

CHAPTER 3

ANALYSIS

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1.5 mile (~10 min walk)

3.1 Analysis Overview

Multiple layers of analyses informed the development of the Silver Lake Reservoir Complex Master Plan. The proposed Master Plan design draws extensively from the site's history, critical cultural and ecological parameters, urban context relationships, recreational needs assessment, and existing site conditions. These analyses were framed as site challenges and opportunities within the community engagement process and used as the basis for developing project goals.

What follows is a summary of key findings of more substantial reports which can be reviewed in the Master Plan Report Appendix.

3.2 Silver Lake History & Cultural Context

Throughout its recorded history, the Silver Lake Reservoir Complex has been integrated into a larger, ever evolving water system – initially it was part of an ecological network of streams and wetlands, and most recently, a significant, man-made component of the City’s potable water infrastructure.

A natural depression within the Ivanhoe Canyon of the Santa Monica Mountain Range, the Complex was once a marshy pond historically referred to as a “meadowland” which was plentiful with wildlife. In fact, this abundant wildlife enticed hunters to this area for game. Historic wetlands mapped prior to 1890, for the Historical Ecology of the Ballona Creek Watershed project indicates an intermittently flowing stream from the south end of what is now Silver Lake Reservoir draining into a small wet meadow complex to the south as shown in Figure 3-1. This historic understanding of the site is reinforced by an early United States Geologic Survey map from 1894 as shown in Figure 3-13 at the end of this section. Water continued to flow south to a vast wetland complex called La Cienega, located just north of Baldwin Hills, and eventually drained into Ballona Lagoon. Together, the La Cienega and Ballona Lagoon complexes supported the largest wetland habitat in the watershed.

The SLRC site was selected by the City for its adventitious location in the watershed and ability to be connected to an evolving Los Angeles water system in order to contribute to the storage capacity and stable water supply needed for the growing population of Los Angeles. The site was anticipated to have a flow line at 445 feet above sea level and once constructed, would have a surface area of approximately 129 acres. The land that comprises the Complex was acquired in two transactions. The northern portion of the site, comprising approximately 110 acres, was purchased in 1886. The remaining acreage was purchased in 1903. The Complex was designed and engineered by Los Angeles Water Department Superintendent,

Figure 3-1 Mapping of historic Ballona Creek Watershed

This mapping of the historic Ballona Creek Watershed over a present-day shaded topography map and major transportation network shows the SLRC site as part of the historic watershed and ecosystem.

Source: Dark, S., E. D. Stein, D. Bram, J. Osuna, J. Monteferante, T. Longcore, R. Grossinger, and E. Beller. 2011. Historical ecology of the Ballona Creek watershed. Southern California Coastal Water Research Project Technical Publication No. 671

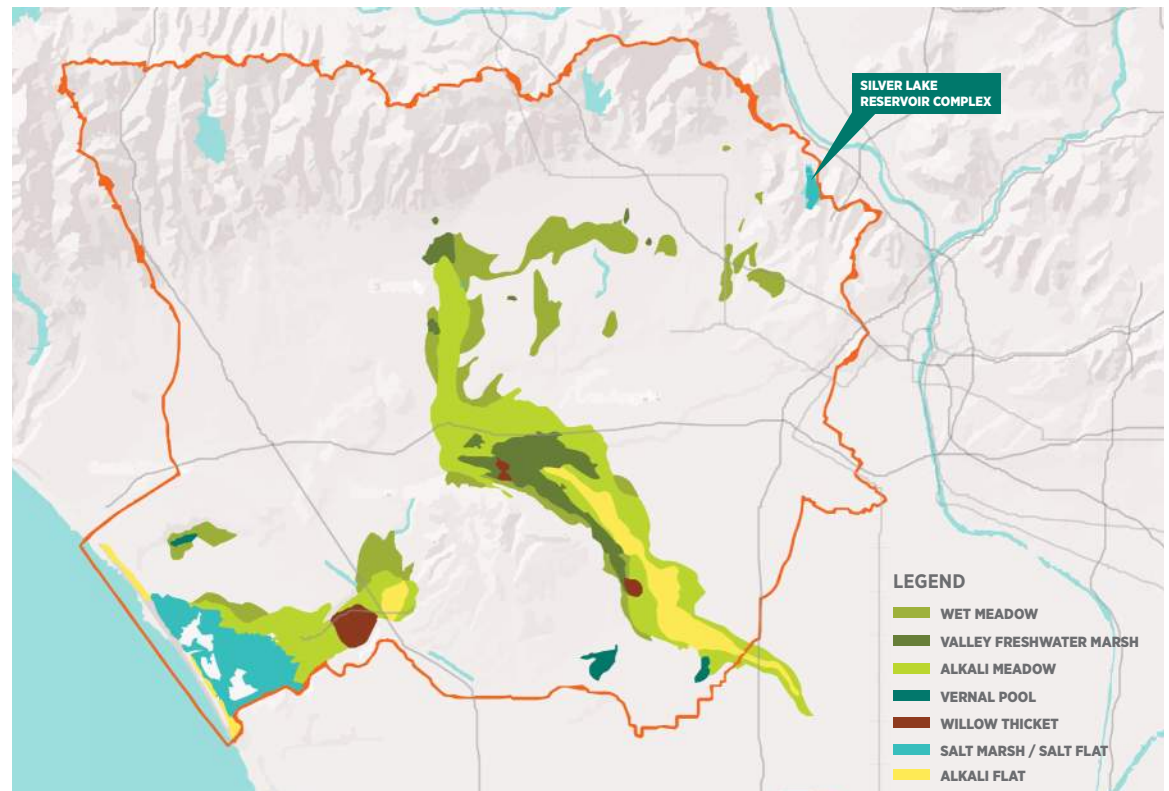




Figure 3-2 Historic Photo of Silver Lake Reservoir 1907

Construction of Silver Lake Reservoir in 1907 showing its regional and geomorphological context
 Source: WRCA LIPP Box 78, Item 141, #115. From the holdings of the Special Collections & Archives, Water Resources Collections, UCR Libraries, University of California, Riverside

William Mulholland. Of historic significance, Mulholland was the first engineer in America to use a method of construction called hydraulic sluicing to build a dam. The Silver Lake and Ivanhoe reservoirs were formed by wagon rolled earthen dams and embankments depicted in Figure 3-2.

Named after the Ivanhoe Canyon, Ivanhoe Reservoir was completed first in 1906, followed by Silver Lake in 1907 which was named after Herman Silver, a member of Los Angeles' first Board of Water Commissioners. According to an article in the LA Times November 25, 1907, Silver Lake would be the largest freshwater lake in the vicinity and destined to become a great City park. Figure 3-3 from this approximate time shows Silver Lake Reservoir with a planted embankment edge.

"...it promises also to become a favorite resort for pleasure seekers, because of its delightful surroundings. Its gently sloping banks will be a park of themselves...with the planting of trees and flowers, however, it will be a beauty spot that may dim the glories of Westlake, Eastlake and some of the other parks. One of the means of keeping the water pure will be through the stocking of the lake with black bass."

Since their completion, Ivanhoe and Silver Lake Reservoirs have been altered to meet the changing needs of the City. Notable alterations include those undertaken in 1920, 1944, 1951–1953, 1975–1976, and 2011–2017. Initially, The Silver Lake Reservoir was used as a source of water for irrigation, while the Ivanhoe Reservoir provided domestic drinking water. However, as a result of rapid population growth and development in the Los Angeles area in the 1910s, the Silver Lake and Ivanhoe Reservoir Complex was modified in 1920 to both supply domestic water to the City's drinking water system. At this time, the embankments of the Silver Lake Reservoir were altered with a steeper slope, increasing the capacity of the reservoir. When they were first completed there was no spillway between the two water bodies as shown in Figure 3-4. They were connected via a gate-controlled 36-inch pipeline. It wasn't until 1944 that the reinforced concrete spillway was constructed.

Figure 3-3 Historic Photo of Silver Lake Reservoir 1908

This hand-colored lantern slide circa 1908 shows the original wetland edge of Silver Lake Reservoir and the Knoll woodland.
 Source: Braun Research Library Collection at the Autry Museum of the American West (Object ID LS.12424)



Figure 3-4 Historic photo of the Ivanhoe Reservoir and South Dam 1906

This 1906 photo shows Ivanhoe Reservoir's South Dam. Initially, there was no spillway between Ivanhoe and Silver Lake Reservoirs.
 Source: Board of Water Commissioners Report, 1906



Figure 3-5 Historic photo of the Ivanhoe Reservoir 1935

In 1907 Ivanhoe Reservoir was covered to protect this domestic water supply.
 Source: Los Angeles Public Library Photo Collection



During 1951–1953, both reservoirs underwent extensive improvements to meet City water demands as well as government water quality regulations. Silver Lake Reservoir was reshaped, deepened, and its embankments were paved in asphalt. Additionally, a 60-inch bypass line was installed underneath the reservoir. Much of the excess excavated soil from this work was used to fill in the east shore and a lagoon known as the East Cove. East Cove was an area prone to stagnation and algae growth which negatively impacted water quality. Ivanhoe Reservoir was also deepened during this time and its basin and embankments were paved with asphalt. Many of these alternations are visible when comparing aerial photography from 1944 and 1956 as shown in Figures 3-6 and 3-7.

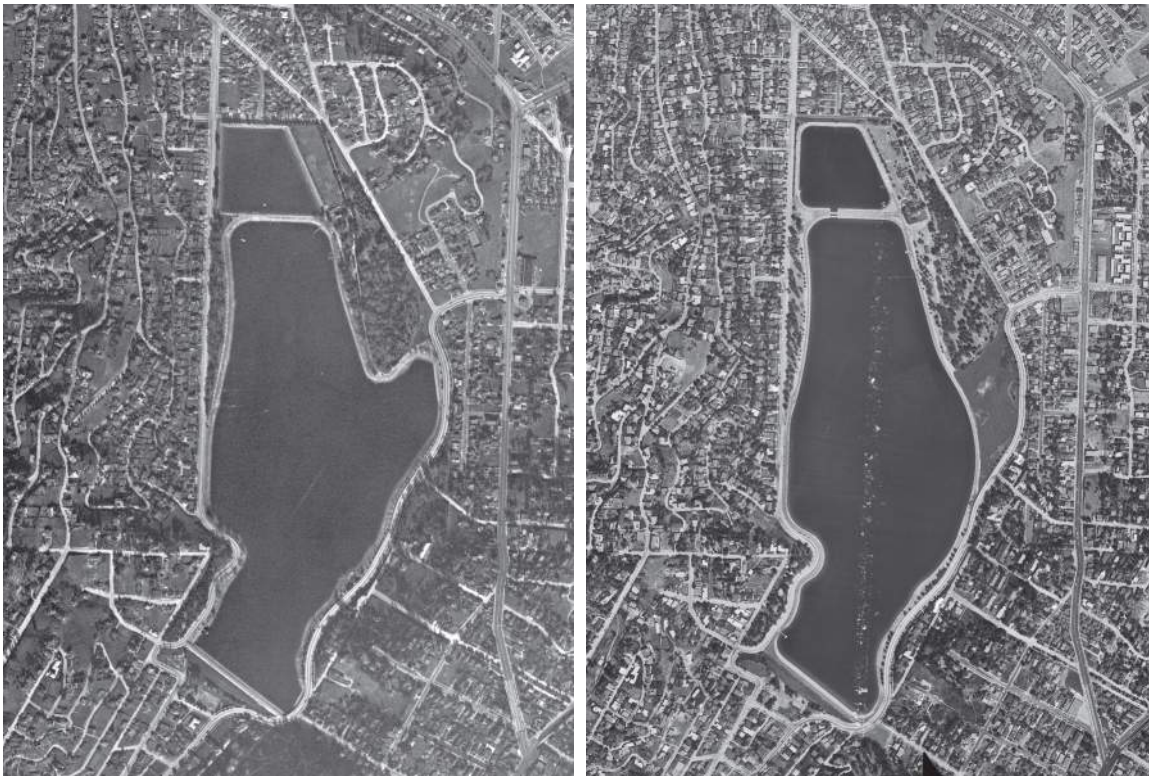


Figure 3-6 (left) Historic aerial photo of the Silver Lake Reservoir Complex from 1944

Figure 3-7 (right) Historic aerial photo of the Silver Lake Reservoir Complex from 1956

Modifications made the reservoirs during the early 1950's can be seen in side-by-side comparisons of aerial photography from 1944 and 1956, including filling in East Cove which is now the Meadow and altering the embankment edges.

Source: UCSB Library, Special Research Collections, University of California Santa Barbara. "FrameFinder Air Photos"

Due to seismic concerns, Silver Lake Dam was completely reconstructed in 1975–1976. The outlet tower was rebuilt, and a new 72-inch pipe was installed. As a result, the southern end of the Silver Lake Reservoir was reshaped to its current configuration.

Since they were completed in 1907, Silver Lake and Ivanhoe Reservoirs have become beloved urban water bodies synonymous with the Silver Lake neighborhood. In the 1920s and 1930s developers, who were encouraged to build in Los Angeles by the City, were attracted To Silver Lake by the hills and the blue jewel focal point that are the Silver Lake and Ivanhoe Reservoirs. The neighborhood attracted an eclectic mix of artists, filmmakers, actors and directors whose homes were designed by great names in architecture, such as Richard Neutra, Harwell Harris, David Hyun, Eric Lloyd Wright, Gregory Ain, John Lautner, Raphael Soriano, Rudolph Schindler, and Rodney Walker.

In 2008 the SLRC was decommissioned and removed from the City's drinking water supply system due to a change in United States federal regulations. Silver Lake Reservoir was taken out of service in 2008, drained in November 2015 to construct a Bypass Project, and refilled in April 2017. Ivanhoe Reservoir was removed from the distribution system in December 2017 and remains filled with water.

Today, the reservoirs remain a locus of the Silver Lake neighborhood and a beloved resource of the community.

Figure 3-8 Historic bird's eye photo of the Silver Lake Reservoir Complex 1924

Early photography from 1924 indicates how the Silver Lake neighborhood grew up around the reservoirs. At this time, East Cove was a prominent feature of the complex and Ivanhoe was covered with a wooden roof.
Source: LA Public Library



Figure 3-9 Historic Photo of the Silver Lake Reservoir Complex 1930

This photo from 1930 shows East Cove on the right and a footpath leading to the top of the Knoll beyond.
Source: silverlake.org, courtesy of Doug Baldwin



3.3 Historic-Cultural Monument Designation

As designated Los Angeles Historic-Cultural Monument (HCM No. 422), the Silver Lake and Ivanhoe Reservoir Complex is subject to the Los Angeles Cultural Heritage Ordinance. The Ordinance stipulates that the Cultural Heritage Commission (CHC) and Office of Historic Resources (OHR) are responsible for reviewing alterations to historical resources listed under national, state, and local landmark programs. Alterations are reviewed by the CHC and OHR for compliance with the Secretary of the Interior’s Standards for the Treatment of Historic Properties (Standards).

The SLRC was designated as a Historic-Cultural Monument primarily for the following:

- Its significant association with the development of the Silver Lake neighborhood
- Its significant association with William Mulholland
- As an early and important example of a hydraulically sluiced reservoir

According to the OHR, the HCM No. 422 boundaries encompass the property owned by the LADWP. The period of significance under this designation has been identified as 1906 to 1953, representing the date of the original construction through the improvement program of the early 1950s.

As a historic cultural landscape, consideration must be given in proposing alterations to its character-defining features. The Standards under which alternations are evaluated are not intended to be prescriptive, but instead provide general guidance. They are intended to be flexible and adaptable to specific project conditions to balance continuity and change, while retaining materials and features to the maximum extent feasible. Not every Standard necessarily applies to every aspect of a project, nor is it necessary to comply with every Standard to achieve compliance.

The Standards are issued by the National Park Service (NPS) and are accompanied by Guidelines for four types of treatments: Preservation, Rehabilitation, Restoration, and Reconstruction. The most common treatment and the one that applies to the proposed Master Plan design is rehabilitation, which is defined by NPS as “the process of returning a property to a state of utility, through repair or alteration, which makes possible an efficient contemporary use while preserving those portions and features of the property which are significant to its historic, architectural, and cultural values.”

CULTURAL HERITAGE COMMISSION
 Cultural Affairs Department
 Room 1500, City Hall
 Los Angeles, CA 90012
 (213) 485-6793

REQUEST FOR HISTORIC - CULTURAL MONUMENT DECLARATION

NAME OF PROPOSED MONUMENT WITHIN THE CITY OF LOS ANGELES: The Silverlake and Ivanhoe Reservoirs

LOCATION: between West Silver Lake Drive and Silver Lake Boulevard 90039
(Community) (Zip)

(Cross Streets) Armstrong on the north
(Zip)

COUNCILMANIC DISTRICT NO. 13

OWNER'S NAME & ADDRESS: City of Los Angeles - Dept. of Water and Power
(City) (Zip)

DATE OF CONSTRUCTION OF PROPOSED MONUMENT: 1906
(This information is important)

ARCHITECT: William Mulholland
(Identification of the architect is very important)

Figure 3-10 Historic Cultural Monument declaration form from 1989

3.3.1 SLRC Character-Defining Features

The first step in applying the Standards to a historic property is the identification of character-defining features. Character-defining features are the components that contribute to a historic property's sense of time and place. Using the NPS Guidelines for the Treatment of Cultural Landscapes, the design team identified character-defining features of the SLRC.

The primary character-defining features of the SLRC range from natural systems and features and topography to circulation patterns and constructed features. Some of these elements at the complex have been constants since the reservoirs opened, while other more recent ones erased early features. For instance, while the reservoirs were always bounded by embankments since their construction, gentle and planted slopes have given way to steep, paved slopes.

NATURAL SYSTEMS & FEATURES

The primary natural feature of the complex is the Knoll, a 9-acre wooded hill approximately 45-feet in height. Its ridgeline has been altered overtime by Department of Water & Power operations.

