, and the reservoir would retain a generally manmade appearance.

The increased Metropolitan Water District supplies would be delivered to the Elysian service area via Eagle Rock Reservoir, which is currently supplied water by the District. To deliver the additional supplies from Eagle Rock Reservoir, a new 66-inch diameter pipeline of approximately 3 miles in length, paralleling the existing Riverside Trunk Line, would be required to bypass Elysian Reservoir. A new regulating station would also be required to maintain appropriate system pressure, and upgrades to the Eagle Rock Hollywood Trunk Line would also be necessary. The construction of the pipelines and station would likely create greater environmental impacts than the proposed project related to traffic, air quality, noise, land use, and other specifically unpredictable factors in the affected neighborhoods.

Eagle Rock Reservoir has historically provided water to a service area that includes large portions of northeast Los Angeles. In order to meet the increased demand created by the addition of the Elysian service area under this alternative, Metropolitan Water District would need to increase the inflow of water to Eagle Rock Reservoir. The Elysian service area may receive supplemental supplies in this way as required to meet peak demand periods during the construction of the proposed project, but this would represent a relatively short-term period, during which Metropolitan Water District could provide the water necessary to supply Elysian service area customers. However, permanently providing water for the Elysian service area with increased Metropolitan Water District supplies via Eagle Rock Reservoir would represent an unacceptable risk in terms of meeting peak demand and responding to emergency shortages on a long-term basis.

Metropolitan Water District provides water to 26 cities and water districts throughout Southern California, primarily to supplement and stabilize local and imported supplies. Ever-increasing demand for water throughout the southwestern United States and several legal judgments limiting diversion of water from sensitive habitat areas have reduced Metropolitan Water District's allocation from its traditional primary sources, the Colorado River and the California Bay-Delta watershed. Further reductions in supply from these sources, as well as increasing demand due to expanding development in the Metropolitan Water District service region, are anticipated to continue in the future. Permanently satisfying the Elysian service area demand solely with Metropolitan Water District supplies is considered infeasible because of the long-term unpredictability of supplies.

Furthermore, this alternative would remove 55 MG of local storage capacity. In order to maintain the flexibility to respond to peak demand in the Elysian service area on a long-term basis, Metropolitan Water District would likely need to replace this storage at another location with a new facility or expand an existing facility, which would likely create environmental impacts equal to or greater than the proposed project. The elimination of local storage within the Elysian service area, even if replaced elsewhere, would also increase the risk of loss of supplies to the service area in the event of an upstream line rupture or other facility damage. The elimination of local storage would also decrease the flexibility to conduct periodic maintenance of facilities.

Because of the unpredictable and potentially unreliable nature of maintaining adequate future supplies for the Elysian service area exclusively from Metropolitan Water District sources and because of the loss of local supply capacity, this alternative was considered infeasible and was dismissed from further analysis.

5.2.5 Buried Reservoir Without Inlet Line Alternative

Under this alternative, the existing Elysian Reservoir would be replaced with a buried concrete reservoir exactly as described in the proposed project. However, the new 54-inch inlet line between the Riverside Trunk Line and the reservoir would not be completed. The intent of this alternative would be to eliminate the construction air quality and noise impacts experienced by nearby sensitive receptors located on Riverside Drive associated with the inlet line component of the proposed project. The buried reservoir would be constructed as described in Chapter 2, but no construction would occur at the Caltrans island located on Riverside Drive. Since the buried reservoir under this alternative would be entirely the same as the structure described in the proposed project, no environmental impacts associated with its construction, including those related to air quality, biological resources, cultural resources, noise, and traffic, would be reduced when compared to the proposed project. However, the air quality impact from toxic air contaminants (TAC) would be entirely eliminated under this alternative.

As discussed in Chapter 2 of this EIR, to physically accommodate the proposed buried reservoir and provide improved emergency service to portions of the Elysian Reservoir service area, the existing reservoir bypass line must be relocated and lowered in elevation. This would also necessitate the reconstruction of a portion of the existing 36-inch diameter reservoir inlet line in order to properly feed the relocated bypass line and the buried reservoir. The existing inlet line, which connects the reservoir to the Riverside Trunk Line in Riverside Drive, was installed in the early 1940s when the present-day Elysian Reservoir was constructed. The line consists primarily of riveted steel, which is no longer utilized by LADWP for water main installations. As part of the Trunk Line Condition Assessment Program, LADWP has been replacing riveted steel lines throughout the City water distribution system to improve infrastructure reliability to avoid widespread leaks and breaks. While the existing Elysian Reservoir inlet line has not experienced any such breakage, because of its age and type of construction, it must be replaced to minimize the risk to the reservoir water supply and to maintain system reliability. Because portions of the inlet line must be reconstructed to accommodate the construction of the buried reservoir, replacing the line in its entirety is considered a key aspect of maintaining local water storage capability in the Elysian Reservoir service. Replacing the existing 36-inch riveted steel inlet line with a new 54-inch welded steel inlet line would minimize the potential for major service disruptions associated with a leak or failure. Because replacing the inlet line is a key component of maintaining local water storage capability, this alternative would not achieve the primary project objective related to maintaining local water storage. Since this alternative would compromise the reliability of the local water supply in the Elysian Reservoir service area, it is considered essentially infeasible and was dismissed from further analysis in this EIR.

5.2.6 No Project Alternative

An evaluation of a No Project Alternative is required under the CEQA Guidelines Section 15126.6(e) to “allow decision makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project.” Under this alternative, no action would be taken relative to improvements at Elysian Reservoir or another location to satisfy the project objectives. Elysian Reservoir would remain an uncovered treated water reservoir. However, because this would neither meet the mandates of the LT2ESWTR to protect treated water stored in open reservoirs nor allow for the adequate management of chloraminated water supplies to properly implement the Stage 2 D-DBPR, the reservoir would ultimately need to be removed from service. Because the water in the abandoned reservoir could not be properly maintained without implementing facility improvements, the reservoir would also probably need to be drained to control odor and disease vectors, such as mosquitoes. No recreation improvements would be implemented, and the site would remain secured for liability reasons. Since the No Project Alternative would not satisfy the LT2ESWTR or Stage 2 D-DBPR mandates or provide a reliable local water supply to adequately meet reservoir service area demand for water, it is considered essentially infeasible and was dismissed from further analysis.

5.3 Alternatives Carried Forward for Detailed Analysis

Based on the environmental analysis conducted for the proposed project, temporary but nonetheless significant and unavoidable impacts would occur to air quality and noise related to project construction activities. Significant but mitigable impacts from construction activities have also been identified related to biological resources, cultural resources, and traffic. Two feasible alternatives (the installation of a flexible membrane floating cover and a lightweight aluminum cover over Elysian Reservoir) that may substantially reduce or avoid the significant impacts of the proposed project have been carried forward for detailed analysis in this EIR. Each of these alternatives would fulfill the primary water storage objective of the proposed project because they would preserve local storage capability to maintain reliability and flexibility to meet the Elysian service area demand for drinking water. Unlike the proposed project, neither of the alternatives would actually bury the reservoir. However, because each would provide a cover from the elements for the drinking water stored in Elysian Reservoir, they would fulfill the primary water quality objective of the proposed project related to the Stage 2 D-DBPR and LT2ESWTR, allowing for the proper management of chloramine disinfectant levels and limiting contamination by pathogenic microorganisms. Because the water supply facilities would not be buried, neither alternative would fulfill the secondary objective of the proposed project to provide a publicly accessible recreation area at the Elysian Reservoir property. The table at the end of this chapter provides a comparison of these alternatives to the proposed project related to impacts. In accordance with the CEQA Guidelines Section 15126.6(d), each alternative was evaluated in sufficient detail to determine whether the associated environmental impacts would be less than, similar to, or greater than the corresponding impacts of the proposed project.

5.3.1 Floating Cover Alternative

Under the floating cover alternative, Elysian Reservoir would remain in basically its existing configuration, and an approximately 325,000-square-foot flexible membrane floating cover would be installed over the entire water surface and anchored to the edge of the reservoir basin above the top of water elevation. The floating cover would be larger in area than the surface area of the reservoir itself at the high-water elevation to allow the cover to float on the water surface as the level of the water in the reservoir rises and falls. The cover would be a minimum of 45-mil thick and a maximum of 60-mil thick polypropylene or hypalon material (see Figure 5-1). Although the reservoir liner and appurtenant facilities would be removed and replaced under this alternative, the reservoir would retain essentially its existing shape and volume (approximately 55 MG), providing local storage capacity for the reservoir service area equivalent to the proposed project.

The floating cover would require a minimal amount of ground disturbance and a relatively low level of construction activity. It would be the least expensive means of covering the Elysian Reservoir water supply to achieve the LT2ESWTR and Stage 2 D-DBPR objectives of the proposed project (an estimated $25 million versus $110 million for the proposed project over a 60-year lifecycle; these figures exclude the cost related to the proposed inlet and bypass lines, which would be common to both the proposed project and the floating cover alternative). Floating covers require more maintenance, including replacement every 15 to 20 years due to deterioration, compared to a buried concrete reservoir, which has a projected lifespan of over 100 years. However, these additional maintenance and replacement costs have been factored into the total life-cycle costs reflected above. The floating cover alternative would require that the reservoir be removed from service for the least amount of time compared to the proposed project (approximately 2.5 years versus 5.5 years).

Figure 5-1 Flexible Floating Cover Examples

Because the floating cover would not allow for accessible open space at the reservoir property, no recreational facilities would be provided under this alternative, and the Elysian Reservoir property would remain under the operation of LADWP and closed to public access. As with the proposed project, a wildlife pond would be created at the north end of the reservoir property as part of the floating cover alternative.

Construction of this alternative would take approximately 2.5 years to complete, primarily because, in addition to the replacement of the reservoir liner and the installation of a floating cover, it includes the replacement of the existing 36-inch diameter reservoir bypass line with a new 54-inch line, similar to the proposed project. It is anticipated that construction activities would start in 2014 and be completed in 2016. Similar to the proposed project, Grand View Drive would be completely closed to ensure public safety and to provide truck access and maneuvering, worker parking, and limited material and equipment staging areas. This road segment essentially surrounds the reservoir. It is located outside the reservoir property but entirely within the boundaries of Elysian Park. Also similar to the proposed project, because of restrictions related to loads on certain roads and bridges and to minimize impacts to local neighborhoods, the proposed truck delivery and haul route in the vicinity of the reservoir remains largely within the confines of Elysian Park. The inbound route would proceed from the I-5 Stadium Way exit, south along Stadium Way, east (left) on Academy Road (to the Dodger Stadium Gate), north (left) on Academy Road, north (left) on Solano Canyon Drive, south (right) on Park Row Drive to Park Row Street, and east (left) on Grand View Drive to the project site. Outbound traffic would follow the same route in reverse (see Figure 2-8). During certain periods of construction involving truck deliveries to and hauling from the site, parking restrictions would be required along Solano Canyon Drive, Park Row Drive, and Park Row Street to allow for the safe passage of trucks. Parking along the west side of Park Row Street in front of existing residences near the Grand View Drive entry to the reservoir would be maintained; however, a flag person may be required in this segment to facilitate the safe passage of vehicles.

During construction, drinking water would continue to be provided to the Elysian Reservoir service area from the Van Norman Complex in Granada Hills. During the initial phases of construction, it would continue to be fed to the service area from the existing Riverside Trunk Line via the existing inlet and bypass lines, and during the latter stages of construction, water would be fed through the new bypass lines and a new inlet line (see below). Water supplies would be further supplemented as necessary to help temporarily meet peak demand during construction with additional purchases from the Metropolitan Water District.

Similar to the proposed project, the floating cover alternative at Elysian Reservoir would also include the construction of a new 54-inch diameter underground inlet line connecting the reservoir to the existing Riverside Trunk Line within Riverside Drive. This new inlet line would replace the existing 67-year-old 36-inch inlet line to help maintain critical system reliability for the Elysian Reservoir service area and provide improved distribution system capability, which would otherwise be limited based on the diameter of the existing inlet line. The primary site for the inlet line construction would be located within the Caltrans island adjacent to the on-ramp to the northbound I-5, along the west side of Riverside Drive, roughly between Barclay Street and Duvall Street (see Figure 2-7). Construction of the new inlet line could proceed essentially independently of construction at the reservoir itself (which includes the new bypass line) because the two construction sites are physically separated. The inlet line construction would be essentially concurrent with the floating cover alternative construction. The construction of the inlet line, including its scope; schedule; methods; numbers of personnel, truck trips, and equipment; and volumes of earthwork would be as described in the Description of the Proposed Project, Chapter 2 of this EIR.

Construction of the floating cover alternative would consist of several tasks, including mobilization, construction of the new bypass line, demolition of the existing reservoir, construction of a new reservoir liner, and the installation of the floating cover itself. Each of these tasks would require truck deliveries and/or haul trips and the operation of heavy equipment, including excavators, graders, dozers, cranes, and various types of trucks. Construction would be conducted in three basic phases, as described below. A spreadsheet that indicates the type, duration, and level of activities for the various construction tasks is included in Appendix B of this EIR.

Phase 1: Mobilization, Bypass Line Construction & Activation, and Reservoir Demolition (19 months)

The first phase of the floating cover alternative construction would consist of mobilizing for construction, constructing and activating the new reservoir bypass line, draining Elysian Reservoir, and demolishing the existing reservoir and appurtenant facilities. This phase would require approximately 19 months to complete. During Phase 1, the number of on-site workers per day based on a monthly average would range from a low of 17 during mobilization to a peak of 72 during concurrent bypass line construction and reservoir demolition. The number of truck deliveries or haul trips per day based on a monthly average would range from a low of 6 during the initial portions of the bypass line construction to a peak of 34 during concurrent bypass line construction and reservoir demolition. The number of full-time operating equipment per day based on a monthly average would range from a low of 6 during mobilization to a peak of 17 during the final months of the bypass line installation.

Mobilization would entail widening and stabilizing existing on-site roads as necessary for truck access during construction, clearing and preparing construction materials laydown areas and vehicle and equipment parking areas, erecting temporary offices and other support facilities, and establishing temporary electrical power connections. Improvements to Grand View Drive at the intersection with Park Row Street would be required to facilitate outbound truck traffic from the reservoir site. This may include both grading and widening the road at the intersection. The trimming of some existing trees along Grand View Drive may be necessary to allow for truck passage. A truck turnaround area would be provided at Point Grand View, northeast of the reservoir (see Figure 2-5). This may require the removal of the parking island, including several palm trees, during construction to provide an adequate turning radius for trucks. However, it would eliminate the requirement to provide a turnaround elsewhere along Grand View Drive, which would require cutting and filling areas adjacent to the road. The parking island, including the trees would be restored after construction. As under the proposed project, a laydown area would be located inside Elysian Park but outside the reservoir property boundary in the existing picnic grounds located north of Grand View Drive between Park Row Street and the reservoir (see Figure 2-5). This area would provide approximately 1 acre of relatively flat ground for construction staging. In order to provide a functional area for storage and maneuvering, most of the existing trees in the picnic area may need to be removed. Trees that would not need to be removed to provide access and storage area would be protected during construction. The area would be restored in accordance with LADRP requirements after completion of the project. The mobilization task would take approximately 1 month.

