

August 2021

Verdugo WASH

visioning pre-design report

!melk
+BuroHappold

prepared for the City of Glendale, California

Verdugo Wash Visioning Pre-Design Report

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1. introduction

The Verdugo Wash Visioning offers a unique place-making opportunity that would significantly reshape the urban framework and character of a major area of Glendale.

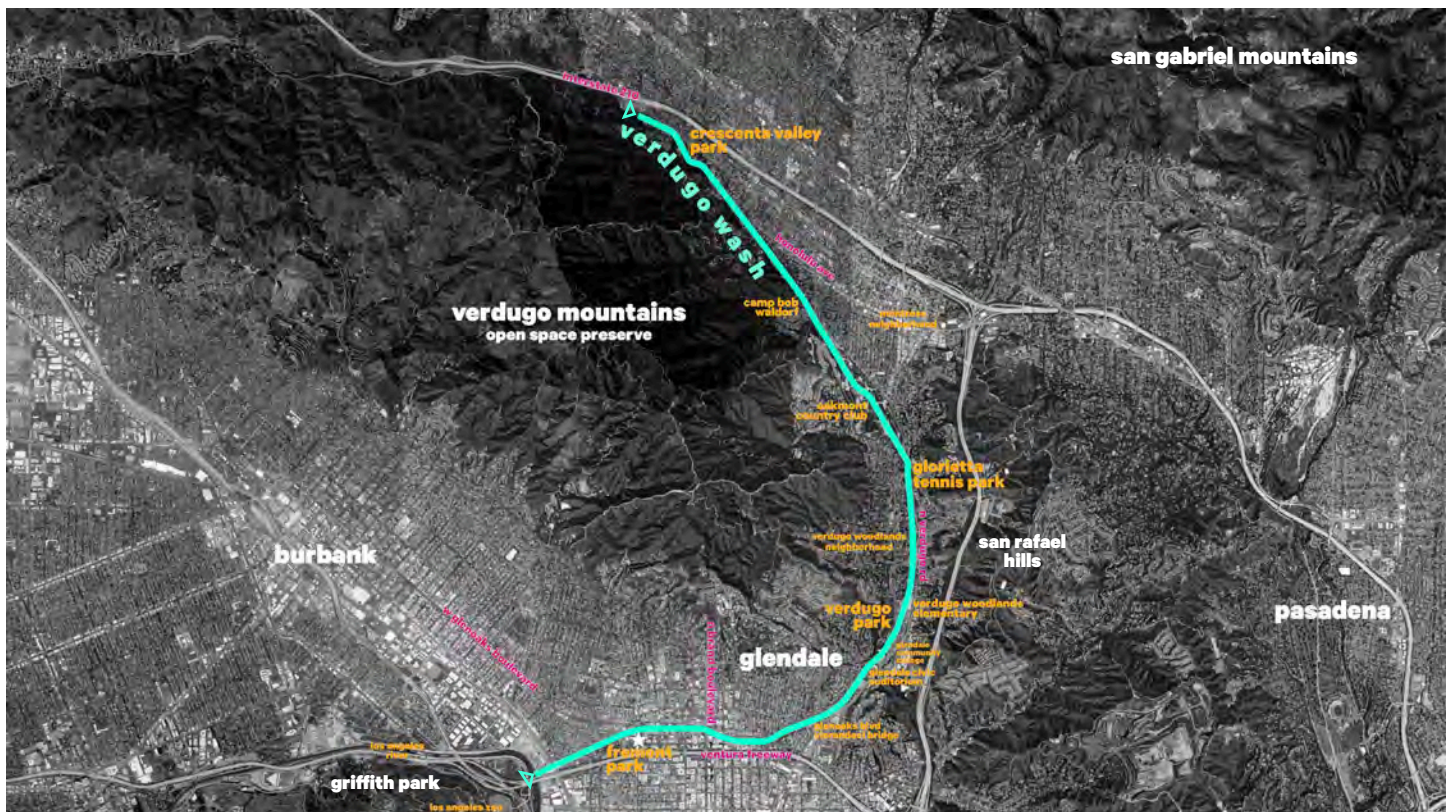
The goal of the project is to develop a high-level vision, including but not limited to, conceptual design, programming, and integration of a re-imagined Verdugo Wash into the existing and potential land use framework of the City.

The vision will help transform the utilitarian design of the Wash (as a flood control channel) into a significant contributor to the City's character and amenities. The original tributary path will be revitalized, biodiversity will be reactivated, and the community will be reconnected with an active transportation corridor.

The Verdugo Wash Visioning will build upon strategies identified in the Greener Glendale Plan and other existing efforts. Related city goals and targets will be incorporated into the design where possible.

The KEY PROJECT OBJECTIVES, as defined by the City of Glendale and the brief for the Verdugo Wash Visioning, are:

1. Create an overall urban design vision for the Verdugo Wash that extends from its northernmost origin to its confluence with the Los Angeles River and Griffith Park. The vision should respect the various neighborhoods along the route, but also create an identifiable theme that is consistent for the entire Verdugo Wash.
2. Develop new pedestrian and cycling trails that will allow the Verdugo Wash to serve as a multimodal transportation spine while supporting and enhancing the Citywide Pedestrian Plan and Bicycle Transportation Plan.
3. Establish connections amongst existing assets along the route such as Downtown Glendale, business districts, entertainment venues, parks, and Griffith Park.
4. Identify and develop opportunities for public open space such as parks above or adjacent to the Verdugo Wash.
5. Identify and develop opportunities for fixed and temporary uses along the Verdugo Wash to promote civic and social engagement using urban design, art, and other placemaking strategies to create inspiring and activated places.



project location: the Verdugo Wash is a 9.4-mile-long tributary of the Los Angeles River located in the Glendale area of Los Angeles County, California. The channel begins just south of Interstate 210 in the Crescenta Valley. It flows southeast along the eastern edge of the Verdugo Mountains, then south through a pass between those mountains and the San Rafael Hills, and finally west to ultimately join the Los Angeles River just northeast of Griffith Park.

6. *Identify sustainability, environmental restoration, and remediation measures including opportunities to restore the natural habitat in segments in or along the Verdugo Wash, and other strategies that will counter the effects of climate change.*
7. *Establish identifiable segments of the route that will create unique urban design visions and environments that are responsive to the surrounding urban context.*
8. *Utilize innovative experiential urban design, landscape architecture, art, and placemaking tools to create an aesthetically compelling and interactive urban space. This may include, but is not limited to; paving materials, landscape palette, art installations, wayfinding, and other unique design strategies that will create an identifiable vision. (Currently, Lighting Design, Public Art Strategy/ Procurement and Signage & Wayfinding are not accounted for in the landscape scope.)*
9. *Create a strategic branding program that will provide a recognizable identity for the Verdugo Wash and the project that will serve as an identifiable symbol and brand to be incorporated into wayfinding and other graphic representation of the vision.*
10. *Identify opportunity parcels that can serve as significant moments along the route. This should include parcels to consider for acquisition, or those that are already in possession of the city that can be repurposed to support the objectives of the Verdugo Wash.*
11. *Identify early and easily implementable strategies by creating a comprehensive vision that will make the project viable for long-term implementation, but creates early “win” opportunities to stake claim in the corridor.*

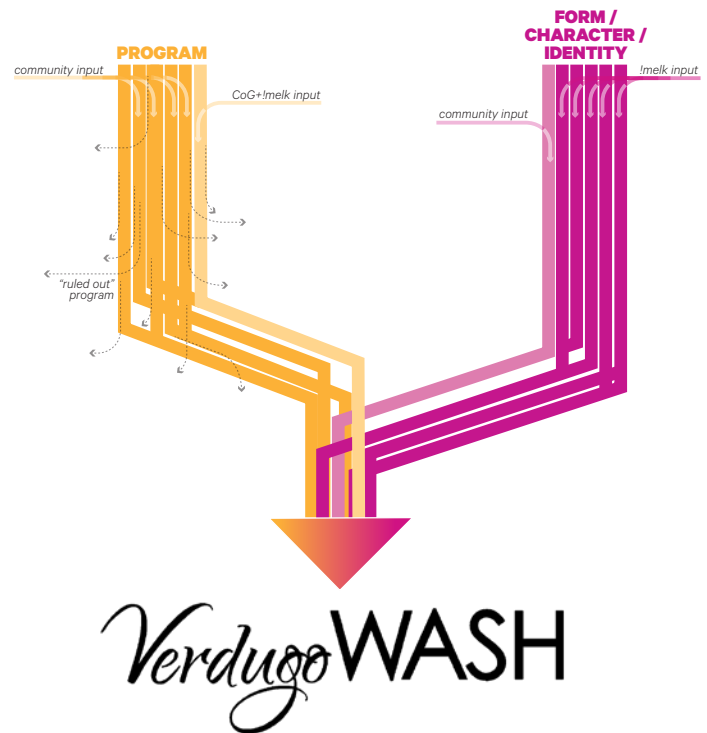
Stakeholder Engagement

Imelk recognizes that the success of a project often hinges on well conceived public engagement processes. For many of our projects in the public realm, we have consistently interacted directly with community leaders, residents, stakeholders, and local agencies and we have developed a methodology for soliciting, documenting and responding to input.

All of **Imelk**'s projects are driven by community engagement and consultation. Whether it is a project in a small town or a large city, we have consistently worked together with project stakeholders and the community at large to gather valuable insights and feedback.

These community relationships are immensely important to the design process, and we welcome everyone to participate and make their voices heard.

For our team, a successful project means that our design and solutions will be inspiring and “future-focused” - a place for the people of the local community, representative of all residents, and that is inclusive, safe, beloved, and uplifting.



a proven process: how the project will be a holistic integration of program and identity/form/character, guided by input from the City of Glendale, the community, and the design team.

We believe that public space must be for all. What we offer as designers is the ability to transform the identity of a place into a unique and community-specific expression of history, desire, and pride; a place to see and be seen, a place to be heard, a place for families and friends, and a place that first and foremost is welcoming.

Stakeholder engagement and outreach will occur throughout the project, ensuring that the Verdugo Wash vision will not only be for, but also by, the residents of Glendale.

A detailed Public Engagement Plan is currently being developed together with the City of Glendale. As a project team, we are committed to promoting diversity and neighborhood representation, by providing a space that can give all in the local community a sense of ownership.

All are encouraged to frequent the project website at <https://www.verdugowash.com/> for more information about Verdugo Wash Visioning, as well as specific updates on the visioning process and any planned public engagement events. Also available is an online survey - the responses received will help guide and facilitate the process!

In addition to interaction and feedback from Glendale Residents and Glendale Homeowners Associations, our team looks forward to working with the City of Glendale and the current working stakeholder group, which includes:

*Arroyo and Foothills Conservancy
Friends of the LA River
Glendale Chamber of Commerce
Glendale Environmental Coalition
Glendale Homeowners Coordinating Council
Glendale Parks and Open Space Foundation
GoGlendale
LARiverWorks
NET or North East Trees
Southern California Assoc of Governments
Walk / Bike Glendale*

The Visioning Process

The Verdugo Wash Visioning effort, led by the **!melk+BuroHappold** team in close collaboration with the City of Glendale, will be an approximately one-year effort, comprised of the following stages:

Stage 1: Project Initiation & Pre-Design

The pre-design stage will establish the basic framework for the study and will involve: collecting and documenting physical and visual data of the study area including existing conditions and future citywide initiatives; reviewing and discussing precedent projects; establishing goals and objectives for the Verdugo Wash Visioning; establishing a public engagement strategy and schedule; and establishing a branding strategy for project identification.

Stage 2: Visioning

Using data collected from Stage 1, public feedback, and design direction established as part of the charette process, the **!melk+BuroHappold** team will develop design alternatives and interventions for the Verdugo Wash. This will include potential route alternatives for pedestrians and cyclists, identifying locations for public space improvements, types of open space, exploring areas for habitat restoration, design approaches to respond to different neighborhood contexts, and sustainability measures.

Stage 3: Visioning Refinements, Community Input & Engagement

The **!melk+BuroHappold** team will further develop and refine the selected master plan alternatives and interventions for the Verdugo Wash incorporating the feedback received during public engagement events and hearings, stakeholder review, and through City staff guidance. This includes refinement of all work products

undertaken in Stage 2, and advancing them from the conceptual to finalized vision documents. Through the course of the visioning process, all details will be addressed in preparation of final documentation.

Stage 4: Final Design & Report

A final report will document the Verdugo Wash Visioning project and process in its entirety in order to record the conditions and influences that shaped the final vision.

Ultimately, upon completion of the Visioning stage, it is the goal that the Final Design and Report encapsulate a Concept Plan and Development Framework that not only has a unique identity, strong design vocabulary, and is beloved by the Glendale community, but also contains possibilities and opportunities to identify potential future phases (perhaps even pilot projects), which can be further developed in subsequent design stages.

!melk is particularly expert in creating strong “brand identities” for places, and has cultivated a reputation for delivering well-crafted designs, from small to large scales. **!melk**’s designs almost always include a fundamental and simple “built-in” fundraising approach in order to activate the appropriate expertise to facilitate with fundraising strategies.

As catalytic problem solvers, **!melk**’s master planning and concept visioning efforts consider long-term viability and address financial challenges, while engineering successful implementation strategies, which include creative, inclusive, and equitable short-term and long-term funding ideas. In addition, **!melk**’s designs often include bespoke elements that inherently create an opportunity for “naming rights” and sponsorships.

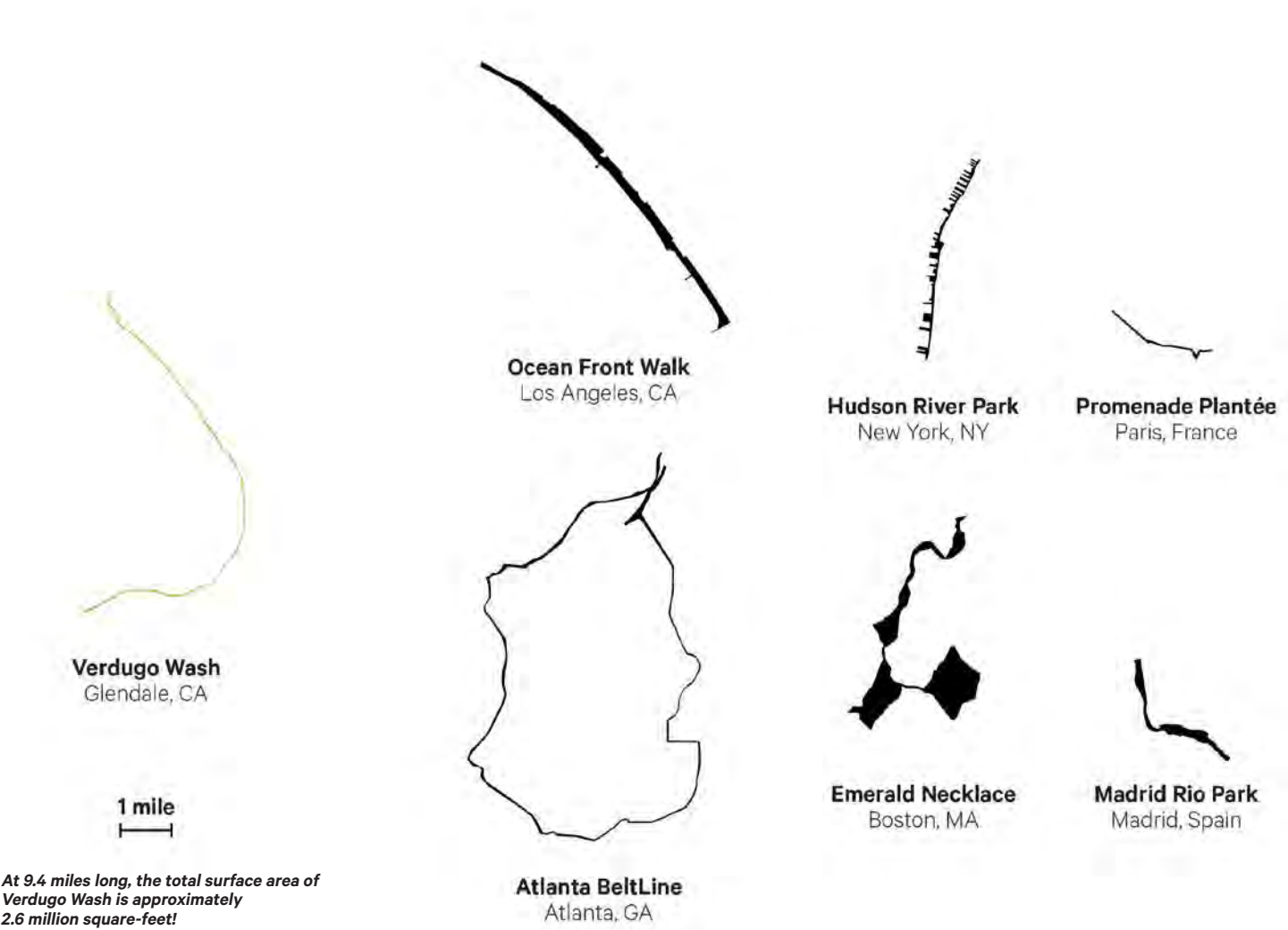
Pre-Design Report

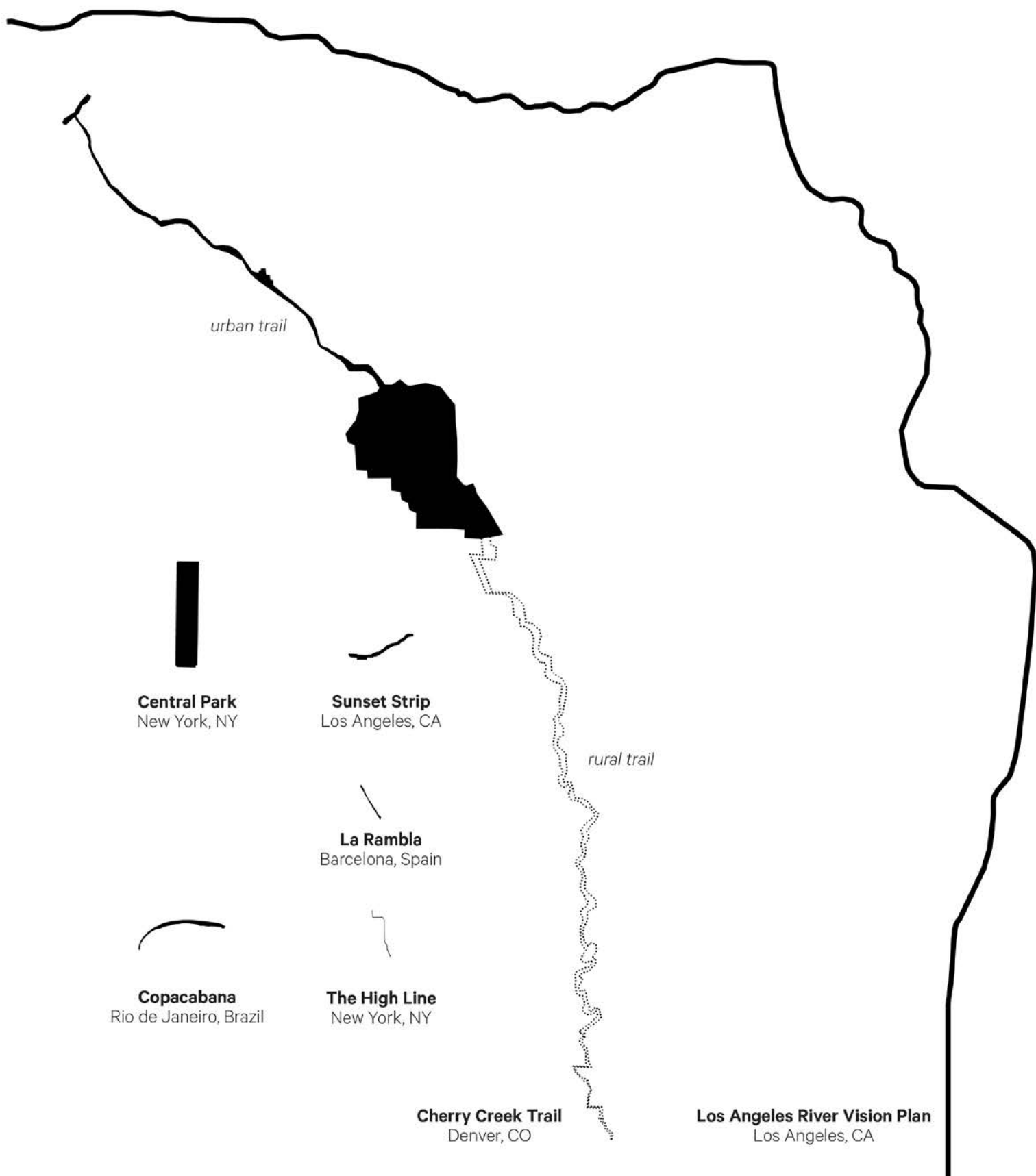
This pre-design report aims to provide a summary of existing conditions, relevant history, constraints and challenges, community needs, opportunities, and project precedents.