Figure 3-11 Historic Photo of the Silver Lake Reservoir Complex 1927

The public perimeter walkway and road in 1927 was at the water's edge. The embankment was still planted.
Source: Water and Power Associates



CIRCULATION

Since their construction, the reservoirs have had some form of a perimeter path and road. Early on, there was a single, wide path used by pedestrians and vehicles along the water's edge as shown in Figure 3-11. Over time the public path moved from the water's edge to exterior roads. A perimeter path still exists around the reservoirs which is currently maintained for LADWP operations and not publicly accessible. Additionally, smaller pathways have been removed or erased, such as a historic footpath from what is now the Meadow to the top of the Knoll.

LAND USES

Uses of the SLRC have evolved over time as a result of changing City uses and needs. The largest land use at the Complex is the reservoirs. Additional land use areas dating from the period of significance, are the Knoll and Eucalyptus Grove which are designated as open space, and the Grassy Patch adjacent to the Recreation Center is designated as park land. Approximately 11 acres of land are used for LADWP Maintenance & Operations.

TOPOGRAPHY

Most of the site is flat but there are several areas with significant changes in elevation dating from the period of significance. The reservoirs are deep basins with steep slopes. The Knoll is an approximately 45-foot high hill with varied slopes. The south Silver Lake Dam and the Ivanhoe Dam have steep slopes 40-feet and 10-feet respectively. Lastly, the Grassy Patch adjacent to the Recreation Center consists of a gentle sloped condition.

BUILDINGS AND STRUCTURES

While there are many buildings within the Complex dating from the period of significance, such as the Sunshine House, these are outside the Master Plan Study Area. Within or directly impacting the Master Plan study area are the North and South Ivanhoe Dams.

VEGETATION

There are three areas dating from the period of significance that are considered character-defining features: The Knoll, Eucalyptus Grove, and Grassy Patch. Within these are mature trees such Eucalyptus, Pines, and Sycamores. Large, mature trees within the Complex are considered character defining. Early photography indicates that trees were planted in loose groupings as well as more defined, linear geometries such as the allée shown in Figure 3-12.

CONSTRUCTED WATER FEATURES

The large, open water bodies of Ivanhoe and Silver Lake Reservoirs have been a primary character-defining feature since they were built.

SMALL-SCALE FEATURES

Overtime, several smaller features have been added to the Complex including the low concrete perimeter walls on the east and west edges of the Complex which were constructed to prevent stormwater runoff to flow into the reservoirs and contaminate the water. Additionally, the Ivanhoe Inlet Tower was constructed during the period of significance.

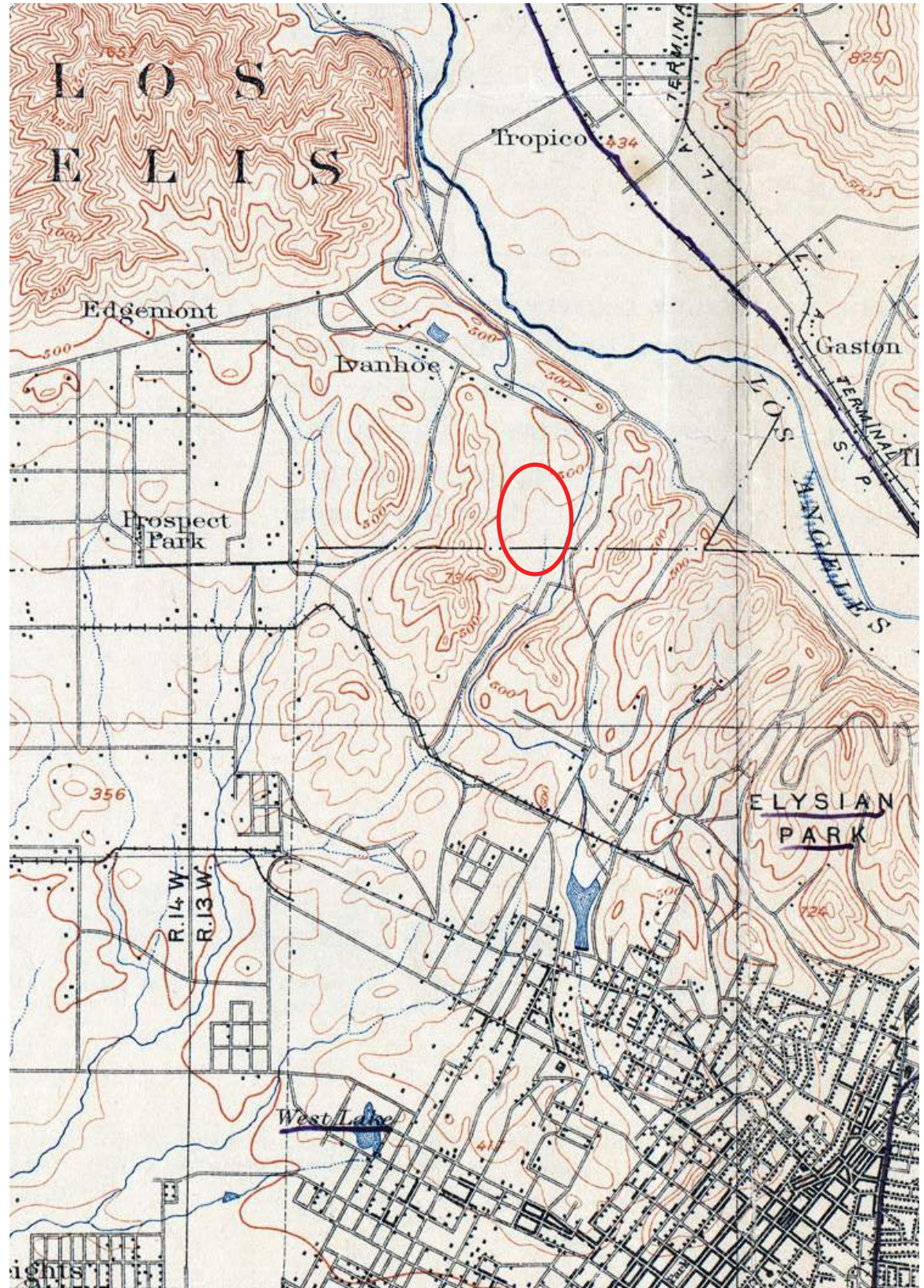


Figure 3-12 Historic Photo of Silver Lake Reservoir 1936

This photo from 1936 shows an allée of trees along the perimeter path on the east side of Silver Lake Reservoir. Source: LADWP

Figure 3-13 Silver Lake and surrounding communities
Topographic Map 1894

A topographic map by the United States Geologic Survey from 1894 depicts a network of streams in what is now Silver Lake. The approximate location of the SLRC is shown as a red oval. Source: University of Texas Library



3.4 Site Ecology

The SLRC is situated in an urbanized valley within the eastern foothills of the Santa Monica Mountain Range. The site is no longer physically connected to this mountain range. The closest significant ecology to the SLRC is 4,000-acre Griffith Park, with habitat areas characterized by mixed chaparral, mixed scrub, oak-sycamore riparian, oak woodland, and walnut woodland native vegetation types. The Complex's proximity to the Los Angeles River corridor as well as Griffith and Elysian Parks helps make the site a potential habitat link as shown in Figure 3-14.

In urban environments, links to habitat areas are critical to species with wide ranges of movement. These linkages facilitate the movement of organisms and ecological processes, such as native plant pollination, between larger areas of intact habitat. In the Silver Lake vicinity, small to medium sized mammals such as raccoons, fox, and coyote can migrate between Griffith Park and the Los Angeles River. Typically, invertebrates such as native butterflies, bees, and ants, as well as lizards, snakes, frogs, and salamanders have limited migration ability and offspring do not typically disperse far from where they are born. To be considered viable, a habitat linkage must provide adequate vegetative cover, food, and water for a given species. While the SLRC offers fresh water, as a habitat linkage its embankment slopes are steep and potentially difficult to navigate. Additionally, vegetation and food resources for terrestrial mammals at the Complex are minimal.

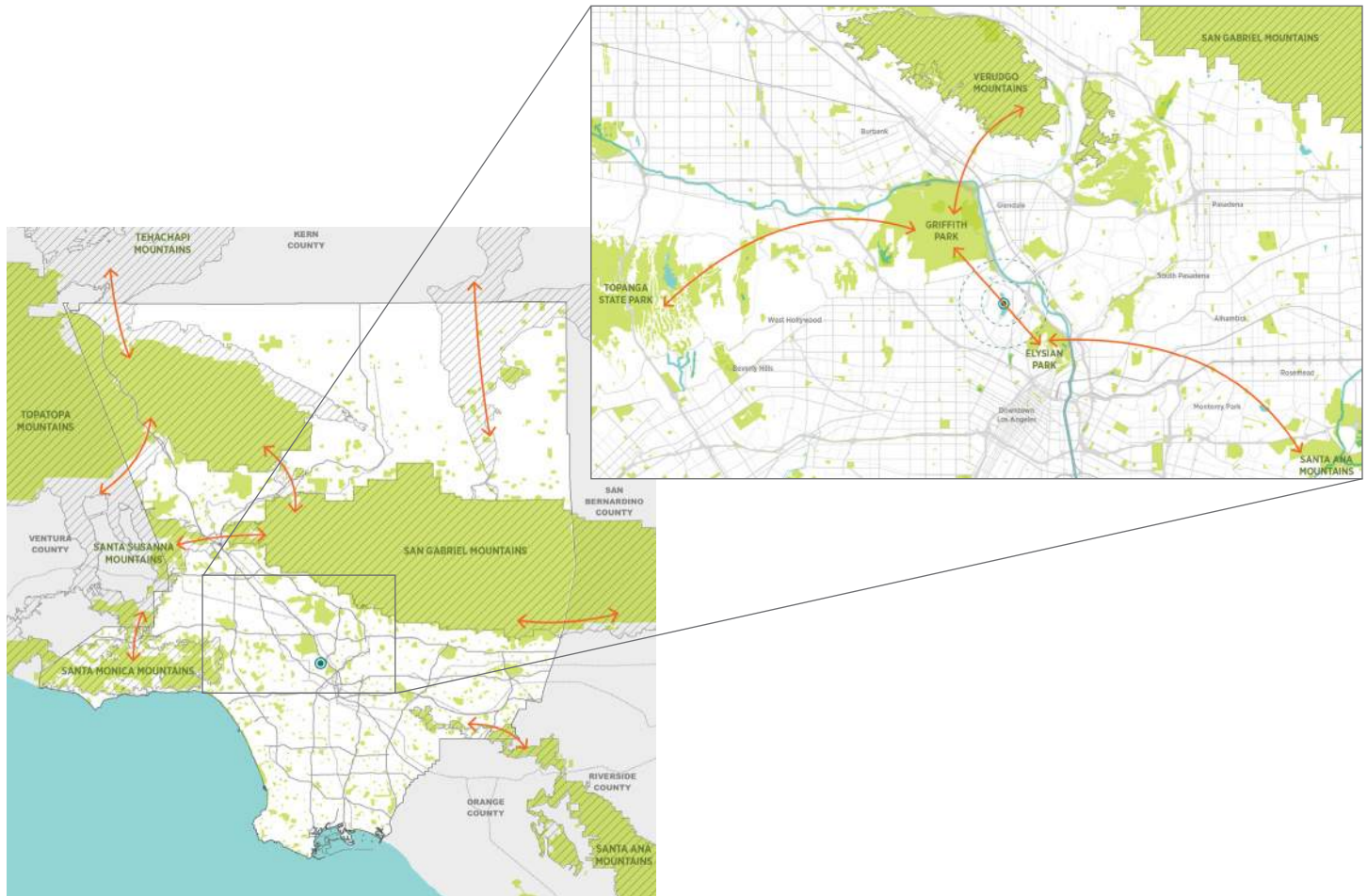
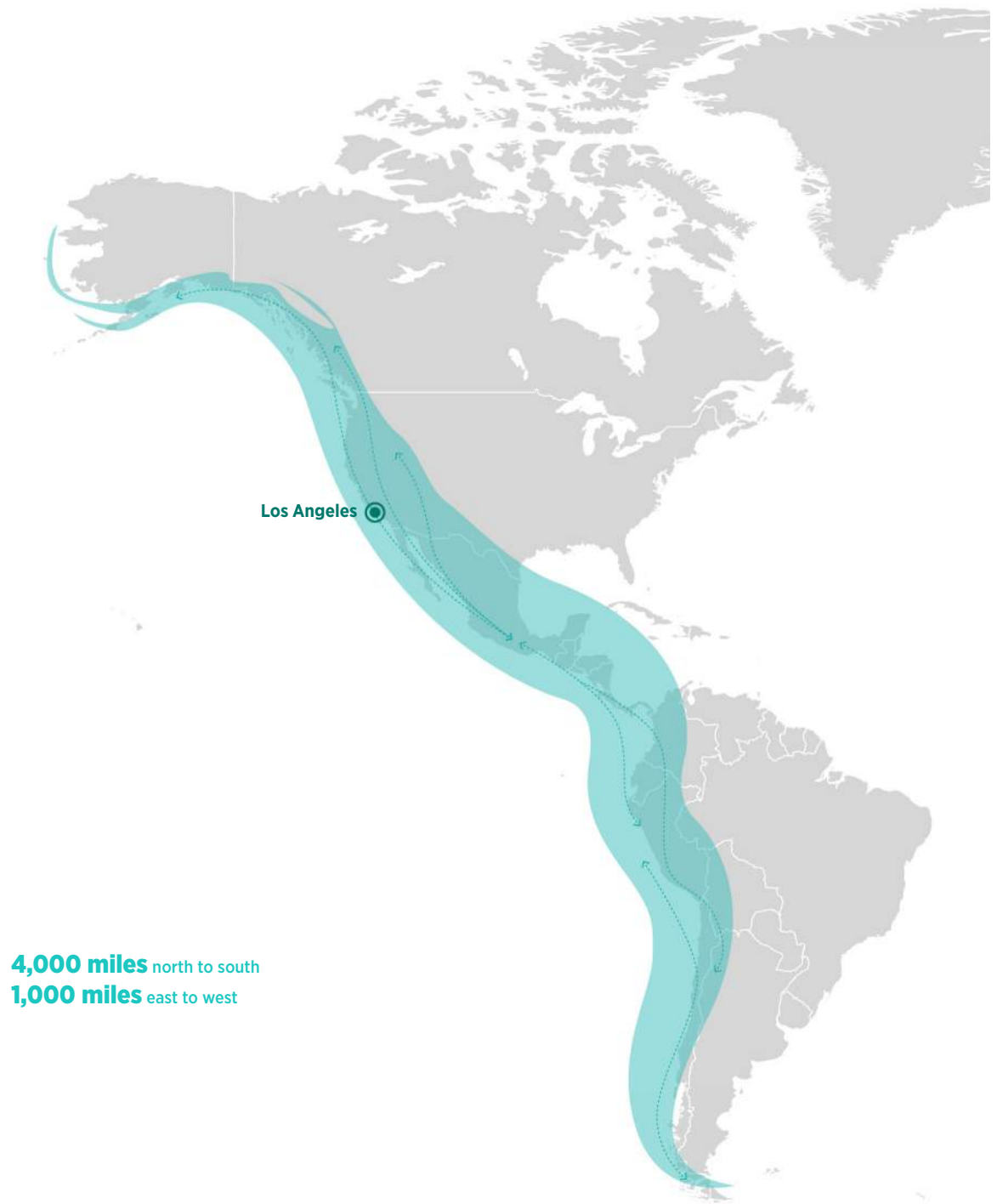


Figure 3-14 Regional habitat linkages and wildlife corridors map adapted from Los Angeles Department of Regional Planning

Figure 3-15 The Pacific Flyway

4,000 miles north to south
1,000 miles east to west

Pacific Flyway: The SLRC is also located along one of four major North American migration routes for birds, predominantly waterfowl, known as the Pacific Flyway which extends from Alaska to South America. In California, wetlands provide critical habitat for millions of migratory birds each year, offering a combination of vegetation and open water that provide both cover and food resources. These food resources include fruit bearing trees and shrubs as well as fish and other aquatic species.

While the large water bodies of the SLRC are currently a stopover for migratory birds, the habitat value of the SLRC is limited by its lack of food resources. Since wetland vegetation and aquatic species, such as fish, are absent within the Complex, the site does not provide adequate resources essential for many migratory birds' survival.

3.4.1 Existing Vegetation

Most of the vegetation within the SLRC is comprised of ornamental, non-native vegetation and lawn. However, there are some native species on the border of Silver Lake Meadow and the Knoll, including Coast Live Oak (*Quercus agrifolia*), California Sycamore (*Platanus racemosa*), California Black Walnut (*Juglans californica*), and Blue Elderberry (*Sambucus nigra ssp. caerulea*). The largest existing planted areas within the Complex are the Eucalyptus Grove and the Knoll. Both of these areas are dominated by mature stands of non-native Eucalyptus trees and a mostly non-native understory plant community.

Disturbed / Reuderal

Vegetation community dominated by annual and perennial introduced/non-native, pioneering, herbaceous plants that readily colonize disturbed ground. This plant community is found beneath the Eucalyptus trees in the Eucalyptus Grove and at the south end of the Silver Lake Recreation Center.

Eucalyptus Globus Semi-Natural Woodland

Vegetation community dominated by *Eucalyptus globulus* with a sparse and intermittent understory. Other species associated with this community include pines (*Pinus spp.*) and non-native annual grasses. This plant community is located within the Eucalyptus Grove and at the bottom of the Knoll.