To minimize disruptions to the Elysian Reservoir service area water distribution system, the construction of the new bypass line would be substantially completed and the new line activated prior to the removal of the existing bypass line from service. This would entail the construction of several vertical shafts and interconnecting tunnels that would route the line around Elysian Reservoir to the west and link the existing reservoir inlet (northeast of the reservoir) and outlet (at the southern end of the reservoir). The excavation of the shafts and tunnels would create approximately 5,000 CY of material, which would be hauled off site, requiring about 750 truck trips. Once the new bypass line is functioning, the existing bypass line would be removed from service and abandoned in place.

Draining the reservoir would initially be accomplished by normal consumption through the drinking water distribution system until the water level reached the lower limit of the normal operating range of the reservoir. Water below the normal operating range elevation would then be pumped into the outlet tower, continuing to supply the system. Any remaining water would be drained into the storm water system. To maintain the stability of the earth dam located at the southern end of the reservoir, the rate at which the water level would be lowered would be carefully controlled. At the controlled rate, the existing storm water facilities are adequately sized to accommodate the reservoir draining. After the water reaches the lower limit of the normal operating range, it would take approximately 2 weeks to drain the remaining water from the reservoir and an additional 2 to 3 weeks for the reservoir to dry out.

In order for the floating cover to be installed and function properly, the inlet structure and overflow spillway, outlet tower, and outlet tower footbridge would be demolished during Phase 1. In addition, because Elysian Reservoir was constructed nearly 70 years ago, the implementation of the floating cover alternative would represent an opportunity to replace the existing 4-inch thick asphalt liner while the reservoir is drained and out of service. The liner would therefore also be demolished during Phase 1 of construction. Demolition would generate about 4,650 CY of debris, which would be hauled off site.

Phase 2: Construction New Inlet and Outlet Structures and Installation of Asphalt Reservoir Liner (9 months)

The second phase of construction would include constructing the new inlet and outlet structures and connecting the structures to the inlet/bypass line system. The reservoir would also be relined with asphaltic concrete during this phase, and new concrete equipment vaults would be installed. This phase of work would take approximately 9 months to complete. During Phase 2, the number of on-site workers per day based on a monthly average would range from a low of 25 during the final months of the reservoir relining to a peak of 54 during concurrent inlet/outlet structure construction and reservoir relining; the number of truck deliveries per day based on a monthly average would range from a low of 8 to a peak of 14; and the number of full-time operating equipment per day based on a monthly average would range from a low of 13 to a peak of 25. Relining the reservoir would require delivering about 10,000 CY of asphalt and aggregate base to the site.

Phase 3: Installation of Floating Cover (4 months)

The third phase of construction would consist of the installation of the floating cover, refilling the reservoir, and construction of the wildlife pond. This phase of work would take approximately 4 months to complete. Limited pieces of equipment would be necessary, including a forklift, generator, drill, air compressor, and various types of trucks. The cover would be installed in sections that would be heat-seamed together. It would be secured with an anchoring system located around the perimeter of the reservoir to apply tension to the floating cover to keep it aligned and prevent damage from wind. The system would allow the cover to float as the water level in the reservoir fluctuated. During Phase 3, the number of on-site workers per day based on a monthly average would be approximately 18. The number of truck deliveries per day based on a monthly average would be approximately 1; however, more than a single delivery per day would occur at times. The number of full-time operating equipment per day based on a monthly average would be approximately 9. During this phase, the picnic area located north of Grand View Drive near Park Row Street used for construction staging and the Point Grand View overlook used for a truck turnaround area would be restored. Park roads and other roads damaged during construction would also be repaired at the end of construction. After the floating cover is installed, Elysian Reservoir would take approximately 1 month to refill, which would occur concurrently with demobilization.

Floating Cover Operations

The reconstructed reservoir with the floating cover would not create the need for LADWP personnel to be located permanently on site. LADWP operations would involve maintenance of the reservoir, pipelines, and ancillary elements at a similar level of activity as current operations at Elysian Reservoir. Occasional washing of the cover to remove dirt and debris would be necessary to protect the drinking water supply. These operations would generate minimal traffic to and from the site, similar to current levels. Every 15 to 20 years, the floating cover may require replacement, which would entail activity similar to that described under Phase 3. As discussed above, no recreation area or public access would be provided to the Elysian Reservoir site under this alternative.

Aesthetics

The Elysian Reservoir property is visible from two designated viewpoints within Elysian Park that offer scenic vistas – Buena Vista Point and Point Grand View. Although it is possible to gain a low-angle view of the southern end of Elysian Reservoir by looking north from limited vantage points at Buena Vista Point, the reservoir itself is not generally included within the scenic vista from the viewpoint, which is primarily directed to the south. Therefore, Point Grand View, which is located east of and above Elysian Reservoir, is considered the key viewpoint in relation to potential impacts to scenic vistas. Implementation of the floating cover alternative would alter the view from the southwest corner of Point Grand View by removing the limited view of open water offered by the reservoir and replacing it with a manmade material. However, from the Point Grand View viewpoint, the skyline of downtown Los Angeles, the Los Angeles River, the Monterey Hills, and, in the far distance, the San Gabriel Mountains would remain the primary focal elements of the scenic vista, and the covered reservoir itself would remain secondary, largely screened from view by intervening trees and other vegetation (see Figures 5-2 and 5-3). Therefore, the floating cover alternative would not create a significant impact in relation to a substantial change to the scenic vista as seen from Point Grand View.

The floating cover alternative would alter the visual character of the Elysian Reservoir site itself by removing the existing open water surface and replacing it with a manmade material. As discussed in Chapter 3.1, publicly available views of Elysian Reservoir from the surrounding ravine outside the reservoir property are few, intermittent, and partially obstructed by vegetation and terrain. In addition, the manmade institutional character of the reservoir may be deemed to diminish its value as a significant element in the visual environment of Elysian Park. Nonetheless, although views of the floating cover from outside the reservoir property would also be few, intermittent, and obstructed, the cover may still be considered visually incompatible with the overall setting of Elysian Park (see Figures 5-4 through 5-7). However, by selectively screening the view of the cover with additional landscaping from the limited number of available viewpoints, the visual impact of the cover itself would be reduced to a less than significant level. Thus, the floating cover alternative would have a similar aesthetic impact as the proposed project.

Figure 5-2 Existing view from Point Grand View

Figure 5-3 Proposed view with Floating Cover from Point Grand View

Figure 5-4 Existing pedestrian view from roadside on Grand View Drive

Figure 5-5 Proposed pedestrian view with Floating Cover on Grand View Drive

Figure 5-6 Existing view from hiking trail

Figure 5-7 Proposed view with Floating Cover from hiking trail

Air Quality

Regional Construction Emissions

The floating cover alternative would require significantly less construction activity than the proposed project, and the construction schedule would be approximately 3 to 4 years shorter. It is anticipated that construction activities would start in 2014 and be completed in 2016. The worst case construction emissions would occur during the concurrent construction of Phase 1 of the Floating Cover and Task 1 of the inlet line, which are similar in nature to the proposed project. As with the proposed project, daily NO_X emissions would exceed the SCAQMD regional significance thresholds. Implementation of mitigation measures AIR-A through AIR-E would be required (see Section 3.2.5 of the EIR), except, because of the earlier construction start date for the floating cover compared to the proposed project (2014 versus 2015), mitigation measure AIR-C would be modified as follows:

- *Prior to January 1, 2015*: All off-road construction diesel engines not registered under CARB's Statewide Portable Equipment Registration Program that have a rating of 50 hp or more shall meet, at a minimum, the Tier 3 California Emission Standards for Off-Road Compression-Ignition Engines as specified in California Code of Regulations, Title 13, Section 2423(b)(1) unless such engine is not available for a particular item of equipment. In the event a Tier 3 engine is not available for any off-road equipment larger than 100 hp, that equipment shall be equipped with a Tier 2 engine. Equipment properly registered under and in compliance with CARB's Statewide Portable Equipment Registration Program shall be considered in compliance with this mitigation measure.

A 5 percent reduction in construction equipment exhaust was used to estimate emissions reductions due to the implementation of mitigation measures AIR-A through AIR-D. As demonstrated in Table 5-1, construction emissions of NO_X would remain over the SCAQMD daily regional significance thresholds. Therefore, the floating cover alternative would result in a significant and unavoidable impact related to regional construction emissions. The impact would be similar to the proposed project. However, it is important to note that although the worst-case daily emissions are similar for the floating cover alternative and the proposed project, the proposed project would create substantially higher total project emissions during the construction period due to the nature and length of the construction activities.

Table 5-1 Floating Cover Estimated Peak Regional Daily Construction Emissions – Mitigated

Construction Phase	Pounds Per Day					
	VOC	**NO_X**	**CO**	**SO_X**	**$PM_{2.5}$[1]**	**PM_{10}[2]**
Floating Cover Construction						
Phase 1	14	125	59	<1	11	35
Phase 2	15	120	63	<1	5	5
Phase 3	3	24	18	<1	1	1
Inlet Line Construction						
Task 1	10	76	38	<1	8	28
Task 2	8	61	30	<1	8	28
Task 3	8	60	31	<1	3	6
Task 4	3	26	13	<1	1	1
Maximum Regional Total[2]	25	202	98	<1	19	63
Significance Threshold	*75*	*100*	*550*	*150*	*55*	*150*
Exceed Threshold?	No	Yes	No	No	No	No

[1] Emissions for fugitive dust were adjusted to account for a 61 percent control efficiency associated with SCAQMD Rule 403.
[2] Maximum emissions would occur during concurrent construction of Phase 1 of the Floating Cover Alternative and Task 1 of the Inlet Line.
Source: Terry A. Hayes & Associates 2010.

<u>*Localized Construction Emissions*</u>

The dispersion modeling results indicate that maximum localized emissions of $PM_{2.5}$, PM_{10}, NO_2, and CO would be the same for the floating cover alternative as for the proposed project. This is because concentrations are directly related to the distance between the source and the sensitive receptor. As with the proposed project, the maximum localized $PM_{2.5}$ and PM_{10} concentrations would exceed the significance thresholds at residential land uses near the Caltrans island on Riverside Drive. Localized $PM_{2.5}$ and PM_{10} concentrations would also exceed the significance thresholds at the residences near Park Row Street and at Solano Avenue Elementary School from construction at the reservoir site. Therefore, the floating cover alternative would result in a significant impact related to localized construction emissions. Even with implementation of mitigation measures AIR-A through AIR-E, mitigated construction localized emissions would continue to exceed the SCAQMD localized thresholds for $PM_{2.5}$ and PM_{10} (see Table 5-2). Therefore, similar to the proposed project, the localized construction emissions impact would remain significant and unavoidable under the floating cover alternative. However, over the entire construction period, substantially fewer total emissions would be produced under the floating cover alternative than under the proposed project.

Table 5-2 Floating Cover Localized Peak Construction Emissions – Mitigated

Pollutant	Estimated Emissions (lbs/day)	Concentration at nearest sensitive receptor	Significance Threshold	Significant Impact?
$PM_{2.5}$	18 - 20	79 ug/m^3	10.4 ug/m^3	Yes
PM_{10}	63 - 68	314 ug/m^3	10.4 ug/m^3	Yes
NO_2	17 - 19	0.09 ppm	0.18 ppm	No
CO (1-Hour)	83 - 94	<1 ppm	20 ppm	No
CO (8-Hour)	84 - 94	<1 ppm	9 ppm	No

Source: Terry A. Hayes & Associates 2010.

Toxic Air Contaminants

As for the proposed project, a health risk assessment was completed for the floating cover alternative to determine the risk posed to sensitive receptors from construction activity, particularly diesel emissions. The results of the HRA indicated that construction at the reservoir site would not exceed the estimated carcinogenic risk of 10 persons in one million threshold at the nearby sensitive receptors, including the residences on Park Row Street, Solano Avenue Elementary School, and Barlow Respiratory Hospital. However, the estimated carcinogenic risk would exceed 10 persons in one million threshold at the residences on Riverside Drive near the Caltrans island (17 persons in one million). Therefore, construction of the floating cover alternative, like the proposed project, would result in a significant impact related to TACs. Implementation of mitigation measures AIR-A through AIR-E is required. As with the proposed project, the impact would remain significant and unavoidable even after implementation of mitigation. However, substantially fewer total emissions would be generated during construction of the floating cover alternative compared to the proposed project.

Operational Phase

Operation of the floating cover alternative would not generate any additional daily vehicle trips or a significant increase in maintenance activities compared to existing conditions because, unlike under the proposed project, no recreation uses would be generated. Thus, implementation of the floating cover alternative would not create any additional emissions during the operational phase. There would be no operational air quality impact, and the impact would be less than the proposed project.

Greenhouse Gas Emissions

GHG emissions were calculated for construction activity associated with the floating cover alternative. Based on SCAQMD guidance, the emissions summary includes construction emissions averaged over a 30-year span. The floating cover alternative would have no net increases in vehicle traffic during operations, and therefore, only construction emissions are quantified. As shown in Table 5-3, the floating cover alternative would result in 356 metric tons of CO_2e per year. GHG emissions would not exceed the 10,000 metric tons of CO_2e per year significance threshold and would result in a less than significant impact. The impact would be the same as the proposed project (less than significant), although substantially fewer total GHG emissions would be produced under the floating cover alternative than the proposed project.

Table 5-3 Floating Cover Estimated Annual Greenhouse Gas Emissions

Source	Carbon Dioxide Equivalent (Metric Tons per Year)
Construction Phase 1	2,531
Construction Phase 2	2,504
Construction Phase 3	657
Inlet Line Task 1	1,637
Inlet Line Task 2	1,261
Inlet Line Task 3	1,475
Inlet Line Task 4	611
Total Construction Emissions	10,676
Total Construction Emissions Amortized[1]	356
Significance Threshold	*10,000*
Exceed Threshold?	No

[1] Based on SCAQMD guidance, the emissions summary also includes construction emissions amortized over a 30-year span.
Source: Terry A. Hayes & Associates 2010.

Construction activity for the floating cover alternative would incorporate source reduction techniques and recycling measures to divert waste from landfills. As with the proposed project, the floating cover alternative would not conflict with any state or local climate change policy or regulation.