In particular, the report will focus on urban design, landscape strategies, sustainability, mobility, and hydrology and biology. The findings presented in the report will help guide and support the visioning and urban design process.

The report will also ensure that the ultimate design is not only transformative and aesthetic, but also practical and evidence-based in the amenities and co-benefits that it provides.

how does Verdugo Wash compare with other prominent and well-known urban corridors?





Central Park
New York, NY

Sunset Strip
Los Angeles, CA

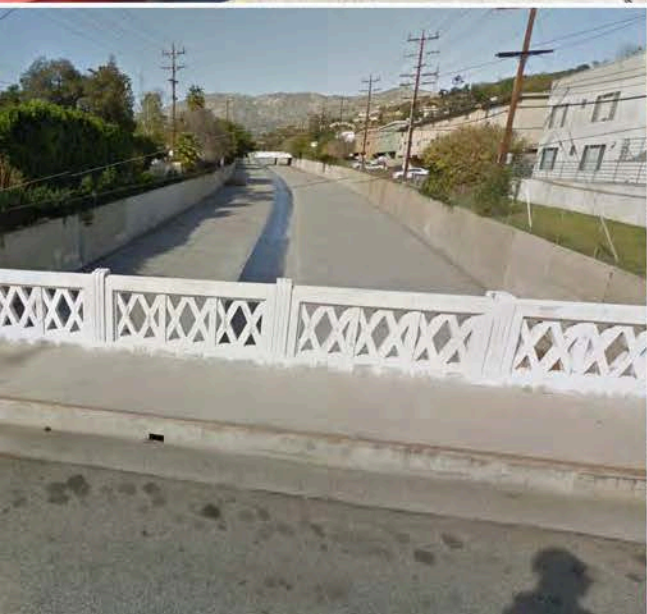
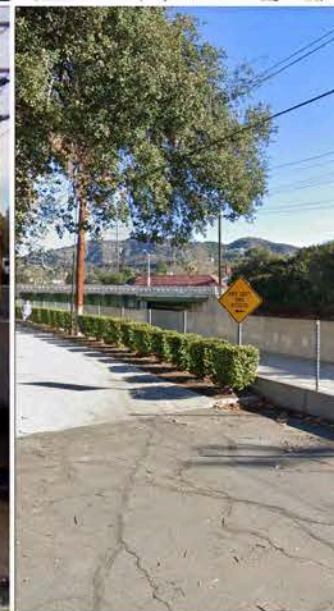
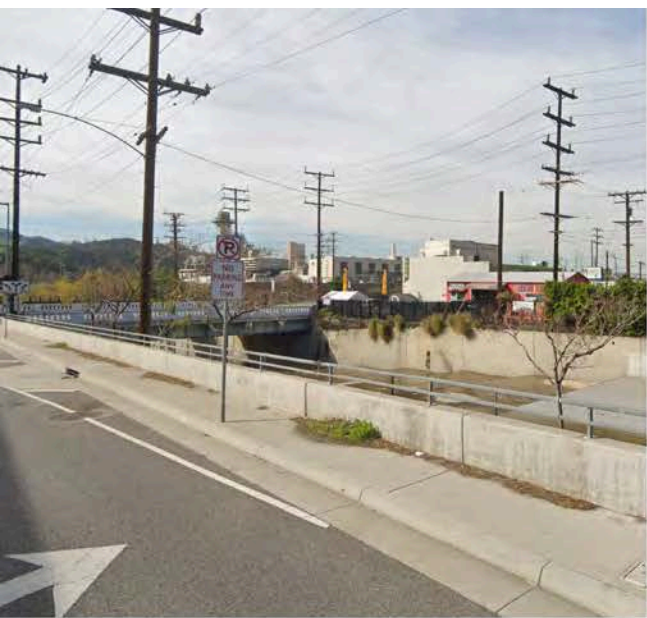
La Rambla
Barcelona, Spain

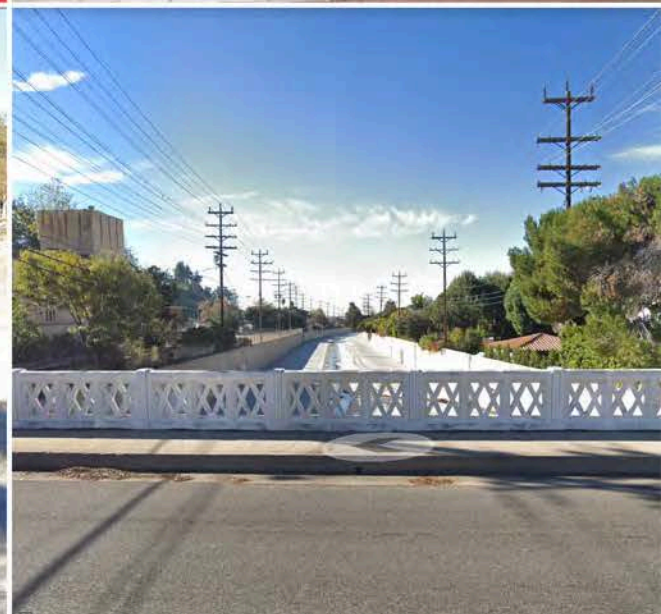
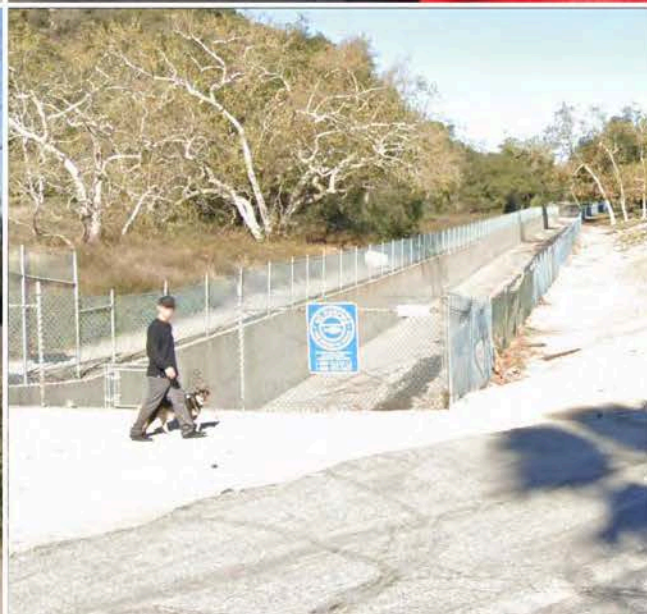
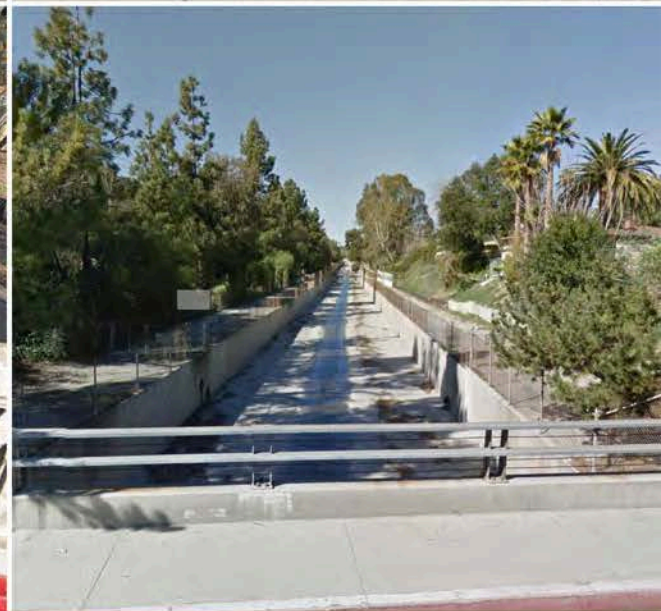
Copacabana
Rio de Janeiro, Brazil

The High Line
New York, NY

Cherry Creek Trail
Denver, CO

Los Angeles River Vision Plan
Los Angeles, CA





2. history

Historically, the Glendale area was home to the Tongva people, who likely first settled in the region some 3,500 years ago. The Tongva people (also known as “People of the Earth”) enjoyed the benefits of the natural river and surrounding ecosystem, often building villages along it. By the late 1700s, the area was under Spanish control, who forcibly removed the Tongva people and used their ancestral lands for grazing and agricultural purposes. In 2002, centuries after the Tongva were forced from their land, a prominent peak in the Verdugo Mountains was named in their honor – “Tongva Peak.”



“San Gabriel Mission 1832” by Ferdinand Deppe image source: https://en.wikipedia.org/wiki/Ferdinand_Deppe#/media/File:Ferdinand_Deppe_1794-1861.jpg

NATURAL BEAUTY

Early descriptions of this area were remarkably illustrative. An diarist from the 1769 de Portolá land expedition described the scene after crossing the Arroyo Seco, *rhapsodizing for more than a thousand words that day about this “green, lush valley” its “very full flowing, wide river”, the “riot of color in the hills.” “The place defined abundance - native grapevines, wild roses and sage growing in rich soils, grizzly, antelope, quail and steelhead trout for the taking.”* This expedition led to the founding of the Mission San Gabriel in 1771.

The Glendale area then became part of one of the first and largest original Spanish land grants made to Mexican and Spanish settlers to establish the pueblo of Los Angeles. Known as Rancho San Rafael, the 36,403-acre area was given to José María Verdugo in 1784 for his service in the Spanish army. With the cession of California to the United States following the Mexican-American War, a 1848 Treaty provided that land grants like this be honored; the US Land Commission confirmed the grant in 1855. In 1882, the grant was patented to the Julio and Catalina Verdugo Family.

In 1884, area residents gathered to form a town site and chose the name “Glendale”. Development in the area then consisted of agriculture, a few homes along Figueroa Street, and summer cottages in the hills overlooking the Arroyo Seco. Unsurprising given the area’s natural beauty, areas like Mount Washington began attracting artists by the 1890’s.



1900 map of the initial Glendale town site and its relationship to the Rancho San Rafael and region’s rich topography.

image source: <https://homesteadmuseum.blog/2019/02/28/all-over-the-map-section-road-map-of-los-angeles-county-1900/> (originally published in “Sectional & Road Map of Los Angeles County Including Part of Orange & Ventura Counties Showing the Oil and Mining Districts Compiled From Official Records” by Stoll and Thayer Company; drawn by engineers A.L. George and N.B. Blunt.

As part of a wave of public fascination with the romantic days of California’s Spanish and Mexican past, visitors made their way in droves **“Out Glendale Way”** to stroll about the area’s lush grounds.



Aerial view of Glendale (circa 1920) at the foot of the Verdugo Mountains with Verdugo Canyon and the San Rafael Hills on the right. Housing development is encroaching on the citrus groves to the north.

image source: https://waterandpower.org/museum/Early_Views_of_Glendale

Glendale on the map! A historically popular destination in Los Angeles.

TRANSPORTATION INNOVATIONS

In 1902, the Glendale Rail Line was pioneered by L.C. Brand and Associates as "The Los Angeles & Glendale Electric Railway". One year later, the Los Angeles City Council approved an electric railway line running from Los Angeles to Glendale. The franchise was soon sold to Henry E. Huntington, owner of Pacific Electric Railway Co., who would bring the "Red Cars" to Glendale by 1904 under the name of Los Angeles Interurban Railway (later changed to Pacific Electric). Noteworthy is the way in which this 1906 promotional brochure reads for the project,

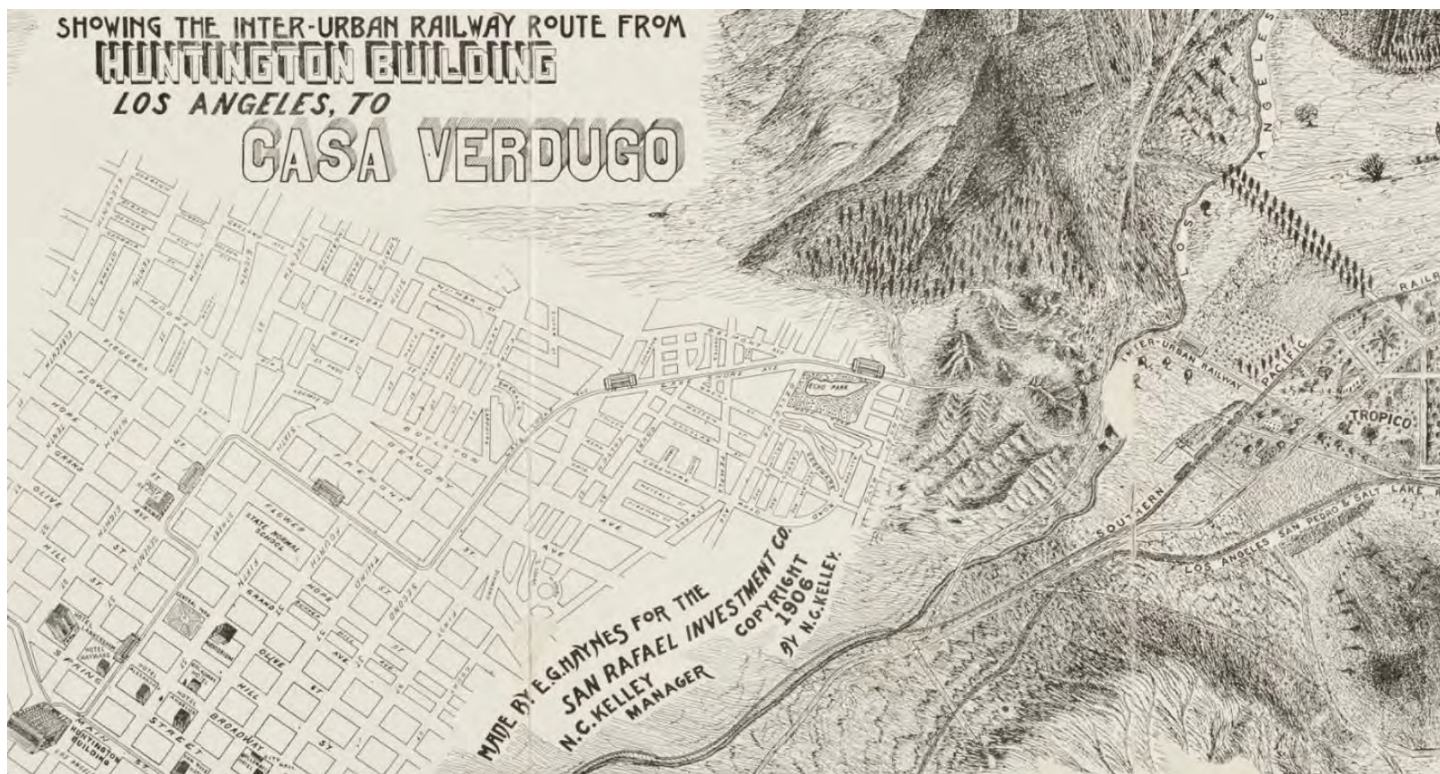
"The fame of this ride, decidedly the most picturesque to any suburb, attracts thousands of tourists, requiring many additional cars on Sundays and holidays, while the hundreds of commuters going daily to and from business and home are rapidly increasing in numbers.

The passage through the city, passing Central Park, traversing Figueroa Street, Lake Shore Drive (today, Glendale Blvd), skirting Echo Park, through Edendale and the Pass between Elysian and Griffith Parks to the point where the most enchanting of all valley panoramas burst upon the view, is accomplished in fifteen minutes. The scene is framed on the north, in ascending order, by the San Rafael Hills, Verdugo Mountains and the San Gabriel range, showing Mts. Lowe and Wilson in the foreground, while far to the east Mt.

Cucamonga's dome and the other snow-capped peaks of the San Bernardino mountains rising eight thousand and nine thousand feet are discovered. The flight along the borders of Griffith Park, over the trestles spanning Los Angeles River, and through Tropico to the fine depot at Brand Boulevard and Fourth Street (today, Broadway), Glendale occupies but ten minutes.

Here, midway the broad valley, its beauties and surpassing advantages are fully realized. But five minutes are required for the remainder of the trip down the center of Brand Boulevard, a thoroughfare 130 feet in width, flanked by seventy-two monoliths, eleven and one-half feet high, capped by electric lights, with the space between the broad cement walks and curbs filled by graceful palms, on to Mountain Avenue. Here at the end of the line is found the choicest residential portion of the valley, at the foothills. This is not a picture of a dissolving view, but one as eternal as the everlasting hills."

With its proximity to Downtown, rail connection, and picturesque landscapes, Glendale quickly became a popular destination. Acres of land in/around the Verdugo Wash were part of a lush park with meandering pathways lined with vegetation - including varieties of cacti and a fragrant grove of oranges that was intended to represent the type of gardens found in the "old California days".



1904 map showing the Inter-Urban Railway route

image source: https://waterandpower.org/museum/Early_Views_of_Glendale



Acres of land in/around the Verdugo Wash were part of a lush park with meandering pathways lined with vegetation - including varieties of cacti and a fragrant grove of oranges that was intended to represent the type of gardens found in the "old California days." source: <https://www.theriverproject.org/>

As a result of these transportation innovations, a commercial district was created in the Casa Verdugo neighborhood at the corner of North Central Avenue and West Stocker Street, which established a new solid "urban core" within Glendale.

This economic district included a theatre, various stores, a school, and a post office - all of which sparked interest in more permanent residential development.



postcards from "Out Glendale Way" advertising the new location of the famous, longtime beloved destination in Glendale, Casa Verdugo restaurant
image source: https://waterandpower.org/museum/Early_Views_of_Glendale

Subsequently, Glendale and its surrounding area experienced a significant growth spurt beginning around 1904, due in large part to the arrival of the Pacific Electric line. In 1906, the City of Glendale was incorporated and by 1930 its population quickly multiplied to over 60,000.

HISTORY OF FLOODING

The success of "Out Glendale Way" and the town's quick growth was threatened during the early 1930s when the region was devastated by a series of unprecedented flood events. The most damaging flood event came after a November 1933 wildfire denuded the San Gabriel Mountains of its vegetation, producing ubiquitous ash and compromising soil stability. Intense rain storms occurred in December, and on New Year's Day 1934, the Verdugo Wash began to swell and overflow its then natural channel, even bucking its banks and destroying homes, washing out bridges, and blanketing the town in mud, boulders, and debris. On January 2nd, the Glendale News-Press published the headline, "36 dead and 31 Missing, Seek U.S. Aid."