Eucalyptus Sp. Mixed Semi-Natural Woodland

Vegetation community dominated by several different Eucalyptus species. Species may include Red Gum (*Eucalyptus camaldulensis*), Lemon Scented Gum (*Eucalyptus citriodora*), Sugar Gum (*Eucalyptus cladocalyx*), Blue Gum (*Eucalyptus globulus*), Silver Dollar Gum (*Eucalyptus polyanthemus*), Money Tree (*Eucalyptus pulverulenta*), Red Iron Bark (*Eucalyptus sideroxylon*), Forest Red Gum (*Eucalyptus tereticornis*), and Manna Gum (*Eucalyptus viminalis*). Other species associated with this community include pines (*Pinus spp.*), California Black Walnut (*Juglans californica*), Bottlebrush (*Callistemon spp.*), Pepper Tree (*Schinus mole*), Hemlock (*Tsuga spp.*), Deodar Cedar (*Cedrus deodar*), and non-native annual grasses, palm trees. This plant community is located on the Knoll.

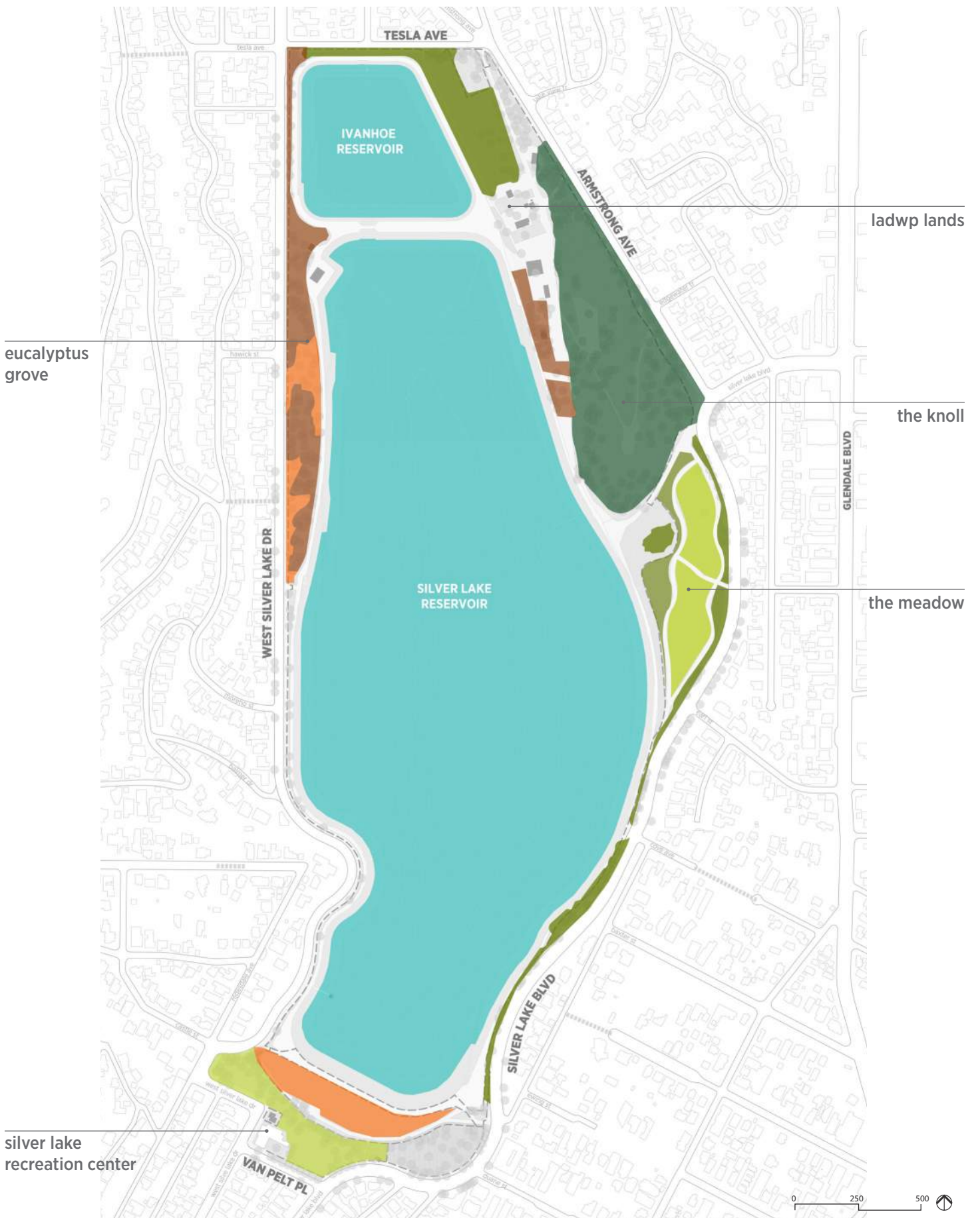
Lawn

Lawn is an area of soil-covered land planted with grass and use for aesthetic and recreational purposes which is regularly mown and irrigated. This plant community is found in the Meadow and at the Silver Lake Recreation Center.

Ornamental

Vegetation community dominated by non-native horticultural plants with some native species. This area includes a mix of trees, shrubs, and flowers. Native species in this area include Deergrass (*Muhlenbergia rigens*), California Buckwheat (*Eriogonum fasciculatum*), Grey Rush (*Juncus patens*), Purple Sage (*Salvia leucophylla*), Matilija Poppy (*Romneya coulteri*), Sugar Bush (*Rhus ovata*), Catalina Ironwood (*Lyonothamnus floribundus*), Salt Bush (*Atriplex lentiformis*) and California Poppy (*Eschscholzia californica*). This plant community is located at the Meadow, along the perimeter of the walking path to the south, around the LADWP lands and surrounding the Silver Lake Recreation Center.

Figure 3-16 Existing Vegetative Communities of the Silver Lake Reservoir Complex



3.4.2 Wildlife

Although the SLRC is dominated by ornamental, non-native vegetation, the large reservoir water bodies still provide an important year-round resource of fresh water for wildlife, particularly for local and migratory waterfowl. Based on field observations, most of the wildlife observed within the SLRC are bird species including hummingbirds, crows, blackbirds, gulls, herons, egrets, and ducks. Nesting pairs recently observed at or in close proximity to the Complex include Great Blue Herons, Great-Horned Owls, Northern Mockingbirds, and Red-Tailed Hawks. These observations are consistent with community sightings reported on a citizen science website, <https://ebird.org> (eBird), as well as multiple, focused surveys conducted at the SLRC between 2004 and 2018. Additionally, California Ground Squirrels, Cottontail Rabbits, and Western Fence Lizards were observed during field visits. The community also reports sightings of bobcats, coyotes, possums, and skunks in the neighborhood.

Bird species observed and/or heard during a field survey by the design team in May 2018 include Allen's Hummingbird (*Selasphorus sasin*), American Crow (*Corvus brachyrhynchos*), Anna's Hummingbird (*Calypte anna*), Black Phoebe (*Sayornis nigricans*), Brewer's Blackbird (*Euphagus cyanocephalus*), California Gull (*Larus californicus*), California Scrub-Jay (*Aphelocoma californica*), California towhee (*Melospiza crissalis*), Canada Goose (*Branta canadensis*), Cliff Swallow (*Petrochelidon pyrrhonota*), Common Raven (*Corvus corax*), Great Blue Heron (*Ardea herodias*), Great Egret (*Ardea alba*), Great-Horned Owl (*Bubo virginianus*), House Finch (*Haemorhous mexicanus*), House Sparrow (*Passer domesticus*), Killdeer (*Charadrius vociferus*), Lesser Goldfinch (*Spinus psaltria*), Mallard (*Anas platyrhynchos*), Mourning Dove (*Zenaida macroura*), Northern Mockingbird (*Mimus polyglottos*), Northern Rough-Winged Swallow (*Stelgidopteryx serripennis*), Nuttall's Woodpecker (*Picoides nuttallii*), Phainopepla (*Phainopepla nitens*), Red-Tailed Hawk (*Buteo jamaicensis*), Ruddy Duck (*Oxyura jamaicensis*), Scaly-Breasted Munia (*Lonchura punctulata*), Tree Swallow (*Tachycineta bicolor*), Western Bluebird (*Sialia mexicana*), Western Kingbird (*Tyrannus verticalis*), and Wrentit (*Chamaea fasciata*).

3.4.3 Special Status Species

The US Migratory Bird Treaty Act (MBTA) protects migratory birds, their occupied nests, and their eggs from disturbance and/or destruction. "Migratory birds" include all non-game, wild birds found in the U.S. except for the House Sparrow, European Starling, and Rock Pigeon.

Within the MBTA, is a sub-set of protected species that pose special management challenges for a variety of factors titled Birds of Management Concern (BMC). These species are of concern because of population declines, small or restricted populations, dependence on restricted or vulnerable habitats, or are overabundant to the point of causing ecological and economic damage. The BMC list was cross-referenced with the last 10 years of eBird data to determine which BMC species have been observed at the SLRC (see Figure 3-17). These species should be considered when undertaking improvements at the site.

Several BMC species were observed during the Master Plan field observations including Great Blue Heron, Canada Goose, Great Egret, Ruddy Duck, Nuttall's Woodpecker, and Allen's Hummingbird.

3.4.4 Significant Ecological Area

Significant Ecological Areas (SEA) are officially designated areas with irreplaceable biological resources within Los Angeles County. These areas represent the wide-ranging biodiversity of Los Angeles County and contain some of the county's most important biological resources.

Typically, habitat in SEAs consist of large continuous acreage with few roads and residential development. **No sensitive habitat or SEA's were found within the SLRC.** The nearest SEA area to the Complex is Griffith Park.

Figure 3-17 Silver Lake Reservoir Complex Bird Sightings

Bird species sighted at the SLRC during field observations and/or documented over the last 10 years on eBird, cross referenced with the U.S. Migratory Bird Treaty Act Birds of Management Concern list and U.S. Fish & Wildlife Service Focal Species list.

SILVER LAKE RESERVOIR COMPLEX BIRD SIGHTINGS

BIRDS OF MANAGEMENT CONCERN (BMC)

The BMC list was cross-referenced with the last 10 years of eBird data to determine which BMC species have been observed at the SLRC.

focal species

The U.S. Fish & Wildlife Service maintains a Focal Species list of birds from the larger BMC list. These species are identified as needing investment and attention because they: (1) have high conservation needs, (2) are representative of a broader group of species sharing the same or similar conservation needs, (3) act as a potential unifier for partnerships, and/or (4) have a high likelihood that factors affecting status can be realistically addressed. The following three species have been sighted at the SLRC.



Northern Pintail
Anas acuta



Greater/Lesser Scaup
Aythya marila/affinis



Bald Eagle
Haliaeetus leucocephalus



Allen's Hummingbird
Selasphorus sasin



Blue-Winged Teal
Anas discors



Band-Tailed Pigeon
Patagioenas fasciata



Canada Goose
Branta canadensis



Canvasback
Aythya valisineria



Cinnamon Teal
Anas cyanoptera



Common Goldeneye
Bucephala clangula



Costa's Hummingbird
Calypte costae



Green-Winged Teal
Anas carolinensis



Long-Tailed Duck
Clangula hyemalis



Northern Shoveler
Anas clypeata



Nuttall's Woodpecker
Picoides nuttallii



Oak Titmouse
Baeolophus inornatus



Olive-Sided Flycatcher
Contopus cooperi



Redhead
Aythya Americana



Ring-Necked Duck
Aythya collaris



Ruddy Duck
Oxyura jamaicensis



Rufous Hummingbird
Selasphorus rufus



Yellow Warbler
Setophaga petechia



American Crow
Corvus brachyrhynchos



Anna's Hummingbird
Calypte anna



Black Phoebe
Sayornis nigricans



Brewer's Blackbird
Euphagus cyanocephalus



California Gull
Larus californicus



California Scrub-Jay
Aphelocoma californica



California Towhee
Melospiza crissalis



Cliff Swallow
Petrochelidon pyrrhonota



Common Raven
Corvus corax



Great Blue Heron
Ardea herodias



Great Egret
Ardea alba



Great Horned Owl
Bubo virginianus



House Finch
Haemorhous mexicanus



House Sparrow
Passer domesticus



Killdeer
Charadrius vociferus



Lesser Goldfinch
Spinus psaltria



Mallard
Anas platyrhynchos



Mourning Dove
Zenaida macroura



Northern Mockingbird
Mimus polyglottos



N. Rough-Winged Swallow
Stelgidopteryx serripennis



Phainopepla
Phainopepla nitens



Red-tailed Hawk
Buteo jamaicensis



Scaly-breasted Munia
Lonchura punctulata



Tree Swallow
Tachycineta bicolor



Western Bluebird
Sialia mexicana



Western Kingbird
Tyrannus verticalis



Wrentit
Chamaea fasciata

● indicates species that have been observed nesting on-site (actively living the area)

3.5 Water Resources

3.5.1 Current Use and Operations

The Silver Lake Reservoir Complex comprises two reservoir basins totaling approximately 94 acres: Ivanhoe to the north (approximately 9 acres) and Silver Lake to the south (approximately 85 acres). The water bodies are separated systems linked by a spillway at the Divider Dam. Combined, the reservoirs hold approximately 2,200 acre-feet (ac-ft) of water below the lip of the Spillway which is at elevation 451 feet (NGVD29). Even though Silver Lake and Ivanhoe Reservoirs are no longer used for potable water, they are still considered significant neighborhood features that play a major role in defining the neighborhood character. A neighborhood survey from 2016 found that “keeping water in the lake” enjoyed the support of 96% of the Silver Lake community (Silver Lake Reservoirs Conservancy, 2017).

Ivanhoe and Silver Lake Reservoirs are man-made bodies of water by which water can be added, subtracted, or stored via a system of pipes and valves. In this sense they are like many other lakes in the region found within parks, such as Echo Park Lake, MacArthur Park Lake, Lincoln Park Lake, Hollenbeck Park Lake, Peck Road Park Lake, Legg Lake, and many others. Each of these lakes must maintain a water quality balance suitable to recreational use; where these lakes have been identified in the Basin Plan, each has an “existing” or a “potential” REC-1 beneficial use.

The SLRC differs from Echo Park Lake, Lincoln Park Lake, and Hollenbeck Park Lake, to name three nearby examples, because there is currently no stormwater runoff input source. There is currently no external source of stormwater in MacArthur Park Lake, though local stormwater runoff from within the park drains to MacArthur Park Lake. Other lakes, such as Lake Balboa, Legg Lake, and others are fed by tertiary-treated recycled wastewater.

Recent projects have been completed within Echo Park Lake and within MacArthur Park Lake that share similarities with those proposed for the SLRC. The Echo Park Lake project added reservoir recirculation and low-flow stormwater runoff diversion, as well as a wetlands system, to improve water quality. The MacArthur Park Lake project shares similar features with the SLRC plans as well. MacArthur Park Lake currently does not receive stormwater runoff flows, but there is a planned project to incorporate urban stormwater runoff to replace a portion of the potable water used to refill the lake. Lake water is currently used to irrigate landscaping within the park, a change which necessitated the construction of a pressure sand filtration and UV disinfection device in 2016 [LASAN].

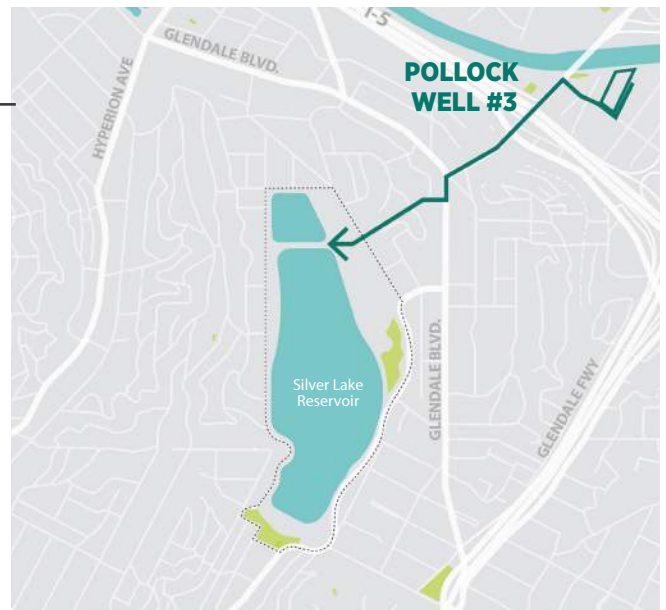


Figure 3-18 Stormwater wetlands at nearby Echo Park

Figure 3-19 (right) Historical Elevation & Evaporation Loss in the Silver Lake Reservoir



Figure 3-20 (far right) Pollock Well Location



REFILLING OPERATIONS

The water level in both reservoirs drops from five to seven feet annually due to evaporation and seepage and thus requires periodic replenishment. The historic operable range of water elevations within the SLRC is between 440 and 451 feet (Figure 3-19). LADWP is currently committed to maintaining the water level at a minimum 440 feet. To refill the reservoirs, LADWP currently relies on pumping water from Pollock Well #3 to the site. Pollock Well #3 is a groundwater well located at LADWP’s Ripple Street Yard northwest of the SLRC (Figure 3-20).

Figure 3-21 Fire department helicopters accessing emergency water from the Reservoirs



FIREFIGHTING OPERATIONS

The SLRC is currently used as a source of water for firefighting operations. Under an agreement with LADWP, both the City and County of Los Angeles Fire Departments may use reservoir water storage for firefighting purposes, and both departments have used the water in the past. The Master Plan supports the continued use of the reservoirs for LA firefighting operations.

WATER QUALITY

Existing water quality within the SLRC is generally very good. This is due in part to the limited size of the tributary watershed. The predominant source of water since 2017 has been a mix of potable water and treated groundwater, with very little precipitation. The only stormwater that can currently enter the SLRC comes from precipitation that falls on the SLRC which is generally clean. However, stormwater runoff tends to have more impaired water quality than treated potable water or treated groundwater because as it moves over the surface of the land it picks up sediments and pollutants from the ground surface.

3.5.2 Planned Future Operations

The LADWP is undertaking several initiatives to diversify the source of water used to refill the reservoirs as well as maintain long-term water quality as described below and depicted in Figure 3-22.