Biological Resources

The floating cover alternative would disturb a similar area as the proposed project, generally confined to the existing reservoir and its immediate surroundings, as well as the Caltrans island on Riverside Drive. In this sense, the floating cover alternative would have a similar impact on biological resources during construction. However, the floating cover would not require the use of the stockpile area within the Elysian Reservoir property, reducing the potential for impacts to biological resources, including wildlife and plants. The floating cover alternative would have the potential to disturb migratory bird species if construction were to start during the breeding/nesting season (generally considered February 15 through September 15). As with the proposed project, this alternative would require the implementation of mitigation measure BIO-A (see Section 3.3.4) to ensure compliance with the Migratory Bird Treaty Act. Indirect impacts to native vegetation could occur, including fugitive dust deposition during construction and increased soil erosion during and after construction. However, because of the nature of construction activities under this alternative, the potential for both these impacts would be significantly less than under the proposed project. Nonetheless, to mitigate potential impacts, the floating cover alternative, as with the proposed project, would be required to implement mitigation measure BIO-B. Construction activities associated with the floating cover would also require removal of oak trees and other trees protected by the City's Tree Protection Ordinance. Impacts to protected trees would conflict with City ordinances, and implementation of mitigation measures BIO-C and BIO-E would be required.

The floating cover alternative would eliminate the open water source of Elysian Reservoir, but like the proposed project, would include the installation of a wildlife pond on the Elysian property. Reducing the amount of water available to wildlife would not be considered a significant impact because there are adequate water sources for local and migratory birds and bats near to Elysian Park, including the Los Angeles River, Echo Park Lake, and Silver Lake Reservoir, located approximately 0.25 mile east, 1 mile west, and 2 miles northwest of Elysian Reservoir, respectively.

Impacts to biological resources would be significant under the floating cover alternative. As under the proposed project, with the implementation of the mitigation measures, these impacts would be reduced to a less than significant level. However, the impacts would be appreciably less compared to the proposed project because of the nature and duration of construction activities.

Cultural Resources

As discussed in Chapter 3.4, Elysian Reservoir was evaluated for its eligibility for the California Register and the National Register. The reservoir was originally constructed in 1903. Between 1940 and 1943, components were added to the reservoir system, and the reservoir itself was enlarged. These modifications changed the reservoir such that it is not eligible for listing as a historic resource under the California Register criteria, and therefore also not eligible for listing on the National Register. Thus, further modification of the reservoir to construct the floating cover alternative would have a less than significant impact on historic resources.

Ground disturbing activities would include demolishing and replacing the existing asphalt liner in the reservoir. Outside of the reservoir footprint, ground disturbing activities would include clearing the construction staging area on Grand View Drive west of Elysian Reservoir and construction of the inlet line on the Caltrans island along Riverside Drive. Compared to the proposed project, the floating cover alternative would involve substantially less ground-disturbing activity within the reservoir property. However, construction activities within the reservoir property nonetheless have the potential to disturb previously unearthed archaeological and paleontological resources. Archival records and recent construction activity within the vicinity demonstrate the possibility that prehistoric and/or historic archaeological resources may be present within the reservoir site. Such resources may lie beneath the surface, obscured by vegetation, pavement, or other reservoir features. Therefore, ground disturbing activities have the potential to uncover previously unknown resources. As with the proposed project, the floating cover alternative would require the implementation of mitigation measure CR-A (see Section 3.4.4). Further, the reservoir site and all of Elysian Park have high paleontological sensitivity. Thus, the floating cover alternative would require the implementation of mitigation measure CR-B. As under the proposed project, with the implementation of the mitigation measures, impacts to archaeological and paleontological resources would be reduced to a less than significant level.

Land Use

Unlike the proposed project, which would provide an open space recreation area in place of Elysian Reservoir, the floating cover alternative would be inconsistent with the existing OS zoning designation of the reservoir property. Open reservoirs are an allowable use within the OS zone. Appurtenant facilities that are incidental to the operation and continued maintenance of such reservoirs are also permitted within the OS zone under the provisions of a Conditional Use Permit. However, a floating cover is not considered an appurtenant use, but a replacement of an open reservoir with a covered storage facility. The implementation of the floating cover alternative would require a zoning variance for the Elysian Reservoir property. With a zoning variance, the impact to land use from the floating cover alternative would be less than significant.

Noise

On-site Construction Noise

Similar to the proposed project, some construction activity would occur inside the drained reservoir or underground during the inlet line tunneling, which would attenuate construction noise due to the “line-of-sight” factor of the noise source. Construction activity associated with the floating cover alternative would generally be less intense than the activity associated with the proposed project. However, the floating cover alternative and the proposed project would use similar types and numbers of equipment during certain phases of construction. Therefore, maximum construction noise would be the same. Construction noise levels related to construction at the reservoir site would exceed the 5-dBA significance threshold at single-family residences located along Park Row Street. Construction noise levels related to the inlet line construction would also exceed the 5-dBA significance threshold at some of the single-family residences located along Riverside Drive. Therefore, the floating cover alternative, like the proposed project, would result in a significant impact related to on-site construction noise. However, with implementation of mitigation measures NOISE-A through NOISE-D (see Section 3.5.5), construction noise levels would be reduced to below the City’s 5-dBA significance threshold at both the reservoir site and the Caltrans island. Overall, impacts related to noise from on-site construction would be less under the floating cover alternative than under the proposed project due to the nature and duration of construction activities.

Off-site Construction Noise

Under the floating cover alternative, haul trucks would use the same routes as the proposed project. The nearest sensitive land use to the reservoir construction haul route would be the residences located on Park Row Street. The residences along Riverside Drive would represent the nearest sensitive receptors to the inlet line construction haul route. The floating cover alternative would generate 8 peak hour truck trips during the heaviest phase of construction at the reservoir (Phase 1). Table 5-4 shows the estimated noise levels at sensitive receptors located along the haul routes.

Table 5-4 Floating Cover Off-site Construction Noise Levels (2015)

Scenario and Roadway Segment	Baseline (dBA, L_{eq})	Construction (dBA, L_{eq})	Increase (dBA, L_{eq})
Stadium Way between Landa Street & Elysian Park Drive	67.9	68.2	0.3
Stadium Way between Elysian Park Drive & Academy Road	68.1	68.4	0.3
Academy Road between Boylston Street & Dodger Stadium	63.0	63.8	0.8
Academy Road west of Solano Canyon Drive	61.9	62.8	0.9
Solano Canyon Drive between Academy Road & Park Row Drive	54.0	57.9	3.9
Park Row Street between Solano Canyon Drive & SR 110	54.4	58.1	3.7
Riverside Drive between Gail & Eads Streets	69.1	69.2	0.1
Riverside Drive between Elmgrove Street & I-5	68.4	68.6	0.2

Source: Terry A. Hayes & Associates 2010.

Unlike the proposed project, the floating cover alternative would not exceed the 5-dBA significance threshold at either Solano Canyon Drive between Academy Road or Park Row Street. Therefore, the floating cover alternative would result in a less than significant impact related to off-site haul truck noise, and the mobile noise impact would be less than the proposed project.

Operational Noise

Unlike the proposed project, the floating cover alternative would not include operation of a recreation area at the project site. Therefore, there would be no increase in vehicle trips to and from the site or a significant increase in maintenance activities. Thus, there would be no incremental increase in noise levels associated with operation of the floating cover alternative.

Groundborne Vibration

The use of heavy equipment (e.g., a large bulldozer) generates vibration levels of 0.089 inches per second at a distance of 25 feet. In addition, there would be added truck traffic to the haul routes exiting the reservoir property and along Riverside Drive; however, truck vibration is not typically perceptible. The nearest residential structures to the Caltrans island are located approximately 70 feet from heavy equipment activity and would experience vibration levels of approximately 0.02 inches per second. The nearest residential structures to the Elysian Reservoir site are the houses on Park Row Street, which are located approximately 600 feet from heavy equipment activity and which would experience vibration levels of approximately 0.001 inches per second. Vibration levels at these receptors would not exceed the potential building damage threshold of 0.3 inches per second. Therefore, the floating cover alternative, like the proposed project, would result in a less than significant impact related to construction vibration.

The operation of the floating cover alternative would not include significant stationary sources of groundborne vibration, such as heavy equipment operations. Operational groundborne vibration in the project vicinity would be generated by vehicular travel on the local roadways. However, similar to existing conditions, project-related traffic vibration levels would not be perceptible by sensitive receptors. Therefore, the floating cover, like the proposed project, alternative would result in a less than significant impact related to operational vibration.

Transportation and Traffic

Study Intersection Construction Analysis

The floating cover alternative would be constructed in three phases over approximately 2.5 years. Trip generation for employees and trucks would vary depending on the phase of construction. Table 5-5 provides the peak hour trip generation calculations for the floating cover construction scenario, based on the number of on-site employees and the number of daily truck trips during the peak of activity during Phase 1 of construction.

Table 5-5 Daily Construction One-Way Peak Trip Generation Calculations for Floating Cover Alternative

Generator	Daily	Weekday AM Total	Weekday AM In	Weekday AM Out	Weekday PM Total	Weekday PM In	Weekday PM Out
Employees[1]	144	72	72	0	72	0	72
Trucks[2]	170	21	11	10	21	11	10
Total	*314*	*93*	*83*	*10*	*93*	*11*	*82*

[1] Employee trips = 1 person/vehicle
[2] Vehicle trips = 2.5 passenger car equivalent X truck trips
Source: KOA Corporation 2010.

The number of employee trips was based on the assumption that all 72 employees would arrive within the morning peak hour and depart within the evening peak hour. The number of truck trips was based on a typical 8-hour shift, with delivery truck trips distributed throughout the day. Based on a daily total of 170 truck trips (68 truck trips at the 2.5 passenger car equivalent factor), 21 truck trips (8 truck trips at the 2.5 passenger car equivalent factor) would occur during both the morning and evening peak hours. The total construction trip generation with passenger car equivalent factor would be 314 daily trips, of which 93 trips would occur during each of the peak hours. As with the proposed project, the floating cover alternative would include the inlet line construction at the Caltrans island on Riverside Drive. In addition to the truck trips shown in Table 5-5 above, the inlet line construction would add a daily total of 22 trips, 10 worker commute trips and 12 truck trips (5 at the passenger car equivalent factor of 2.5), occurring during each of the peak hours.

Vehicle trips generated by the floating cover alternative, including the inlet line construction, were added to background traffic volumes that would occur without implementation of a project. Tables 5-6 and 5-7 provide a summary of the construction period study intersection impact analysis for the floating cover alternative during the morning and evening peak periods.

Table 5-6 Floating Cover Study Intersection LOS – AM Peak Hour

#	Intersection	Game Day Scenario	Existing (2010) V/C	Existing (2010) LOS	Future Without Project (2015) V/C	Future Without Project (2015) LOS	Future With Project (2015) V/C	Future With Project (2015) LOS	Diff.	Sig. Impact?
1	Stadium Way/ Riverside Drive	Non-Game Game	0.651 0.568	B A	0.720 0.632	C B	0.745 0.657	C B	0.025 0.025	No No
2	Stadium Way/ Land Street	Non-Game Game	0.656 0.611	B B	0.697 0.651	B B	0.723 0.676	C B	0.026 0.025	No No
3	Riverside Drive/ Eads Street	Non-Game Game	0.435 0.380	A A	0.470 0.413	A A	0.479 0.422	A A	0.009 0.009	No No
4	Riverside Drive/ Northbound I-5 Ramps	Non-Game Game	0.265 0.244	A A	0.438 0.414	A A	0.440 0.416	A A	0.002 0.002	No No
5	Academy Road (major) at Academy Road (minor)	Non-Game Game	Excluded from AM Peak Analysis[1]							
6	Academy Road/ Solano Canyon Drive	Non-Game Game	Excluded from AM Peak Analysis[1]							

[1] Intersection excluded from the a.m. peak period analysis due to low morning traffic activity in the area.
Source: KOA Corporation 2010.

Table 5-7 Floating Cover Study Intersection LOS – PM Peak Hour

#	Study Intersection	Game Day Scenario	Existing (2010)		Future Without Project (2015)		Future With Project (2015)		Diff.	Sig. Impact?
			V/C	LOS	V/C	LOS	V/C	LOS		
1	Stadium Way/ Riverside Drive	Non-Game Game	0.660 0.725	B C	0.723 0.790	C C	0.729 0.797	C C	0.006 0.007	No No
2	Stadium Way/ Land Street	Non-Game Game	0.517 0.619	A B	0.543 0.675	A B	0.563 0.680	A B	0.020 0.005	No No
3	Riverside Drive/ Eads Street	Non-Game Game	0.368 0.456	A A	0.390 0.468	A A	0.413 0.471	A A	0.023 0.003	No No
4	Riverside Drive/ Northbound I-5 Ramps	Non-Game Game	0.309 0.354	A A	0.387 0.434	A A	0.393 0.440	A A	0.006 0.006	No No
5	Academy Road (major) at Academy Road (minor)	Non-Game Game	8.7 9.0	A A	8.8 9.1	A A	9.1 9.2	A A	- -	- -
6	Academy Road/ Solano Canyon Drive	Non-Game Game	0.065 0.102	A A	0.067 0.107	A A	0.125 0.175	A A	0.058 0.068	No No

Note: Study intersection 5 Academy Road (major) at Academy Road (minor) is a stop-controlled intersection. LOS for signalized intersections is measured on a scale of 0.0 to 100.0, whereas signalized intersections are measured on a scale of 0.000 to 1.000.
Source: KOA Corporation 2010.

As shown in Tables 5-6 and 5-7 above, all of the study intersections would continue to operate at LOS C or better during construction of the floating cover alternative. As with the proposed project, the impact to the study intersections would be less than significant; however, substantially fewer total trips would be generated under the floating cover alternative than the proposed project.

Study Roadway Segment Construction Analysis

In addition, peak hour traffic impacts were analyzed at the study roadway segments to determine potentially significant impacts at the analyzed roadways. Table 5-8 summarizes the peak-hour volumes that would occur throughout the day. The peak-hour volumes may not necessarily occur during typical peak-hour periods between 7:00 a.m. to 9:00 a.m. and between 4:00 p.m. to 6:00 p.m.

Based on the results provided within Table 5-8, the analyzed roadway segments would operate at LOS C or better on non-game days. However, the following two of the roadway segments would operate at LOS E or F on game days and would worsen with vehicle traffic generated during construction of the floating cover alternative:

- Riverside Drive, between Gail Street and Eads Street – LOS E
- Academy Road (major) – LOS F

As with the proposed project, construction activities that overlap with games scheduled at Dodger Stadium would impact two of the study roadway segments. The impact would be significant; however, implementation of mitigation measures TRANS-A and TRANS-B (see Section 3.6.4) would be required to reduce the impact to a less than significant level. Overall, the total number of net new vehicle trips would be substantially lower under the floating cover alternative compared to the proposed project.