This news headline, "...Seek U.S. Aid," embodied a larger national shift. Many American cities were founded along economically and agriculturally rich waterways and were similarly struggling with flood conflicts. So in response to public demands for federal aid for flood-prone areas like Glendale's (and also for work relief in the midst of the Great Depression), Congress passed the Flood Control Act in 1936. This was the first act that recognized flood control as "a proper activity of the Federal Government." Most of the responsibility for planning and designing federal flood control projects was assigned to the Army Corps of Engineers (USACE).

sources for this section:

<https://www.kcet.org/shows/departures/hahamogna-native-tongva-people>
https://en.wikipedia.org/wiki/Hahamongna,_California#cite_note-gnis-1
https://geonames.usgs.gov/apex/f?p=GNISPO:3::NO:P3_FID:1732526
<https://www.latimes.com/socal/glendale-news-press/entertainment/tn-gnp-me-yamada-20180126-story.html>
<https://www.coloradoboulevard.net/forgotten-residents/>
http://www.tongvapeople.org/?page_id=696
<http://www.laalamanac.com/history/hi05.php>
<https://gabrielinotribe.org/history/>
<https://www.theriverproject.org/>
<https://gabrielenindians.org/>

why was the Verdugo Wash channelized?



flooded condition: pre-channelization

Left: the 1933-34 flood sent water, mud, and debris down the steep slopes of the San Gabriels. The flood followed the then mostly-natural wash through the Woodlands. The photo taken Jan 5, 1934 by the Los Angeles County Flood Control District shows the devastation. **Right:** a man surveys the heavily eroded banks the Verdugo Wash after the 1934 flood.



typical condition, pre-channelization

the area that today known as the “Verdugo Wash” was originally a natural canyon channeling seasonal precipitation

sources:

Special Collections, Glendale Public Library

https://waterandpower.org/museum/Early_Views_of_Glendale_2_of_2.html

<https://digital-collections.csun.edu/digital/collection/SFVH/id/1278/>

<http://dpw.lacounty.gov/wmd/Watershed/LA/Larmp/LARMP-33%20Appendix%20A%20-%20History%20of%20the%20Los%20Angeles%20River.pdf>

https://www.publications.usace.army.mil/Portals/76/Publications/EngineerPamphlets/EP_870-1-29.pdf

Given the recent devastating flood events and the federal political climate regarding flooding, the Los Angeles County Flood Control District and USACE partnered to engineer nearly 9.5 miles of the Verdugo Wash and mitigate flood risk in Glendale. What was once a natural canyon channeling (and sometimes overflowing) seasonal precipitation was lined in concrete in order to create a safe place for water and debris to go during flash storm events and reduce, if not prevent, future flooding of Glendale homes and businesses. The use of concrete was an intentional material choice, selected to efficiently move stormwater from the city grid to the new wash channel and onto the LA River. Unlike the stream's natural banks, concrete would not erode away during storm events, and would facilitate easier clean up of the mud and debris the floodwaters carry downstream.

While the Verdugo Wash channelization project was certainly successful in reducing flood risk in Glendale, the channelization denuded the natural river of its many natural benefits. Wildlife habitats were fragmented, storm water runoff and pollution increased, and the original identity of the stream began to fade away. The Verdugo Wash Visioning project aims to revitalize the original tributary path, reactivate biodiversity, and reconnect the community with an active transportation corridor.



Verdugo Wash construction



The significant and impervious mountainous topography surrounding Glendale is a primary reason why this area has been particularly susceptible to flooding. During storm events, rain cascades down the mountains with force, having no "horizontal" distance before the town begins to slow down and infiltrate into the ground. When this forceful storm water "runs off," it also carries considerable debris and mud, disturbing city activities.



the "AFTER"



typical condition, post-channelization
one of the standard segments of the Verdugo Wash, which was created to mitigate and divert waters from large-scale flood events

Section 2: "History" bibliography

<http://www.tobevisible.org/timeline.html>

<https://www.latimes.com/socal/glendale-news-press/news/tn-gnp-xpm-2003-09-22-export15802-story.html>

Katherine Yamada. Verdugo Views: Flood in 1930s devastated La Crescenta, Montrose. Los Angeles Times. <https://www.latimes.com/socal/glendale-news-press/entertainment/tn-gnp-me-yamada-20180126-story.html>

Los Angeles Times - Courtesy of Special Collections, Glendale Public Library

3. today's Verdugo Wash

Glendale is an urban city within Los Angeles County comprised of approximately 30 square miles in and around several mountainous regions. Conveniently located near the center of the county, Glendale has a reputation for safety, good schools, healthcare facilities, and positive business environment including a growing restaurant and entertainment sector.

While many nearby cities contract with the County and other entities for services, Glendale is a full-service City that includes Glendale Water & Power, which also operates its own power plant. Glendale has a substantial central business district with more than six million square feet of office space and is home to nationally recognized firms including Walt Disney Imagineering, ServiceTitan, IHOP / Applebees, DreamWorks, LegalZoom, and Public Storage.

Glendale's built form includes both a dense, mixed-use core and residential neighborhoods that are largely comprised of single-family homes. The homeownership rate in Glendale is 32.9% and median property value is around \$725,000.

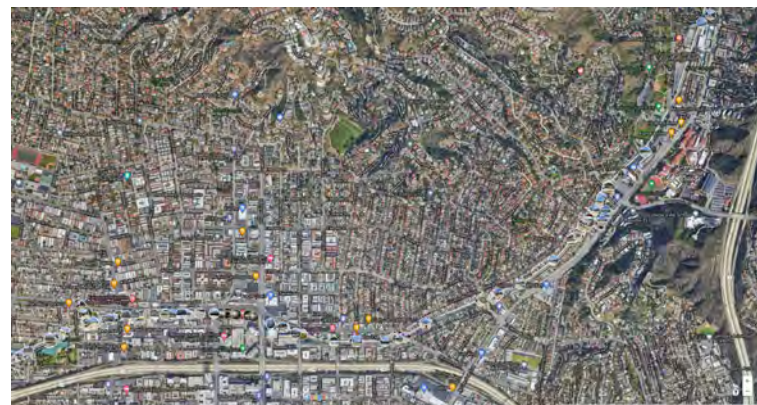
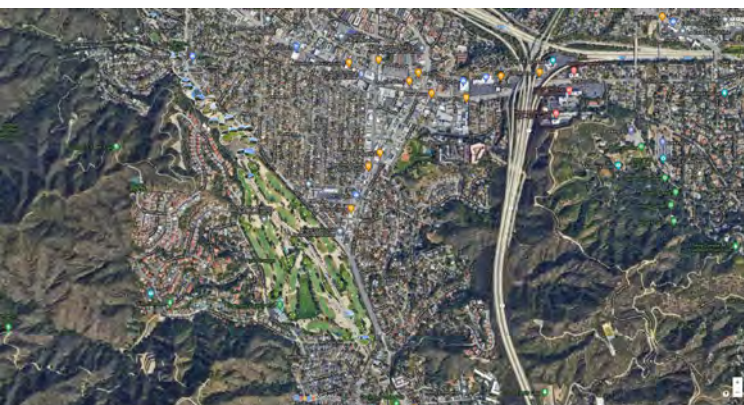
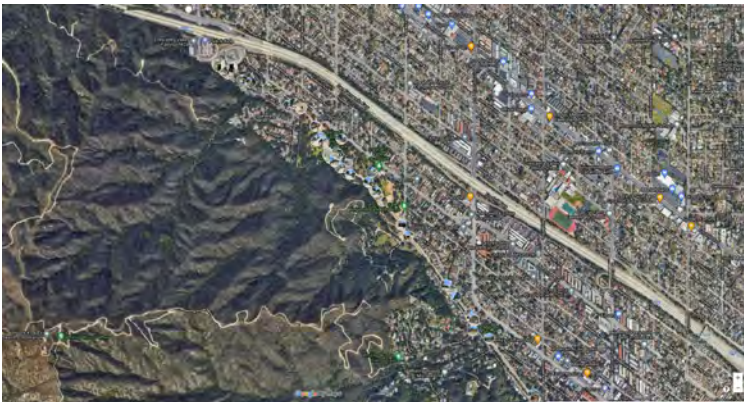
Glendale is centrally located between the major cities of Pasadena, Burbank, and adjacent to the northeast region of Los Angeles. Four major freeways run through Glendale: The Golden State Freeway, Ventura Freeway, Glendale Freeway, and Foothill Freeway.

The City of Glendale has a population of just over 200,000 residents, making it the fourth most populous city in Los Angeles County. The residents of Glendale are predominantly white (61.7% in 2019), with smaller Asian (16.2%) and Hispanic/Latinx (17.5%) populations.

In the early 1900s Glendale existed as a "Sundown Town," the colloquial name of organized jurisdictions that for decades intentionally excluded non-white persons from residing within city limits via laws and informal policy (the name is derived from signs that instructed non-white people to leave by sundown). By 1920, the US Census reported a Black American population of 0.16% in Glendale, which rose to 1.6% in 2019. Today, the city has the largest Armenian community in the country after a surge of immigration in the 1970s and 1980s. With somewhere between one quarter and one third of the Glendale population identifying as Armenian-American, they comprise the largest ethnic group in the City.

In April 2021, the Verdugo Wash Visioning team had the opportunity to tour the channel. Together, with the City of Glendale staff, the **!melk+BuroHappold** team rode bikes along the entire length of the corridor!

Due to the limited access into the channel today, this site tour was truly a one-of-a-kind experience, which exceeded all expectations! The visit was documented in the form of a geo-tagged photo library, which can be accessed online via the link provided in the caption below.



The design team's geo-tagged photo library for the length of the Verdugo Wash channel, an inventory developed by !melk + BuroHappold following the April 2021 site tour.
https://www.google.com/maps/d/u/3/edit?mid=1YdVwiohNLakDMCFE47lrch1_mCJkAdA&usp=sharing

site observation #1: **Verdugo Wash is potentially over-engineered?**





The channel was designed for a 12-inch maximum rainfall event.

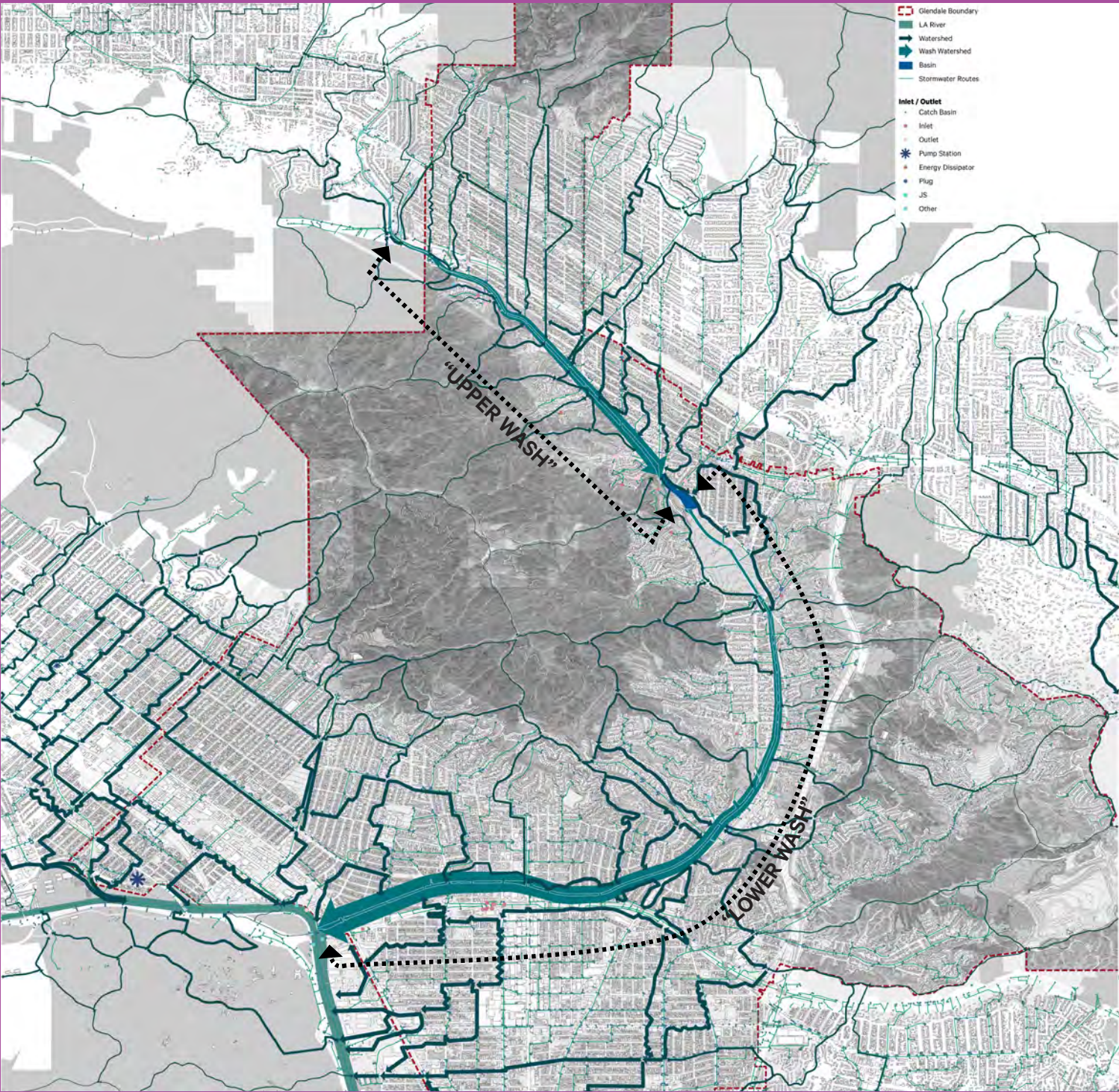
The highest single accumulation recorded is 8-inches.

site observation #2: **what is water quality at Verdugo Wash?**





site observation #3: **are there effectively “two” washes?**



the “upper” and “lower” reaches of Verdugo Wash, distinguished by the wash debris basin located just north of the Oakmont Golf Course

The “upper wash” is generally narrower than the “lower wash” - beginning at 10 ft wide and widening to about 40 ft



The wash debris basin & spillway split the “upper” & “lower” reaches of the wash. The basin has three primary functions: 1) it detains (holds back) water flowing from the “upper wash” (middle image below.) When the basin water level reaches a certain elevation, it spills over the concrete spillway (right image below) into the “lower wash.” Detained water is slow-moving, allowing 2) debris and sediment to drop out of the wash water & 3) some wash water to infiltrate the natural bottom & recharge the local aquifer.