PROPOSED LADWP AERATION PROJECT

The aeration project will install new air pumps and piping to introduce twenty small tubes (fourteen in Silver Lake and six in Ivanhoe) that convey air bubbles to diffusers placed in the middle of each water body. The project will support water quality by introducing dissolved oxygen into the water to reduce algae development and minimize potential odors related to anaerobic conditions in the reservoirs. This dissolved oxygen can also help support aquatic organisms in the future.

PROPOSED LADWP RECIRCULATION PROJECT

The recirculation project will utilize an abandoned bypass line to recirculate water from Silver Lake Reservoir to Ivanhoe Reservoir. The project will allow for more thorough mixing and thermal destratification, which also supports water quality. Once implemented, the Ivanhoe Reservoir will fill up to the Spillway elevation of 451 feet and then cascade into Silver Lake Reservoir.

PROPOSED LADWP STORMWATER CAPTURE PROJECT

To help supplement the amount of water used from Pollock Well #3 to refill the reservoirs, a stormwater capture project is planned to divert stormwater from portions of the neighborhood to the Complex. The project will deliver up to 57 acre-feet of stormwater on average per year to the SLRC.

Alternate Sources of Water for Replenishment

The design team also explored other potential non-potable sources of water to refill the reservoirs: the Los Angeles River and recycled water.

Los Angeles River Water

The Los Angeles River is about half a mile northeast of Ivanhoe Reservoir and adjacent to LADWP's Ripple Street Yard. Based on a study by LADWP, it is possible to use Los Angeles River water in the future to refill the SLRC. The pipeline that currently delivers water from Pollock Well #3 is the same pipe that could ultimately also deliver water from the river. However, this would require new infrastructure to be built within the Los Angeles River channel. A new diversion structure would be required within the channel, as well as a pump to get the water from the bottom of the channel to the existing pipes at Ripple Yard.

The new physical infrastructure within the Los Angeles River would present several, multi-year permitting challenges, including the need to secure US Army Corps of Engineers (USACE) Section 408 Permits, Section 401 and 404 permits, a California Department of Fish and Wildlife Section 1602 permit, and a LACFCD flood construction permit.

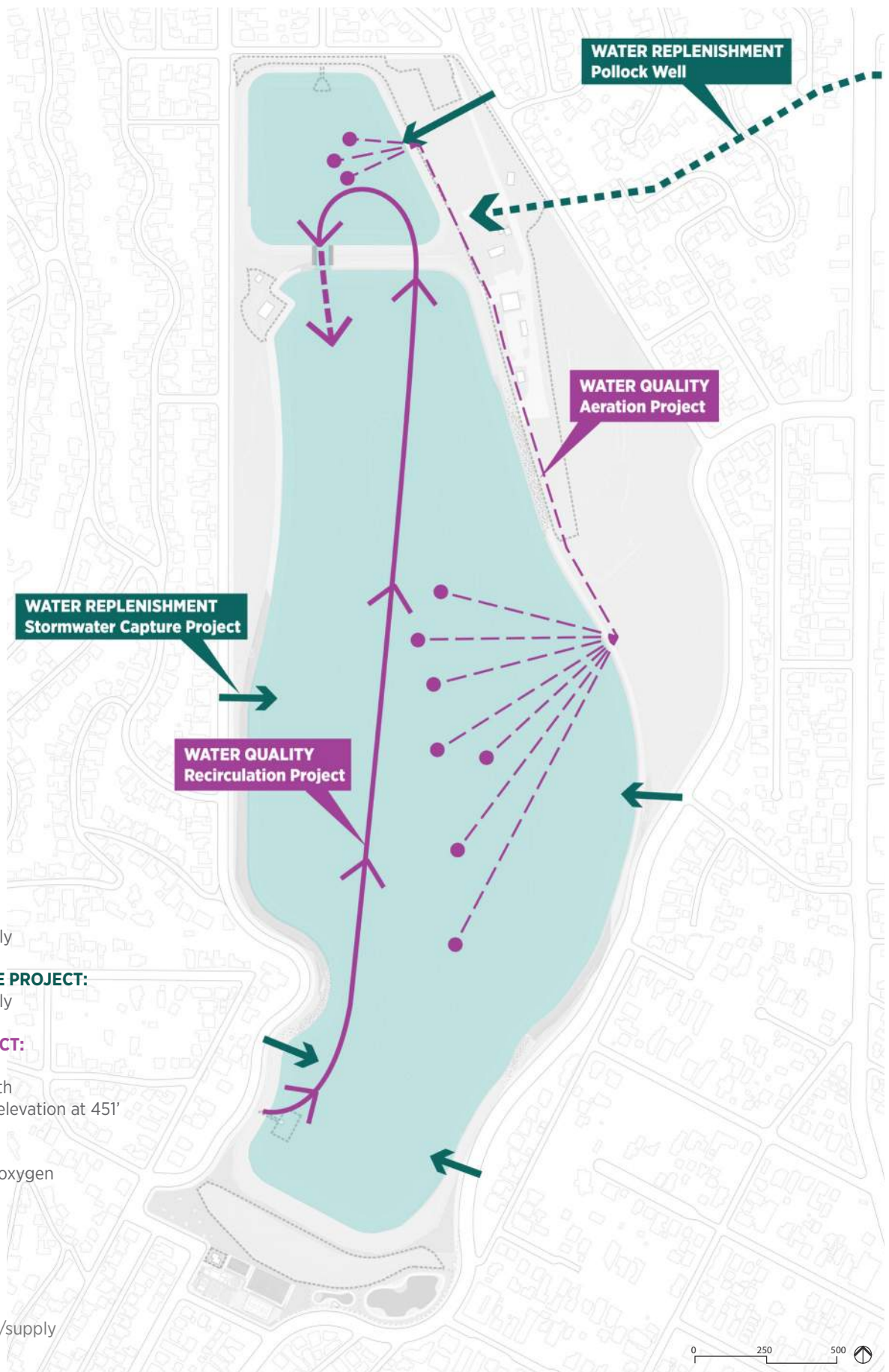
The use of Los Angeles River water for refill water at the SLRC could also present water quality challenges. The diversion would likely be designed to only take in a portion of the Los Angeles River dry-weather flows during summer months rather than stormwater flows. Dry-weather flows in the Los Angeles River are composed of the effluent from water reclamation plants that tend to be high in nutrients which are damaging to aquatic habitat, and usage of this water in the SLRC would lead to an increase in chlorophyll and algae if no additional treatment processes were used.

Recycled Water

Recycled water could be used rather than groundwater as a source of non-potable water to refill the SLRC. Piping could be installed to connect to an existing recycled water facility in Griffith Park a mile and a half away from the reservoirs. However, currently, all the recycled water from the Los Angeles-Glendale Water Reclamation Plant has been allocated to other uses, so a restructuring of these uses would be necessary for the SLRC to use this water.

If recycled water were to be used instead of groundwater to periodically refill the SLRC, the project would require a new pipeline stretching to the SLRC from existing recycled water pipelines at the Griffith Park facility. This new pipeline could be as long as 1.5 miles and an expensive undertaking. Additional infrastructure would also need to be constructed, such as pump stations, tanks, and possibly a new pressure regulator station. The recycled water pipeline extension project would present challenges such as right-of-way acquisition, utility relocation, and construction traffic management. Recycled water would also present some of the same water quality challenges as using Los Angeles River dry-weather flows. Even though recycled water is very clean, elevated levels of nutrients may lead to an increase in chlorophyll and algae in the SLRC and require additional treatment to be safe for aquatic habitat.

Figure 3-22 Water Replenishment and Water Quality Projects planned for the SLRC



POLLOCK WELL:

- replenishment/supply

STORMWATER CAPTURE PROJECT:

- replenishment/supply

RECIRCULATION PROJECT:

- Daily circulation
- Prevents algal growth
- Sets Ivanhoe water elevation at 451'

AERATION PROJECT:

- Increases dissolved oxygen
- Prevents odors

LEGEND

- water replenishment/supply
- water quality

3.6 Precedent Studies

3.6.1 Environmental Education

Fundamental goals of the Silver Lake Reservoir Complex Master Plan are to enrich and expand habitat for wildlife and create the possibility for the park's visitors to interact with the natural world in the heart of Los Angeles. This interaction presents the opportunity for people, and especially children, to learn about biodiversity in an urban environment. To that effect, the entire reservoir complex is meant to become a classroom.

To further enhance this learning experience, including field trips by school children, the Master Plan explored the possibility of creating a small educational facility, as has been done successfully in a number of parks in the Los Angeles area, which is described herein.

This approach and element were discussed with the community and stakeholder groups and received the support of the majority of respondents to the project's multiple questionnaires, though the Silver Lake residents are generally in agreement that any new construction should be properly measured. To guide the development of an Education Center the design team conducted a precedent study of twelve parks with educational facilities and programs in the Los Angeles region: Lewis MacAdams Riverfront Park, Audubon Center at Debs Park, Augustus Hawkins Natural Park, Stone View Nature Center, Tree People, Eaton Canyon Nature Center, Sooky Goldman Nature Center, Madrona Marsh Preserve and Nature Center, Santa Fe Dam Nature Center, El Dorado Nature Center, George F. Canyon Nature Center, and White Point Nature Education Center.

The three outlined below and described on the following page were determined to be the most relevant examples to inform the approach and development of educational programming, elements, and structures at the SLRC.

LOCATION	PARK SIZE	FACILITY SIZE	CLASSROOMS	ENCLOSED	OFFICE(S)	RESTROOMS	OTHER
Lewis MacAdams Riverfront Park	3.9 acres	4,920 sf	2	No	No	Yes	<i>200-person capacity</i>
Stone View Nature Center	5 acres	6,000 sf	2	Yes	Yes	Yes	
El Dorado Nature Center	105 acres	8,800 sf	1	Yes	Yes	Unknown	<i>Bookstore, Gallery Space, Info Desk</i>

LEWIS MACADAMS RIVERFRONT PARK

Part of the Los Angeles River Greenway, the 3.9-acre Lewis MacAdams Riverfront Park is located adjacent to a nine-mile section of the 51-mile Los Angeles River known as the Glendale Narrows which has a natural soft bottom instead of a concrete floor within the channel. This section allows native river plants and animals to thrive as if the river were in its natural state. The park provides access to the LA River Bike Path and the Los Angeles River Recreation Zone. With a stellar view of the Verdugo Hills, as well as picnic grounds, grassy areas, and nature-themed children's play equipment, the park also includes restrooms and two outdoor classrooms. The distinctive, open-air pavilion can accommodate more than 200 people for events of all kinds.



STONE VIEW RIVER CENTER

Stoneview Nature Center is 5-acre urban sanctuary nestled in the Blair Hills of Culver City with scenic views of the Los Angeles basin from the Santa Monica Mountains to the Hollywood Hills. As an important node along the five mile "Park to Playa Trail", the facility and surrounding gardens were envisioned as a place for the community to come together and engage both socially and architecturally. An Observation Deck visually connects visitors to the nearly panoramic views of the Los Angeles skyline, while the Outdoor Room offers a central connection point to the facility's lobby, multi-purpose room, demonstration kitchen and gardens beyond.



EL DORADO NATURE CENTER

The 105 acres that make up the El Dorado Nature Center grounds provide sanctuary for animals and plant life. Two miles of dirt trails and a ¼ mile paved trail wind around two lakes, a stream, and forested areas. At the entrance, a wooden bridge spanning the lake leads to a small island that houses the Visitor Center which includes educational displays, an art gallery, and a small gift shop offering environmentally themed books and gifts. The museum contains a small, permanent natural-history display put together with the help of the Natural History Museum of Los Angeles County. Also in the museum is a small gallery that features changing exhibits of art and photography.



3.6.2 Repurposed Reservoirs and Urban Water Bodies

Repurposing reservoirs or other urban water bodies to public parks is not unusual for the City of Los Angeles. Many such examples are in proximity to the SLRC. In the early stages of the Master Plan process, examples (precedents) of these transformations were analyzed to inform optimum planning relationships, programming and uses, as well as spatial organization.

The following page shows a series of examples of nearby reservoirs and water bodies which were repurposed as public space. Each example includes a plan diagram (shown at the same scale as the SLRC outline), notes indicating size and relevant amenities or interest, and a corresponding photograph showing the character of the space.



Echo Park Lake (~26.98 acres)

Amenities/Interest:

- Paddle Boating
- Concession
- Rec Center
- Bird Watching
- Wildlife Habitat
- Family Friendly



MacArthur Park Lake (~31.92 acres)

Amenities/Interest:

- Paddle Boating
- Bird Watching
- Wildlife Habitat
- Walking/Running Path



Lincoln Park Lake (~44.71 acres)

Amenities/Interest:

- Historical Value
- Cultural Landmark
- Popular for Events
- Fishing
- Playgrounds
- Recreation Center
- Restrooms
- Walking/Running Path
- Sports Fields/Courts
- Bird Watching
- Skateboard Park
- Paddle Boating



Lake Balboa (~152.75 acres)

Amenities/Interest:

- Historical Value
- Cultural Landmark
- Picnic/ Playgrounds
- Bird watching
- Skateboard Park
- Paddle Boating
- Bicycle Friendly
- Wildlife Habitat



Hollywood Reservoir (~429.68 acres)

Amenities/Interest:

- Historical Value
- Cultural Landmark
- Hiking Loop
- Family Friendly
- Walking/Running Path
- Bird watching
- Sight Seeing

3.7 Park Needs Assessment

Successful parks provide spaces that respond to the unique character of their site as well as community needs and goals. In early stages of the Master Plan process, existing parks within a 2-mile radius of the Silver Lake Reservoir Complex were assessed to understand the amenities and activities they offered. This study was also used to inform a questionnaire developed to access what the community wanted to see and do in the Complex in the future.

One mile to the northwest is 4,000-acre **Griffith Park**, one of the largest municipal parks in the country which offers miles of hiking trails, two golf courses, horseback riding trails, soccer fields, baseball fields, children’s playgrounds, a merry-go-round, a zoo and a planetarium, among other amenities. Additionally, a state-of-the-art soccer field, a large public pool, and a newly refurbished playground are all located at the southern edge of the park closest to the SLRC.

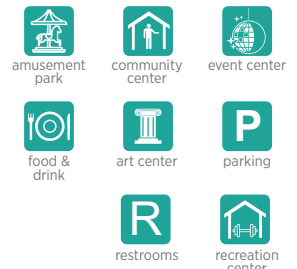
The **Elysian Park** complex, located approximately one and a half miles to the southeast, is another major natural park with extensive hiking trails as well as Dodger Stadium. It offers a myriad of sports and cultural amenities ranging from tennis and baseball to outdoor performances and a recreation center

One and a half miles to the south is **Echo Park** which was also once a drinking water reservoir for the City. A smaller urban park, it offers paddle boating and a café as well as walking paths and open lawn with shade trees.

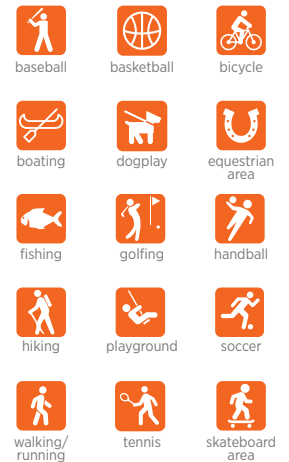
Less than two miles from the SLRC is the **Los Angeles River** which offers a continuous recreational path running along its western bank, where people bike, walk, and observe wildlife in the Glendale Narrows area of the river.

On the eastern bank of the LA River, two and a half miles east of the reservoir complex is the **Rio de Los Angeles State Park** with multiple soccer fields, a large children’s playground, and more hiking trails.