Table 5-8 Floating Cover Peak Hour Roadway Segment Volumes Summary (2015)

Study Roadway Segment	Game Day Scenario	Base Volumes								Proposed Project			
		Existing			Ambient Growth	Area Projects	Future Base			Project Only	Future With Project		
		Volume	V/C	LOS			Volume	V/C	LOS		LOS	V/C	LOS
Stadium Way between Riverside Drive & I-5 Southbound Ramps	Non-Game Game	1,494 1,586	0.598 0.634	A B	5% 5%	264	1,834 1,931	0.734 0.772	C C	48	1,882 1,979	0.753 0.792	C C
Riverside Drive between Gail Street & Eads Street	Non-Game Game	1,678 2,014	0.671 0.806	B D	5% 5%	157	1,921 2,274	0.768 0.910	C E	42	1,963 2,316	0.785 0.926	C E
Riverside Drive between Fernleaf Street & Elmgrove Street	Non-Game Game	1,357 1,740	0.543 0.696	A B	5% 5%	115	1,541 1,944	0.616 0.778	B C	13	1,554 1,957	0.622 0.783	B C
Riverside Drive between Oros Street and I-5 Northbound Ramps	Non-Game Game	1,352 1,405	0.541 0.562	A A	5% 5%	331	1,752 1,808	0.701 0.723	C C	22	1,774 1,830	0.710 0.732	C C
Stadium Way north of Academy Road	Non-Game Game	1,973 2,312	0.438 0.514	A A	5% 5%	162	2,236 2,592	0.497 0.576	A A	81	2,317 2,673	0.515 0.594	A A
Academy Road (major)	Non-Game Game	563 2,838	0.180 0.908	A E	5% 5%	75	667 3,058	0.213 0.979	A E	90	757 3,148	0.242 1.007	A F
Academy Road (minor)	Non-Game Game	490 350	0.363 0.259	A A	5% 5%	10	525 378	0.389 0.280	A A	90	615 468	0.456 0.347	A A

Source: KOA Corporation 2010.

Truck traffic during the peak of construction of the floating cover would be substantially less than under the proposed project. However, construction traffic on park roadways would nonetheless pose a potential conflict with park patrons during the peak period of construction of the floating cover alternative. Implementation of mitigation measures TRANS-D through TRANS-F would be required. The impact would be less than significant with implementation of the measures. Further, the duration of the impact would be reduced from approximately 5.5 years under the proposed project to 2.5 years under the floating cover alternative.

CMP Construction Analysis

Floating cover construction, during the peak phase of activity (Phase 1) and during the peak traffic hour, would add fewer than 50 trips to the I-5 southbound off-ramp at Stadium Way and northbound on-ramp at Stadium Way associated with construction at Elysian Reservoir. As with the proposed project, the impact would be less than significant, and no mitigation is required.

The floating cover alternative would not add more than 150 new trips per hour to any freeway segments near the project site. Therefore, impact analysis at CMP freeway monitoring stations is not required. The impact would be less than significant, similar to the proposed project.

Operations Phase

Unlike under the proposed project, no recreation would be provided at the project site as part of the floating cover alternative. Operation of the floating cover alternative would be similar to the maintenance of the existing uncovered Elysian Reservoir. There would not be a significant increase in vehicle trips to and from the project site. Further, there would be no need to provide additional parking on site. No impact would occur to transportation and traffic during operation of the floating cover alternative.

Summary of Conclusions

Under the floating cover alternative, the reservoir, although relined, would be retained in essentially its same configuration, and LADWP would install an approximately 325,000-square-foot flexible membrane floating cover over the entire water surface and secure it to the edge of the reservoir basin at the roadway elevation. In addition, LADWP would install a new 54-inch bypass line at the reservoir and a new 54-inch inlet line between the Riverside Trunk Line and the reservoir. Under this alternative, the Elysian Reservoir property would remain under the operation of LADWP, and no recreational facilities would be constructed. Construction of the floating cover alternative would take approximately 2.5 years to complete. As with the proposed project, the floating cover alternative would meet the two primary project objectives. The floating cover alternative would comply with updated water quality regulations, and it would maintain local drinking water storage capacity within the Elysian Reservoir service area. This alternative would not meet the secondary project objective of providing publicly-accessible open space at the Elysian Reservoir property.

The following summarizes the potential environmental impacts that would be created by the floating cover alternative compared to those that would be created by the proposed project.

Aesthetics

- Neither the floating cover alternative nor the proposed project would create a significant impact to a scenic vista.

- Neither the floating cover alternative nor the proposed project would create a significant impact by substantially degrading the existing visual character or quality of the site and its surroundings. However, to completely avoid an impact, some landscape screening in selected areas would be required under the floating cover alternative.

Air Quality

- The floating cover alternative, like the proposed project, would create a significant and unavoidable regional air quality impact during certain periods of the construction phase. However, the floating cover alternative would result in slightly lower peak emissions and substantially lower emissions over the entire construction period compared to the proposed project.
- Neither the proposed project nor the floating cover alternative would create a significant regional air quality impact related to post-construction project operations. Because the floating cover alternative would generate no additional post-construction traffic or maintenance activity at the reservoir property from recreation use, it would create no impacts related to regional air pollutant emissions during post-construction operations.
- The floating cover alternative would result in the same peak localized air pollutant concentrations but lower peak TAC emissions during construction compared to the proposed project. However, the floating cover alternative, like the proposed project, would create a significant and unavoidable impact related to localized air pollutant emissions and TACs during certain periods of the construction phase. It would result in substantially lower air pollutant concentrations and TAC emissions over the entire construction period.
- The proposed project would create a less than significant impact related to localized air pollutant emissions and TACs during post-construction project operations. Because the floating cover alternative would generate no additional post-construction traffic or maintenance activity at the reservoir property from recreation use, it would create no impacts related to localized air pollutant emissions or TACs during post-construction operations.
- Neither the proposed project nor the floating cover alternative would create a significant impact related to GHG emissions from either construction or operations. However, the floating cover alternative would create substantially lower GHG emissions during construction and operations when compared to the proposed project.

Biological Resources

- Both the floating cover alternative and the proposed project could create significant impacts related to migratory birds, indirect impacts to native vegetation, and conflicts with local tree protection ordinances. With the implementation of mitigation measures BIO-A through BIO-E, these impacts would be reduced to a less than significant level under both the floating cover alternative and the proposed project. However, potential impacts to biological resources would be appreciably decreased under the floating cover alternative when compared to the proposed project because the nature and duration of construction activities would be reduced and the area of disturbance would be smaller.

Cultural Resources

- Both the floating cover alternative and the proposed project would create significant impacts related to ground disturbing activities that have the potential to uncover previously unearthed archaeological and paleontological resources within the reservoir property. With the implementation of mitigation measures CR-A and CR-B, these impacts would be reduced to a less than significant level under both the floating cover alternative and the proposed project. However, the potential for impacts would be decreased under the floating cover alternative when compared to the proposed project because ground disturbing activities would be substantially reduced.

Land Use

- Unlike the proposed project, the floating cover alternative would require a zoning variance for the Elysian Reservoir property.

Noise

- Both the floating cover alternative and the proposed project would create a less than significant impact related to construction equipment noise at both the Elysian Reservoir site and the Caltrans island with implementation of mitigation measures NOISE-A through NOISE-D. However, over the entire period of construction, the floating cover alternative would create less noise than the proposed project because of the nature and duration of construction activities.
- The floating cover alternative would have a less than significant mobile noise impact associated with haul truck trips to and from both the reservoir site and the Caltrans Island. The impact would be less than the proposed project, which would create a significant and unavoidable mobile noise impact.
- The proposed project would create a less than significant impact related to noise during post-construction project operations. Because the floating cover alternative would generate no additional post-construction traffic or maintenance activity at the reservoir property from recreation use, it would create no impact related to noise during post-construction operations.

Transportation and Traffic

- Neither the floating cover alternative nor the proposed project would create a significant impact related to level of service at the study intersections during construction. However, the floating cover alternative would create substantially fewer average and peak construction-related daily vehicle trips compared to the proposed project.
- Both the floating cover alternative and the proposed project would create a significant impact to the level of service on two roadway segments when construction activity overlaps with games scheduled at Dodger Stadium. With the implementation of mitigation measures TRANS-A and TRANS-B, these impacts would be reduced to a less than significant level under both the floating cover alternative and the proposed project.
- Both the floating cover alternative and the proposed project would create significant impacts related to potential conflicts with park patrons during the peak period of construction traffic. With the implementation of mitigation measures TRANS-D through TRANS-F, these impacts would be reduced to a less than significant level under both the floating cover alternative and the proposed project. However, truck traffic during the peak of construction of the floating cover alternative would be substantially less than under the proposed project.
- Unlike the proposed project, the floating cover would not create a significant impact to CMP facilities in the project vicinity during construction.
- The proposed project would create a less than significant impact related to traffic and parking during post-construction project operations. Because the floating cover alternative would generate no additional post-construction traffic or maintenance activity at the reservoir

property from recreation use, it would create no impact related to traffic and parking during post-construction operations.

5.3.2 Aluminum Cover Alternative

Under the aluminum cover alternative, Elysian Reservoir would remain in basically its existing configuration, and a lightweight aluminum cover would be installed over the entire surface of the reservoir. The aluminum cover structure would consist of a standing seam roof, situated several feet above the water surface, resting on concrete side walls (see Figure 5-8). Although the reservoir liner and appurtenant facilities would be removed and replaced under this alternative, the reservoir would retain essentially its existing shape and volume (approximately 55 MG minus an insignificant volume lost to the roof support columns), providing local storage capacity for the reservoir service area essentially equivalent to the proposed project.

The aluminum cover would create less ground disturbance and require less construction activity than the proposed project. It would also be a less expensive means than the proposed project to cover the Elysian Reservoir water supply to achieve the LT2ESWTR and Stage 2 D-DBPR mandates (an estimated $55 million versus $110 million for the proposed project over a 60-year lifecycle; these figures exclude the cost related to the proposed inlet and bypass lines, which would be common to both the proposed project and the aluminum cover alternative). The aluminum cover would require approximately 4 years for construction compared to 5.5 years for the proposed project. The aluminum cover would be less durable than the concrete cover, but still require relatively little maintenance or replacement of components.

Because the aluminum cover would not allow for accessible open space at the reservoir property, no recreational facilities would be provided under this alternative, and the Elysian Reservoir property would remain under the operation of LADWP and closed to public access. As with the proposed project, a wildlife pond would be created at the north end of the reservoir property as part of the aluminum cover alternative.

Columns would be necessary to support the aluminum cover, including some that would need to be located within the earth dam at the southern end of the reservoir. However, the relatively small number of columns that would penetrate the dam (approximately 30), combined with the relatively light weight of the aluminum cover, would not compromise the structural integrity of the dam, even during seismic events.

Figure 5-8 Aluminum Cover Examples

Construction of this alternative would take approximately 4 years to complete, partially because, in addition to the replacement of the reservoir liner and the construction of an aluminum cover, it includes the replacement of the existing 36-inch diameter reservoir bypass line with a new 54-inch line, similar to the proposed project. It is anticipated that construction activities would start in 2014 and be completed in 2018. Similar to the proposed project, Grand View Drive would be completely closed to ensure public safety and to provide truck access and maneuvering, worker parking, and limited material and equipment staging areas. Also similar to the proposed project, the proposed truck delivery and haul route in the vicinity of the reservoir remains largely within the confines of Elysian Park. The inbound route would proceed from the I-5 Stadium Way exit, south along Stadium Way, east (left) on Academy Road (to the Dodger Stadium Gate), north (left) on Academy Road, north (left) on Solano Canyon Drive, south (right) on Park Row Drive to Park Row Street, and east (left) on Grand View Drive to the project site. Outbound traffic would follow the same route in reverse (see Figure 2-8). During certain periods of construction involving truck deliveries to and hauling from the site, parking restrictions would be required along Solano Canyon Drive, Park Row Drive, and Park Row Street to allow for the safe passage of trucks. Parking along the west side of Park Row Street in front of the existing residences near the Grand View Drive entry to the reservoir would be maintained; however, a flag person may be required in this segment to facilitate the safe passage of vehicles.

During construction, drinking water would continue to be provided to the Elysian Reservoir service area from the Van Norman Complex in Granada Hills. During the initial phases of construction, it would continue to be fed to the service area from the existing Riverside Trunk Line via the existing inlet and bypass lines, and during the latter stages of construction, water would be fed through the new bypass line and a new inlet line (see below). Water supplies would be further supplemented as necessary to help temporarily meet peak demand during construction with additional purchases from the Metropolitan Water District.

Similar to the proposed project, the aluminum cover alternative at Elysian Reservoir would also include the construction of a new 54-inch diameter underground inlet line connecting the reservoir to the existing Riverside Trunk Line within Riverside Drive. This new inlet line would replace the existing 67-year-old 36-inch inlet line to help maintain critical system reliability for the Elysian Reservoir service area and provide improved distribution system capability, which would otherwise be limited based on the diameter of the existing inlet line. The primary site for the inlet line construction would be located within the Caltrans island adjacent to the on-ramp to the northbound I-5, along the west side of Riverside Drive, roughly between Barclay Street and Duvall Street (see Figure 2-7). Construction of the new inlet line could proceed essentially independently of construction at the reservoir itself (which includes the new bypass line) because the two construction sites are physically separated. The inlet line construction would be concurrent with the first two years of the aluminum cover alternative construction. The construction of the inlet line, including its scope; schedule; methods; numbers of personnel, truck trips, and equipment; and volumes of earthwork would be as described in the Description of the Proposed Project, Chapter 2 of this EIR.

Construction of the aluminum cover alternative would consist of several tasks, including mobilization, construction of the new bypass line, demolition of the existing reservoir, construction of a new reservoir liner, and the installation of the aluminum cover itself. Each of these tasks would require truck deliveries and/or haul trips and the operation of heavy equipment, including excavators, graders, dozers, cranes, and various types of trucks. Construction would be conducted in three basic phases, as described below. A spreadsheet that indicates the type, duration, and level of activities for the various construction tasks is included in Appendix B of this EIR.

Phase 1: Mobilization, Bypass Line Construction & Activation, and Reservoir Demolition (19 months)

The first phase of the aluminum cover alternative construction would consist of mobilizing for construction, constructing and activating the new reservoir bypass line, draining Elysian Reservoir, and demolishing the existing reservoir and appurtenant facilities. This phase would require approximately 19 months to complete. During Phase 1, the number of on-site workers per day based on a monthly average would range from a low of 17 during mobilization to a peak of 72 during concurrent bypass line construction and reservoir demolition. The number of truck deliveries or haul trips per day based on a monthly average would range from a low of 6 during the initial portions of the bypass line construction to a peak of 46 during concurrent bypass line construction and reservoir demolition. The number of full-time operating equipment per day based on a monthly average would range from a low of 6 during mobilization to a peak of 17 during the final months of the bypass line installation.