water flowing into the basin

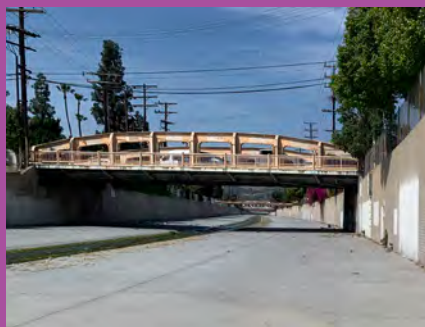


water collected in the basin

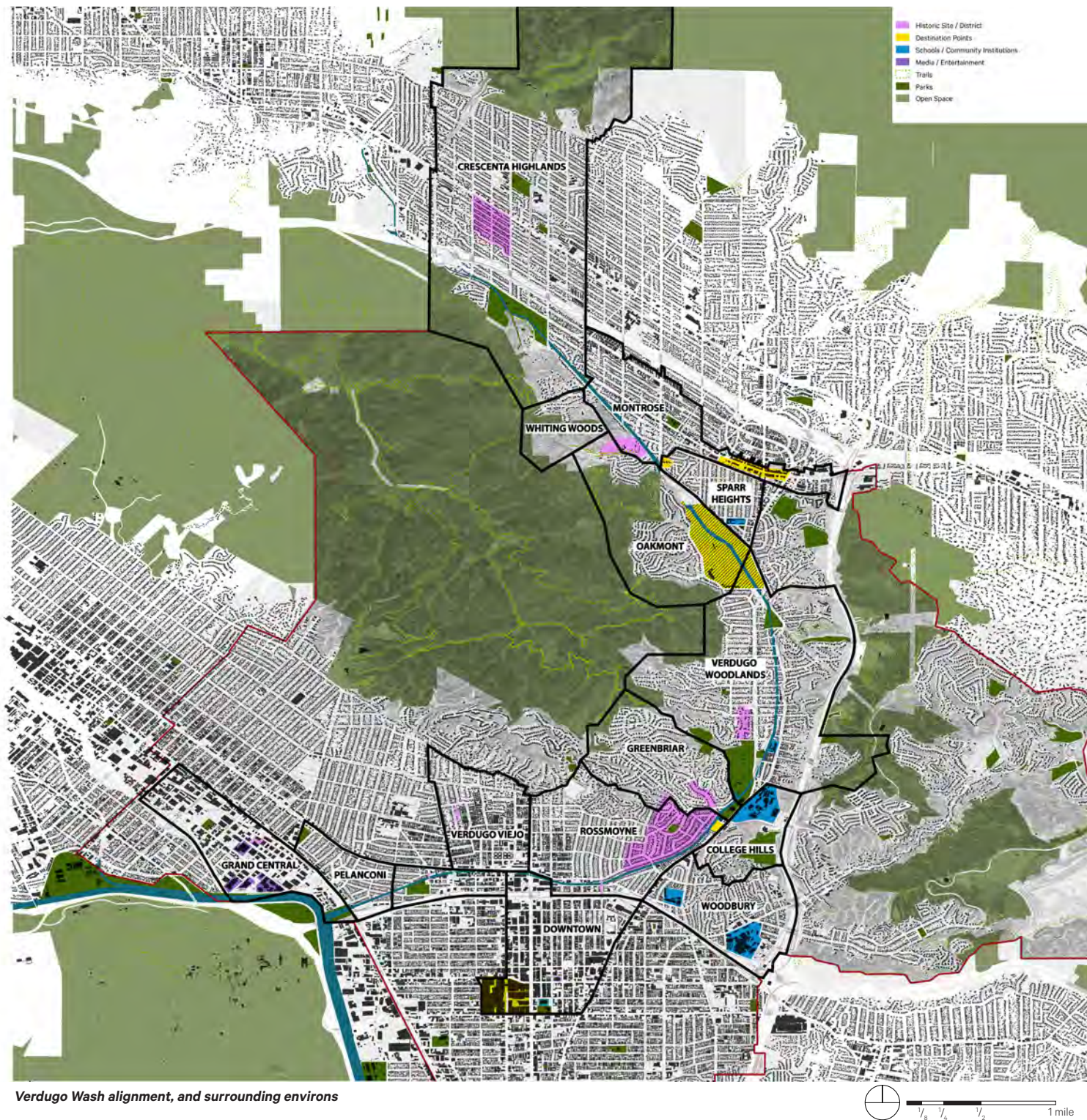


water detained behind the concrete spillway

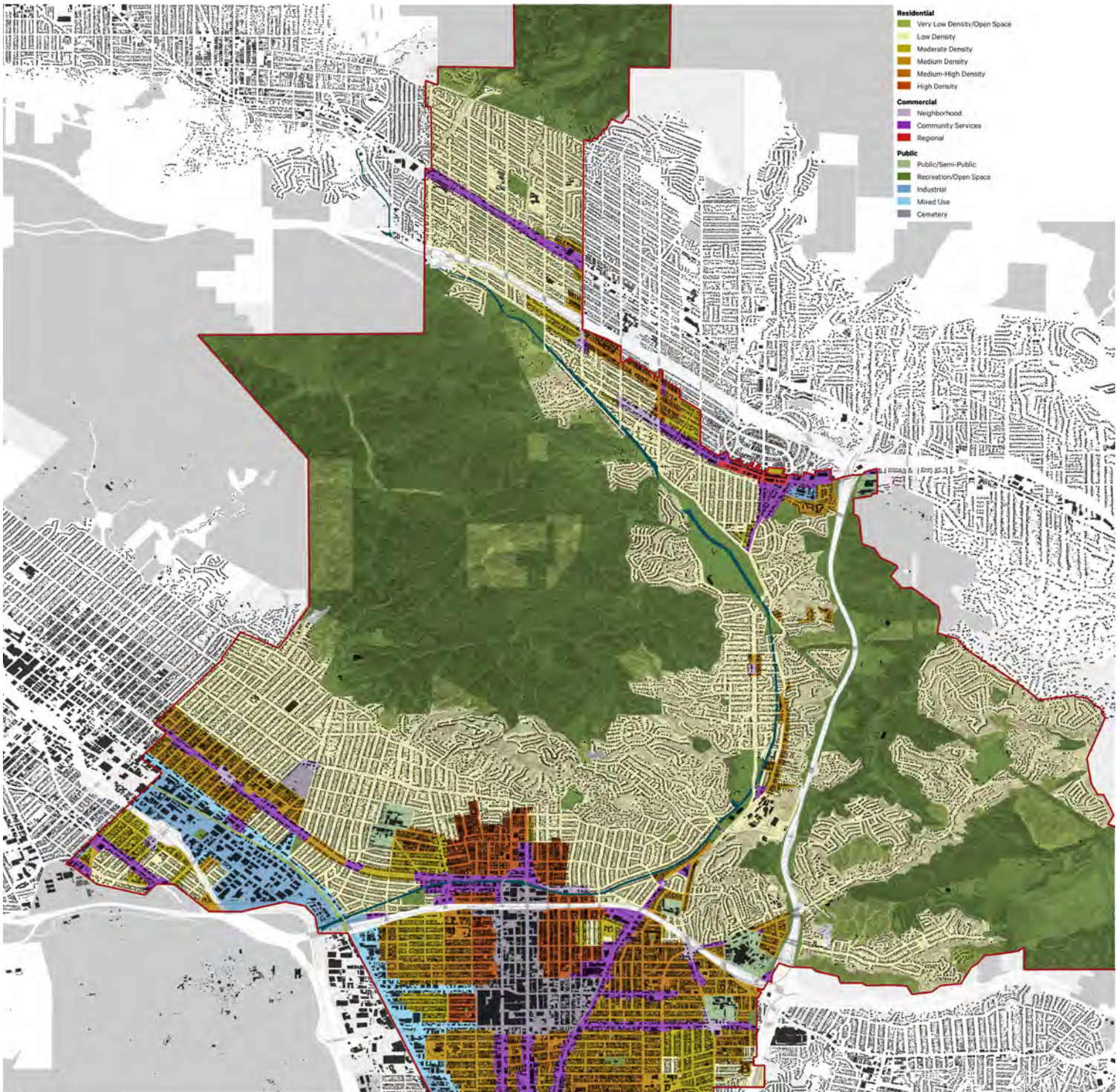
The “lower wash” ranges in width from 43 ft to 87 ft and terminates at the confluence with the Los Angeles River



how does Verdugo Wash relate to the rest of Glendale?



site analysis / !melk 3d model:
urban scale massing & land use



Verdugo Wash alignment, and adjacent urban land uses



what is the character of each of the neighborhoods adjacent to Verdugo Wash?

Neighborhood:

greater Crescenta Highlands

Map Index Reference:

1 & 2

Types of Uses:

Single-family residential neighborhoods with commercial uses along Foothill Boulevard.

Character:

The area has typical grid-street single-family residential development with low density. It was largely developed after the war to accommodate the region's booming population growth. Crescenta Highlands neighborhoods feature an eclectic mix of design styles. Setbacks, massing, garage location, sidewalks, curbs, street lights and utilities vary from street to street.

Notable Features or Structures:

Highway Highlands is a distinct neighborhood set within the larger Crescenta Highlands neighborhood. The angled street grid is unique, with streets that typically do not feature sidewalks or mid-block street lights. This neighborhood contains a concentration of historic stone houses built in the 1920s, along with considerable lengths of stone retaining walls at the front of many upsloping properties.

Nearby Parks or Trails:

These neighborhoods have access to the Verdugo Mountains and other open spaces, including Deukmejian Wilderness Park in the north and the Crescenta Valley Community Regional Park in the south east. Cedar Bend Edison Trail starts at Cedarbend Drive in the southwestern corner of the area and skirts the Verdugo Mountains.

Community Group Profile(s):

Representatives from the Crescenta Valley Heritage, Crescenta Valley Chamber of Commerce, and the Crescenta Valley Community Association were all involved in the creation of the North Glendale Community Plan.

Disposition of the Wash to the Neighborhood:

The wash passes through the southern end of the neighborhood. Boston Avenue and New York Avenue cross over the wash via bridges. The wash is visible from homes on Honolulu Avenue, El Lado Drive and ark Vista Drive.

Neighborhood:

Whiting Woods

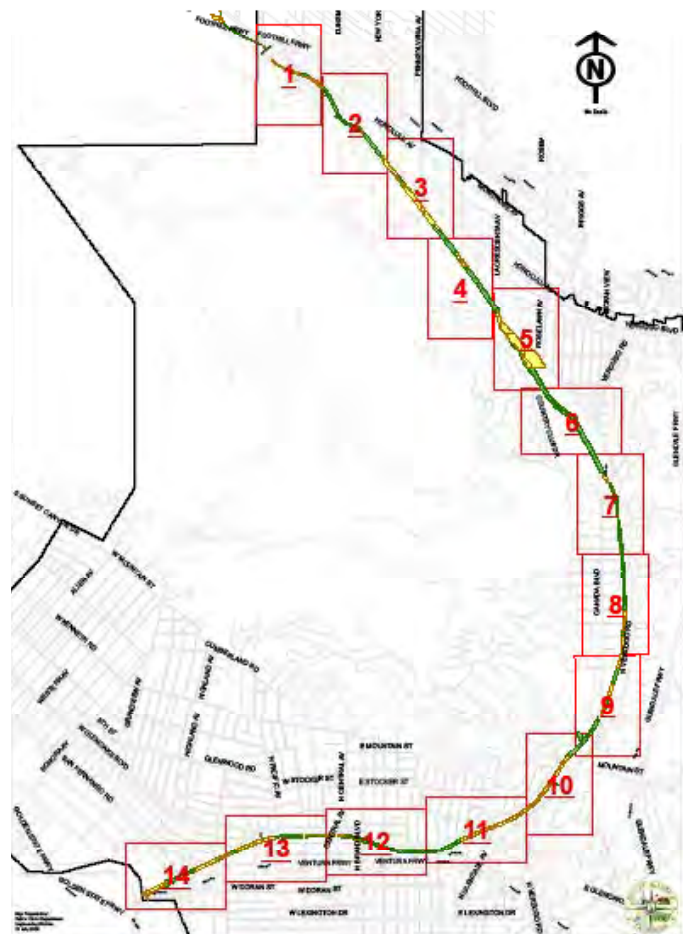
Map Index Reference:

3 & 4

Types of Uses:

Single family homes and hiking trails.

sources: **City of Glendale**



map index: Verdugo Wash neighborhood profiles

source: **City of Glendale**

Character:

The Whiting Woods neighborhood is primarily composed of single-family homes. Their low density has a rural feel. Whiting Woods is notable for its seasonal creek and extensive stands of oaks and sycamores. The neighborhood features sprawling homes with horizontal massing, ranch, and post and beam styles that are nestled with the trees and topography. Parcels of varying sizes are arrayed across a small network of streets that follow the contours of the mountain.

Notable Features or Structures

Homes by architects John Lautner, Richard Neutra, and Clair Earl.

Nearby Parks or Trails:

The end of Whiting Wood Road turns into the Whiting Woods Hiking Trail on the Motorway and leads to Verdugo Peak in the Verdugo Mountains.

Historic Features:

Clair Earl's Daily House, which is listed on the Glendale Register due to the quality of its post-and-beam architecture,

as well as its original art glass designed by local artist Robert Brown.

Community Group Profile(s):

The Whiting Woods HOA is a very active and vocal presence in the community. They were very involved during preparation of the North Glendale Community Plan to ensure the defining characteristics represented their values.

Disposition of the Wash to the Neighborhood:

The wash passes through the Whiting Woods neighborhood on the eastern edge. Whiting Wood Road runs over the wash via a bridge. The wash is visible from homes on El Lado Drive.

Neighborhood:

Montrose

Map Index Reference:

3 & 4

Types of Uses:

- Single family areas and areas of multi-family residences, with densities ranging up to 40 units per acre, are primarily clustered on streets such as Montrose and Honolulu Avenue.
- Mixed-use buildings successfully integrate into commercial neighborhoods near the Montrose Shopping Park.

Character:

Family-friendly neighborhoods with a mix of styles and neighborhood-oriented commercial districts.

Notable Features or Structures:

Montrose Shopping Park is a commercial area along Honolulu Avenue with a town center feel, providing pedestrian-friendly, destination shopping and dining supported by public parking lots, wide sidewalks and shade trees. It's a low-scale destination shopping area that draws customers from regions beyond the Crescenta Valley.

Nearby Parks or Trails:

Oakmont View Drive leads to Oakmont View Park and Leviathan's Teeth Trail in the Verdugo Mountains Open Space Preserve.

Historic Features:

Montrose was the first portion of the valley to be developed in the 1910s. The Bonetto House at 2819 Manhattan Avenue is listed on the Glendale Register. It is a Tudor Revival style home built in 1931.

Community Group Profile(s):

The Montrose Shopping Park Association and what is now the Montrose - Verdugo City Chamber of Commerce were involved during the creation of the North Glendale

Community Plan. The Crescenta Valley Armenian Community Center, and Volunteers Organized In Conserving the Environment (VOICE) are also in the area.

Disposition of the Wash to the Neighborhood:

The wash passes through the Montrose neighborhood on the southwestern edge. Shirleyjean Street and Oakmont View Drive run over the wash via bridges. The wash is visible from homes on El Lado Drive.

Neighborhood:

Oakmont

Map Index Reference:

4 & 5 & 6

Types of Uses:

The Oakmont Neighborhood consists of Oakmont Country Club to the east and single-family housing to the west. Oakmont Country Club is an approximately 0.2 square-mile golf-oriented private club featuring large expanses of open space.

Character:

The Oakmont Country Club features a golf course with a club building and parking lot located at the southwest edge of the property along Country Club Drive adjacent to the single-family neighborhood. The single-family neighborhood consists of several hundred homes built throughout the 1900s in a variety of styles and sizes.

Notable Features or Structures:

Camp Bob Waldorf, a 112-acre nonprofit youth camp founded in 1938 and owned and operated by Jewish Big Brothers and Big Sisters of Los Angeles, is located at the far north of the Oakmont neighborhood. Its entire eastern edge is defined by the Verdugo Wash.

Nearby Parks or Trails

- Oakmont View Park, a small park with two tennis courts and park clearing, is nestled into the mountains to the northwest and overlooks the Oakmont neighborhood. Hiking trails (e.g. Leviathan's Teeth Trail) begin up the road from the park.
- Beaudry Loop Trail, another hiking trail, begins at the southwest corner of the single family neighborhood against the mountains.

Historic Features:

- Oakmont Woods (see text at end of this section.)
- Camp Bob Waldorf (formerly Camp Max Straus) (see text in "Notable Features/Structures" above)

Community Group Profile(s):

Deer Canyon/Oakmont Property Owners Association

Disposition of the Wash to the Neighborhood:

The Oakmont neighborhood is located near the southeast edge of the Verdugo Mountains and primarily runs along the western side of the Verdugo Wash for approximately 1.3-miles. Oakmont Country Club straddles the Verdugo Wash for an approximately 0.8-mile distance. An almost 0.5-mile section of the Verdugo Wash lies north of the Oakmont Country Club and east of single-family housing clusters in the Oakmont neighborhood.

The location of the Verdugo Wash through the Oakmont Country Club, a private facility, may limit public access. Los Angeles County Flood Control District holds a 120-foot wide easement centered on the Verdugo Wash and running through Oakmont Country Club. A 150-foot power line right-of-way owned by Southern California Edison runs immediately adjacent and to the left of the southern part of the easement, and then forks off to the west as it runs to the north. To the south of the Oakmont Neighborhood, Cañada Boulevard bridges across the Verdugo Wash. To the north, Oakmont View Drive and Shirleyjean Street also bridge over the Verdugo Wash.

The Oakmont Woods subdivision occupies land in the Verdugo foothills once owned by Homer Baldridge, who built his home, Onondarka, on 136 acres in 1913. A popular riding stable of the same name operated from the property for many years. In 1950, Hyman Minkoff bought the house and its land and proceeded to lay out Oakmont Woods. All of the lots were built out within the decade, with some constructed by Minkoff himself, and the remainder by others, resulting in homogeneous streetscapes filled with Traditional and Modern Ranch-style homes. The Minkoff family lives on through the area's streets, named after Hyman's daughters: Eileen (Eilinita Avenue), Dolores (Dolorita Avenue), Shirley Jean (Shirleyjean Street), and Camille (Camann Street). Three of them lived in the neighborhood; Dolores resided in the old Onondarka House, which still stands though under different ownership. The neighborhood is also the home of Camp Bob Waldorf (see "Notable Features/Structures" section above).

Neighborhood:

Sparr Heights

Map Index Reference:

4 & 5 & 6

Types of Uses:

Sparr Heights, an approximately 0.25 square-mile neighborhood, primarily features single family homes. Other land uses include an approximately seven-block, triangular-shaped commercial district to the northeast, an elementary school and community center at the south, and a large plant nursery at the northwest immediately facing Shirleyjean Street, which crosses over the Verdugo Wash.

Character:

Sparr Heights consists of two distinct yet interconnected areas; a residential neighborhood south of Montrose Shopping Park and a neighborhood commercial area along Verdugo Boulevard. Single-family homes in Sparr Heights are modestly scaled and contain a mix of period architectural styles. Two-story multi-family housing is located along Downing Avenue and Glencoe Way on its southern edge. The Sparr Heights commercial area is pedestrian-friendly and characterized by local retail and service uses.

Sparr Heights was the first developed area in North Glendale to feature Period Revival homes. It appears that a few of the earlier homes in the area were designed in the Craftsman style that was beginning to fall out of favor, but the vast majority of buyers in the 1920s and 1930s opted for Spanish Colonial Revival and Tudor Revival styled homes. The neighborhood features many small, well detailed homes in these styles, as well as a small collection of French Revival and American Colonial Revival styled properties. By the end of the 1940s, Sparr Heights was almost completely built out. Minimal Traditional and Ranch style homes indicate these later construction dates. Mature street trees and consistent street lights are further indicators of the neighborhood's genesis as a thoughtfully planned community.

Notable Features or Structures:

- John C. Fremont Elementary School
- Sparr Heights Community Center
- La Crescenta Nursery
- Two historic stone houses

Nearby Parks or Trails:

Montrose Community Park, a 14.5 acre park with sports fields, picnic and playground areas, lies to the east of Sparr Heights, across North Verdugo Road.

Historic Features:

- The Sparr Heights Community Building, completed in 1922, was originally advertised as a community amenity. Neighborhood developers shrewdly used it as their primary sales office, but soon nobly donated it to the city, thereby absolving part-owner, Sparr, and the development company of future responsibility for the building. Now serving as the Sparr Heights Community Center, the building retains much of its historic integrity at the exterior despite an addition at one side; its interior, however, is highly altered.
- The Stone House Survey Update, which reviewed two stone houses in the neighborhood for historic value, determined that one is eligible for local listing and the second is eligible at the state and federal levels.

Community Group Profile(s):

The Montrose-Verdugo City-Sparr Heights Neighborhood Association participated in the North Glendale Community Plan.

Disposition of the Wash to the Neighborhood:

Sparr Heights is located to the east of the Verdugo Wash, with La Crescenta Avenue running along its west boundary.

The southern end of La Crescenta Avenue is adjacent to Oakmont Country Club (which straddles the Wash). The northern half is directly adjacent to the Wash with crossings over Shirleyjean Street and Oakmont View Drive overpasses.

Neighborhood:

Verdugo Woodlands

The Verdugo Woodlands area, once referred to as the “Verdugo Canyon Tract,” is a relatively dense suburban neighborhood with over 10,000 residents resting between the eastern base of the Verdugo Mountains and the western face of the San Rafael Hills.

Map Index Reference:

7 & 8 & 9

Types of Uses:

- Single-family residential is the predominant use west of the wash and in the neighborhood overall.
- Commercial and Multi-family uses are located on the eastern side of the wash lining N Verdugo Road.
- Institutional use includes the Verdugo Woodlands Elementary School, which straddles the wash with a footbridge
- Open Space is abundant in this neighborhood and includes neighborhood and regional parks with special features and access to mountain trails.

Character:

The Verdugo Woods is a very desirable neighborhood with mostly smaller traditional style homes on pleasant walkable streets.

Notable Features or Structures:

- Catalina Verdugo Adobe (Glendale Register #1)
- Niodrara Drive Historic District
- Foursquare at 1616 Wabasso Way (1912)
- Rodriguez House (1942) by modernist architect
- R. M. Schindler (Glendale Register #24)

Nearby Parks or Trails:

- Glorietta Park is a neighborhood park with tennis courts, children's play area, ballparks, and picnic areas
- Verdugo Park (1621 Cañada Blvd.) is a large regional park that features a ballfield, basketball court, children's play area, horseshoe court, picnic areas, skate park, and special facilities. At the southern tip of Verdugo Park are: Stengel Field (1601 Cañada Blvd), renamed in 1952 to honor baseball legend and Glendale resident Casey Stengel; and Verdugo Skate Park, a 15,000 sf concrete skateboard facility.
- Babe Herman Field for Little League play, named after Floyd Herman, who led Glendale High School to its first baseball playoffs in 1920.
- Verdugo Mountain - Beaudry Fire Loop Trail

Historic Features:

The original Catalina Verdugo Adobe was built in 1828 by Teodoro Verdugo on the lands of the Rancho San Rafael land grant awarded by the Spanish to his grandfather, José Maria Verdugo. The adobe is one of the earliest structures

built in Glendale dating back to the early Rancho days. It is on the Glendale Register of Historic Places and registered as California Historic Landmark #637. In 1847, the Verdugo Adobe homestead was the site of negotiations for a treaty to end fighting in California during the Mexican-American War. Negotiations took place under a large oak tree at the Verdugo Adobe. The “Oak of Peace,” estimated to be 500 years old, was a historic landmark until it was felled by disease in the 1980s. The area is now a popular 1.3 acre park

The Niodrara Drive Historic District includes 32 homes in a range of architectural styles including Foursquare, Spanish Colonial Revival, Tudor Revival, and Ranch, as well as the Rodriguez House (1942) by Modernist Architect R. M. Schindler. The district is on or adjacent to Niodrara Drive between Wabasso Way and Colina Drive. A natural stream ran through the district. While the bed is dry now, many of the original landscape features such as the stream bed, ponds, faux bois bridges, river rock curbs, and date markers remain today.