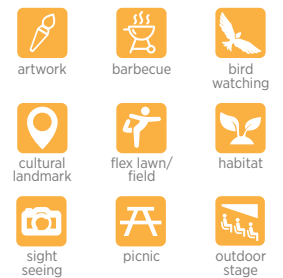
FACILITIES



ACTIVE



PASSIVE



EXISTING PARKS (2 mile radius)

- | | | |
|--|---|---|
| 01 Silver Lake Reservoir <i>Meadow</i> | 12 Echo Park | 23 Marsh Riverfront Park |
| 02 Silver Lake Reservoir <i>Community Park</i> | 13 Elysian Park <i>Victory Memorial Grove</i> | 24 Glennhurst Park |
| 03 Tommy Lasorda Field of Dreams | 14 Elysian Park <i>Montecillo De Leo Politi</i> | 25 Juntos Fmaily Park |
| 04 Basketball Courts | 15 Elysian Park <i>Angels Point</i> | 26 Cerritos Park |
| 05 Rattlesnake Park | 16 Elysian Park <i>Hiking Trail</i> | 27 Los Feliz Golf Course |
| 06 Los Angeles River Bicycle Park | 17 Elysian Park | 28 Sunnynook River Park |
| 07 Rowena Reservoir | 18 Elysian Park <i>Adaptive Recreation Center</i> | 29 Griffith Park <i>Recreation Center</i> |
| 08 Barnsdall Art Park | 19 Rio De Los Angeles State Park | 30 Griffith Park |
| 09 Bellevue Recreation Center | 20 Elysian Valley Recreation Center | 31 Griffith Park <i>Cedar Grove</i> |
| 10 Madison West Park | 21 Elysian Valley Gateway Park | 32 Lake St Park <i>Community Center</i> |
| 11 Laurel and Hardy Park | 22 Marsh Street Nature Park | 33 Madison Ave <i>Community Garden</i> |

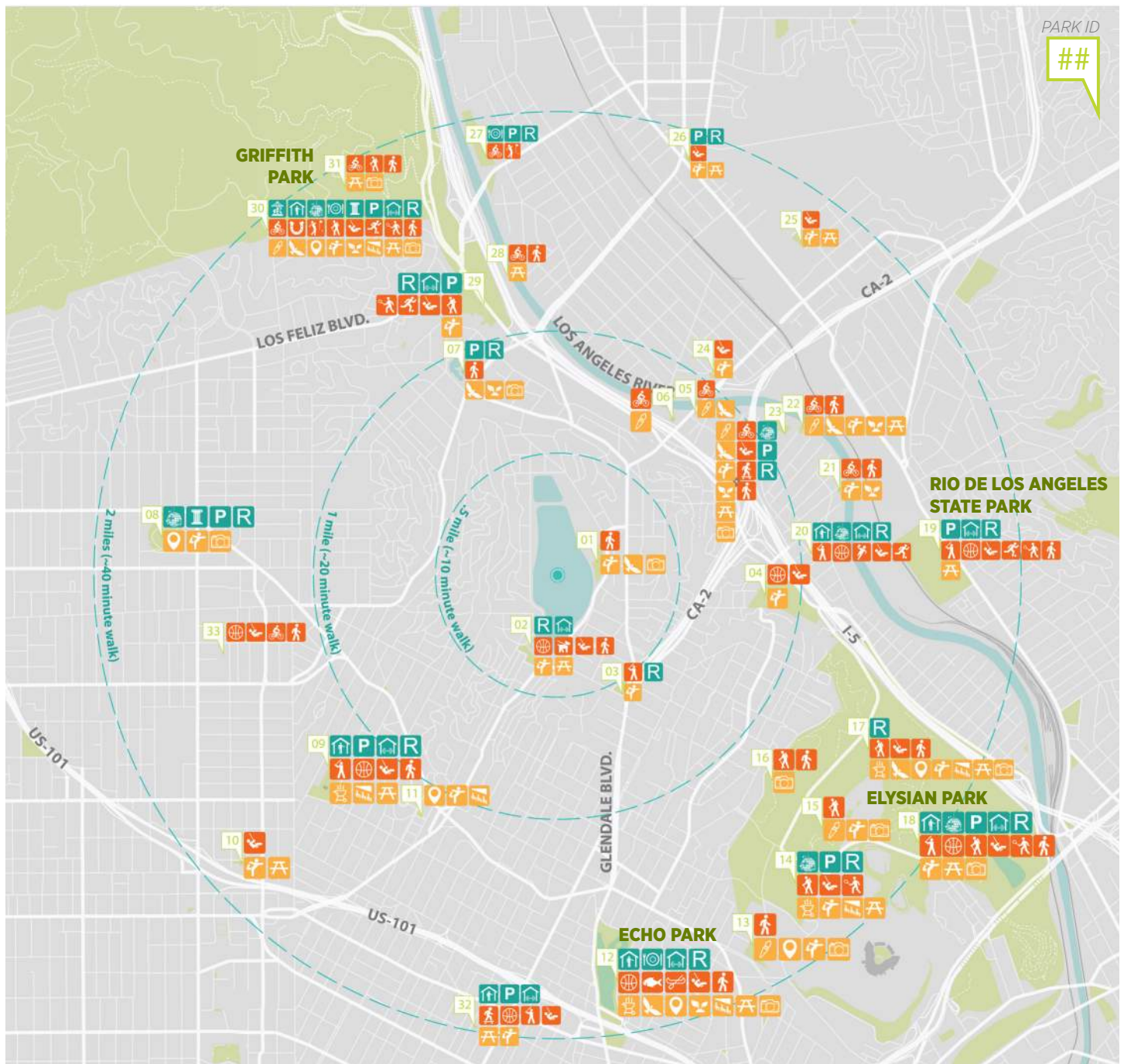


Figure 3-23 Existing Parks within a 2-mile radius around the Silver Lake Reservoir Complex

Within the SLRC there are three primary areas of existing parkland overseen by RAP: The Meadow, Dog Park, and Recreation Center. Amenities and programs offered in these areas are shown in Figure 3-24 below. Linking these spaces together and creating another recreational use is a perimeter path that loops around the complex and is used daily for strolling, dog walking, and running. These neighborhood amenities are part of an extensive network of outdoor and indoor sports and recreation facilities within two miles of the Silver Lake Reservoir Complex.

THE MEADOW

The Meadow park was created in 2011, as envisioned by the 2000 Master Plan, when the fence surrounding the Complex was relocated to open this area to the public. The Meadow is an unstructured open lawn with some clusters of shade trees. It is primarily used for relaxing, picnicking, walking, running, exercising, and playing lawn games. The northern edge of the Meadow features a native plant garden maintained by volunteers. The 3.4-acre park is enclosed by a low fence and closes at 10:30 pm each evening.

THE DOG PARK

This 1.5-acre park consists mainly of a sloped dirt field with minimal vegetation and shade. It has separate areas for small dogs and large dogs, and it is a popular amenity with Silver Lake residents. When interviewed as part of this analysis, RAP, which maintains the facility, would like to upgrade the dog parks in response to user-expressed needs whom have requested new features such as mounds and water play areas as well as replacing the dirt with turf in some areas.

Figure 3-24 Existing Facilities and Recreation within the SLRC

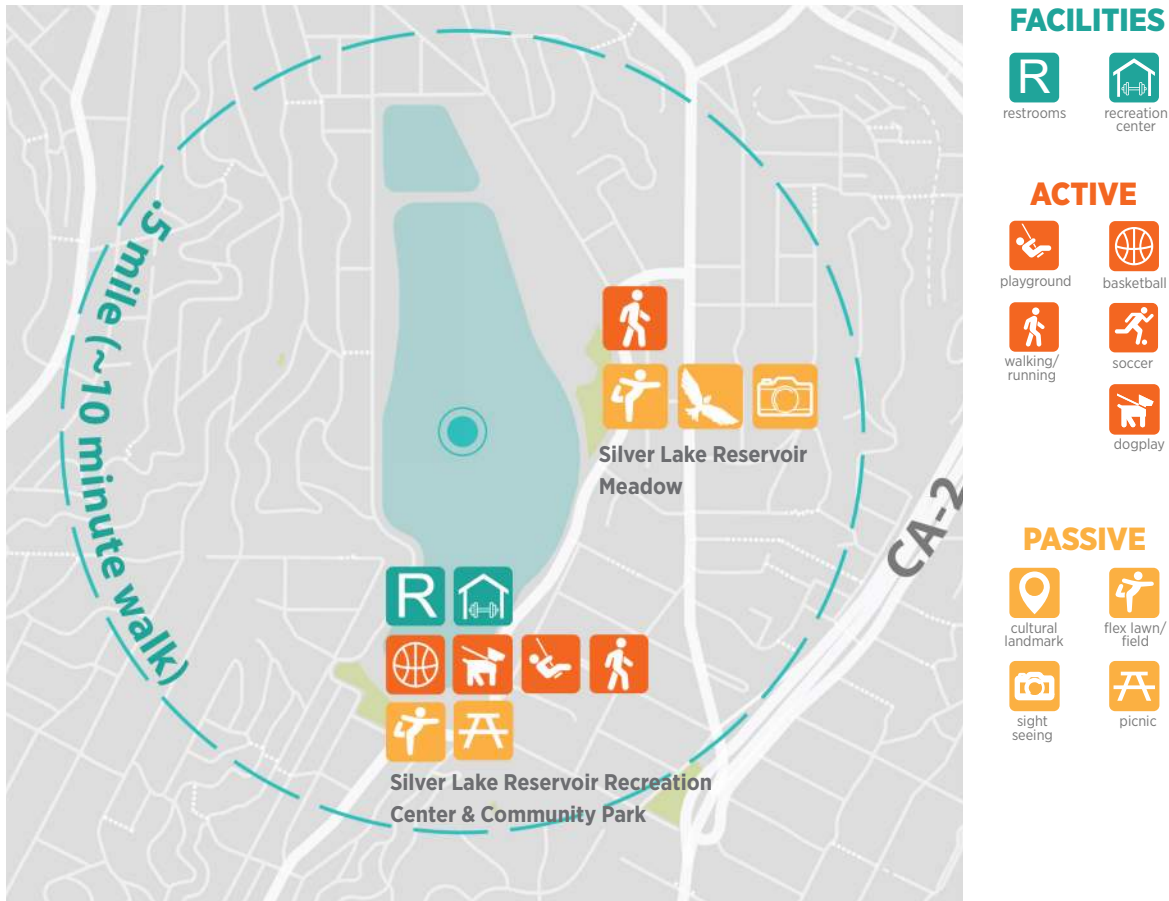




Figure 3-25 Existing Recreation Center Site Plan

THE RECREATION CENTER

The Silver Lake Recreation Center is located at the south end of the Silver Lake Reservoir, just below the South Dam of the Silver Lake Reservoir. It can be accessed from Silver Lake Boulevard and West Silver Lake Drive. The Recreation Center was originally built in the 1930s and was expanded in the mid-1980s. The playground was built in the late-1990s and was recently renovated in 2018.

The Recreation Center consists of a building facility with a small gym, a kitchen, community room, and offices. Within the grounds are a children's playground, an outdoor basketball court, and a play field. The Center is surrounded by lawn and shade trees, including a popular gentle slope called the Grassy Patch and offers some picnic tables. In addition to the play field and court, The Recreation Center offers a wide range of activities throughout the year, including day camps in the summer. Additionally, it serves as a neighborhood polling place for most elections.

RAP operates and maintains the existing facilities with 7 to 10 staff members on site daily, including a full-time director. During an interview for the Master Plan project, the Recreation and Parks department expressed an interest in expanding the facility to better serve the needs of neighborhood residents. The Master Plan presents the opportunity to increase the size of the facility in its existing location or in a new location on the project site. Figure 3-26 below outlines the existing and desired programming and facilities provided by RAP.

With the diversity of park spaces and recreation amenities in proximity, the Silver Lake recreation facilities are scaled to serve the immediate neighborhood. Outside of the immediate needs to expand the Recreation Center and upgrade the Dog Parks, RAP has not identified specific needs in the larger surrounding area that should be addressed by the Silver Lake Reservoir Complex Master Plan.

Figure 3-26 Existing and Desired Recreation Center Program

ACTIVITIES PROGRAM		Notes
EXISTING	DESIRED	
Peewee Soccer (ages 5-8)		
Peewee Basketball (ages 5-8)		
T-Ball (ages 5-8)		
	High School Basketball	
Pick-up Basketball (outdoor)		
Volleyball		
	High School Volleyball	
Aerobics and Ballet (ages 3-7)		
Yoga and Zumba		
Summer Camps		
Painting and Arts & Crafts		
Cooking Classes		
	Dance Classes	
Community Meetings		
Polling Place		
Picnicking		

FACILITIES PROGRAM							
	Net Floor Area		Length	Width	SF/Person	Occupancy	Notes
Interior Spaces	EXISTING	DESIRED					
Multi-Purpose Room	1,750	6,000	100	60			No bleachers
Regulation Basketball Court			84	50			High School court size
Storage	215	500					Assumption
Power Room	70	100					Assumption
Trash Room	26	50					Assumption
Kitchen	312	300					Existing size satisfactory
Pantry	64	60					Existing size satisfactory
Director's Office	151	120					Dedicated office
Staff Office		200					Open office area
Director's Restroom	44	0					Separate restroom not required
Staff Men's Room		100					
Staff Ladies' Room		100					
Locker Room		200					
Janitor's Closet	19	20					Unchanged
Women's Restroom	109	110					Unchanged
Men's Restroom	109	110					Unchanged
Conference Room / Game Room	410	450			15	30	
Arts & Crafts Studio		500			25	20	
Dance Studio		1,000			100	10	
TOTAL	3,279	9,920					
Exterior Amenities	EXISTING	DESIRED					Notes
Children's Playground							Existing size satisfactory
Play Field							
Basketball Court							Existing size satisfactory
Picnic Tables							Existing number satisfactory
Remaining Grounds							
TOTAL		9,920					

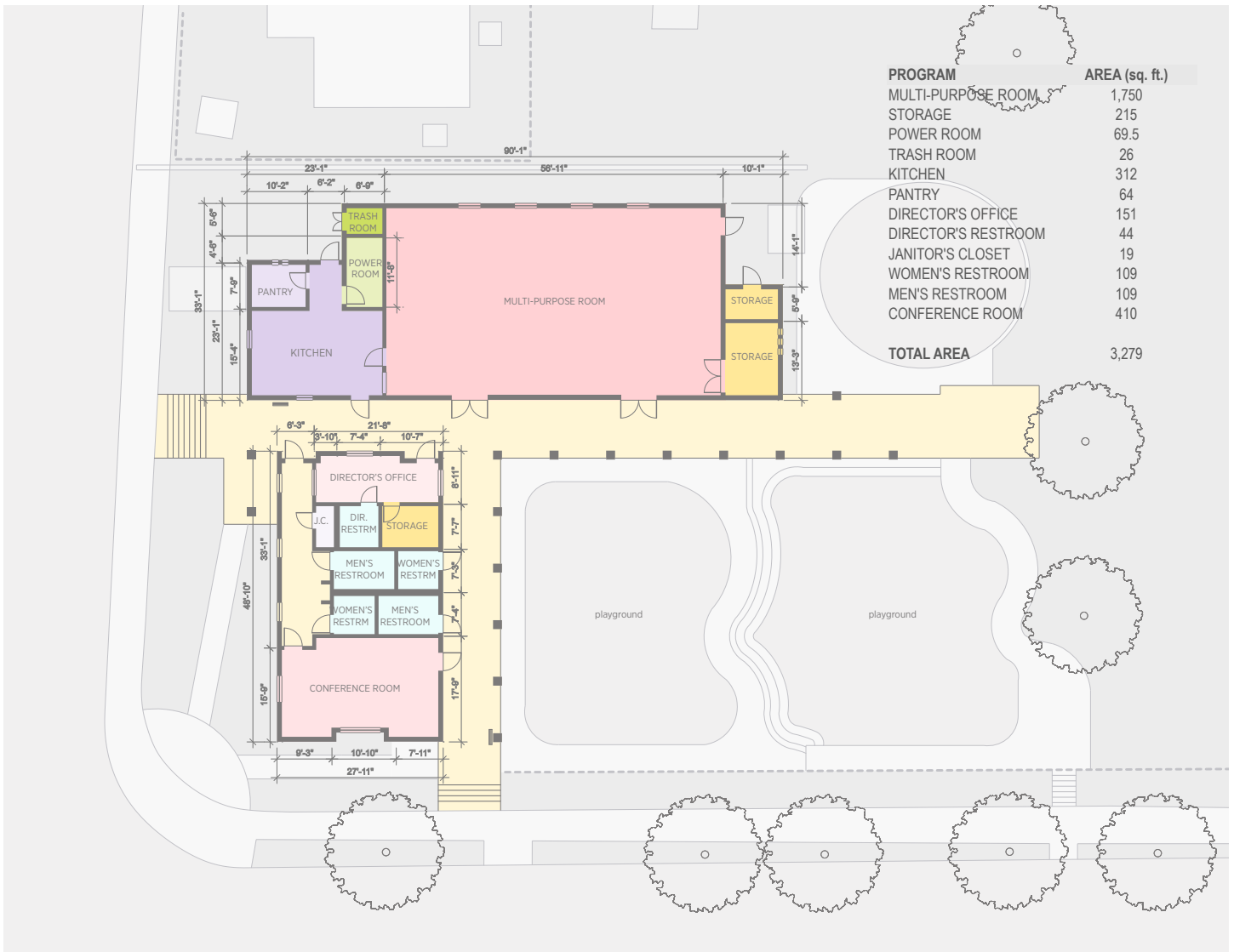


Figure 3-27 Floor plan of existing Silver Lake Recreation Center (above)

Figure 3-28 Existing Silver Lake Recreation Center entrance (right)



3.8 Circulation

Access to the Silver Lake Reservoir Complex is available via a network of streets, transit routes, bike lanes, and walkways.

3.8.1 Vehicular Access

Regionally, the neighborhood of Silver Lake is served by the Golden State Freeway (I-5), the Glendale Freeway (SR-2), the Hollywood Freeway (US-101), and Sunset Boulevard. These connect to the roadway network which form the boundaries of the SLRC: Silver Lake Boulevard and Armstrong Avenue on the east, Tesla Avenue on the north, West Silver Lake Drive on the west and Van Pelt Place on the south.

As described below and shown in Figure 3-29, these bounding roadways vary in their classification and widths, the largest of which is Silver Lake Boulevard. This primary thoroughfare is classified as an Avenue II with a roadway width of 50 feet, accommodating two-way traffic and a Class II bike lane in each direction. Silver Lake Boulevard has a 35-mph speed limit.

West Silver Lake Drive which bounds the west side of the complex is a two-way road classified as a Collector with a width of 36 feet and 25-mph speed limit. Similarly, Armstrong Avenue is also a two-lane Collector street with a varying width of 30- to 35-feet and 25-mph speed limit. The remaining roadways, Tesla Avenue and Van Pelt Place, are classified as Local streets. Tesla is one-way in the westbound direction, 24-feet wide, and has a 25-mph speed limit. Van Pelt is 30-feet wide with one lane in each direction and a 25-mph speed limit.