Mobilization would entail widening and stabilizing existing on-site roads as necessary for truck access during construction, clearing and preparing construction materials laydown areas and vehicle and equipment parking areas, erecting temporary offices and other support facilities, and establishing temporary electrical power connections. Improvements to Grand View Drive at the intersection with Park Row Street would be required to facilitate outbound truck traffic from the reservoir site. This may include both grading and widening the road at the intersection. The trimming of some existing trees along Grand View Drive may be necessary to allow for truck passage. A truck turnaround area would be provided at Point Grand View, northeast of the reservoir (see Figure 2-5). This may require the removal of the parking island, including several palm trees, during construction to provide an adequate turning radius for trucks. However, it would eliminate the requirement to provide a turnaround elsewhere along Grand View Drive, which would require cutting and filling areas adjacent to the road. The parking island, including the trees would be restored after construction. As under the proposed project, a laydown area would be located inside Elysian Park but outside the reservoir property boundary in the existing picnic grounds located north of Grand View Drive between Park Row Street and the reservoir (see Figure 2-5). This area would provide approximately 1 acre of relatively flat ground for construction staging. In order to provide a functional area for storage and maneuvering, most of the existing trees in the picnic area may need to be removed. Trees that would not need to be removed to provide access and storage area would be protected during construction. The area would be restored in accordance with LADRP requirements after completion of the project. The mobilization task would take approximately 1 month.

To minimize disruptions to the Elysian Reservoir service area water distribution system, the construction of the new bypass line would be substantially completed and the new line activated prior to the removal of the existing bypass line from service. This would entail the construction of several vertical shafts and interconnecting tunnels that would route the line around Elysian Reservoir to the west and link the existing reservoir inlet (northeast of the reservoir) and outlet (at the southern end of the reservoir). The excavation of the shafts and tunnels would create approximately 5,000 CY of material, which would be hauled off site, requiring about 750 truck trips. Once the new bypass line was functioning, the existing bypass line would be removed from service and abandoned in place.

Draining the reservoir would initially be accomplished by normal consumption through the drinking water distribution system until the water level reached the lower limit of the normal operating range of the reservoir. Water below the normal operating range elevation would then be pumped into the outlet tower continuing to supply the system. Any remaining water would be drained into the storm water system. To maintain the stability of the earth dam located at the southern end of the reservoir, the rate at which the water level would be lowered would be carefully controlled. At the controlled rate, the existing storm water facilities are adequately sized to accommodate the reservoir draining. After the water reaches the lower limit of the normal operating range, it would take approximately 2 weeks to drain the remaining water from the reservoir and an additional 2 to 3 weeks for the reservoir to dry out.

In order for the aluminum cover to be installed and function properly, the inlet structure and overflow spillway, outlet tower, outlet tower footbridge, and reservoir parapet wall would be demolished during Phase 1. Because Elysian Reservoir was constructed nearly 70 years ago, the implementation of the aluminum cover alternative would also represent an opportunity to replace the existing 4-inch thick asphalt liner while the reservoir is drained and out of service. The liner would therefore also be demolished during Phase 1 of construction. In addition, numerous existing sub-grade concrete caisson foundations that were constructed within the reservoir to support a previously proposed but never completed aluminum cover would need to be removed to accommodate the currently proposed aluminum cover. Demolition would generate about 7,000 cubic yards (CY) of debris, which would be hauled off site.

Phase 2: Construction of New Inlet and Outlet Structures and Installation of Asphalt Reservoir Liner (9 months)

The second phase of construction would include constructing the new inlet and outlet structures and connecting the structures to the inlet/bypass line system. The reservoir would also be relined with asphaltic concrete during this phase, and new concrete equipment vaults would be installed. This phase of work would take approximately 9 months to complete. During Phase 2, the number of on-site workers per day based on a monthly average would range from a low of 25 during the final months of the reservoir relining to a peak of 54 during concurrent inlet/outlet structure construction and reservoir relining; the number of truck deliveries per day based on a monthly average would range from a low of 8 to a peak of 14; and the number of full-time operating equipment per day based on a monthly average would range from a low of 13 to a peak of 25. Relining the reservoir would require delivering about 10,000 CY of asphalt and aggregate base to the site.

Phase 3: Aluminum Cover Construction (18 months)

The third phase of construction would consist of the construction of the aluminum cover, refilling the reservoir, and construction of the wildlife pond. It would include construction of new caisson foundations, reinforced concrete columns, and concrete perimeter wall, as well as the delivery and installation of the truss system and aluminum decking. This phase of work would take approximately 18 months to complete. Throughout Phase 3, the number of on-site workers per day based on a monthly average would be approximately 23. The number of truck deliveries per day based on a monthly average would be approximately 4. The number of full-time operating equipment per day based on a monthly average would be approximately 15. During this phase, the picnic area located north of Grand View Drive near Park Row Street used for construction staging and the Point Grand View overlook used for a truck turnaround area would be restored. Park roads and other roads damaged during construction would also be repaired at the end of construction. After the aluminum cover construction is completed, Elysian Reservoir would take approximately 1 month to refill, which would occur concurrently with demobilization.

Aluminum Cover Operations

The reconstructed reservoir with the aluminum cover would not create the need for LADWP personnel to be located permanently on site. LADWP operations on site would involve maintenance of the reservoir, pipelines, and ancillary elements at a similar level of activity as current operations at Elysian Reservoir. Little actual maintenance of the aluminum cover itself would be necessary. These operations would generate minimal traffic to and from the site, similar to current levels. As discussed above, no recreation area or public access would be provided to the Elysian Reservoir site under this alternative.

Solar Panel Option

In an effort to help meet LADWP's ongoing commitment to renewable energy production to provide for the electrical power needs of the City, an option to install solar photovoltaic (PV) panels on the aluminum cover at Elysian Reservoir is under consideration. A solar energy option is not under consideration for the floating cover alternative because incompatibilities between the floating cover and the solar components would hinder operations and maintenance and compromise the integrity of both the water storage and solar energy systems. A solar energy option is not under consideration for the buried concrete reservoir (the proposed project) because it would preclude the provision of a publicly accessible recreation area at the Elysian Reservoir property, which is the primary reason for the buried reservoir approach to achieving the water storage and water quality objectives of the project. The solar panel option would extend the construction period for the aluminum cover alternative from approximately 4 years to 4.5 years, compared to 5.5 years for the proposed project.

In November 2008, the City initiated a new solar energy plan known as Solar LA that establishes a goal of developing 1,280 megawatts (MW) of solar energy by 2020, enough to serve about 10 percent of Los Angeles' electrical power demands. Solar LA consists of several program areas, including customer programs, LADWP in-City solar projects, and large-scale solar projects outside the City boundaries. LADWP manages the country's most successful municipal utility customer solar incentive program, encouraging customers to install over 19 MW of solar power in Los Angeles since 1999. LADWP is also continuing to plan for the development of several large-scale solar power generation facilities in the region.

To effectively and efficiently meet the goal of in-City solar projects, LADWP is focusing on sites that provide an opportunity for large-scale rooftop and ground mounted installations. Elysian Reservoir, which is located on City-owned property and offers several acres of generally unshaded area, provides such an opportunity. The Elysian solar facility would create approximately 2 MW of power generation, enough to provide for the annual electrical energy needs of over 600 households in the City.

The installation of the solar panels would represent an additional phase of construction that would occur after the construction of the aluminum cover itself. As such, the potential environmental impacts of the construction and operation of the aluminum cover alternative (without the solar panel component) can be considered separately, and the impacts associated with the construction and operation of the solar panel option can then be considered additionally along with any impacts related to the aluminum cover alternative.

Phase 4: Solar Panel Installation (7 months)

The construction of the solar panels involves several distinct tasks, which would generally be completed concurrently, including the actual panel installation and wiring, the installation of power inverters and transformers, and the interconnection of the solar power facility to the City distribution system. The total construction time for this phase would be approximately 7 months. The individual solar PV panels would measure approximately 6 feet by 4 feet (see Figure 5-9). The panels may be installed flat on the reservoir surface or at a slight angle from horizontal, depending on which configuration provides the greatest efficiency relative to power generation for the entire system. Flat installations minimize shadows that interfere with solar energy collection, but they are also oriented less favorably to most effectively collect solar radiation. The determination regarding the angle of the panels would be made during detailed design, but it would not affect the overall nature of the solar installation. The panels would be fastened to the roof with non-penetrating clamps. The panels would be grouped in approximately 50 foot by 50 foot arrays, with 4 to 6 foot access walkways between adjacent arrays. Two crews consisting of about 5 personnel each would work simultaneously on separate sections of the aluminum roof installing panels and completing the wiring. This task would take approximately 6 months to complete and would entail an average of less than 2 truck deliveries per day for the solar panels and about 1 additional delivery per week for other components required for the task. An on-site truck crane would be required to offload the panels.

Because the solar panel system creates direct current (DC) power, inverters are required to change the power to alternating current (AC) power usable in the City distribution system. Two 12,000-pound pad-mounted inverters (one per MW of power generation) would be required at Elysian. One 10,500-pound pad-mounted transformer to step up the voltage of the power generated by the solar panels before distribution would also be required. This equipment would be located within the reservoir fence line. Each inverter and the transformer would be delivered by a single truck. Each would require a concrete pad with a compacted aggregate base (approximately 15 feet square for the inverters and 8 feet square for the transformer). This would entail a total of approximately 3 truck deliveries for the aggregate, reinforcing steel, and concrete. A backhoe would also be required to excavate the area for the pads, and a small crane would be required to offload and position the transformer and inverters on the pads. This task would generally involve fewer than 6 personnel and would take approximately 2 months to complete. However, the work would be entirely concurrent with the installation of the solar panels.

The interconnection of the solar power facility would involve running new feeder lines along existing distribution pathways to an existing LADWP distribution station. This task would involve minor off-site work, including stringing conductors, and would occur concurrently with the installation of the solar panels. Once all of this work is completed, the final test, inspection, and commissioning of the system would take approximately 1 month.

Because some of the tasks involved in the power interconnection would occur concurrently with the solar panel installation on the aluminum cover, the peak on-site personnel would reach approximately 20 (during the installation of the inverters and transformer). Truck deliveries required for the solar installation would average less than 2 per day, but a slightly higher number of daily truck trips may occur when both solar panel components and foundation material for the inverters and transformer are delivered on the same day. Little equipment would be operating on site during this phase other than a truck crane and, for brief periods during the transformer and inverter installation, a backhoe, soil compactor, and concrete truck.

Figure 5-9 Solar Photovoltaic Panel

Solar Power Facility Operations

No additional personnel would be required at the Elysian Reservoir site on a daily basis to maintain and operate the solar power facilities. A small number of personnel may be required during brief periods when certain maintenance operations must be performed. The project would be monitored by automated methods to ensure that it is generating electricity to the specified capacity. Static PV arrays generate electricity without moving parts, and general maintenance requirements are characteristically low. Maintenance activities, such as troubleshooting, repairing, replacing, or optimizing system components, would occur on an event-driven basis. Occasional washing of the solar panels may be required in order to restore generation efficiency. However, such washing would be performed only as needed to maintain system performance and manufacturer's warranties on electrical equipment.

Aesthetics

The Elysian Reservoir property is visible from two designated viewpoints within Elysian Park that offer scenic vistas – Buena Vista Point and Point Grand View. Although it is possible to gain a low-angle view of the southern end of Elysian Reservoir by looking north from limited vantage points at Buena Vista Point, the reservoir itself is not generally included within the scenic vista from this viewpoint, which is primarily directed to the south. Therefore, Point Grand View, which is located east of and above Elysian Reservoir, is considered the key viewpoint in relation to potential impacts to scenic vistas. Implementation of the aluminum cover alternative would alter the view from the southwest corner of Point Grand View by removing the limited view of open water offered by the reservoir and replacing it with manmade structure. However, from the Point Grand View viewpoint, the skyline of downtown Los Angeles, the Los Angeles River, the Monterey Hills, and, in the far distance, the San Gabriel Mountains would remain the primary focal elements of this scenic vista, and the covered reservoir itself would remain secondary, largely screened from view by intervening trees and other vegetation (see Figures 5-10 and 5-11). Therefore, the aluminum cover alternative would not create a significant impact in relation to a substantial change to the scenic vista as seen from Point Grand View.

The implementation of the solar panel option for the aluminum cover alternative would not alter this conclusion regarding a less than significant impact to the Point Grand View scenic vista because the panels, like the aluminum cover itself, would remain a secondary element in the vista, largely screened from view by intervening trees and other vegetation (see Figure 5-12). To keep the PV cells clean and protect them from damage but still allow for the collection of solar energy, the surface of the solar panels would be covered with a pane of glass, which is normally a reflective material. However, the solar panels would employ a low-iron content glass, which is specifically designed to provide high transparency to increase light transmission to the PV cells and reduce the absorption, refraction, and reflection of light. In addition, the glass panes would include an anti-reflective coating or finish to further increase the transmission of light through the glass to the cells and decrease reflection. While these characteristics of the solar panel glass, intended to increase energy production, do not entirely eliminate reflection, the general appearance of the panels would be a dark field, which would not adversely affect views from Point Grand View. Glare, which would be caused by the direct reflection of the sun in the panels, would also be reduced by the anti-reflective characteristics of the glass and would generally be no greater than that experienced off the surface of the existing open reservoir and would be momentary from any given viewpoint. Furthermore, because of the position of the sun (generally to the south) and the solar panels (to the west) relative to a viewer at Point Grand View, reflective glare would not normally occur.

The aluminum cover alternative would alter the visual character of the Elysian Reservoir site itself by removing the existing open water surface and replacing it with a manmade structure. As discussed in Chapter 3.1, publicly available views of Elysian Reservoir from the surrounding ravine outside the reservoir property are few, intermittent, and partially obstructed by vegetation and terrain. In addition, the manmade institutional character of the reservoir may be deemed to diminish its value as a significant element in the visual environment of Elysian Park. Nonetheless, the cover may still be considered visually incompatible with the overall setting of Elysian Park (see Figures 5-13 through 5-16). However, by selectively screening the view of the cover with additional landscaping from the limited number of available viewpoints, the visual impact of the cover itself would be reduced to a less than significant level.

The implementation of the solar panel option for the aluminum cover alternative would not alter this conclusion regarding a less than significant impact to the visual environment of Elysian Park. As discussed above, the panels would generally appear as a dark field (see Figures 5-17 and 5-18). Glare would be reduced based on the physical characteristics and orientation of the panels and would generally be no greater than that experienced off the surface of the existing open reservoir. Furthermore, such glare would be momentary from any particular viewpoint, based on the position and angle of the sun and panels relative to the viewpoint at a given time. As with the aluminum cover itself, by selectively screening the view of the cover with the solar panels from the limited number of available viewpoints, the visual impact would be less than significant. The aluminum cover alternative (with or without solar) would therefore have a similar aesthetic impact to the proposed project.