Community Group Profile(s):

The Verdugo Woods West HOA is an active group in the community. They were very involved during preparation of the North Glendale Community Plan to ensure the defining characteristics represented their values. Their stated mission reads: “*To preserve the low-profile, single-family character and unique aesthetics of the Verdugo Woodlands; and to provide a forum for discussion of civic issues that may affect our neighborhood and its residents.*”

Disposition of the Wash to the Neighborhood:

Cañada Boulevard and North Verdugo Road are parallel streets running north/south through the middle of the Woodlands. The wash runs north/south between these two streets for most of its path through the Woodlands. At the northern end of the Woodlands, the streets merge near San Gabriel Avenue; they also merge at the southern end of the Woodlands before reaching Mountain Street near the Glendale Community College Campus.

Vehicular bridge crossings over the wash from north to south exist at Cañada Road, Glorietta Avenue, Opechee Way, Wabasso Way, and again at Cañada Road at the southern end of the neighborhood.

Footbridges occur at the northern edge of Glorietta Park, Colina Drive, and between Verdugo Skate Park and Stengel Park near Cañada Road at the southern end of the Verdugo Woodlands.

Commercial properties with parking lots and the elementary school along Verdugo Road back up to the wash, forming the eastern edge.

At the southern end of Verdugo Park where Cañada Road and Verdugo Blvd again merge is the beginning of two adjacent neighborhoods: Greenbriar to the west side of the wash and College Hills to the wash's east.

Neighborhood:

Greenbriar and College Hills

Map Index Reference:

10

Background:

Both Greenbriar and College Hills neighborhoods are in close proximity to the wash. An existing bridge provides a connection to North Verdugo Road and Mountain Street, leading up to the 2 Freeway in one direction and the historic Royal Boulevard. A footbridge over North Verdugo Road and Cañada Boulevard connects Glendale Community College to the wash. The neighborhoods are also close to the Glendale Civic Auditorium.

There are various parking lots adjacent to the wash that can be utilized, including Parking Lots 30, 31 and 32. Parking lots 30 and 31 are off Mountain Street and Lot 32 is adjacent to Verdugo Park.

The main transportation stops for the neighborhoods are off of North Verdugo Road and include LA Metro Buses 90/91 and 685 and Glendale Beeline 3, 7 and 8. A Class III shared bike lane begins on Cañada Boulevard.

Character:

The Greenbriar neighborhood primarily consists of single-family homes in a variety of home styles, including Spanish Revival, Colonial Revival, French Revival, Tudor Revival and Ranch. The College Hills neighborhood mainly consists of the Glendale Community College Campus.

Notable Features or Structures:

The historic Mountain Street Bridge crosses the Verdugo Wash, connecting Royal Boulevard from the west and leading to North Verdugo Road to the east. There is also a footbridge that connects Verdugo Park to the adjacent parking lot and Cañada Boulevard. Another important landmark feature is the palm tree-lined Royal Boulevard that consists of 38 notable Period Revival architecture homes.

The neighborhood is also home to the St. Gregory Armenian Catholic Church located at 1510 E Mountain St.

A unique aspect of Glendale Community College is the Glendale College Planetarium.

Animals coexisting with Glendale residents here are:

- Bird species like Black Phoebe, House Finch, Northern Mockingbird, Mourning Dove, Dark-Eyed Junco, Bushtit, Anna's Hummingbird, Say's Phoebe, Ruby-Crowned Kinglet, Yellow-Rumped Warbler, Cooper's Hawk, and the Great Horned Owl (in Verdugo Park).
- Mammals such as Coyote, Raccoon, Striped Skunk, Mule Deer, Virginia Opossum, Fox Squirrel, and the Brown Rat.
- Reptiles including the Western Fence Lizard.

Nearby Parks or Trails:

Verdugo Park contains a large grove of sycamore trees, oak trees and young redwoods. The park also features a dry stream on the west side of the park and above that is a short walking trail. The park also has a ball field, multi-purpose field, half basketball courts, playground areas and a skate park. Some Glendale Community College sports teams utilize Verdugo Park for practices.

The Mount Thom's trailhead begins at the end of Sunshine Drive and leads to the namesake's peak.

Historic Features

- Royal Boulevard Historic District consists of 38 homes that include Period Revival homes. Two homes in the district are also listed in the Glendale Register of Historic Resources for their fine architectural design and association with significant Glendalians including Bob Wian, founder of Bob's Big Boy, and Ed "Strangler" Lewis, world heavyweight wrestling champion of the 1910s.
- The Mountain Street Bridge was built in 1936 by the U.S. Army Corp of Engineers.

Community Group Profile(s)

The St. Gregory Armenian Catholic Church, led by Bishop Mikael Mouradian, is an active and flourishing church and congregation. Also active is the Glendale Community College Student Affairs.

Disposition of the Wash to the Neighborhood:

The wash starts to curve from south to south-southwest, with Greenbriar and Verdugo Park to the west and College Hills to the east.

Accessibility to the wash in Greenbriar is possible via the Mountain Street Bridge. Glendale Community College has footbridge that connects the college campus to Verdugo Park, and the wash may be accessed through there. The most significant intersection is North Verdugo Road and Mountain Street.

Neighborhood:

Rossmoyne and Woodbury

Map Index Reference:

11

Background:

Both Rossmoyne and Woodbury neighborhoods are in close proximity to the wash. The Glenoaks Boulevard Bridge provides a connection over the wash between the Rossmoyne and Woodbury neighborhoods.

The main transportation stops for the neighborhoods are off of North Glendale Avenue and include LA Metro Buses 90/91 and 685 and Glendale Beeline 3, 7, 8 and 31, and LA Metro Bus 685 off of Verdugo Road.

Character:

The Rossmoyne neighborhood is primarily made up of single-family homes, with some multi-family residences as well. Woodbury has a mix of single-family and multi-family residences. The neighborhoods consist of a variety of home styles, including Spanish Revival, Colonial Revival, French Revival, Tudor Revival and Ranch.

Notable Features or Structures:

In the Rossmoyne neighborhood, the historic Glenoaks Boulevard Bridge runs above the Verdugo Wash, where Rossmoyne Avenue becomes East Glenoaks Boulevard. The Woodbury neighborhood is home to Woodrow Wilson Middle School and Adventist Hospital. This neighborhood is also where the 134 and 2 freeways meet.

Animals coexisting with Glendale residents here are:

- Bird species like Black Phoebe, House Finch, Northern Mockingbird, Mourning Dove, Dark-eyed Junco, Bushtit, Anna's Hummingbird, Say's Phoebe, Ruby-crowned Kinglet, Yellow-rumped Warbler, Cooper's Hawk, and the Great Horned Owl (in Verdugo Park).
- Mammals such as Coyote, Raccoon, Striped Skunk, Mule Deer, Virginia Opossum, Fox Squirrel, and the Brown Rat.
- Reptiles including the Western Fence Lizard.

Nearby Parks or Trails:

Nibley Park is located in the Rossmoyne neighborhood and features two tennis courts, greenspace, and a basketball court. The Woodbury neighborhood abuts the Glendale Hills trailhead just north of where the 2 and 134 freeways meet. This trail connects to other trails further east, which further connects Glendale to Eagle Rock and then to the Rose Bowl. These hills provide habitat for various animals including cougars.

Historic Features:

Rossmoyne is Glendale's largest historic district consisting of 503 homes. The area was developed by the Haddock-Nibley Company beginning in 1923. A portion of Royal Boulevard is also considered to be in this neighborhood. The Glenoaks Boulevard Bridge and Geneva Street Bridge were both built in 1938.

Community Group Profile(s)

Disposition of the Wash to the Neighborhood

The wash continues to turn from south-southwest to southwest, passing through the Rossmoyne neighborhood on the easterly edge the homes, between Cañada, North Glendale Avenue, North Verdugo Road and Ethel Street. The wash is on the north-westerly edge of the Woodbury neighborhood. As it reaches the Geneva Street Bridge, the wash's direction flows to the west. Accessibility to the wash is mainly through the Glenoaks Boulevard Bridge and the Geneva Street Bridge. The most significant intersections are North Glendale Avenue, North Verdugo Road and Glenoaks Boulevard.

Neighborhood:

City Center

Map Index Reference:

12

Background:

City Center is in close proximity to the wash mainly off of Monterey Road bridged by North Jackson Street and North Louiss Street, as well as Glenoaks Boulevard at North Brand Boulevard and North Central Avenue. The main transit stops for the neighborhood are off of West Glenoaks, North Brand and North Central and include Metro Bus 92 and Glendale Beeline 1, 2 and 7. Glenoaks Boulevard is slated to have protected bike lanes (class 1, 2 or both).

Character:

City Center is mainly made up of commercial and multi-family residences, as well as some single-family homes. The area consists of some start-up companies including Disqo and Service Titan, and also established companies such as Avery Dennison.

Notable Features or Structures:

The City Center neighborhood features various notable structures to the City of Glendale including the Alex Theatre, the Glendale Galleria, the Americana, Glendale's Central Library, Glendale's City Hall and Municipal Building, and the partition on Brand Boulevard that once housed Glendale's Streetcar. Two streets, Goode Ave and Sanchez Drive, are named after significant Glendalians.

Animals coexisting with Glendale residents here are:

- Bird species like Black Phoebe, House Finch, Northern Mockingbird, Mourning Dove, Dark-eyed Junco, Bushtit, Anna's Hummingbird, Say's Phoebe, Ruby-crowned Kinglet, Yellow-rumped Warbler, Cooper's Hawk, and the Great Horned Owl (in Verdugo Park).
- Mammals such as Coyote, Raccoon, Striped Skunk, Mule Deer, Virginia Opossum, Fox Squirrel, and the Brown Rat.
- Reptiles including the Western Fence Lizard.

Nearby Parks or Trails:

Glendale's Central Park is the only greenspace in City Center. This will soon be home to the Armenian American Museum and Cultural Center of California.

Historic Features:

There are various historic features in City Center including what was once Hotel Glendale, Glendale City Hall, Glendale's Central Post Office and the Alex Theatre, among others

Community Group Profile(s)

- Glendale Chamber of Commerce
- Armenian Chamber of Commerce

Disposition of the Wash to the Neighborhood:

The wash runs west, passing through the northern end of City Center adjacent to Monterey Road and Glenoaks Boulevard. A portion of the wash runs underneath the Hilton Hotel between Brand Boulevard and Central boulevard. Accessibility to the wash in City Center is possible via bridges off of North Jackson Street, North Louise Street, North Brand Boulevard and North Central Avenue.

The most significant intersections are: West Glenoaks Boulevard, Monterey Road, North Jackson Street, North Louise Street, North Brand Boulevard and North Central Avenue.

Neighborhood:
Fremont Park

Map Index Reference:
13

Background:

The Fremont Park neighborhood consists of a balanced mix of residential and commercial areas. Family-style restaurants, small businesses, and churches line Pacific Avenue, Central Avenue, and Glenoaks Boulevard. The neighborhood and the eponymous park was named after the famous 19th century explorer and soldier, John C. Fremont, who was instrumental in negotiating the end of the Mexican-American War in Verdugo Canyon.

Character:

Predominantly built in the Spanish style, the Fremont Park neighborhood consists of a combination of single-family homes, apartments and condos. There are no identified historic districts in this neighborhood.

Notable Features or Structures / Parks or Trails:

A landmark feature is Fremont Park, located near the 134 freeway. The park serves as a focal point for this neighborhood, with its greenery, numerous play areas, and tennis courts and is slated for revitalization. Two bridges constructed over the wash, the Kenilworth Avenue Bridge and Concord Street Bridge, are both identified as historic resources on Glendale's Historic Register.

Community Group Profile(s):

There is no HOA that represents the Fremont Park neighborhood. However, the City's Parks and Open Space Foundation oversees park projects, recreation programs, and trails and open space activities that enrich the entire community.

Disposition of the Wash to the Neighborhood:

The wash passes directly through the Fremont Park neighborhood and is bounded by residential homes and the Fremont Park open space. There are currently three bridges (accessible by foot and vehicles) in the neighborhood that are built over the Wash at Concord Avenue, Kenilworth Avenue, and Pacific Avenue. The "dead-end" of Burchett street, located north of the wash, may provide access

opportunity into the new wash trails. In addition, an existing pedestrian tunnel that provides a connection below the 134 Freeway will be an important asset in making the wash trails more easily available to South Glendale communities.

Available Public Transit Options:

There are more than 10 bus stops located in the Fremont Park neighborhood. These bus stops are primarily located on Glenoaks Boulevard, Central Avenue, Pacific Avenue, and Concord Street. There are two MetroLink train stations within 10 minutes' drive from the Fremont Park neighborhood, which are in Burbank and Glendale.

Neighborhood:
Grand Central

Map Index Reference:
13

Background:

Compared to other neighborhoods where residential uses reign supreme, the Grand Central neighborhood offers an interesting mix of uses. Predominantly commercial and industrial (with only a few blocks of residential buildings tucked in the southwestern portion of the neighborhood), Grand Central is home to many well-known media giants such as Walt Disney Imagineering, Dreamworks, and ABC 7. Multiple production and ancillary facilities are also located in this area and complements the surrounding uses.

Character:

The Grand Central neighborhood is largely commercial and industrial, with a small pocket of modest, single-family residential homes by the southwestern portion of the neighborhood. The residential area has a variety of architectural styles and there are no identified historic districts in this neighborhood.

Notable Features or Structures:

A notable landmark feature is the Grand Central Airport Terminal, which is the last remaining building of the nation's first transcontinental air passenger service. The airport terminal is identified as a historic resource on Glendale's Historic Register.

Irving Air Chute Company Building located on the corner of Flower Street and Sonora Avenue is also identified as a historic resource on Glendale's Historic Register.

Parks or Trails:

Grand Central features Griffith Manor Park, which is a small park located off of Sonora Avenue. In addition, the neighborhood is adjacent to the LA River and the Glendale Narrows Riverwalk Trail and Confluence Park, which is slated to host a bridge across the LA River and connect to associated trails and the Griffith Park.

Community Group Profile(s) :

The Grand Central Neighborhood Association represents the Grand Central neighborhood.

Disposition of the Wash to the Neighborhood:

The Wash runs through the southern corner of the Grand Central neighborhood and before uniting with the Los Angeles River. Grand Central neighborhood is an ideal location that would serve as the “bridge” for pedestrians who would be utilizing the future Wash trail and the Glendale Narrows Riverwalk trail.

The end of the Glendale Narrows Riverwalk trail (known as Confluence Park) would be an ideal location to serve as a connection point for the future Wash trail.

Available Public Transit Options:

There are more than 30 bus stops that are located in the Grand Central neighborhood. These bus stops are located throughout the neighborhood on San Fernando Road and Flower Street. There are two MetroLink train stations within 10 minutes’ drive from the Grand Central neighborhood, which are both in Burbank.

Neighborhood:

Pelanconi

Map Index Reference:

14

Background:

The Pelanconi neighborhood was named after the Pelanconi family, who once operated and owned a vineyard in the area. The neighborhood is mostly residential with a scattering of manufacturing shops and light industrial uses located on San Fernando Road, which bounds the south edge of the neighborhood. Mid-sized homes dominate this neighborhood, along with multifamily developments lining Glenoaks Boulevard. Restaurants, retail, and transportation options make this neighborhood convenient for both drivers and pedestrians.

Character:

The Pelanconi neighborhood features a variety of architectural styles such as Spanish and Minimal Traditional. The neighborhood is known for wide, curving streets and shaded sidewalks. There are no identified historic districts in this neighborhood.

Notable Features or Structures / Parks or Trails:

Pelanconi Park serves as a landmark feature for the neighborhood, located at its northwestern end. Mature pine and palm trees, a baseball diamond, and physical exercise equipment graces the triangular park, which is frequented by many residents and visitors throughout the day. To the south of the neighborhood is the Glendale Narrows Riverwalk Trail.

Historic Structures:

The Concord Avenue Bridge, which crosses over the Wash, is identified as a historic resource on Glendale’s Historic Register.

Community Group Profile(s):

The Pelanconi Estates HOA represents the Pelanconi

neighborhood. The HOA vigilantly practices the “Neighborhood Watch” program to help keep the neighborhood safe and also promotes neighborhood meetings to encourage communication and rapport among residents.

Disposition of the Wash to the Neighborhood:

The Wash directly passes through Pelanconi and unofficially serves as the southeastern boundary for the neighborhood. There are currently two bridges (accessible by foot and vehicles) in the neighborhood that are built over the Wash at Concord Avenue and San Fernando Road. The “dead-ends” of Estelle Street and Omar Street (north of the Wash) may be opportunities for future wash access.

how does the Verdugo Wash concrete channel vary along its length?

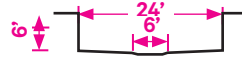
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"Types" refer to areas of the wash with similar widths, shapes, and adjacent land uses

TYPE 1

(in residential area)

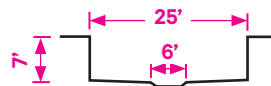
10' - 25'



TYPE 2

(in residential area)

25'



TYPE 3A

(in residential area)

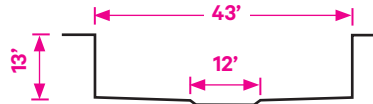
40' - 45'



TYPE 3B

(in open space area)

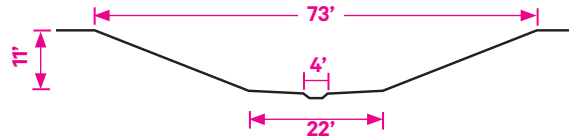
43'



TYPE 4

(in golf course)

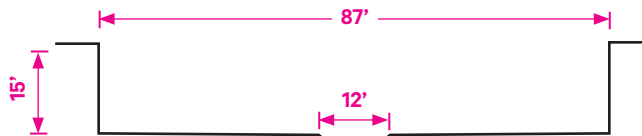
75'



TYPE 5A

(in residential area)

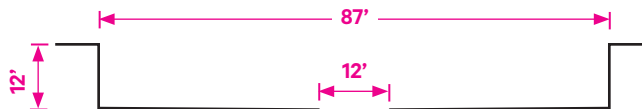
87'



TYPE 5B

(in open space area)

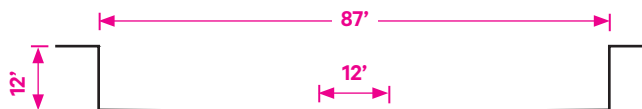
87'