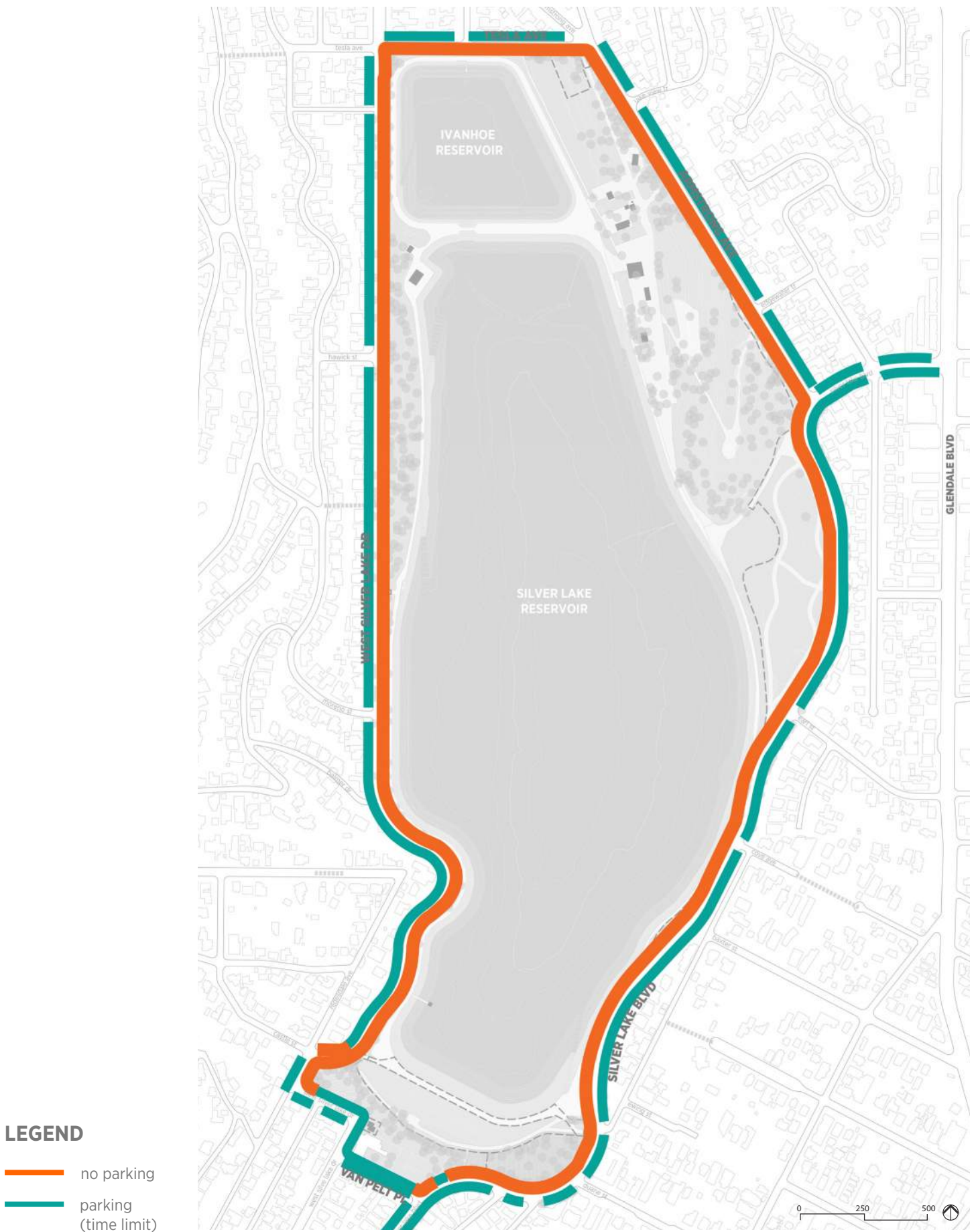
Figure 3-29 Existing road network around the SLRC



3.8.2 Parking

Parking at SLRC is limited. Surface lots within the Complex are restricted to LADWP facility staff and on-street parking is prohibited adjacent to the perimeter of the Complex. On-street parking is permitted on the opposite sides of the Complex's perimeter roads as shown in Figure 3-30. Given the traffic congestion concerns of the community and limited parking availability, making alternate modes of transportation to the Complex plentiful and easy to access is paramount.

Figure 3-30 Existing on-street parking around the SLRC



3.8.3 Bicycle Connections

There are two dedicated City bike lanes that currently provide access to the Complex, one on Silver Lake Boulevard adjacent to the Meadow (shown in Figure 3-31) and one on Rowena Avenue which connects to West Silver Lake Drive. Additionally, neighborhood traffic calming elements to improve safety and comfort for people walking and bicycling are also planned as part of the City's Mobility Plan 2035 on West Silver Lake Drive and Armstrong Avenue.

This existing and planned bike connectivity was studied for coordination with the Master Plan design. The following sections on pages 70-73 (Figures 2-32 to 3-35) depict how bicycling can be accommodated in the future within the existing street rights-of-way, creating safe bike and pedestrian circulation to and around the Complex.

3.8.4 Pedestrian Connections

Currently, a perimeter walkway allows for a continuous walking loop around the Complex. A functional perimeter walk should be accommodated by any future design. As shown in Figure 3-31, pedestrian crossings along the perimeter streets around the SLRC occur at multi-way stop signs at the intersections of Tesla Avenue and West Silver Lake Drive and Armstrong Avenue, as well as the intersections of West Silver Lake Drive and Hawick Street, Moreno Drive, and Van Pelt Place. Additionally, there are pedestrian-activated crossings at the intersection of Silver Lake Boulevard and Van Pelt Place, a traffic signal crossing at the intersection of Silver Lake Boulevard and Duane Street and along Silver Lake Boulevard at the Meadow.

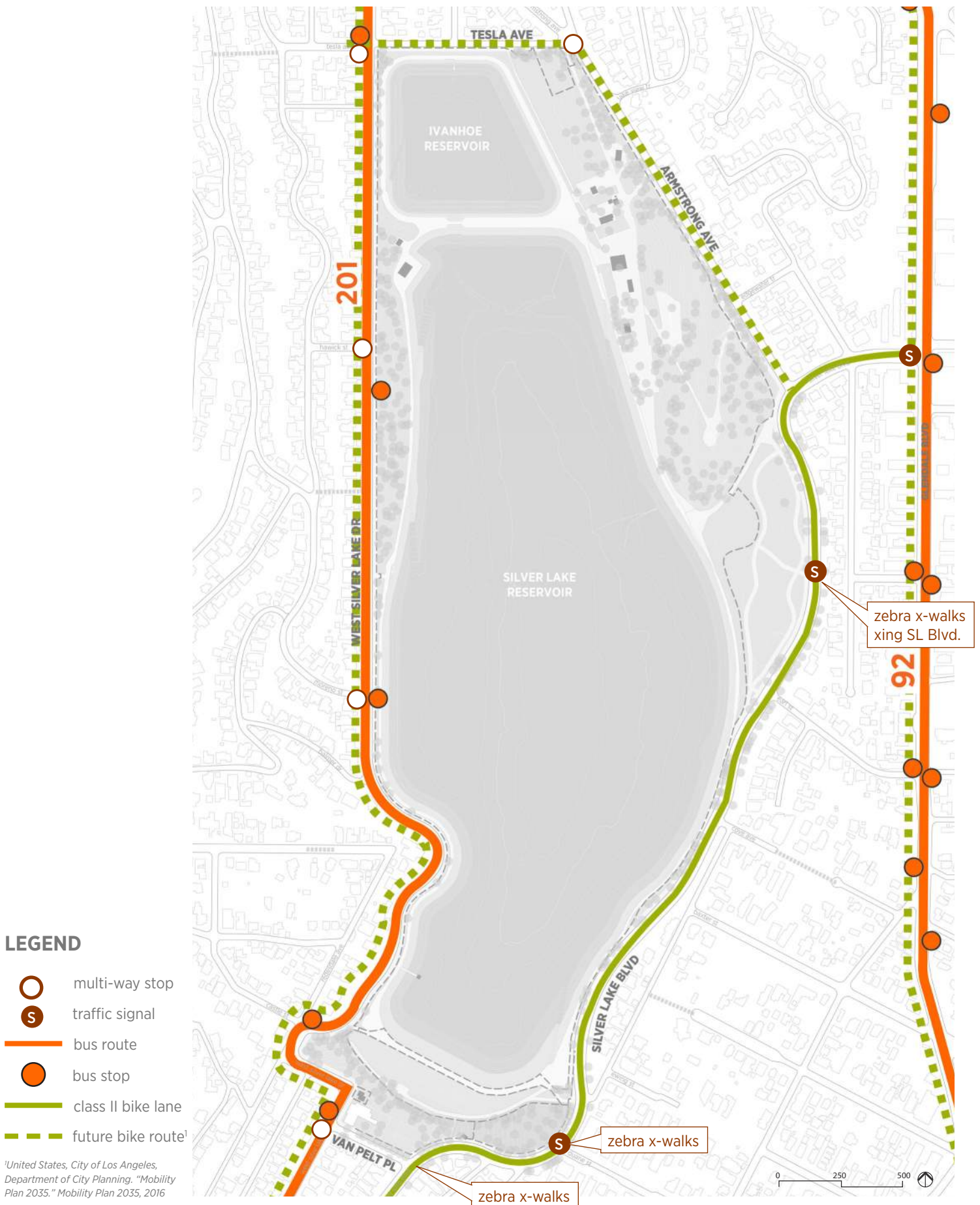
3.8.5 Transit Connections

The SLRC is connected to the County Metro bus system via lines #201 that runs West Silver Lake Drive with multiple stops adjacent to the Complex and #92 which runs on Glendale Boulevard with multiple stops which are a short walking distance from the Complex as shown in Figure 3-31. Connections into the complex from these transit stops are prioritized in the Master Plan design.

3.8.6 Ride Share and Shuttle Bus Drop Off

Currently, there are no designated drop off locations around the perimeter of the Complex for rideshare or shuttle buses. This represents an opportunity to manage potential increased visitors to the complex.

Figure 3-31 Existing bus and bike network around the SLRC

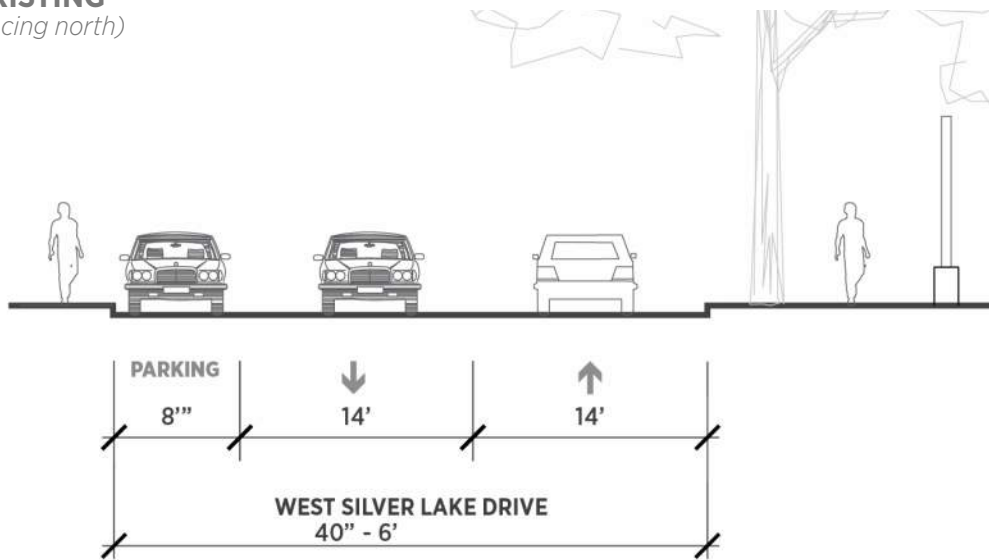


WEST SILVER LAKE DRIVE

Within the existing ROW of West Silver Lake Drive, parking and drive aisles can be reduced to accommodate a dedicated, 7-foot bike lane heading north, and the inclusion of sharrow markings heading south.

EXISTING

(facing north)



PROPOSED

(facing north)

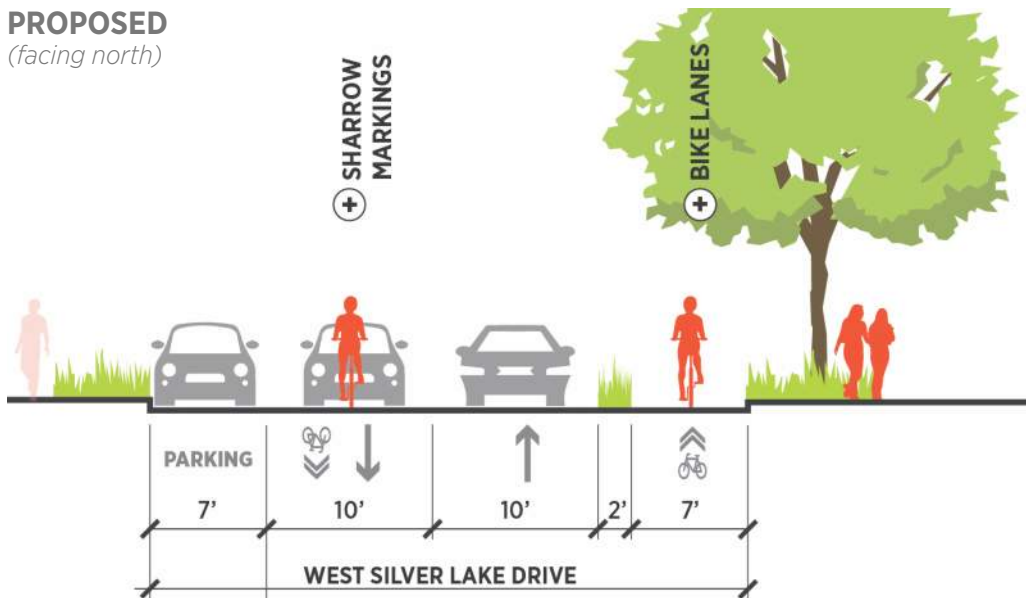


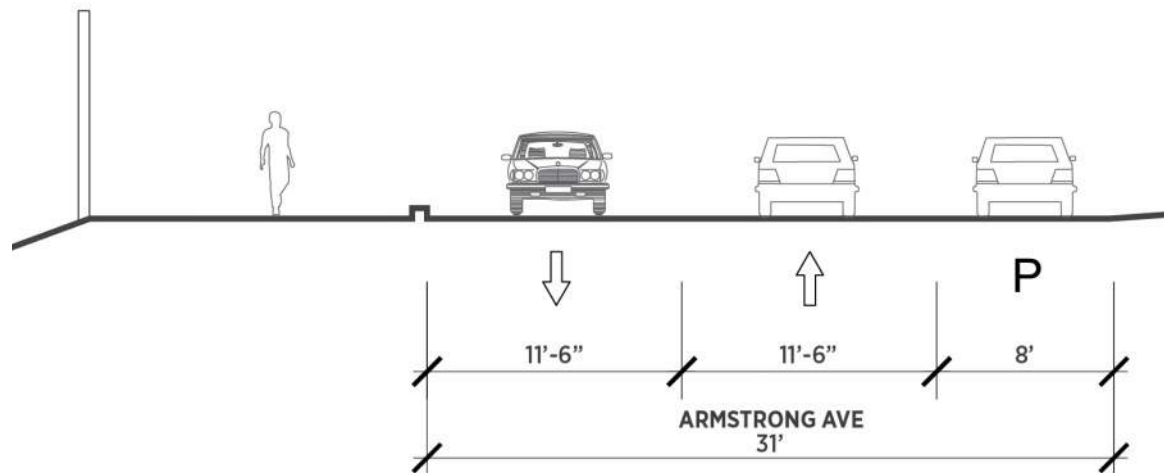
Figure 3-32 Existing & proposed section through West Silver Lake Dr.

Note: all proposed changes in these studies are conceptual and subject to final DOT approval.

ARMSTRONG AVE

Armstrong Avenue is too narrow to accommodate dedicated bike lanes, however this street can accommodate sharrow markings in each direction.

EXISTING (facing north)



PROPOSED (facing north)

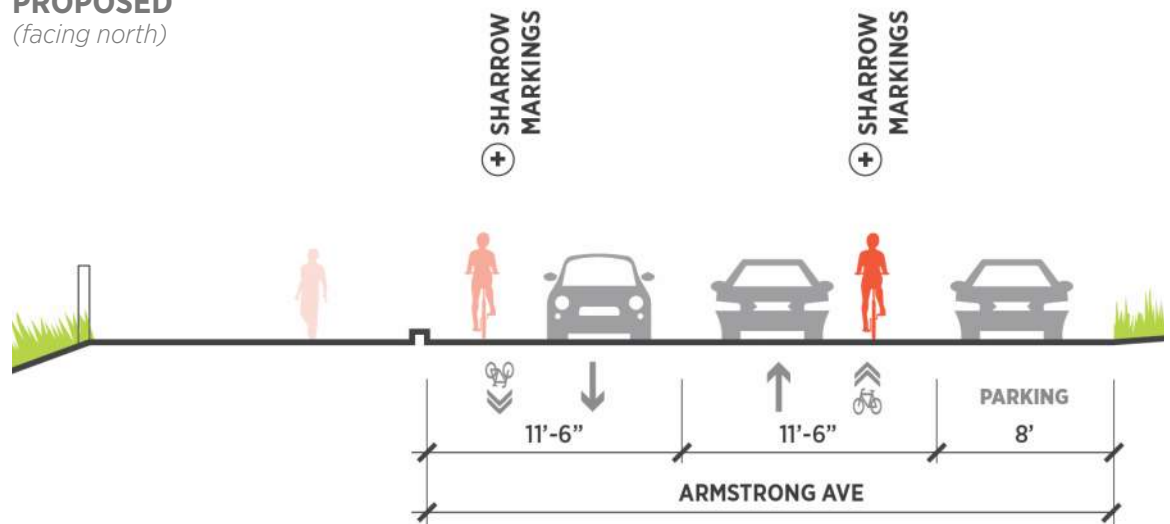


Figure 3-33 Existing & proposed section through Armstrong Ave.