Figure 5-10 Existing view from Point Grand View

Figure 5-11 Proposed view with Aluminum Cover from Point Grand View

Figure 5-12 Proposed view with Aluminum Cover and Solar Panels from Point Grand View

Figure 5-13 Existing pedestrian view from roadside on Grand View Drive

Figure 5-14 Proposed pedestrian view with Aluminum Cover from roadside on Grand View Drive

Figure 5-15 Existing view from hiking trail

Figure 5-16 Proposed view with Aluminum Cover from hiking trail

Figure 5-17 Proposed view with Aluminum Cover and Solar Panels from roadside on Grand View Drive

Figure 5-18 Proposed view with Aluminum Cover and Solar Panel from hiking trail

Air Quality

Regional Construction Emissions

The aluminum cover alternative would require significantly less construction activity than the proposed project, and the construction schedule would be approximately 1.5 years shorter. It is anticipated that construction activities would start in 2014 and be completed in 2018. The worst case construction emissions would occur during the concurrent construction of Phase 1 of the Aluminum Cover and Task 1 of the inlet line, which is similar in nature to the proposed project. As with the proposed project, daily NO_X emissions would exceed the SCAQMD regional significance thresholds. Implementation of mitigation measures AIR-A through AIR-E would be required (see Section 3.2.5 of the EIR), except, because of the earlier construction start date for the aluminum cover compared to the proposed project (2014 versus 2015), mitigation measure AIR-C would be modified as follows:

- *Prior to January 1, 2015*: All off-road construction diesel engines not registered under CARB's Statewide Portable Equipment Registration Program that have a rating of 50 hp or more shall meet, at a minimum, the Tier 3 California Emission Standards for Off-Road Compression-Ignition Engines as specified in California Code of Regulations, Title 13, Section 2423(b)(1) unless such engine is not available for a particular item of equipment. In the event a Tier 3 engine is not available for any off-road equipment larger than 100 hp, that equipment shall be equipped with a Tier 2 engine. Equipment properly registered under and in compliance with CARB's Statewide Portable Equipment Registration Program shall be considered in compliance with this mitigation measure.

A 5 percent reduction in construction equipment exhaust was used to estimate emissions reductions due to the implementation of mitigation measures AIR-A through AIR-D. As demonstrated in Table 5-9, construction emissions of NO_X would remain over the SCAQMD daily regional significance thresholds. Therefore, the aluminum cover alternative would result in a significant and unavoidable impact related to regional construction emissions. The impact would be similar to the proposed project. However, it is important to note that although worst-case daily emissions are similar for the aluminum cover alternative and the proposed project, the proposed project would create substantially higher total emissions during the construction period due to the nature and duration of the construction activities.

Table 5-9 Aluminum Cover Estimated Peak Regional Daily Construction Emissions – Mitigated

Construction Phase	Pounds Per Day					
	VOC	NO_X	CO	SO_X	$PM_{2.5}$[1]	PM_{10}[1]
Aluminum Cover Construction						
Phase 1	15	132	62	<1	12	40
Phase 2	14	130	64	<1	5	5
Phase 3	7	56	34	<1	2	2
Phase 4	1	10	8	<1	<1	1
Inlet Line Construction						
Task 1	10	76	38	<1	8	28
Task 2	8	61	30	<1	8	28
Task 3	8	60	31	<1	3	6
Task 4	3	26	13	<1	1	1
Maximum Regional Total[2]	25	208	100	<1	20	68
Significance Threshold	*75*	*100*	*550*	*150*	*55*	*150*
Exceed Threshold?	No	Yes	No	No	No	No

[1] Emissions for fugitive dust were adjusted to account for a 61 percent control efficiency associated with SCAQMD Rule 403.
[2] Maximum emissions would occur during concurrent construction of Phase 1 of the Aluminum Cover Alternative and Task 1 of the Inlet Line.
Source: Terry A. Hayes & Associates 2010.

Localized Construction Emissions

The dispersion modeling results indicate that maximum localized emissions of $PM_{2.5}$, PM_{10}, NO_2, and CO would be the same for the aluminum cover alternative as for the proposed project. This is because concentrations are directly related to the distance between the source and the sensitive receptor. As with the proposed project, the maximum localized $PM_{2.5}$ and PM_{10} concentrations would exceed the significance thresholds at residential land uses near the Caltrans island on Riverside Drive. Localized $PM_{2.5}$ and PM_{10} concentrations would also exceed the significance thresholds at the residences near Park Row Street and Solano Avenue Elementary School from construction at the reservoir site. Therefore, the aluminum cover alternative would result in a significant impact related to localized construction emissions. Even with implementation of mitigation measures AIR-A through AIR-E, mitigated construction localized emissions would continue to exceed the SCAQMD localized thresholds for $PM_{2.5}$ and PM_{10} (see Table 5-10). Therefore, similar to the proposed project, the localized construction emissions impact would remain significant and unavoidable under the aluminum cover alternative. However, over the entire construction period, substantially fewer total emissions would be produced under the aluminum cover alternative than under the proposed project.

Table 5-10 Aluminum Cover Peak Localized Construction Emissions – Mitigated

Pollutant	Estimated Emissions (lbs/day)	Concentration at nearest sensitive receptor	Significance Threshold	Significant Impact?
$PM_{2.5}$	18 - 20	79 ug/m^3	10.4 ug/m^3	Yes
PM_{10}	63 - 68	314 ug/m^3	10.4 ug/m^3	Yes
NO_2	17 - 19	0.09 ppm	0.18 ppm	No
CO (1-Hour)	83 - 94	<1 ppm	20 ppm	No
CO (8-Hour)	84 - 94	<1 ppm	9 ppm	No

Source: Terry A. Hayes & Associates 2010.

Toxic Air Contaminants

As with the proposed project, a health risk assessment was completed for the aluminum cover alternative to determine the risk posed to sensitive receptors from construction activity, particularly diesel emissions. The results of the HRA indicated that construction at the reservoir site would not exceed the estimated carcinogenic risk of 10 persons in one million threshold at the nearby sensitive receptors, including the residences on Park Row Street, Solano Avenue Elementary School, and Barlow Respiratory Hospital. However, the estimated carcinogenic risk would exceed the 10 persons in one million threshold at the residences on Riverside Drive near the Caltrans island (17 persons in one million). Therefore, construction of the aluminum cover alternative, like the proposed project, would result in a significant impact related to TACs. Implementation of mitigation measures AIR-A through AIR-E is required, As with the proposed project, the impact would remain significant and unavoidable even after implementation of mitigation. However, substantially fewer total emissions would be generated during construction under the aluminum cover alternative compared to the proposed project.

Operational Phase

Operation of the aluminum cover alternative would not generate any additional daily vehicle trips or a significant increase in maintenance activities compared to existing conditions because, unlike under the proposed project, no recreation uses would be generated. Thus, implementation of the aluminum cover alternative would not create any additional emissions during the operational phase. There would be no operational air quality impact, and the impact would be less than the proposed project.

Greenhouse Gas Emissions

GHG emissions were calculated for construction activity associated with the aluminum cover alternative. Based on SCAQMD guidance, the emissions summary includes construction emissions averaged over a 30-year span. The aluminum cover alternative would have no net increases in vehicle traffic during operations, and therefore, only construction emissions are quantified. The aluminum cover alternative with the implementation of the solar panel option, would have a beneficial long-term impact of reducing GHG emissions related to electricity generation. However, this conservative emissions analysis did not account for the solar panels. As shown in Table 5-11, the aluminum cover alternative would result in 392 metric tons of CO_2e per year. GHG emissions would not exceed the 10,000 metric tons of CO_2e per year significance threshold and would result in a less than significant impact. The impact would be the same as the proposed project (less than significant), although substantially fewer GHG emissions would be produced under the aluminum cover alternative than under the proposed project.

Table 5-11 Aluminum Cover Estimated Annual Greenhouse Gas Emissions

Scenario and Source	Carbon Dioxide Equivalent (Metric Tons per Year)
Construction Phase 1	2,723
Construction Phase 2	2,456
Construction Phase 3	1,382
Construction Phase 4	226
Inlet Line Task 1	1,637
Inlet Line Task 2	1,261
Inlet Line Task 3	1,475
Inlet Line Task 4	611
Total Construction Emissions	11,771
Total Construction Emissions Amortized[1]	392
Significance Threshold	*10,000*
Exceed Threshold?	No

[1] Based on SCAQMD guidance, the emissions summary also includes construction emissions amortized over a 30-year span.
Source: Terry A. Hayes & Associates 2010.

Construction activity for the aluminum cover alternative would incorporate source reduction techniques and recycling measures to divert waste from landfills. As with the proposed project, the aluminum cover alternative would not conflict with any state or local climate change policy or regulation.

Solar Panel Option

The implementation of the solar panel option (Phase 4) would extend the length of construction of the aluminum cover alternative by approximately 7 months. However, because the installation of the panels would involve low levels of equipment use, truck deliveries, and personnel, emissions of pollutants and GHGs would remain well below significance thresholds established by local, state, and federal agencies. The solar panel option would not in itself or cumulatively, when considered along with other phases of construction associated with the aluminum cover, create significant impacts related to air quality. The generation of energy by the solar panels would decrease regional air pollutant and GHG emissions over the long run by displacing an equivalent amount of fossil-fuel generated energy.

Biological Resources

The aluminum cover alternative would disturb a similar area as the proposed project, generally confined to the existing reservoir and its immediate surroundings, as well as the Caltrans island on Riverside Drive. In this sense, the aluminum cover alternative would have a similar impact on biological resources during construction. However, the aluminum cover would not require the use of the stockpile area within the Elysian Reservoir property, reducing the potential for impacts to biological resources, including wildlife and plants. The aluminum cover alternative would have the potential to disturb migratory bird species if construction were to start during the breeding/nesting season (generally considered February 15 through September 15). As with the proposed project, this alternative would require the implementation of mitigation measure BIO-A (see Section 3.3.4) to ensure compliance with the Migratory Bird Treaty Act. Indirect impacts to native vegetation could occur, including fugitive dust deposition during construction and increased soil erosion during and after construction. However, because of the nature of construction activities under this alternative, the potential for both these impacts would be less than under the proposed project. Nonetheless, to mitigate potential impacts, the aluminum cover alternative, as with the proposed project, would be required to implement mitigation measure BIO-B. Construction activities associated with the aluminum cover would also require removal of oak trees and other trees protected by the City's Tree Protection Ordinance. Impacts to protected trees would conflict with City ordinances, and implementation of mitigation measures BIO-C and BIO-E would be required.

The aluminum cover alternative would eliminate the open water source of Elysian Reservoir, but like the proposed project, would include the installation of a wildlife pond on the Elysian property. Reducing the amount of water available to wildlife would not be considered a significant impact because there are adequate water sources for local and migratory birds and bats near to Elysian Park, including the Los Angeles River, Echo Park Lake, and Silver Lake Reservoir, located approximately 0.25 mile east, 1 mile west, and 2 miles northwest of Elysian Reservoir, respectively.

Impacts to biological resources would be significant under the aluminum cover alternative but appreciably reduced compared to the proposed project because of the nature and duration of construction activities. However, as under the proposed project, with the implementation of the mitigation measures, these impacts would be reduced to a less than significant level.

Solar Panel Option

The implementation of the solar panel option (Phase 4) would extend the length of construction of the aluminum cover alternative by approximately 7 months, but the area of disturbance would not increase. With the implementation of the mitigation measures as outlined above, the solar panel option would not in itself or cumulatively, when considered along with other phases of construction associated with the aluminum cover, create significant impacts to biological resources.

Cultural Resources

As discussed in Chapter 3.4, Elysian Reservoir was evaluated for its eligibility for the California Register and the National Register. The reservoir was originally constructed in 1903. Between 1940 and 1943, components were added to the reservoir system, and the reservoir itself was enlarged. These modifications changed the reservoir such that it is not eligible for listing as a historic resource under any of the California Register criteria, and also therefore would not be eligible for the National Register. Thus, further modification of the reservoir to construct the aluminum cover alternative would have a less than significant impact on historic resources. The implementation of the solar panel option of the aluminum cover would not alter this conclusion.

Ground disturbing activities would include demolishing and replacing the existing asphalt liner in the reservoir, removing the existing caissons, and constructing the replacement caissons and columns inside the existing reservoir footprint. Ground disturbing activities outside the reservoir footprint would include clearing the construction staging area on Grand View Drive west of Elysian Reservoir and construction of the inlet line on the Caltrans island along Riverside Drive.

Compared to the proposed project, the aluminum cover alternative would involve substantially less ground-disturbing activity within the reservoir property. However, construction activities within the reservoir property nonetheless have the potential to disturb previously unearthed archaeological and paleontological resources. Archival records and recent construction activity within the vicinity demonstrate the possibility that prehistoric and/or historic archaeological resources may be present within the reservoir site. Such resources may lie beneath the surface, obscured by vegetation, pavement, or other reservoir features. Therefore, ground disturbing activities have the potential to uncover previously unknown resources. As with the proposed project, the aluminum cover alternative would require the implementation of mitigation measure CR-A (see Section 3.4.4). Further, the reservoir site and all of Elysian Park have high paleontological sensitivity. Thus, the aluminum cover alternative would be required to implement mitigation measure CR-B. As under the proposed project, with the implementation of the mitigation measures, impacts to archaeological and paleontological resources would be reduced to a less than significant level.

Solar Panel Option

The implementation of the solar panel option would entail primarily above ground construction activities on the reservoir cover that would not create additional impacts to archaeological or paleontological resources. Minor ground disturbing activities would occur related to the construction of the concrete pad for the inverters and transformer. However, with the implementation of the mitigation measures CR-A and CR-B, any impacts would be reduced to a less than significant level.

Land Use

Unlike the proposed project, which would provide an open space recreation area in place of Elysian Reservoir, the aluminum cover alternative would be inconsistent with the existing OS zoning designation of the reservoir property. Open reservoirs are an allowable use within the OS zone. Appurtenant facilities that are incidental to the operation and continued maintenance of such reservoirs are also permitted within the OS zone under the provisions of a conditional use permit. However, an aluminum cover is not considered an appurtenant use, but a replacement of an open reservoir with a covered storage facility. The implementation of the aluminum cover alternative would require a zoning variance for the Elysian Reservoir property. With a zoning variance, the impact to land use from the aluminum cover alternative would be less than significant. The implementation of the solar panel option of the aluminum cover alternative would also be consistent with this zoning designation and would not alter this conclusion.