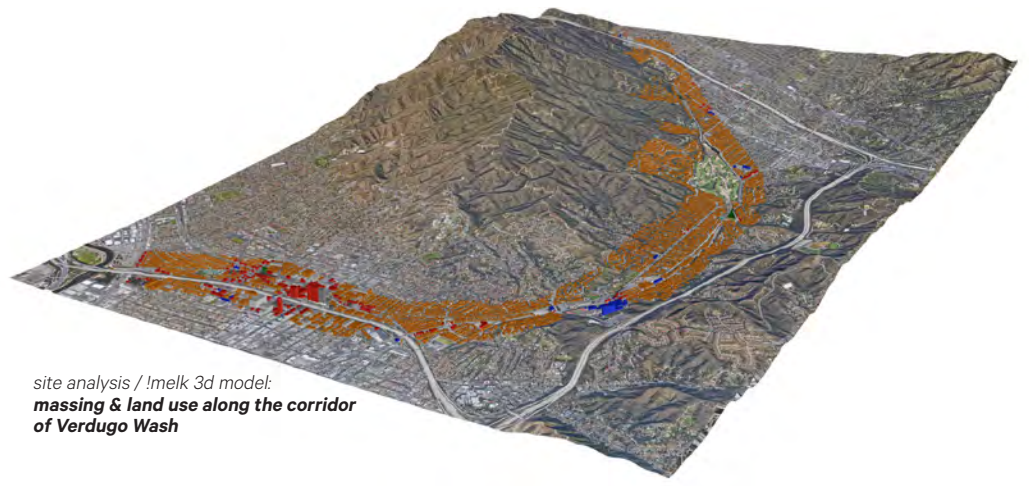


TYPE 5C

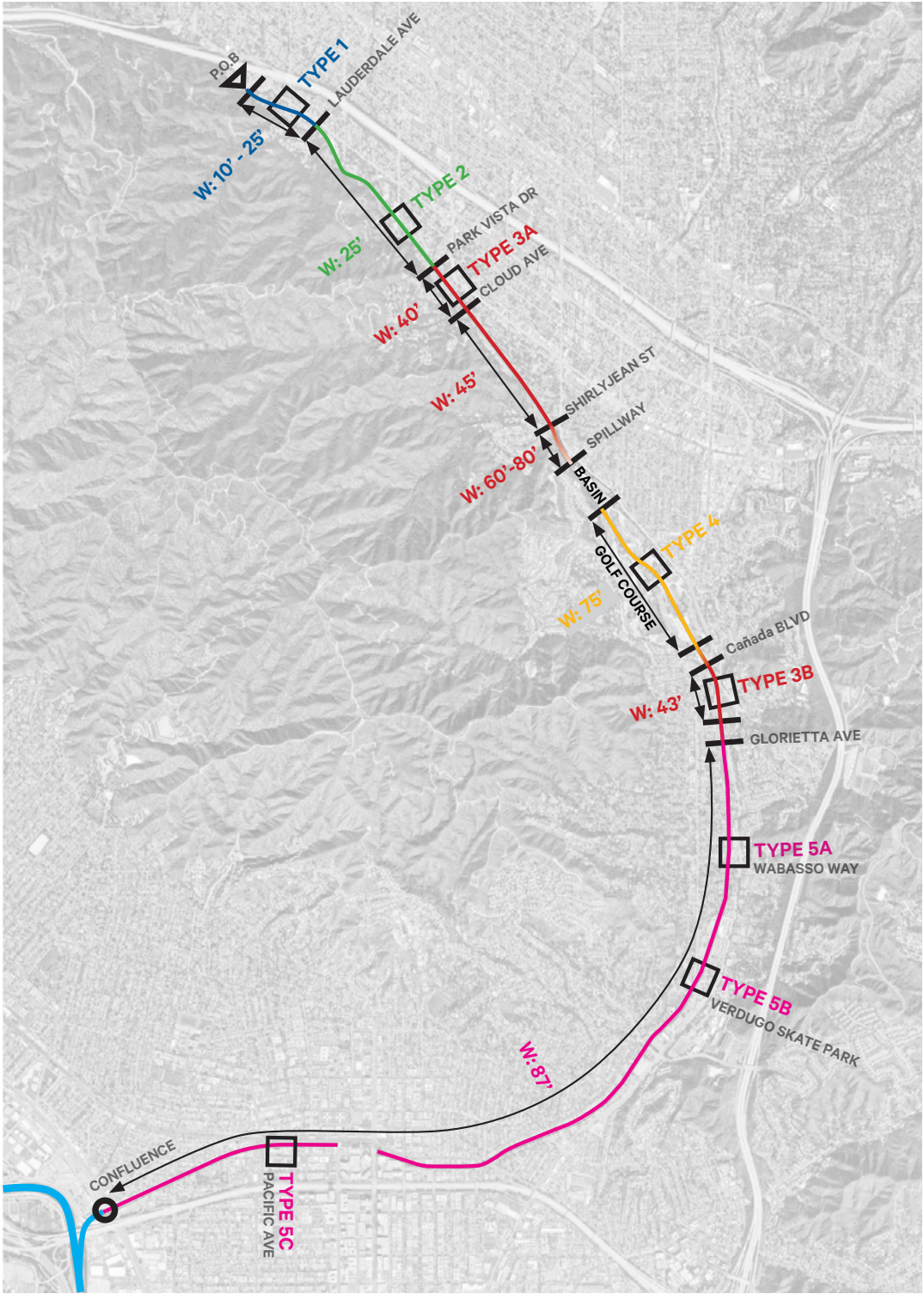
(in commercial area)








87'





site analysis / !melk 3d model:
**massing & land use along the corridor
 of Verdugo Wash**



- W:XXX** WASH OVERALL WIDTH
-  TYPICAL SECTION
-  SECTION / SEGMENT TYPE 1
-  SECTION / SEGMENT TYPE 2
-  SECTION / SEGMENT TYPE 3
-  SECTION / SEGMENT TYPE 4
-  SECTION / SEGMENT TYPE 5
-  LOS ANGELES RIVER

this page / opposite page:

3D model development of areas typifying certain conditions along the Verdugo Wash, such as the channel's profile (width and shape), as well as the adjacent land uses such as open space, residential and commercial



TYPE 1
(in residential area)



TYPE 2
(in residential area)



TYPE 3A
(in residential area)



TYPE 3B
(in open space area)



TYPE 4
(in golf course)



TYPE 5A
(in residential area)



TYPE 5B
(in open space area)



TYPE 5C
(in commercial area)

The Verdugo Wash channel's point of beginning (P.O.B) in north Glendale is located just south of 210, curving for 9.4 miles from southeast to west before merging with the LA River.

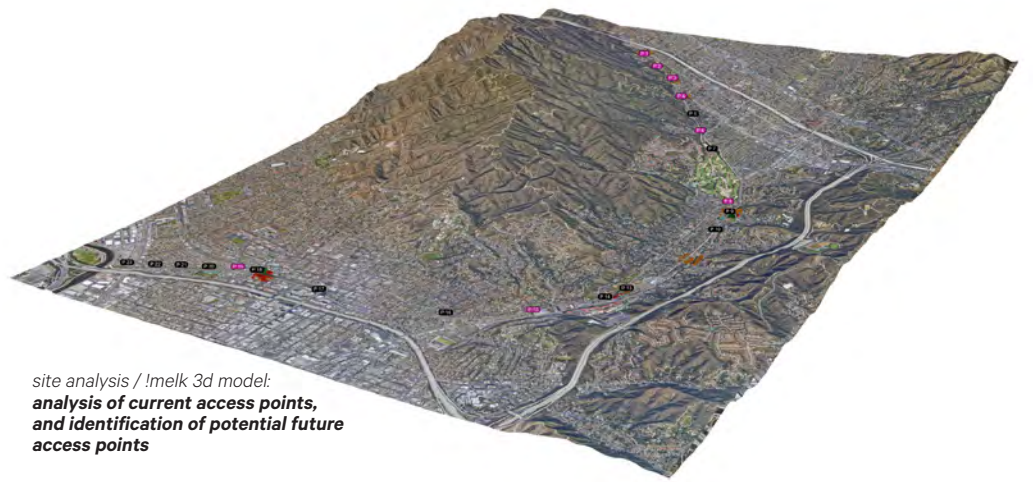
Legend:

- POTENTIAL WASH ACCESS POINT (Black oval)
- EXISTING WASH ACCESS POINT (Pink oval)
- WASH TRACE (Dashed blue line)

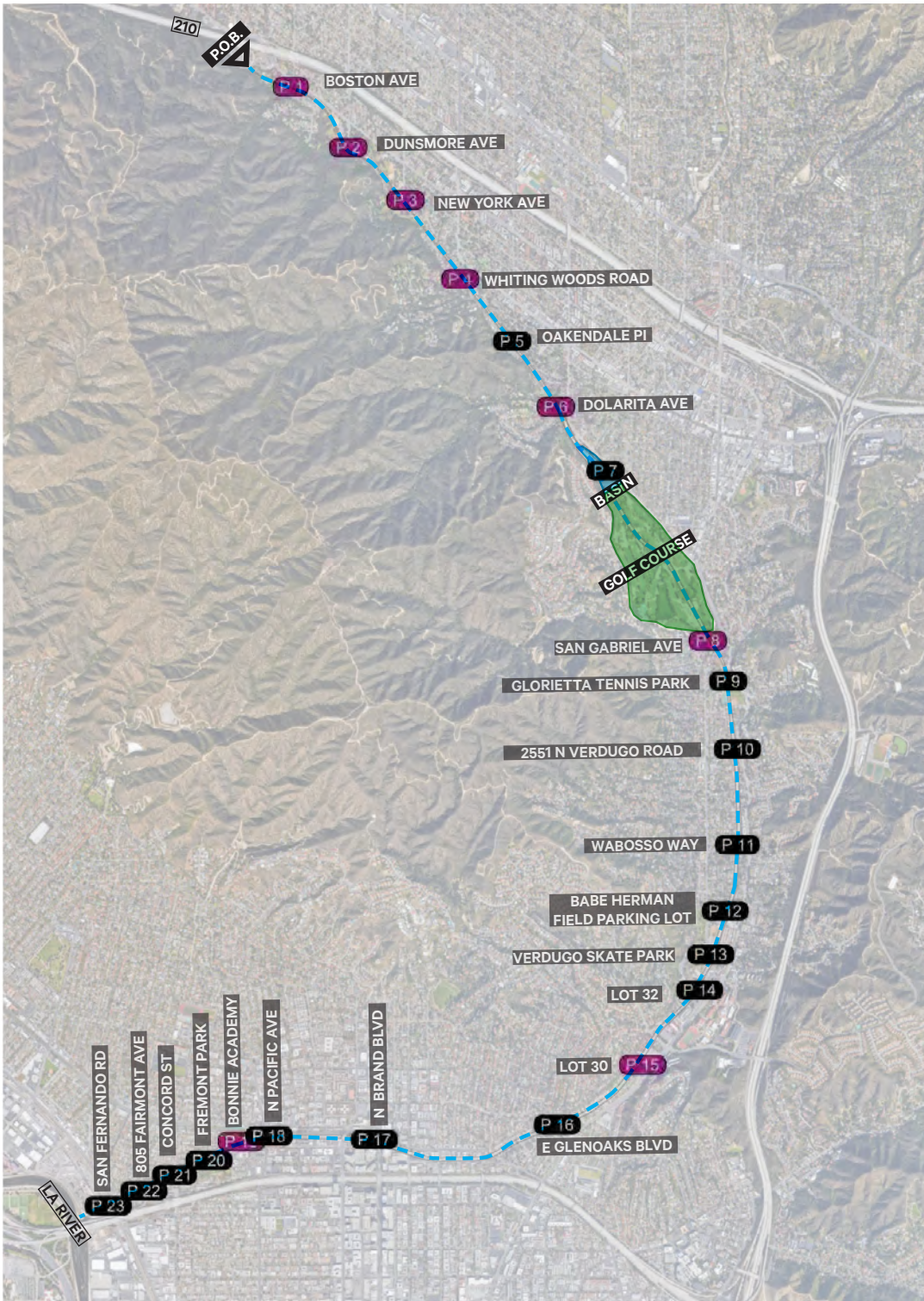
Scale: X.XX DISTANCE (IN MILES)

Route Details:

- Start:** P.O.B. (Point of Beginning)
- Points:** P1, P2, P3, P4, P5, P6, P7, P8, P9, P10, P11, P12, P13, P14, P15, P16, P17, P18, P19, P20, P21, P22, P23
- Distances (Miles):** 0.4, 0.35, 0.43, 0.37, 0.36, 0.37, 0.9, 0.2, 0.3, 0.43, 0.3, 0.2, 0.16, 0.42, 0.47, 0.83, 0.5, 0.13, 0.17, 0.16, 0.17
- Walk Times:** 8-MINUTE WALK, 7-MINUTE WALK, 18-MINUTE WALK, 4-MINUTE WALK, 6-MINUTE WALK, 8-MINUTE WALK, 6-MINUTE WALK, 4-MINUTE WALK, 3-MINUTE WALK, 8-MINUTE WALK, 9-MINUTE WALK, 16-MINUTE WALK, 10-MINUTE WALK, 2-MINUTE WALK, 3-MINUTE WALK, 3-MINUTE WALK, 3-MINUTE WALK
- Landmarks:** BASIN, GOLF COURSE, LA RIVER



site analysis / !melk 3d model:
analysis of current access points,
and identification of potential future
access points



See photo catalogue on the following
pages for each of the referenced
(existing + potential) access points

Based on site analysis of land uses & physical constraints, as well as rationalized distance between access points, Imelk identified opportunities for potential access points. The feasibility and design of these will be further studied during the Visioning stage.



P1: Boston Avenue (existing access point)



P2: Dunsmore Avenue (existing access point)



P5: Oakendale Place (potential access point)



P6: Dolarita Avenue looking north (existing access point)



P9: Glorietta Tennis Park (potential access point)



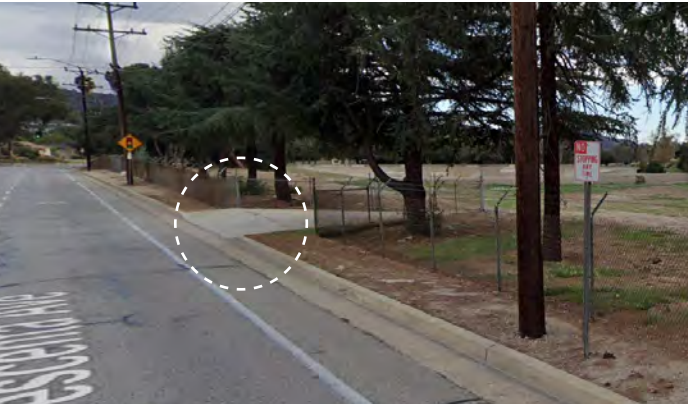
P10: N. Verdugo Road (potential access point)



P3: New York Avenue looking north (existing access point)



P4: Whiting Woods Road looking north (existing access point)



P7: Basin (existing access point)



P8: San Gabriel Avenue (existing access point)



P11: Wabasso Way (potential access point)



P12: Babe Herman Field Parking Lot (potential access point)



P13: Verdugo Skate Park (potential access point)



P14: Lot 32 (potential access point)



P17: N. Brand Boulevard (potential access point)



P18: N. Pacific Avenue (potential access point)



P21: Concord Street (potential access point)



P22: Fairmount Avenue / Faircourt Lane (potential access point)



P15: Lot 30 (existing access point)



P16: E Glenoaks Boulevard and Louise Street looking west (potential access point)



P19: First German United Methodist Church (existing access point)



P20: Fremont Park (potential access point)



P23: San Fernando Road (potential access point)

Based on site analysis of land uses & physical constraints, as well as rationalized distance between access points, !melk identified opportunities for potential access points. The feasibility and design of these will be further studied during the Visioning stage.

4. hydrology & biology

The re-imagined Verdugo Wash will maintain its flood protection purposes for the design storm event while improving connectivity, access, and biodiversity. The hydrology study articulates the goals and strategies for maintaining hydraulic functions while exploring opportunities to integrate community benefits. The biology study aims to identify any potential impacts of the Visioning Plan on existing biodiversity within or adjacent to the Verdugo Wash while exploring opportunities for ecological enhancements and connecting Glendale residents with nature.

Existing Efforts - Hydrology and Biology

Key plans and reports that have been reviewed and referenced, and which will be pertinent in next steps, are outlined below:

Greener Glendale Plan (2011)

This plan assesses what actions the City and community have already taken to be more sustainable and makes recommendations for building on these efforts. Nine Sustainability Focus Areas are developed, the most relevant ones for Verdugo Wash are listed below:

- Urban Nature
 - UN3: Implement programs to increase biodiversity in Glendale

Verdugo Wash Visioning can increase biodiversity by exploring opportunities for locally-relevant ecological enhancements like habitat restoration and for connectivity by working with the channel's linear nature to link larger natural areas.

- UN4: Ensure there is accessible park and recreational open space to serve residents

Verdugo Wash Visioning can provide opportunities for accessible public space as a recreational amenity itself and by connecting existing parks and open spaces.

- Water
 - WT5: Implement stormwater management practices to protect water quality and replenish local groundwater sources
 - WT5-E: Explore design of recreation areas that can hold runoff

Verdugo Wash Visioning can contribute to improved water quality by exploring opportunities to detain, filter, and infiltrate wash water like in the Verdugo Wash debris basin and perhaps other key locations.

OurCounty

Los Angeles Countywide Sustainability Plan (2019)

OurCounty is a regional sustainability plan for Los Angeles that outlines what local governments and stakeholders can do to enhance well-being and reduce damage to the natural environment, all while adapting to climate change. Twelve goals are set to achieve this. Those providing the most opportunity for the Verdugo Wash Visioning are listed below:

- Goal 5: Thriving ecosystems, habitats, and biodiversity

Verdugo Wash Visioning can support thriving ecologies by exploring opportunities for locally-relevant ecological enhancements like habitat restoration and for connectivity by working with the channel's linear nature to link larger natural areas.

- Goal 6: Accessible parks, beaches, recreational waters, public lands, and public spaces that create opportunities for respite, recreation, ecological discovery, and cultural activities

Verdugo Wash Visioning can provide opportunities for accessible public space as a rich, programmed recreational amenity itself and by connecting existing parks, open spaces, and natural areas.

LA River Master Plan (2021)

The Master Plan introduces the Los Angeles River and provides its context before addressing its future as an inclusive and connected open space. The Master Plan includes implementation steps to integrate design and performance objectives in a multi-jurisdictional context. Nine goals are supported by actions and methods to set the strategic direction for the Los Angeles River. The most relevant for Verdugo Wash Visioning are listed below:

- Reduce flood risk and improve resilience

A key component of the Verdugo Wash Vision is to ensure the channel maintains its flood protection purpose while providing climate change resiliency.

- Provide equitable, inclusive, and safe parks, open space, and trails

Verdugo Wash Visioning can create an inviting recreational space that connects different areas and people along its length.

- Support healthy, connected ecosystems

Verdugo Wash Visioning can increase biodiversity by exploring opportunities for locally-relevant ecological enhancements like habitat restoration, and for connectivity by working with the channel's linear nature to link larger natural areas.

Upper Los Angeles River and Tributaries Revitalization Plan (2020)

The ULART plan focuses on multi-benefit projects that prioritize the restoration of natural habitats, increase green areas and open space, and engage underserved communities. The ULART planning area consists of the entire Los Angeles River watershed feeding into the point where it meets the Lower Los Angeles River Revitalization Plan in the City of Vernon.

California Assembly Bill 466 (AB 466), signed into law on September 28, 2017, is relevant for the Verdugo Wash Visioning as this legislation established the ULART Working Group and required them “to develop, through watershed-based planning methods and community engagement, a revitalization plan for the Upper Los Angeles River, [its] tributaries... [including] Verdugo Wash, and any additional tributary waterway that the working group determines to be necessary.”

The goals and the objectives of Water and Environment Committee (identified by the Working Group) are as follows:

- Create equitable opportunities to enhance watershed health, ecosystem functions, habitat, and biodiversity; increase local water supplies; and improve water quality
- Reduce flood risk to communities by prioritizing natural systems
- Balance the utilization of available space and resources for both the environment and the community
- Assess all opportunities for resiliency to climate change

Feedback points from Verdugo Wash Visioning community outreach to date that are relevant to hydrology and biology have been summarized:

- Ensure design and features that create safe access

The Verdugo Wash Visioning will closely consider the channel's community context to balance wash access with privacy and security. A constraint of note related to safe access is the channel's inherently varying water levels.

- Create areas that provide small gathering spaces

The Verdugo Wash Visioning will explore opportunities for gathering areas. The project's primary constraint of maintaining hydraulic function likely means such spaces would be best sited next to or elevated above the existing wash floor.

- Incorporate trails and pathways

The Verdugo Wash Visioning can create an inviting recreational space with experiential pathways and greenspace that connects different people and areas along its length, including other existing trails.

Reader's Guide for the LA River Ecosystem Restoration Project (2016)

This report provides a local environmental review of the proposed LA River Ecosystem Restoration Project, which proposes to restore aquatic riparian ecosystems native to the Los Angeles River along an approximate 11-mile length. The project aims to restore ecosystems in accordance with flood risk management while considering recreation opportunities. The report highlights how historic treatment of the Los Angeles River to channel flood waters to the coast as efficiently as possible, along with urban sprawl, disconnected the river from its floodplain and significant ecological zones and contributed to the 90% loss of Southern California's riparian habitat.