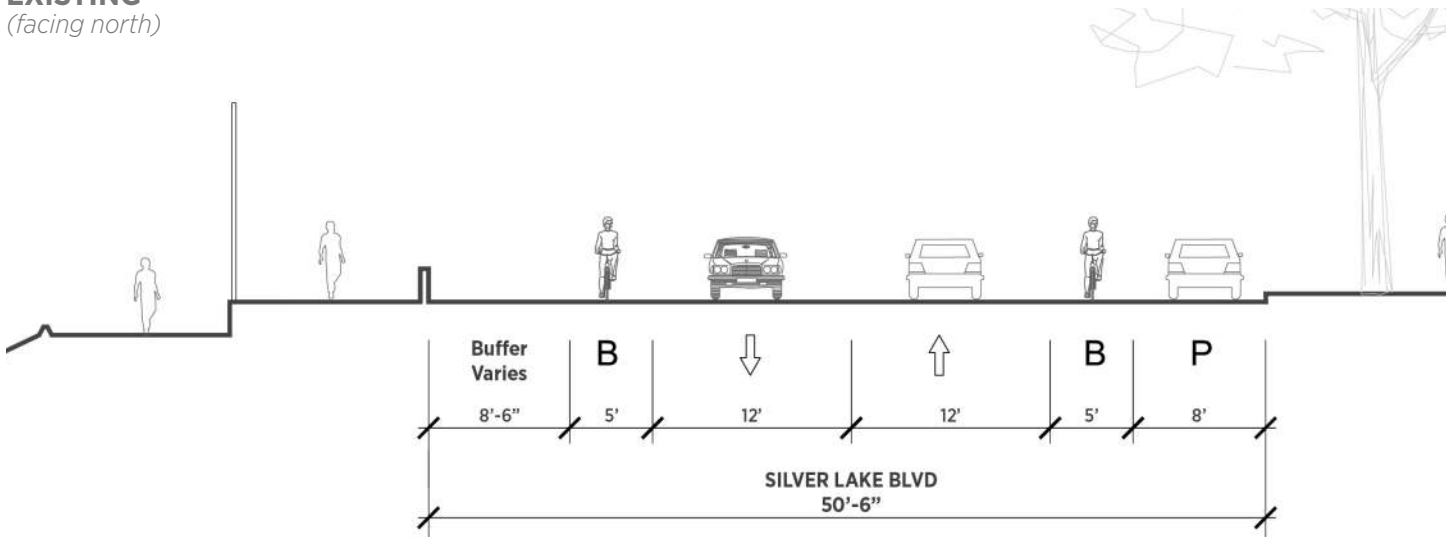
Note: all proposed changes in these studies are conceptual and subject to final DOT approval.

SILVER LAKE BOULEVARD

Drive lanes, buffers, and bike lanes can be reconfigured along Silver Lake Boulevard to accommodate a safer and more pleasant bike route. Drive lanes and parking lanes are narrowed to allow for bi-directional bike traffic along the sidewalk. A large, vegetated buffer is placed between bikers and automobiles.

EXISTING

(facing north)



PROPOSED

(facing north)

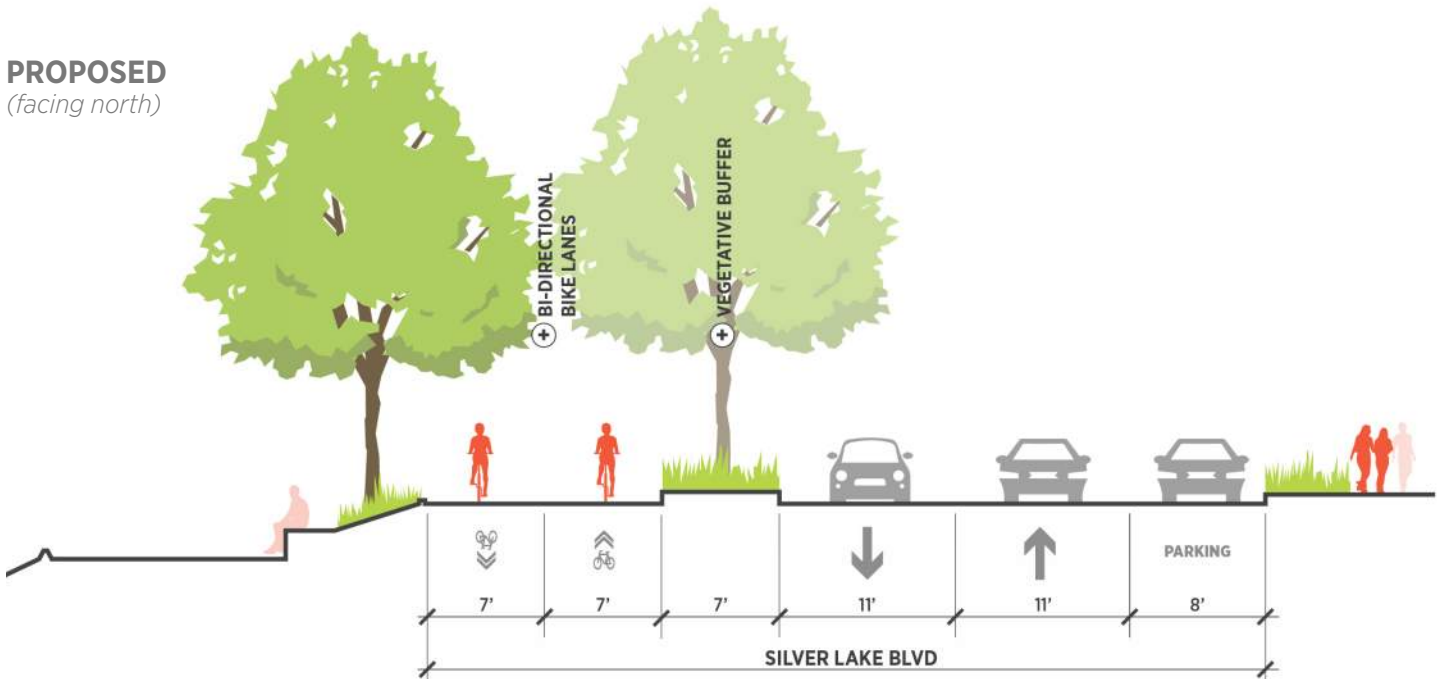


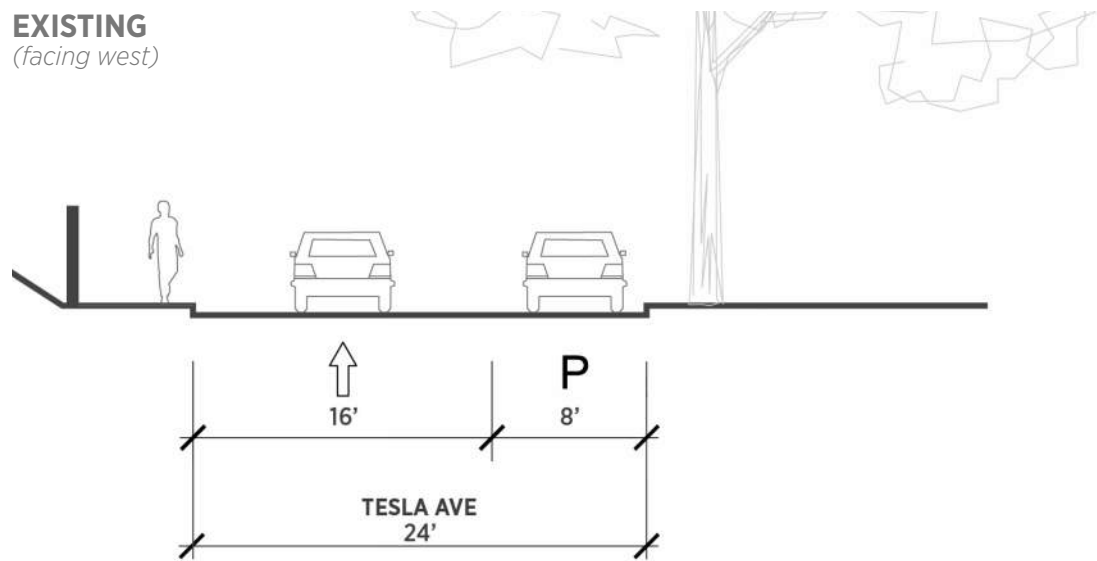
Figure 3-34 Existing & proposed sections through Silver Lake Blvd.

Note: all proposed changes in these studies are conceptual and subject to final DOT approval.

TESLA AVE

Tesla Avenue is a one-way street heading westbound. The drive lane is proposed to be narrowed to allow for a contra-flow bike lane heading east, and sharrow markings are added in the westbound direction.

EXISTING (facing west)



PROPOSED (facing west)

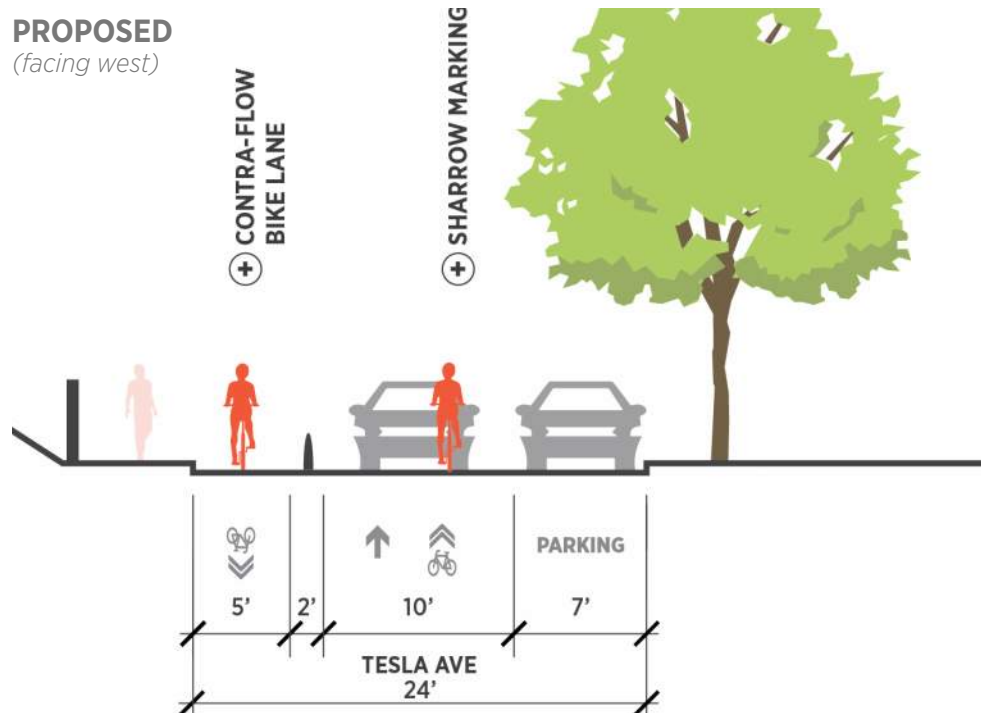


Figure 3-35 Existing & proposed sections through Tesla Ave.

Note: all proposed changes in these studies are conceptual and subject to final DOT approval.

3.9 Dams and Reservoirs

While the Master Plan envisions the reservoir complex being transformed into a public park amenity, Silver Lake and Ivanhoe Dams must remain functional and secure to protect residents and surrounding properties. The dams are located approximately one mile south of the Hollywood-Raymond Hill Fault, 8 miles northeast of the Newport-Inglewood Fault, and 32 miles southwest of the San Andreas Fault.

Ivanhoe North Dam is approximately 450 feet long and was originally constructed of wagon rolled earth filled to a maximum of 25 feet above the original streambed elevation. In 2012, a retaining wall was constructed north of the Ivanhoe North Dam for the installation of a pedestrian sidewalk on Tesla Ave.

Ivanhoe Reservoir is separated from Silver Lake Reservoir by the Divider Dam, a wagon rolled earth embankment constructed to a maximum height of 22-26 feet above the original streambed elevation and approximately 650 feet long. In 1944, a reinforced concrete spillway was constructed through the upper portion of the South Dam enabling the reservoir to be operated at a constant elevation.

Silver Lake Dam was originally constructed to a maximum height of 37 feet above the original streambed elevation by the hydraulic fill method. Due to rapid growth of the city in the 1920s, the dam was raised with wagon rolled earth fill and modifications were made to improve the reservoir for domestic use. In the 1937, a side channel spillway was constructed on the west side of the reservoir which discharged into a tunnel that connects to the storm drain system.

In the 1950s, Silver Lake Reservoir Improvements included: sharpening and deepening the reservoir, blanketing the reservoir slopes, constructing a bypass pipeline, installing reservoir blow off lines, excavating the upstream face of the dam down to bedrock, replacing the upstream face of the dam with compacted fill, and asphalt paving of the interior slopes of reservoir.

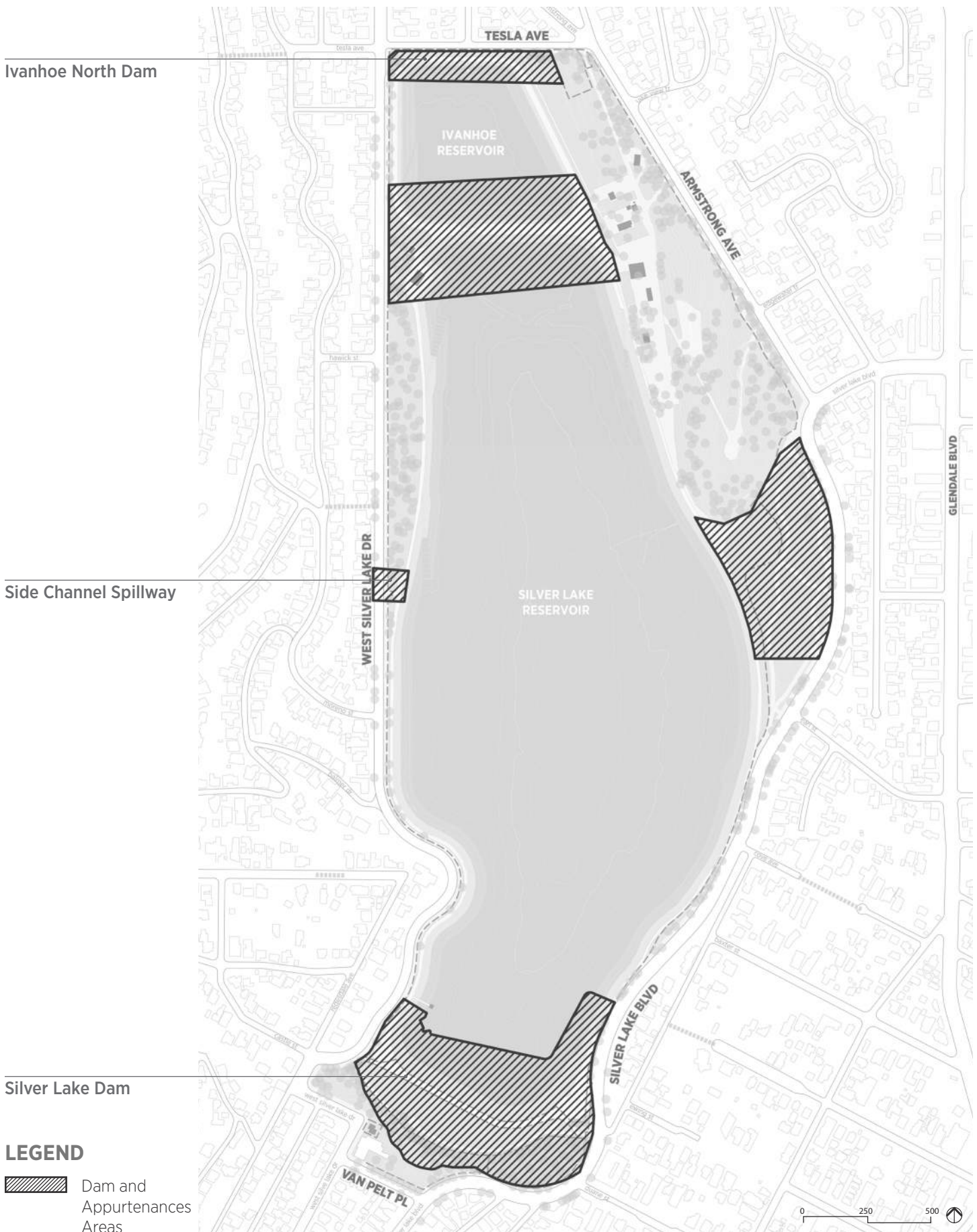
In the 1970s after the San Fernando Earthquake, seismic testing indicated the potential for liquefaction – a condition that would likely lead to failure of the dam. Based on this investigation, Silver Lake Dam was reconstructed using modern compaction methods and built on a bedrock foundation. The dam is 45 feet in height and 915 feet long.

3.9.1 State of California Department of Water Resources, Division of Safety of Dams (DSOD) Jurisdiction

Ivanhoe and Silver Lake Reservoirs falls under the jurisdiction of the State of California Department of Water Resources, Division of Safety of Dams. Any dam enlargements, repairs, alterations and removals will require review and approval by DSOD. Improvements that impact areas within the dams' areas of influence are subject to more restrictions and oversight.

Portions of the Master Plan design impacting dams and reservoirs have taken these restrictions into consideration based on a preliminary coordination with the department and a courtesy review by the DSOD. Any future design impacting the dams and reservoirs needs to be reviewed and approved by LADWP and the DSOD.

Figure 3-36 Dam and Appurtenances Areas



3.10 Viewshed

The power of the Silver Lake Reservoir Complex is the iconic singularity of its expression. Yet, because of the sheer scale of the reservoirs, it's challenging to comprehend the Complex all at once. Instead, one understands their magnitude and relationship to the neighborhood and region by moving around these water bodies both inside the Complex as well as outside within the Silver Lake neighborhood.