Noise

On-site Construction Noise

Similar to the proposed project, some construction activity would occur inside the drained reservoir or underground during the inlet line tunneling, which would attenuate construction noise due to the “line-of-sight” factor of the noise source. Construction activity associated with the aluminum cover alternative would generally be less intense than the activity associated with the proposed project. However, the aluminum cover alternative and the proposed project would use similar types and numbers of equipment during certain phases of construction. Therefore, maximum construction noise would be the same. Construction noise levels related to construction at the reservoir site would exceed the 5-dBA significance threshold at single-family residences located along Park Row Street. Construction noise levels related to the inlet line construction would also exceed the 5-dBA significance threshold at some of the single-family residences located along Riverside Drive. Therefore, the aluminum cover alternative, like the proposed project, would result in a significant impact related to on-site construction noise and implementation of mitigation measures would be required. With implementation of mitigation measures NOISE-A through NOISE-D (see Section 3.5.5), construction noise levels would be reduced to below the City's 5-dBA significance threshold at both the Elysian Reservoir site and the Caltrans island. Overall, impacts related to noise from on-site construction would be less under the aluminum cover alternative than under the proposed project due to the nature and duration of construction activities.

Off-site Construction Noise

Under the aluminum cover alternative, haul trucks would use the same routes as the proposed project. The nearest sensitive land use to the reservoir construction haul route would be the residences located on Park Row Street. The residences along Riverside Drive would represent the nearest sensitive receptors to the inlet line construction haul route. The aluminum cover alternative would generate 12 peak hour truck trips during the heaviest phase of construction at the reservoir (Phase 1). Table 5-12 shows the estimated noise levels at sensitive receptors located along the haul routes. Similar to the proposed project, the aluminum cover alternative would exceed the 5-dBA significance threshold at Solano Canyon Drive between Academy Road and Park Row Drive and on Park Row Drive/Street between Solano Canyon Drive and the SR 110 Ramp. Therefore, the aluminum cover alternative would result in a significant impact related to off-site haul truck noise. There are no feasible mitigation measures to reduce on-road haul truck noise in these locations. Therefore, the impact related to haul truck noise would remain significant and unavoidable under the aluminum cover alternative as it would under the proposed project. However, noise levels would nonetheless be lower under the aluminum cover alternative compared to the proposed project.

Table 5-12 Aluminum Cover Off-site Construction Noise Levels (2015)

Scenario and Roadway Segment	Baseline (dBA, L_{eq})	Construction (dBA, L_{eq})	Increase (dBA, L_{eq})
Stadium Way between Landa Street & Elysian Park Drive	67.9	68.4	0.5
Stadium Way between Elysian Park Drive & Academy Road	68.1	68.6	0.5
Academy Road between Boylston Street & Dodger Stadium	63.0	64.4	1.4
Academy Road west of Solano Canyon Drive	61.9	63.6	1.7
Solano Canyon Drive between Academy Road & Park Row Drive	54.0	60.0	6.0
Park Row Street between Solano Canyon Drive & SR 110	54.4	60.1	5.7
Riverside Drive between Gail & Eads Streets	69.1	69.4	0.3
Riverside Drive between Elmgrove Street & I-5	68.4	68.6	0.2

Source: Terry A. Hayes & Associates 2010.

Operational Noise

Unlike the proposed project, the aluminum cover alternative would not include operation of a recreation area at the project site. Therefore, there would be no increase in vehicle trips to and from the site or a significant increase in maintenance activities. Thus, there would be no incremental increase in noise levels associated with operation of the aluminum cover alternative.

Groundborne Vibration

The use of heavy equipment (e.g., a large bulldozer) generates vibration levels of 0.089 inches per second at a distance of 25 feet. In addition, there would be added truck traffic to the haul routes exiting the reservoir property and along Riverside Drive; however, truck vibration is not typically perceptible. The nearest residential structures to the Caltrans island are located approximately 70 feet from heavy equipment activity, and would experience vibration levels of approximately 0.02 inches per second. The nearest residential structures to the Elysian Reservoir site are the houses on Park Row Street, which are located approximately 600 feet from heavy equipment activity and which would experience vibration levels of approximately 0.001 inches per second. Vibration levels at these receptors would not exceed the potential building damage threshold of 0.3 inches per second. Therefore, the aluminum cover alternative, like the proposed project, would result in a less than significant impact related to construction vibration.

The operation of the aluminum cover alternative would not include significant stationary sources of groundborne vibration, such as heavy equipment operations. Operational groundborne vibration in the project vicinity would be generated by vehicular travel on the local roadways. However, similar to existing conditions, project-related traffic vibration levels would not be perceptible by sensitive receptors. Therefore, the aluminum cover alternative, like the proposed project, would result in a less than significant impact related to operational vibration.

Solar Panel Option

The implementation of the solar panel option (Phase 4) would extend the length of construction of the aluminum cover alternative by approximately 7 months. However, because the installation of the panels would involve low levels of equipment use, truck deliveries, and personnel, no significant noise would be generated during construction. The construction of the solar panel option would not in itself or cumulatively, when considered along with other phases of construction associated with the aluminum cover, create significant impacts related to noise. The operation of the solar panels would generate no noise.

Transportation and Traffic

Study Intersection Construction Analysis

The aluminum cover alternative would be constructed in four phases over approximately 4 years. Trip generation for employees and trucks would vary depending on the phase of construction. Table 5-13 provides the peak hour trip generation calculations for the aluminum cover construction scenario, based on the number of on-site employees and the number of daily truck trips during the peak of activity during Phase 1 of construction.

Table 5-13 Daily Construction Peak One-Way Trip Generation Calculations for Aluminum Cover Alternative

Generator	Daily	Weekday AM Total	Weekday AM In	Weekday AM Out	Weekday PM Total	Weekday PM In	Weekday PM Out
Employees[1]	144	72	72	0	72	0	72
Trucks[2]	230	29	15	14	29	15	14
Total	*374*	*101*	*87*	*14*	*101*	*15*	*86*

[1] Employee trips = 1 person/vehicle
[2] Vehicle trips = 2.5 passenger car equivalent X truck trips
Source: KOA Corporation 2010.

The number of employee trips was based on the assumption that all 72 employees would arrive within the morning peak hour and depart within the evening peak hour. The number of truck trips was based on a typical 8-hour shift, with delivery truck trips distributed throughout the day. Based on a daily total of 230 truck trips (92 truck trips at the 2.5 passenger car equivalent factor), 29 truck trips (12 truck trips at the 2.5 passenger car equivalent factor) would occur during both the morning and evening peak hours. The total construction trip generation with passenger car equivalent factor would be 374 daily trips, of which 101 trips would occur during each of the peak hours. As with the proposed project, the aluminum cover alternative would include the inlet line construction at the Caltrans island on Riverside Drive. In addition to the truck trips shown in Table 5-13 above, the inlet line construction would add a daily total of 22 trips, 10 worker commute trips and 12 truck trips (5 truck trips at the passenger car equivalent factor of 2.5), occurring during each of the peak hours.

Vehicle trips generated by the aluminum cover alternative, including the inlet line construction, were added to background traffic volumes that would occur without implementation of a project. Tables 5-14 and 5-15 provide a summary of the construction period study intersection impact analysis for the aluminum cover alternative during the morning and evening peak periods.

Table 5-14 Aluminum Cover Study Intersection LOS – AM Peak Hour

#	Intersection	Game Day Scenario	Existing (2010)		Future Without Project (2015)		Future With Project (2015)		Diff.	Sig. Impact?
			V/C	LOS	V/C	LOS	V/C	LOS		
1	Stadium Way/ Riverside Drive	Non-Game Game	0.651 0.568	B A	0.720 0.632	C B	0.745 0.657	C B	0.025 0.025	No No
2	Stadium Way/ Landa Street	Non-Game Game	0.656 0.611	B B	0.697 0.651	B B	0.724 0.678	C B	0.027 0.027	No No
3	Riverside Drive/ Eads Street	Non-Game Game	0.435 0.380	A A	0.470 0.413	A A	0.479 0.422	A A	0.009 0.009	No No
4	Riverside Drive/ Northbound I-5 Ramps	Non-Game Game	0.265 0.244	A A	0.438 0.414	A A	0.440 0.416	A A	0.002 0.002	No No
5	Academy Road (major) at Academy Road (minor)	Non-Game Game	Excluded from AM Peak Analysis[1]							
6	Academy Road/ Solano Canyon Drive	Non-Game Game	Excluded from AM Peak Analysis[1]							

[1] Intersection excluded from the a.m. peak period analysis due to low morning traffic activity in the area.
Source: KOA Corporation 2010.

Table 5-15 Aluminum Cover Study Intersection LOS – PM Peak Hour

#	Study Intersection	Game Day Scenario	Existing (2010)		Future Without Project (2015)		Future With Project (2015)		Diff.	Sig. Impact?
			V/C	LOS	V/C	LOS	V/C	LOS		
1	Stadium Way/ Riverside Drive	Non-Game Game	0.660 0.725	B C	0.723 0.790	C C	0.729 0.797	C C	0.006 0.007	No No
2	Stadium Way/ Landa Street	Non-Game Game	0.517 0.619	A B	0.543 0.675	A B	0.566 0.682	A B	0.023 0.007	No No
3	Riverside Drive/ Eads Street	Non-Game Game	0.368 0.456	A A	0.390 0.468	A A	0.416 0.471	A A	0.026 0.003	No No
4	Riverside Drive/ Northbound I-5 Ramps	Non-Game Game	0.309 0.354	A A	0.387 0.434	A A	0.393 0.440	A A	0.006 0.006	No No
5	Academy Road (major) at Academy Road (minor)	Non-Game Game	8.7 9.0	A A	8.8 9.1	A A	9.1 9.2	A A	- -	- -
6	Academy Road/ Solano Canyon Drive	Non-Game Game	0.065 0.102	A A	0.068 0.107	A A	0.128 0.181	A A	0.060 0.074	No No

Note: Intersection 5 Academy Road (major) at Academy Road (minor) is a stop-controlled intersection. LOS for signalized intersections is measured on a scale of 0.0 to 100.0, whereas signalized intersections are measured on a scale of 0.000 to 1.000.
Source: KOA Corporation 2010.

As shown in Tables 5-14 and 5-15 above, all of the study intersections would continue to operate at LOS C or better during construction of the aluminum cover alternative. As with the proposed project, the impact to the study intersections would be less than significant; however, substantially fewer total trips would be generated under the aluminum cover alternative than the proposed project.

Study Roadway Segment Construction Analysis

In addition, peak hour traffic impacts were analyzed at the study roadway segments to determine potentially significant impacts at the analyzed roadways. Table 5-16 summarizes the peak-hour volumes that would occur throughout the day. The peak-hour volumes may not necessarily occur during typical peak-hour periods between 7:00 a.m. to 9:00 a.m. and between 4:00 p.m. to 6:00 p.m. Based on the results provided within Table 5-16, the analyzed roadway segments would operate at LOS C or better on non-game days.

However, the following two roadway segments would operate at LOS E or F on game days, and would worsen with vehicle traffic generated during construction of the aluminum cover alternative:

- Riverside Drive, between Gail Street and Eads Street – LOS E
- Academy Road (major) – LOS F

As with the proposed project, construction activities that overlap with games scheduled at Dodger Stadium would impact two of the study roadway segments. The impact would be significant; however, implementation of mitigation measures TRANS-A and TRANS-B (see Section 3.6.4) would be required to reduce the impact to a less than significant level. Overall, the total number of net new vehicle trips would be substantially lower under the aluminum cover alternative compared to the proposed project.

Table 5-16 Aluminum Cover Peak Hour Roadway Segment Volumes Summary

Study Roadway Segment	Game Day Scenario	Base Volumes								Proposed Project			
		Existing			Ambient Growth	Area Projects	Future Base			Project Only	Future With Project		
		Volume	V/C	LOS			Volume	V/C	LOS		LOS	V/C	LOS
Stadium Way between Riverside Drive & I-5 Southbound Ramps	Non-Game Game	1,494 1,586	0.598 0.634	A B	5% 5%	264	1,834 1,931	0.734 0.772	C C	52	1,886 1,983	0.754 0.793	C C
Riverside Drive between Gail Street & Eads Street	Non-Game Game	1,678 2,014	0.671 0.806	B D	5% 5%	157	1,921 2,274	0.768 0.910	C E	46	1,967 2,320	0.787 0.928	C E
Riverside Drive between Fernleaf Street & Elmgrove Street	Non-Game Game	1,357 1,740	0.543 0.696	A B	5% 5%	115	1,541 1,944	0.616 0.778	B C	13	1,554 1,957	0.622 0.783	B C
Riverside Drive between Oros Street and I-5 Northbound Ramps	Non-Game Game	1,352 1,405	0.541 0.562	A A	5% 5%	331	1,752 1,808	0.701 0.723	C C	22	1,774 1,830	0.710 0.732	C C
Stadium Way north of Academy Road	Non-Game Game	1,973 2,312	0.438 0.514	A A	5% 5%	162	2,236 2,592	0.497 0.576	A A	89	2,325 2,681	0.517 0.596	A A
Academy Road (major)	Non-Game Game	563 2,838	0.180 0.908	A E	5% 5%	75	667 3,058	0.213 0.979	A E	98	765 3,156	0.245 1.010	A F
Academy Road (minor)	Non-Game Game	490 350	0.363 0.259	A A	5% 5%	10	525 378	0.389 0.280	A A	98	623 476	0.461 0.353	A A

Source: KOA Corporation 2010.

Truck traffic during the peak of construction of the aluminum cover would be substantially less than under the proposed project. However, construction traffic on park roadways would nonetheless pose a potential conflict with park patrons during the peak period of construction of the aluminum cover alternative. Implementation of mitigation measures TRANS-D through TRANS-F would be required to reduce the impact to a less than significant level. Overall, the total number of net new vehicle trips would be substantially lower under the aluminum cover alternative compared to the proposed project.

CMP Construction Analysis

Aluminum cover construction, during the peak phase of activity (Phase 1) and during the peak traffic hour, would add fewer than 50 trips to freeway on- and off-ramps on the haul route associated with activity at the Elysian Reservoir site. The impact would be less than significant and no mitigation would be required. The impact would be less than the proposed project. Unlike the proposed project, there would be no CMP impacts associated with the inlet line construction.

The aluminum cover alternative would not add more than 150 new trips per hour to any freeway segments near the project site. Therefore, impact analysis at CMP freeway monitoring stations is not required. The impact would be less than significant, similar to the proposed project.

Operations Phase

Unlike under the proposed project, no recreation would be provided at the project site as part of the aluminum cover alternative. Operation of the aluminum cover alternative would be similar to the maintenance of the existing uncovered Elysian Reservoir. There would not be a significant increase in vehicle trips to and from the project site. Further, there would be no need to provide additional parking on site. No impact would occur to transportation and traffic during operation of the aluminum cover alternative.

Solar Panel Option

The implementation of the solar panel option (Phase 4) would extend the length of construction of the aluminum cover alternative by approximately 7 months. However, because the installation of the panels would involve low levels of truck deliveries and personnel, no significant traffic would be generated during construction. The construction of the solar panel option would not in itself or cumulatively, when considered along with other phases of construction associated with the aluminum cover, create significant impacts related to transportation or traffic. The operation of the solar panels would generate only minimal traffic related to periodic maintenance activities.