The report stresses the importance of contributing resources outside of the LA River Project boundary to support and enhance the ecology of the Los Angeles River. The Verdugo Wash is highlighted specifically as a tributary with potential to provide habitat connectivity between the Verdugo Mountains, San Rafael Hills, and Los Angeles River.

The LA SEA Program

“Significant Ecological Areas (SEA) are officially designated areas within LA County with irreplaceable biological resources.” The Verdugo Mountains is one area within LA County with this designation and partially lies within the ¼ mile project buffer of the Verdugo Wash at its most northerly extent. The SEA Program aims to conserve biodiversity within Los Angeles County by designating and supporting important biological resource areas in such a way that they can sustain themselves in the long-term. While the SEA Program aims to guide development within SEAs, some of the guiding principles of the SEA Program are relevant to measures that the Verdugo Wash Visioning project could provide and support, including:

- Create new places where biodiversity can be woven through urban fabric.
- Ensure that individual SEAs can thrive by reducing fragmentation, creating, or preserving connectivity and habitat functionality.
- Ensure the continuation of natural ecosystem, services that improves quality of life for all who live in Los Angeles County.
- Key Stakeholders:
 - Los Angeles County Flood Control District
Contact with the LACFCD has been undertaken by the design team as part of this Pre-Design stage and further consultation and coordination is proposed throughout as the project progresses.
 - The United States Army Corps of Engineers
Engagement is yet to be started in the Pre-Design phase, but consultation with the USACE will be undertaken in later phases of the Verdugo Wash Visioning after further coordination with the LACFCD. A permit from the USACE will be required. For a full list of potential permits, see Appendix 2 – Permitting and Regulatory Requirements.

Existing Conditions - Hydrology

The Verdugo Wash was created solely for the purpose of flood risk protection. Located within the City of Glendale, the channel transports rainwater from where it falls in its catchment area to the Los Angeles River. The Verdugo Wash Visioning aims to work with the existing drainage regime established in the catchment area to maintain flood protection, all while delivering added benefits beyond this hydraulic function. Conceptual design strategies to deliver these added benefits for the Verdugo Wash Visioning include urban forestry, green infrastructure, improved biodiversity, connectivity, and access.

The Verdugo Wash is located within the City of Glendale and is a 9.4-mile-long engineered channel and a tributary of the Los Angeles River. The Verdugo Wash was originally a natural seasonal stream before the engineered concrete channel was constructed in the 1930s by Los Angeles County to improve the conveyance of flooding from the Verdugo catchment into the Los Angeles River. Based on an assessment of satellite topography for the Glendale area, the Verdugo Wash catchment has a total area of just over 21 square miles. The figure below shows the narrow urbanized catchment alongside the lower reaches of the Wash and the catchment picking up runoff from the Verdugo Mountains, Crescenta Highlands and the non-urban areas of Angeles National Forest.

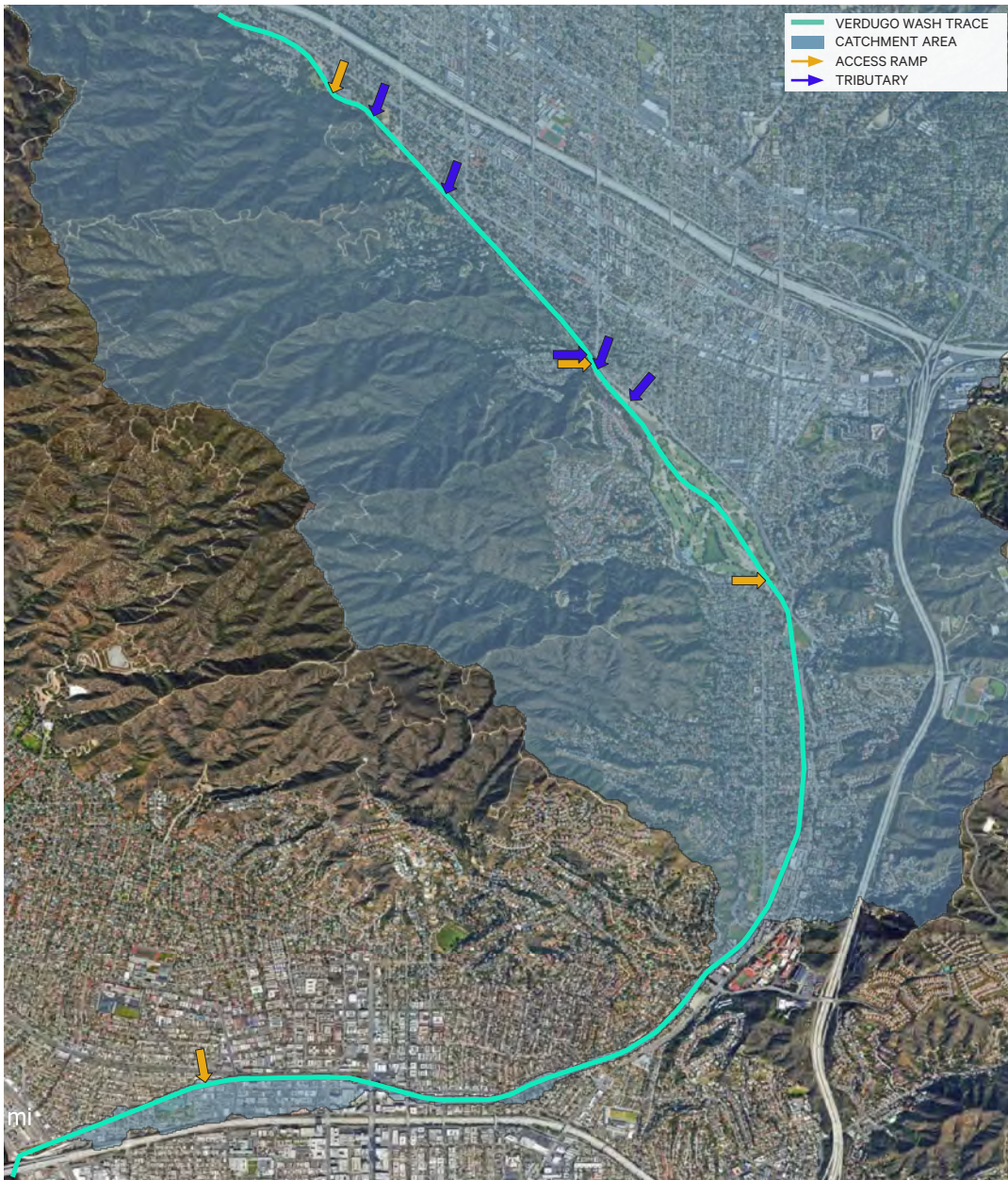
Heading upstream from the connection with the Los Angeles River just northeast of Griffith Park, the channel extends northeast through heavily urbanized areas in the lower catchment, then north between the Verdugo Mountains and the San Rafael Hills and then it moves northwest along the eastern edge of the Verdugo Mountains. This upper part of the catchment is steeper and rockier with partial vegetation cover. The upper extremity of the channel is just south of Interstate 210 in the Crescenta Valley. The Verdugo Wash Debris Basin Dam is the only part of the channel of the Verdugo Wash that is not lined in concrete. The basin has an approximate length of 0.3 miles and represents 3.2% of the total length of the Verdugo Wash. Most of the constructed channel is rectangular in cross section, with varying widths from approximately 17 feet in the north in Crescenta Valley, to 89 feet to the south where it connects to the Los Angeles River.

Immediately downstream of the Verdugo Wash Debris Basin Dam, the channel has a trapezoidal cross section with an average bottom width of 22 feet and a top width of 73 feet. The trapezoidal channel represents approximately 9.5% of the entire length of the Verdugo Wash and passes through the Oakmont Country Club Golf Course. Along the channel there are four access ramps to the channel and five tributaries are identified as feeding into the Verdugo Wash. These must be considered when developing a potential top bank multimodal facility.



Verdugo Wash trace and catchment area





Access and tributaries to the Verdugo Wash channel



Verdugo Wash downstream, close to its connection to the LA River

A HEC-RAS model developed by USACE has been provided to the project team from LACFCD. This provides peak flood flows and flood depths in the Verdugo Wash for the 1:100 year event, which represents the design event and a key design constraint.

As part of the pre-design phase, a hydrological modelling exercise has been undertaken by the Buro Happold team, to identify drainage sub catchments and drainage reaches. These have then been correlated with the information in the USACE hydraulic model provided. The exercise carried out by Buro Happold and the information provided by USACE, via LACFCD, show relatively good agreement in the upper and lower reaches of the Verdugo Wash.

The following figures and table outline the flows and depths at the given reaches.

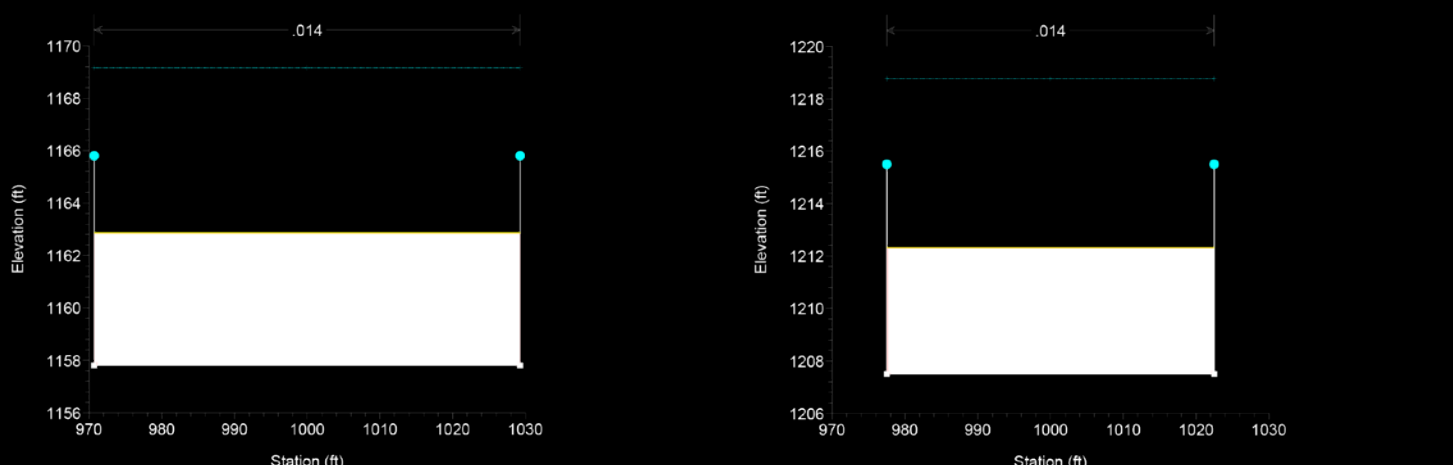
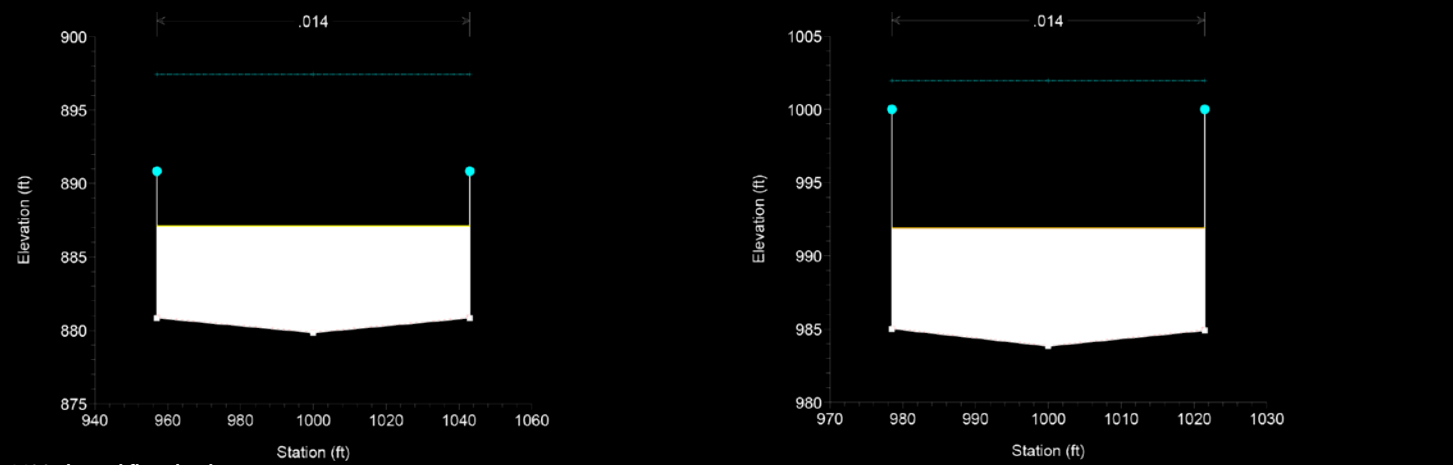
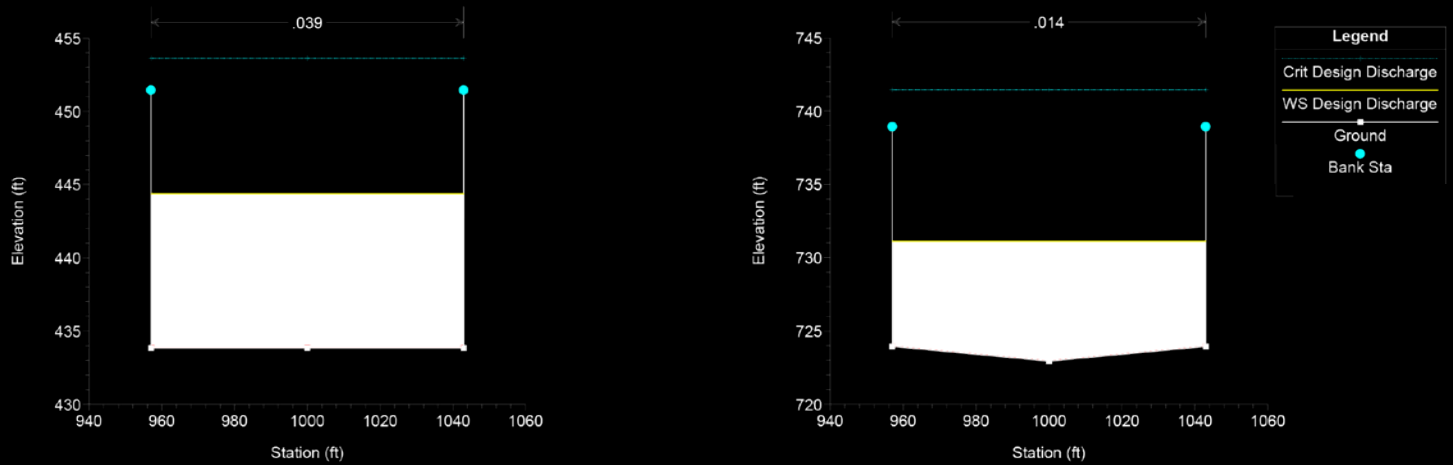


Sub catchments and associated reaches

Buro Happold Reach Name	Associated Station from USACE Model	Cross Section type !melk report	Width (feet)	Channel depth (feet)	Flow (cubic feet per second) (USACE)	Flow Depth (feet) (USACE)
Reach V1	998.15 (LV)	Type 5C	87	18.5*	42,900	10.52
Reach R1	15958.89 (LV)	Type 5B	87	15.5*	37,350	8.20
Reach R3	21686.4 (LV)	Type 5A	87	11.5*	34,600	7.26
Reach R4B	25629.46 (LV)	Type 3B	43	15.5*	18,000	8.07
Reach R4A	1012 (UV)	-	60*	8*	12,745	5.07
Reach R8	3000 (UV)	Type 3A	44	8*	9,665	4.82

USACE HEC-RAS extracted modelling results for 1:100 event for Verdugo Wash

The USACE HEC-RAS report provides information on the cross section channel width and depth, as well as the calculated flow depths for the 1:100 year event. The Verdugo Wash Visioning team will use this information to identify sections of the wash which may be suitable for intervention.



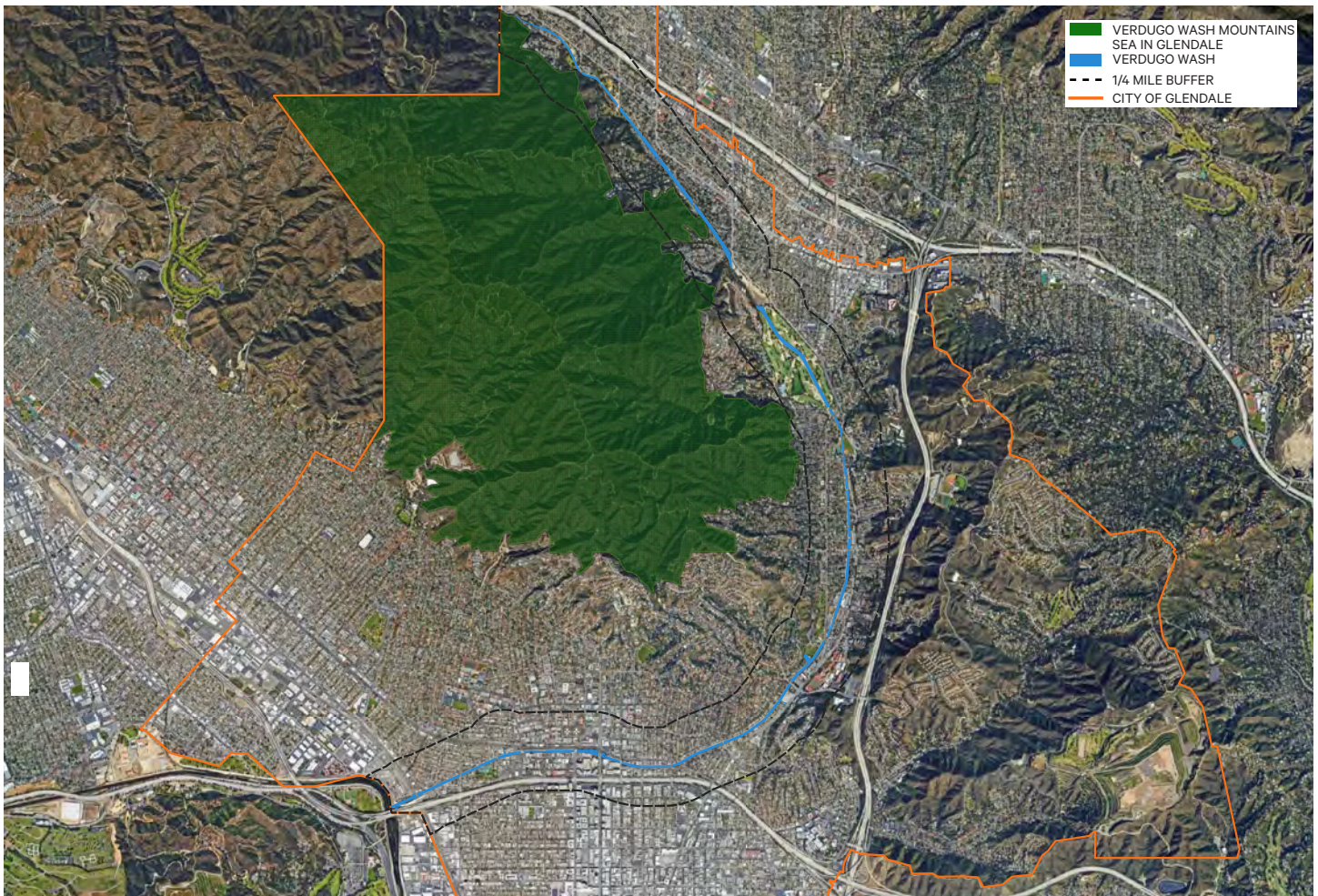
Existing Conditions - Biology

While the setting of the Verdugo Wash is largely within the highly urban environment of the City of Glendale, the wider landscape includes a variety of natural and semi-natural habitats, including the three distinct hillside/mountain ranges within the city boundary: the Verdugo Mountains, San Rafael Hills and San Gabriel Mountains, as well as the numerous open spaces and parks within the City. The Verdugo Mountains are designated by the Los Angeles County as a Significant Ecological Area as it is considered to support irreplaceable biological resources. The ¼ mile buffer applied to the Verdugo Wash Visioning project overlaps with the SEA at the northern extent of the Wash.