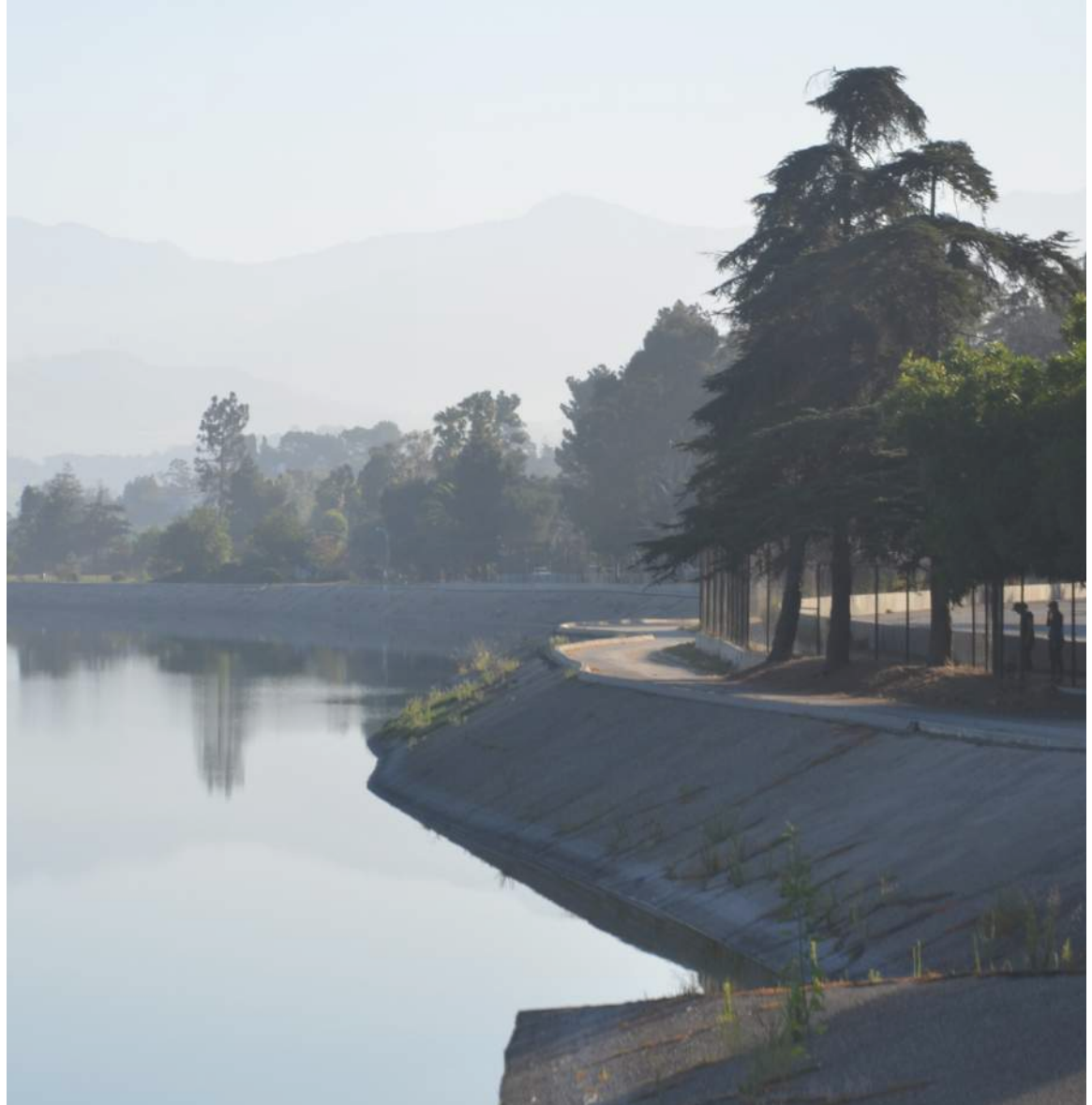
The reservoirs and Silver Lake neighborhood are synonymous with one another. Constructing the reservoirs within Ivanhoe Canyon was a primary catalyst for the community's growth which rapidly developed on adjacent hillsides. And given the reservoirs' central location within the canyon valley, they became an important focal point in the heart of this Los Angeles neighborhood, affording extraordinary water vistas and a vantage point for views of the regional landscape.

The vast SLRC can be seen, in whole or in part, from the public realm and from many of private residences in the surrounding hills. At the first community workshop June 27, 2019 of this Master Plan effort, it was evident that, while there was a range of different opinions regarding the future use and accessibility of the Complex, there was a strong consensus regarding its essential quality: the water. Many of the defining characteristics expressed by the community at the first workshop evoke this interest: "vistas, serenity; morning sparkle, beauty." This aesthetic quality, cherished by so many people, transcends individual delight; it becomes a shared experience that brings people together.

Figure 3-37 Runner along the South Dam Walkway



Figure 3-38 Inside the reservoir looking north along Silver Lake Blvd.



Within the complex, the scale of the reservoirs create an immense open space that allows unobstructed views of the neighborhood hills, as well as the greater landscape of Griffith Park and the foothills of Glendale and Highland Park. From an existing publicly accessible walkway along the south Silver Lake Dam are sweeping views across the water to the San Gabriel Mountains in the distance. What unfolds as one moves around the Complex is a layered narrative about the connection between the reservoirs and the Silver Lake community as well as their fundamental place in the region.

The primary task of the Viewshed Study was to document and investigate the array of views from outside the project site looking at the reservoirs, and from within the Complex looking at the surrounding landscape. Its purpose was to gain a better understanding of the breath, depth and meaning of the reservoir views for the Silver Lake community and visitors. These studies informed the Master Plan design from the strategic placement of elements within the Complex to align with important view corridors in the neighborhood to creating moments within the Complex to heighten visitor experience.

3.10.1 Views from within

The following 2 pages show a sample of the views from within the Complex. For a complete list with descriptions, see the View Shed Study Report in the Appendix.

Figure 3-39 Key map and images of views from within the reservoir (1 of 2)

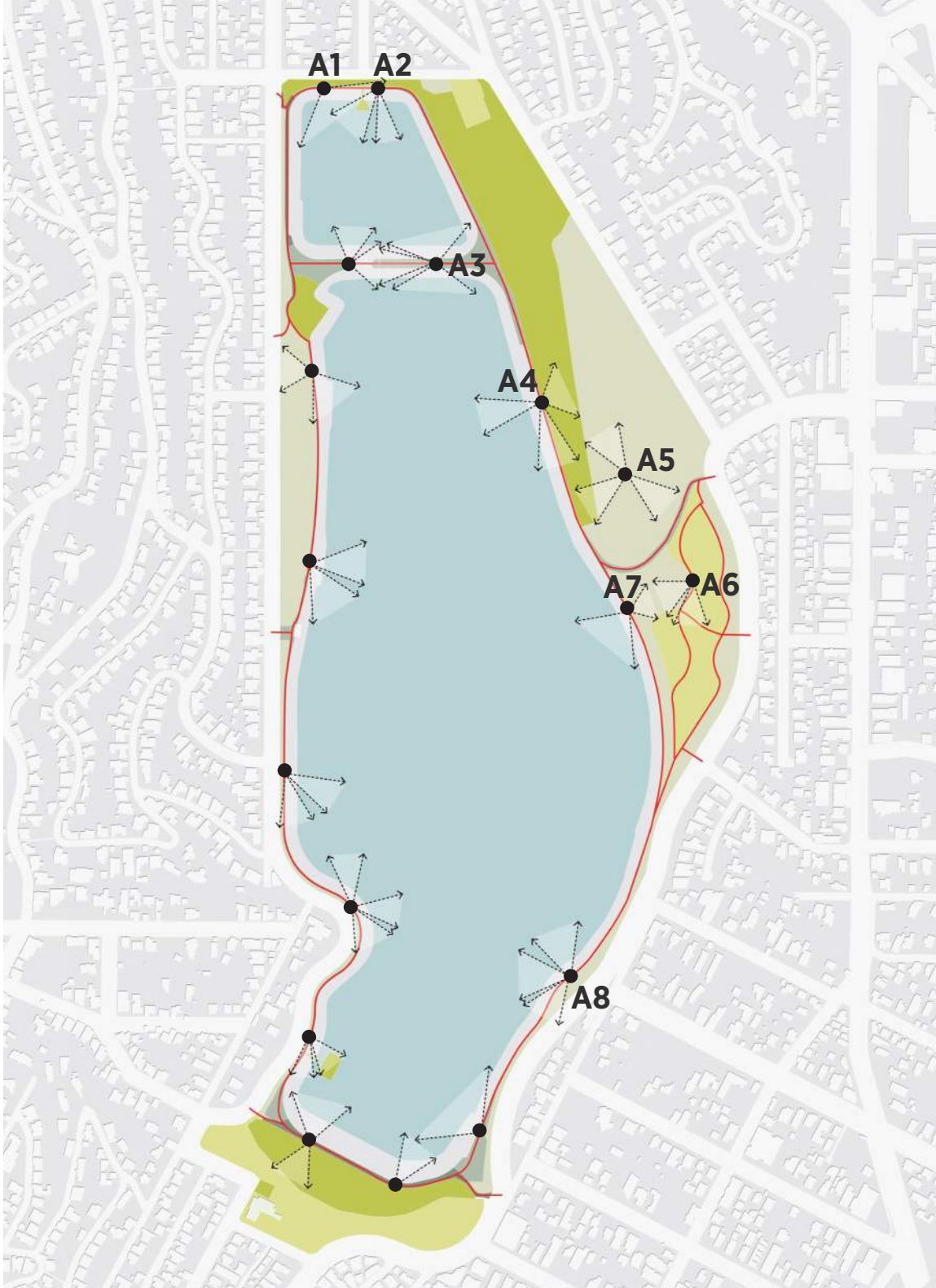
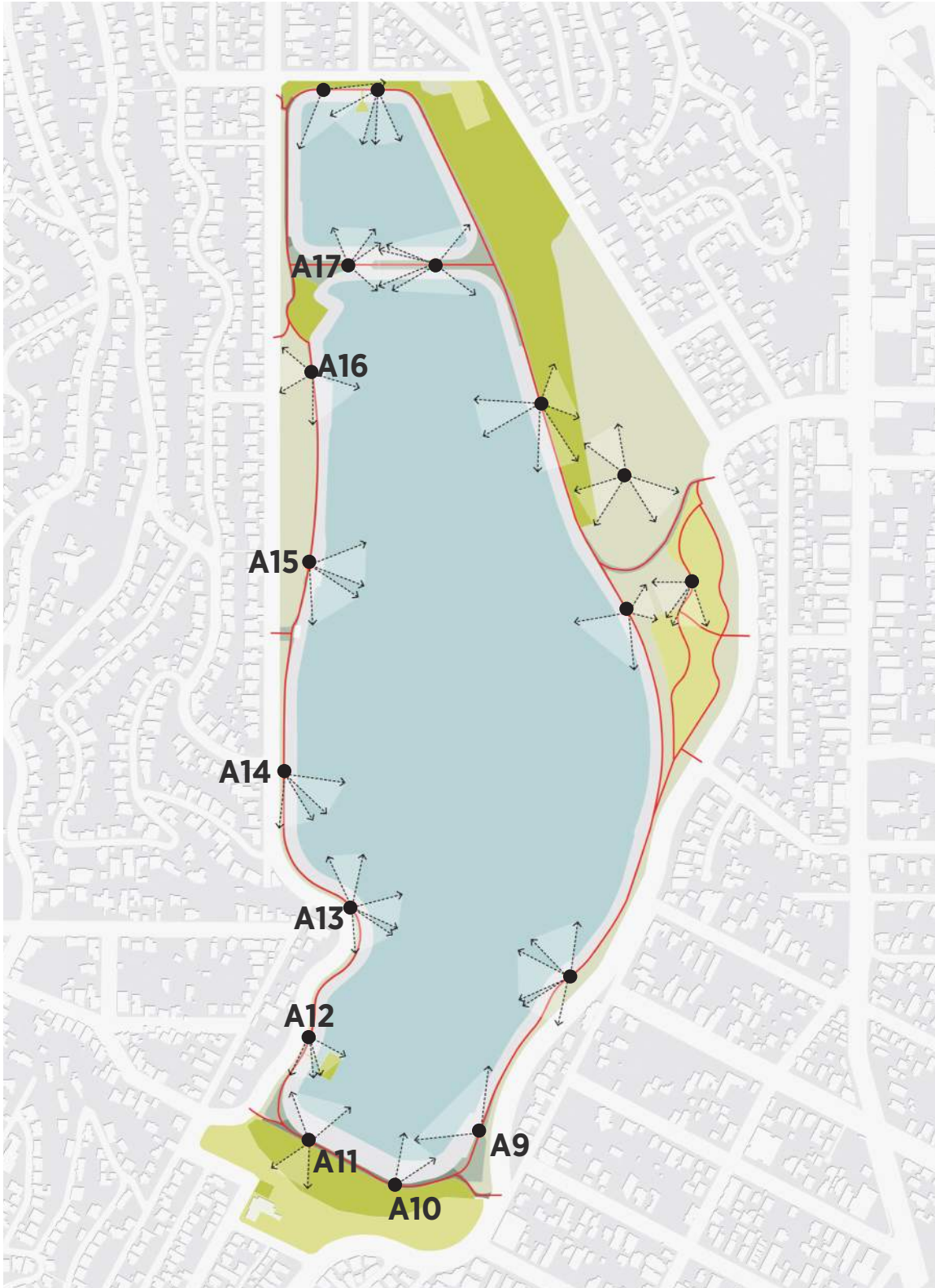
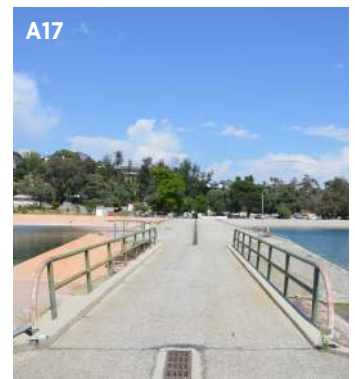
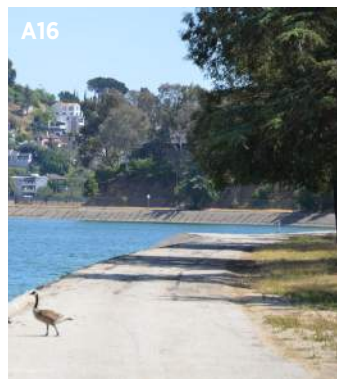




Figure 3-40 Key map and images of views from within the reservoir (2 of 2)





3.10.2 Views from outside

The following 2 pages show a sample of the views from outside Complex. For a complete list with descriptions, see the View Shed Study Report in the Appendix.

Figure 3-41 Key map and images of views from outside the reservoir (1 of 2)

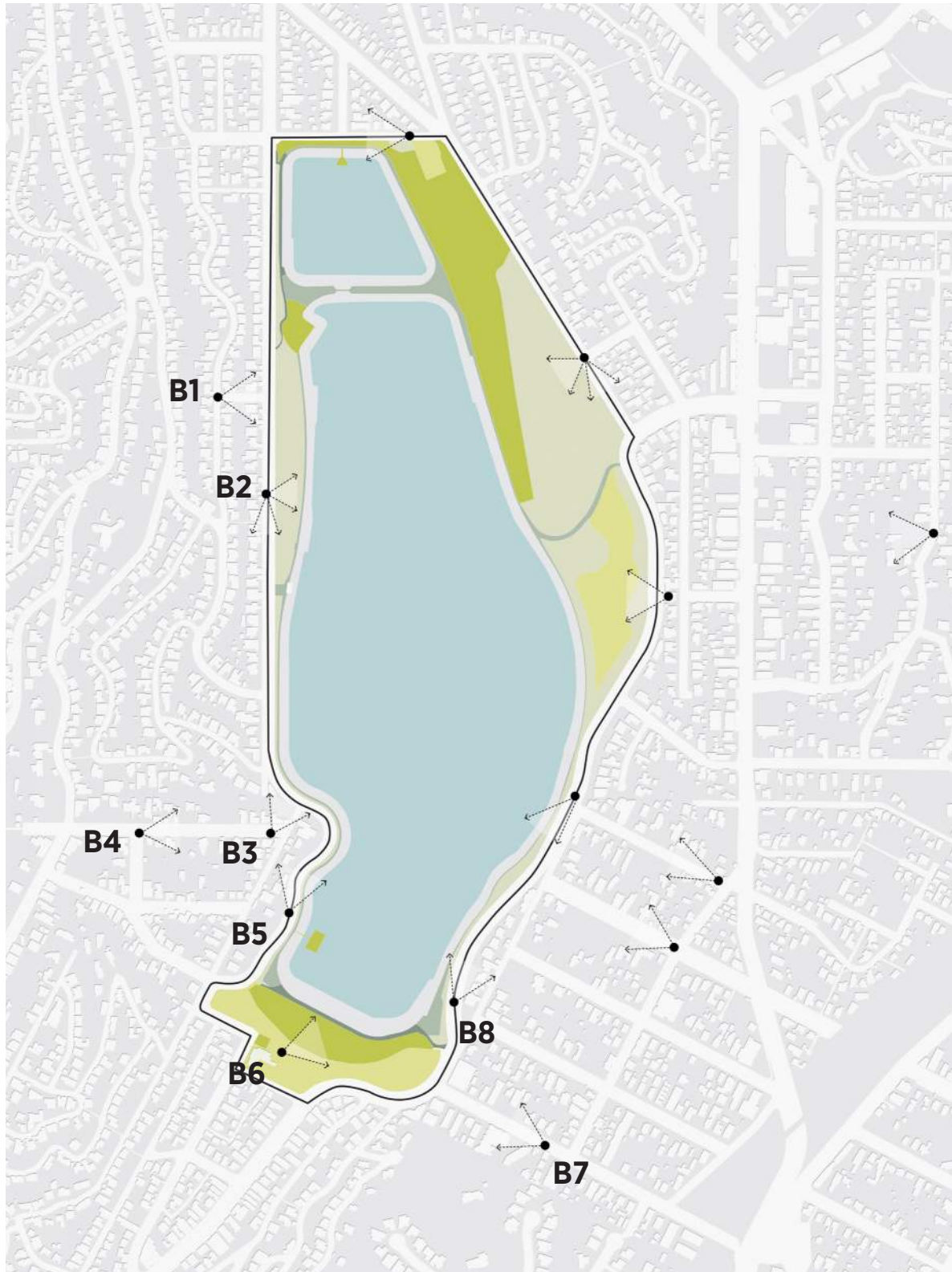




Figure 3-42 Key map and images of views from outside the reservoir (2 of 2)