Summary of Conclusions

Under the aluminum cover alternative, the reservoir, although relined, would be retained in essentially its same configuration, and LADWP would install a lightweight aluminum cover over the entire surface of the reservoir. In addition, LADWP would install a new 54-inch bypass line at the reservoir and a new 54-inch inlet line between the Riverside Trunk Line and the reservoir. Under this alternative, the Elysian Reservoir property would remain under the operation of LADWP, and no recreational facilities would be constructed. Construction of the aluminum cover alternative would take approximately 4 years to complete. As with the proposed project, the aluminum cover alternative would meet the two primary project objectives. The aluminum cover alternative would comply with updated water quality regulations, and it would maintain local drinking water storage capacity within the Elysian Reservoir service area. This alternative would not meet the secondary project objective of providing publicly-accessible open space at the Elysian Reservoir property.

The following summarizes the potential environmental impacts that would be created by the aluminum cover alternative compared to those that would be created by the proposed project. Unless otherwise noted, the impacts pertain to the aluminum cover with or without the implementation of the solar panel option.

Aesthetics

- Neither the aluminum cover alternative nor the proposed project would create a significant impact to a scenic vista.
- Neither the aluminum cover alternative nor the proposed project would create a significant impact by substantially degrading the existing visual character or quality of the site and its surroundings. However, to completely avoid an impact, some landscape screening in selected areas would be required under the aluminum cover alternative.

Air Quality

- The aluminum cover alternative, like the proposed project, would create significant and unavoidable regional air quality impact during certain periods of the construction phase. However, while the aluminum cover alternative would result in slightly higher peak emissions, it would result in substantially lower emissions over the entire construction period compared to the proposed project.
- Neither the proposed project nor the aluminum cover alternative would create a significant regional air quality impact related to post-construction project operations. Because the aluminum cover alternative would generate no additional post-construction traffic or maintenance activity at the reservoir property from recreation use, it would create no impacts related to regional air pollutant emissions during post-construction operations.
- The aluminum cover alternative would result in the same peak localized air pollutant concentrations but slightly lower peak TAC emissions during construction compared to the proposed project. However, the aluminum cover alternative, like the proposed project, would create a significant and unavoidable impact related to localized air pollutant emissions and TACs during certain periods of the construction phase. It would result in substantially lower air pollutant concentrations and TAC emissions over the entire construction period.
- The proposed project would create a less than significant impact related to localized air pollutant emissions and TACs during post-construction project operations. Because the aluminum cover alternative would generate no additional post-construction traffic or maintenance activity at the reservoir property from recreation use, it would create no impacts related to localized air pollutant emissions or TAC during post-construction operations.
- Neither the proposed project nor the aluminum cover alternative would create a significant impact related to GHG emissions from either construction or operations. However, the aluminum cover alternative would create substantially lower GHG emissions during construction and operations when compared to the proposed project.

Biological Resources

- Both the aluminum cover alternative and the proposed project could create significant impacts related to migratory birds, indirect impacts to native vegetation, and conflicts with local tree protection ordinances. With the implementation of mitigation measures BIO-A through BIO-E, these impacts would be reduced to a less than significant level under both the aluminum cover alternative and the proposed project. However, potential impacts to biological resources would be appreciably decreased under the aluminum cover alternative when compared to the proposed project because of the nature and duration of construction activities would be reduced and the area of disturbance would be smaller.

Cultural Resources

- Both the aluminum cover alternative and the proposed project would create significant impacts related to ground disturbing activities that have the potential to uncover previously unearthed archaeological and paleontological resources within the reservoir property. With the implementation of mitigation measures CR-A and CR-B, these impacts would be reduced to a less than significant level under both the aluminum cover alternative and the proposed project. However, the potential for impacts would be decreased under the aluminum cover alternative when compared to the proposed project because ground disturbing activities would be substantially reduced.

Land Use

- Unlike the proposed project, the aluminum cover alternative would require a zoning variance for the Elysian Reservoir property.

Noise

- Both the aluminum cover alternative and the proposed project would create a less than significant impact related to construction equipment noise at both the Elysian Reservoir site and the Caltrans island with implementation of mitigation measures NOISE-A through NOISE-D. However, over the entire period of construction, the aluminum cover alternative would create less noise than the proposed project because of the nature and duration of construction activities.
- Both the aluminum cover alternative and the proposed project would create a significant and unavoidable impact related to mobile noise sources during project construction along the haul route to/from Elysian Reservoir.
- The proposed project would create a less than significant impact related to noise during post-construction project operations. Because the aluminum cover alternative would generate no additional post-construction traffic or maintenance activity at the reservoir property from recreation use, it would create no impact related to noise during post-construction operations.

Transportation and Traffic

- Neither the aluminum cover alternative nor the proposed project would create a significant impact related to level of service at the study intersections during construction. However, the aluminum cover alternative would create substantially fewer average and peak construction-related daily vehicle trips compared to the proposed project.
- Both the aluminum cover alternative and the proposed project would create a significant impact to the level of service on two roadway segments when construction activity overlaps

with games scheduled at Dodger Stadium. With the implementation of mitigation measures TRANS-A and TRANS-B, these impacts would be reduced to a less than significant level under both the aluminum cover alternative and the proposed project.

- Both the aluminum cover alternative and the proposed project would create significant impacts related to potential conflicts with park patrons during the peak period of construction traffic. With the implementation of mitigation measures TRANS-D through TRANS-F, these impacts would be reduced to a less than significant level under both the aluminum cover alternative and the proposed project. However, truck traffic during the peak of construction of the aluminum cover alternative would be substantially less than under the proposed project.
- Unlike the proposed project, the aluminum cover alternative would not create a significant impact to CMP facilities in the project vicinity during construction.
- The proposed project would create a less than significant impact related to traffic and parking during post-construction project operations. Because the aluminum cover alternative would generate no additional post-construction traffic or maintenance activity at the reservoir property from recreation use, it would create no impact related to traffic and parking during post-construction operations.

5.4 Environmentally Superior Alternative

In accordance with Section 15126.6(e)(2) of the CEQA Guidelines, an EIR shall identify an environmentally superior alternative among the alternatives, including the proposed project. Most impacts related to the floating and aluminum covers would be reduced compared to the proposed project because these alternatives involve substantially less ground disturbance, truck traffic, and construction time than the proposed project. These include impacts related to air quality/greenhouse gas emissions, biological resources, cultural resources, noise, and transportation/traffic. Impacts to aesthetics would be considered similar. Because no recreation element would be included under either the floating cover or aluminum cover alternative, both would avoid all impacts associated with the operation of this component of the proposed project; however, these impacts were also determined to be less than significant under the proposed project. Impacts related to air quality/greenhouse gas emissions, noise, and transportation/traffic would be somewhat less under the floating cover alternative than under the aluminum cover alternative due to the reduced scope of construction required. Further, the construction schedule and amount of equipment required for the floating cover alternative would be substantially reduced compared to the proposed project or the aluminum cover alternative. As such, the floating cover alternative is considered the environmentally superior alternative. The floating cover alternative would meet the two primary project objectives. It would comply with updated water quality regulations, and it would maintain local drinking water storage capacity within the Elysian Reservoir service area. This alternative would not meet the secondary project objective of providing publicly-accessible open space at the Elysian Reservoir property. Table 5-17 provides a comparison of the impacts of the alternatives to the proposed project.

Table 5-17 Comparison of Impacts for the Proposed Project and the Alternatives

Impact Area	Proposed Project	Floating Cover Alternative	Aluminum Cover Alternative	Aluminum Cover Alternative w/ Solar Panels
Aesthetics				
VIS-1: The proposed project would not have a substantial adverse effect on a scenic vista.	Less than significant	Less than significant (Similar)	Less than significant (Similar)	Less than significant (Similar)
VIS-2: The proposed project would not substantially degrade the existing visual character or quality of the site and its surroundings.	Less than significant	Less than significant (Similar)	Less than significant (Similar)	Less than significant (Similar)
Air Quality				
AIR-1: During the construction phase, the proposed project would violate the air quality standards for nitrogen oxides (NO_x) and contribute substantially to an existing or projected air quality violation. In addition, the proposed project would result in a cumulatively considerable net increase in NO_x during construction.	Significant & unavoidable	Significant & Unavoidable (Less)	Significant & Unavoidable (Less)	Significant & Unavoidable (Less)
AIR-2: The proposed project would expose sensitive receptors to substantial pollutant concentrations of particulate matter (PM_{10} and $PM_{2.5}$) and toxic air contaminants (TACs) during construction.	Significant & Unavoidable	Significant & Unavoidable (Less)	Significant & Unavoidable (Less)	Significant & Unavoidable (Less)
AIR-3: The proposed project would not generate greenhouse gas emissions, either directly or indirectly, that would have a significant impact on the environment or conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	Less than significant	Less than significant (Less)	Less than significant (Less)	Less than significant (Less)
Biological Resources				
BIO-1: The proposed project would have a substantial adverse effect, either directly or through habitat modifications, on species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service.	Less than significant with mitigation	Less than significant with mitigation (Less)	Less than significant with mitigation (Less)	Less than significant with mitigation (Less)
BIO-2: The proposed project would have a substantial adverse effect on riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service.	Less than significant with mitigation	Less than significant with mitigation (Less)	Less than significant with mitigation (Less)	Less than significant with mitigation (Less)
BIO-3: The proposed project would not have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.	No impact	No impact (Similar)	No impact (Similar)	No impact (Similar)

Impact Area	Proposed Project	Floating Cover Alternative	Aluminum Cover Alternative	Aluminum Cover Alternative w/ Solar Panels
BIO-4: The proposed project would not interfere substantially with the movement of 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.	Less than significant with mitigation	Less than significant with mitigation (Similar)	Less than significant with mitigation (Similar)	Less than significant with mitigation (Similar)
BIO-5: The proposed project would conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.	Less than significant with mitigation	Less than significant with mitigation (Less)	Less than significant with mitigation (Less)	Less than significant with mitigation (Less)
Cultural Resources				
CR-1: The proposed project would not cause a substantial adverse change in the significance of a historical resource.	Less than significant	Less than significant (Similar)	Less than significant (Similar)	Less than significant (Similar)
CR-2: The proposed project could cause a substantial adverse change in the significance of an archaeological resource.	Less than significant with mitigation	Less than significant with mitigation (Less)	Less than significant with mitigation (Less)	Less than significant with mitigation (Less)
CR-3: The proposed project could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	Less than significant with mitigation	Less than significant with mitigation (Less)	Less than significant with mitigation (Less)	Less than significant with mitigation (Less)
Land Use				
The proposed project would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.	No Impact	Less than significant (Greater)	Less than significant (Greater)	Less than significant (Greater)
Noise/Vibration				
NOISE-1: Construction of the proposed project would expose persons to or generate noise levels in excess of City standards and create a substantial temporary increase in ambient noise levels in the vicinity of the project site.	Significant & unavoidable	Less than significant with mitigation (Less)	Significant & unavoidable (Less)	Significant & unavoidable (Less)
NOISE-2: Operation of the proposed project would not expose persons to noise levels in excess of City standards.	Less than significant	No impact (Less)	No impact (Less)	No impact (Less)
NOISE-3: Construction and operation of the proposed project would not expose people to excessive groundborne vibration.	Less than significant	Less than significant (Similar)	Less than significant (Similar)	Less than significant (Similar)

Impact Area	Proposed Project	Floating Cover Alternative	Aluminum Cover Alternative	Aluminum Cover Alternative w/ Solar Panels
Transportation/Traffic				
TRANS-1: The proposed project would conflict with an applicable plan, ordinance, or policy for establishing measures of effectiveness for the performance of the circulation system on study street segments during construction.	Less than significant with mitigation	Less than significant with mitigation (Less)	Less than significant with mitigation (Less)	Less than significant with mitigation (Less)
TRANS-2: Construction activity would exceed the level of service standards established by the county congestion management agency for designated roads or highways.	Less than significant with mitigation	Less than significant (Less)	Less than significant (Less)	Less than significant (Less)
TRANS-3: The proposed project would create a safety hazard during construction at Elysian Reservoir associated with incompatible uses.	Less than significant with mitigation	Less than significant with mitigation (Less)	Less than significant with mitigation (Less)	Less than significant with mitigation (Less)
TRANS-4: The proposed project would not result in inadequate parking supply.	Less than Significant	No impact (Less)	No impact (Less)	No impact (Less)

Notes: Less: Impact is lower in magnitude than the impact of the proposed project
Similar: Impact is similar in magnitude to impact of the proposed project
Greater: Impact is greater in magnitude than the impact of the proposed project

CHAPTER 6
ACRONYMS AND ABBREVIATIONS

AC	alternating current
ADA	Americans with Disabilities Act
ADT	Average Daily Traffic
AQMP	Air Quality Management Plan
AYSO	American Youth Soccer Organization
California Register	California Register of Historic Places
Caltrans	State of California Department of Transportation
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCSEP	Citizens Committee to Save Elysian Park
CEQA	California Environmental Quality Act
CH_4	methane
CMA	Critical Movement Analysis
CMP	Congestion Management Program
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	CO_2 equivalent
CPOR	Coalition to Preserve Open Reservoirs
CY	cubic yards
dB	decibel
dBA	A-weighted decibel
DC	direct current
D-DBPR	Stage 2 Disinfectants and Disinfection Byproducts Rule
EIR	Environmental Impact Report
EPA	Environmental Protection Agency
°F	degrees Fahrenheit
GHG	greenhouse gases
hp	horsepower
I-5	Interstate 5, Golden State Freeway
I-110	Interstate 110, Harbor Freeway

LADOT	Los Angeles Department of Transportation
LADRP	Los Angeles Department of Recreation and Parks
LADWP	Los Angeles Department of Water and Power
LAFD	Los Angeles Fire Department
L_{eq}	equivalent noise level
LOS	level of service
LST	localized significance threshold
LT2ESWTR	Long Term 2 Enhanced Surface Water Treatment Rule
Metro	County of Los Angeles Metropolitan Transportation Authority
MG	million gallons
$\mu g/m^3$	micrograms per cubic meter
MW	megawatt
N_2O	nitrous oxide
NO	nitric oxide
NO_2	nitrogen dioxide
NOP	Notice of Preparation
NO_X	nitrogen oxide
O_3	ozone
OS	Open Space
Pb	lead
PM_{10}	respirable particulate matter
$PM_{2.5}$	fine particulate matter
ppm	parts per million
PV	photovoltaic
SCAQMD	South Coast Air Quality Management District
SO_2	sulfur dioxide
SO_x	sulfur oxide
SR 110	State Route 110, Pasadena Freeway
SUSMP	Standard Urban Storm Water Mitigation Plan
TAC	toxic air contaminant
US 101	Hollywood Freeway
UBC	Uniform Building Code
V/C	volume-to-capacity
VOC	volatile organic compounds

CHAPTER 7
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