The City champions habitat restoration through its Tree Reforestation programs work, which aims to increase tree canopy coverage. As of 2009, Glendale fosters 48,760 street trees with a variety of 246 species, providing multiple benefits to both people and wildlife. Furthermore, under the City's Municipal Code, the following habitat characteristics are also protected: Oak, Bay, and Sycamore trees; blue line streams (riparian habitats), and ridgelines. Glendale's Hillside Development Standards for new subdivisions also call for protection of natural hillsides, stream channels, habitat, and vegetation areas.

The landscape within Glendale includes several distinct vegetation and habitat types. Data relating to these different vegetation systems was obtained from the US Forest Service Region 5 using the Classification and Assessment with Landsat of Visible Ecological Groupings (CALVEG) classification system which aims to classify existing vegetation, rather than indicating 'potential vegetation' as with other natural vegetation classification systems used in the US. CALVEG maps "dominance types," indicating the main habitat type within an assigned area. Other vegetation types may be present as an understory or mosaic component, but the system does not capture that level of detail.

(While CALVEG includes 'urban' as a classification type, this has been removed from the "habitat typologies" graphic, on the opposite page, to better illustrate the semi-natural habitats within the City of Glendale and those in proximity to the Verdugo Wash.) Broad vegetation types have been grouped into similar colors to illustrate their distribution across the City. Scrub and shrub habitat (also known as chaparral) is the most prevalent, associated with the Verdugo Mountains and San Rafael Hills. Some of these vegetation types include those associated with trees, including oak and mahogany species which are growing at smaller heights due to environmental stresses. The scrub/



The Verdugo Mountain SEA

shrub typology is interspersed with defined forest areas of taller, more mature trees which typically have a dominant species type such as oak, sycamore, eucalyptus and big-cone Douglas fir. In the northern extent of the Verdugo Wash, these habitats almost directly border the Wash at the edge of the SEA.

Small isolated pockets of annual meadow grassland typically occur around the foot of the mountains and hills; however, a small area is identified where the basin within the Verdugo Wash is located, indicating potential greater biodiversity value of the Wash in this area. The golf course which straddles either side of the Verdugo Wash at the basin is indicated to be an area of non-native/ornamental planting, alongside several other open spaces and parks within the City of Glendale. This can be typical of urban open green and recreational spaces, which have been designed for amenity interest, rather than habitat value. It may be the case that some non-native ornamental planting types support local native biodiversity species, such as invertebrates and birds, that feed on pollen and nectar.

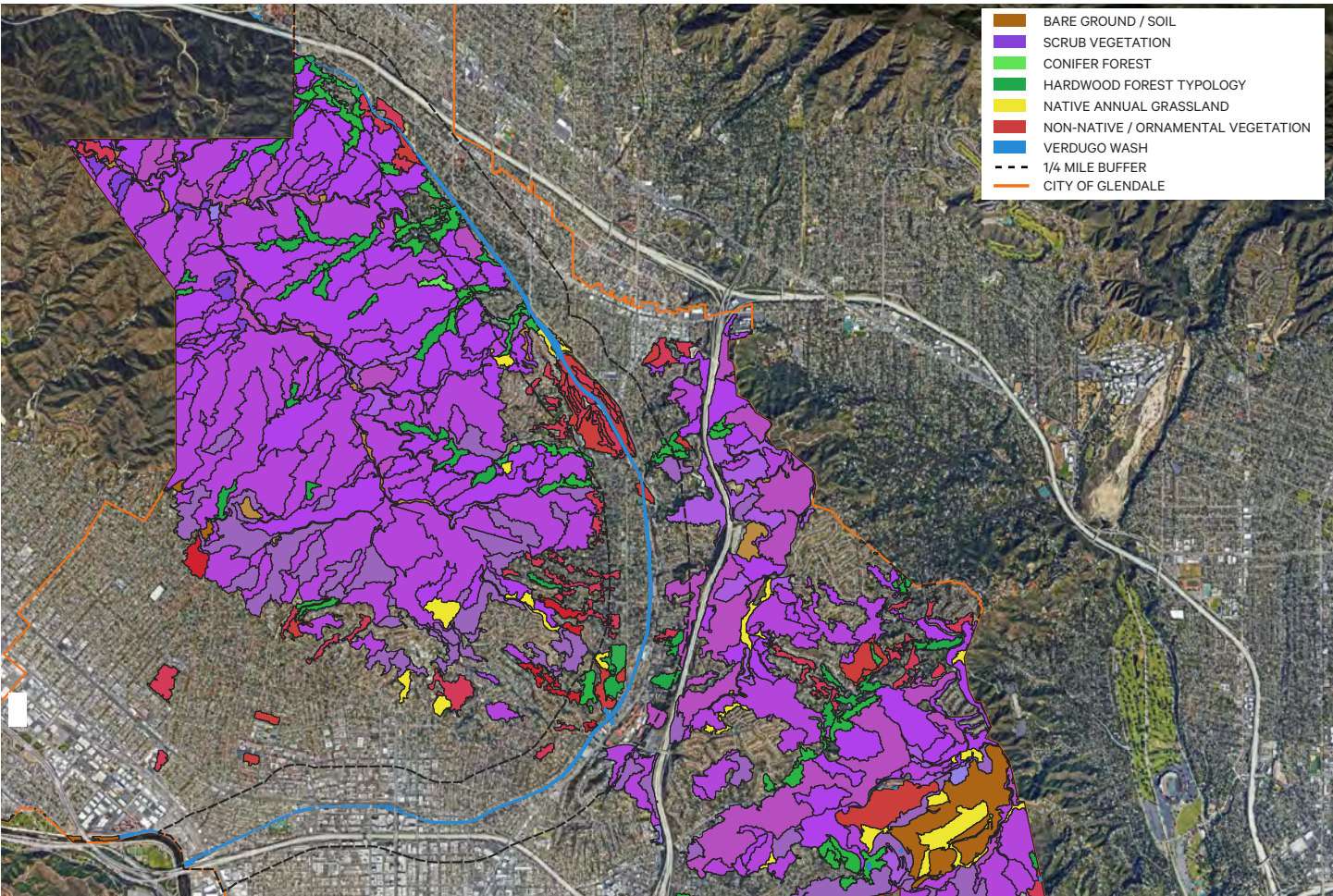
Within the Verdugo Wash itself, much of its length is dominated by concrete with limited habitat value due to the largely hard engineered treatment of the channel for flood protection. Generally, low water flow within the channel provides few opportunities for riparian habitat to establish

and the hard concrete treatment of the channel prevents colonizing species from being able to establish, which would aid successional plant growth. It was noted that the area in the channel that remains wet supports at most algal growth, as seen in the site photo below, but no notable emergent or wetland plant species were noted within the water channel. However, from a review of site photos from the walkover of the Verdugo Wash, it is apparent that there are pockets of habitat that exist sporadically along the length of the Wash.

These are incidental in nature and have occurred either through natural colonization of small areas, the Verdugo



The Verdugo Wash, illustrating algal growth in the water channel



City of Glendale CALVEG habitat typologies

Wash basin and where vegetation from neighboring property encroaches into the Wash.

The most significant area of semi-natural vegetation occurs within and bordering the Verdugo Wash Debris Basin Dam. The more natural substrate in this area, potentially gathered through the settling of debris out of the Wash flow, provides a relatively large area of open habitat which appears to



*top: The approach to the Verdugo Wash basin, illustrating the scrub habitat on the boundaries either side, and wider grassland within the basin itself
bottom: Rockier habitat within the Verdugo Basin supporting a variety of plant species*

support natural grassland species. The boundaries to the Verdugo Wash Debris Basin Dam, further support scrub and shrub habitats as well as sparse ephemeral type habitats in rockier substrates. Together these mosaics of habitat types may support an abundance of local flora and fauna including invertebrates, reptiles, birds, and mammals.

Detailed surveys of the Verdugo Wash Debris Basin Dam could be undertaken by a wildlife specialist to identify the habitat types and extents that exist within the basin and the species that these habitats support. This information can then be used to support the design of habitat enhancements and restoration within this area while also seeking to support community interest, open space, and providing a community nature resource.

Opportunities for Site Hydrology

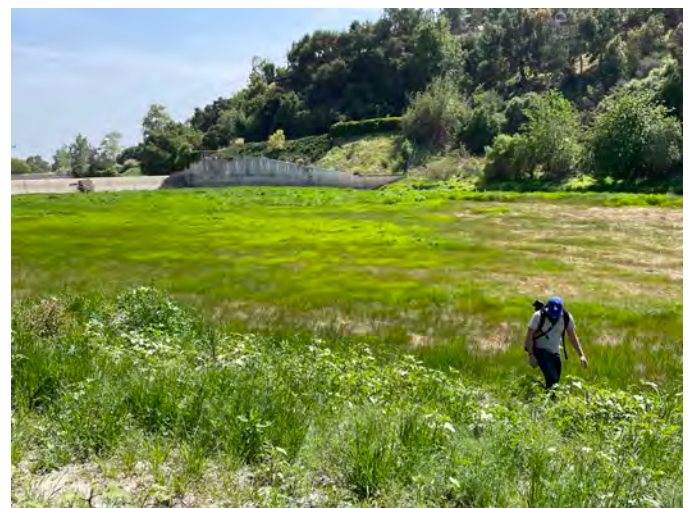
The Verdugo Wash Vision can build on positive synergies, including many of those identified in relevant local plans. Key to this will be identifying areas suitable for local intervention where the overall value of the Verdugo Wash channel can be increased beyond its purely flood risk mitigation purpose. As

seen in the Project Context section, a key goal is to develop accessible and safe urban spaces that improve biodiversity and enhance ecosystems, while reducing flood risk.

Within the wider Los Angeles River catchment, work is being undertaken as part of the Los Angeles River Path to improve connectivity. In addition to the stormwater management role the project includes improved access, amenities, and recreational opportunities.

The Los Angeles River Ecosystem Restoration is another project which involves rehabilitating 11 miles of the Los Angeles River from Griffith Park to Downtown Los Angeles, while aiming to maintain the existing standards of flood risk management. The project is initiated by the City of Los Angeles, in conjunction with the U.S. Army Corps of Engineers.

The Verdugo Wash Debris Basin Dam provides an opportunity for targeted intervention as the location is less constrained by adjacent development. Modeling carried out for the Los Angeles River Masterplan and replicated by the design team indicates that the dam does not have a significant impact on water levels in the channel for the design event and therefore the sensitivity of the catchment to interventions in this area may be less severe. Downstream of the basin, the trapezoidal sections of the channel provide an opportunity to consider whether a change of the cross section could allow interventions for improved mobility and ecology. Further work is being undertaken to identify the sections of the Verdugo Wash that have the greatest hydrological flexibility for future interventions.



Verdugo Wash Debris Basin Dam area has opportunities to introduce public amenity and contribute to improved biodiversity

Opportunities for Site Biology

The most significant opportunity that the Verdugo Wash Visioning represents for biodiversity is the potential to create a vegetated corridor that provides new habitat connectivity between the Verdugo Mountains, San Rafael Hills, and the Los Angeles River. Due to the highly urban environment



Changes to the cross section could be considered for trapezoidal sections of the channel

of the City of Glendale, particularly towards the southern extent of the city, there is a physical barrier to dispersal for many species associated with the Verdugo Mountain and San Rafael Hills in the north of the city and the Los Angeles River in the south. The way in which the Verdugo Wash cuts through the city in a continuous length, means that vegetating all, or strategic parts, of the length of the channel could help join up these significant habitat areas and support restoration of habitat links across the City.

Incorporating native species of local provenance within the scheme design will further support the habitat connectivity provided by the Wash. Limiting the use of non-native ornamental species will increase the value of the Wash for local wildlife species. Where there are species of particular interest for California, Los Angeles and/or the City of Glendale, plants that can support these species could be incorporated into the Wash to provide a meaningful enhancement to local biodiversity.

A significant habitat type to be incorporated within the Verdugo Wash would be the provision of restored riparian habitats within the Wash utilizing the water channel to support habitats that have historically been lost from the Wash. It is noted that, given the extent of water within the channel at the time of the site walkover, that this may not be feasible as riparian habitat requires near-continuous water to thrive. However, it is a significant opportunity for restoration and should be explored.

Due to the area and existing potential value, the Verdugo Wash Debris Basin Dam provides an opportunity to create significant habitat enhancements while also supporting other proposed functions for the space such as gathering spaces and community use. Intertwining nature with community use will help to bring a sense of nature further into the City of Glendale and could be a base for community nature activities as promoted similarly along parts of the Los Angeles River.

Gaps and Challenges for Site Hydrology

The Verdugo Wash is designed for a 1 in 100-year event. Preliminary modeling, using NOAA design rainfall data, indicates that the channel could be close to capacity for sections of the Wash in the 1 in 100-year event. Review of the rainfall recorded at gauges around the Verdugo Wash indicate that there could be a gap between the design rainfall referenced by NOAA and the information demonstrated by historical rainfall. This is something that will need to be reviewed and coordinated with the LACFCD. Interventions located within the channel that are likely to result in a reduction in the cross-sectional area of the channel are likely to pose a challenge in terms of municipal support and approval. It will be necessary to demonstrate that any reductions in flood conveyance do not result in increases in flood risk to third parties.

With the urban extents so close to the edge of the Verdugo Wash and the likely constraints associated with the retention of the hydraulic function of the channel, it is likely that the capacity of the channel will influence the feasibility of the interventions. As such, interventions will need to be targeted to discrete sections of the Wash where it can be demonstrated that there is sufficient capacity in the Wash to accommodate the interventions proposed.

Gaps and Challenges for Site Biology

Existing detailed ecological survey information for the Verdugo Wash is currently limited in extent. The identified habitats presented are broad habitat categories assigned based on remote habitat classification techniques with some field survey. Whether any of the habitats in proximity to the Verdugo Wash have been ground-truthed is currently unknown but should be investigated further. The habitat types and faunal species supported by the semi-natural vegetation identified within the Verdugo Wash basin is also currently unknown. Further investigation into any existing biodiversity data on this area will be required to better understand the existing value of the basin for biodiversity and how interventions as a part of the project can aim to support and enhance the area while also providing a key community resource. Where data does not exist, surveys by a wildlife specialist should be sought to support the project.

Additionally, a review of satellite imagery on Google Earth™ of the Verdugo Wash basin indicates that the area is maintained, with imagery across several years appearing to show that the ground gets cleared of vegetation at least every other year, if not annually. It would be useful to obtain information as to why the area is cleared, whether it is for channel or habitat maintenance purposes, and by what mechanism. Scope for adjusting the management regime to promote biodiversity can then be explored.

The extent to which habitats can be created within the channel itself will largely be dictated by how much the channel can accommodate interventions that may reduce flood capacity, as discussed in the Hydrology section above. Therefore, it may not be possible to provide continuous

green links of planting throughout the length of the channel due to the infrastructure required to support vegetation within an otherwise concrete channel. In this instance, where possible, proposed vegetation should seek to join up with areas of existing greenspace and habitat identified within the City of Glendale that border the Wash, to create stepping-stones across the city where a continuous link is not feasible.

Where planting can be incorporated within the channel, consideration will need to be given to the type of habitats that the environment of the channel can reasonably support. While targeting the restoration of riparian and wet woodland habitats would support the recovery of a diminishing ecosystem within California, consideration of the water demand of these habitats will need to be given alongside the predicted flows and water levels for the channel. If for most of the year, flows will be low and water availability for planting within the channel scarce, it will not be reasonably feasible to support a riparian ecosystem without significant irrigation intervention which would be unsustainable. Additionally, the existing construction of the channel limits how vegetation can be established. It is likely that built planting beds would

be required to support a suitable soil substrate to support plant-life in an otherwise barren environment. These containers would require maintenance and higher levels of irrigation than plants that are in natural ground due to the limitation of root growth and increased rates of desiccation experienced within planting containers.

Consideration will also be needed with regards to climate change and the projected impacts to rainfall rates and average temperatures that will affect the Verdugo Wash through the lifespan of the operational project. Plants that have more resilience to drought may need to be incorporated to reduce the rate of planting failure in the future. Utilizing native and adapted species such as arid specialists that can cope with environmental stresses such as extremes of heat and limited water will help create biodiversity improvements along the Wash that are resilient and can adapt to the predicted effects of climate change in Los Angeles County.

Urban Wildlife

In theory, it is possible that a cougar or other large terrestrial animal would use the Wash as a movement corridor if access both in and out of the Wash was readily available. Access to the Wash is currently restricted by high fences and locked gates. If these security measures were to be removed at particular access points, then animals could potentially move more freely up and down the Wash.

However, while adult cougars can jump fairly high fences and tend to have large home ranges (50-150 square miles), they are solitary and highly territorial. This means that without a “good” reason to do so (e.g. in search of prey or a mate, or driven by habitat loss or competition), it is unlikely they would move far from their home range.

Accounts of the Griffith Park cougar indicate he is an older cat and considered unlikely leave the area by those who study him; though, with sufficient pressure (*examples listed above*), he might. Responding to those theoretical pressures, this cougar would likely leave via one of two routes: 1) head west back to the Santa Monica Mountains where he came from, or 2) cross the main LA River and negotiate various built infrastructure to find an access point to the Wash, potentially connecting to the Verdugo Mountains.

Besides large terrestrial animals like cougars, there are many smaller species, both terrestrial and airborne, which could use the Wash if there was more natural habitat within and next to the Wash and with or without creating access points. These areas would function as habitat in and of itself, but additionally serve to increase the permeability of the Wash,

which today, likely functions as a barrier to movement for many species. Fauna will also use habitat areas as stepping stones between existing green space like parks, gardens, and public realm areas, as well as more widely linking to the more natural areas including the mountains along either side of the Wash. Creating access points at ground level in long stretches of fence, using vegetation to help wildlife over tall fences, and including unlit, ‘dark’ routes for nocturnal species are strategies that aid species in moving through human-built environments.



Many animal species that occur within our cities are urban-adapted and thus tolerate a degree of proximity to humans and anthropogenic disturbances. While these populations will use human-made structures like bridges to move within the urban environment, measures such as integrating habitat and increasing permeability of such spaces make movement easier and wider for these animals.

Section 5: “Hydrology & Biology” bibliography

<https://lariver.org/blog/la-river-ecosystem-restoration>

<https://planning.lacounty.gov/site/sea/home/> US Census Bureau, 2019

<https://www.fs.fed.us/r5/rsl/projects/classification/system.shtml>

<https://ladotlivablestreets.org/projects/LA-River-Path%20-Headwaters>

<https://lariver.org/blog/la-river-ecosystem-restoration>

Pasadena-Chlorine Plant station chosen, link: https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html?bkmrk=ca

5. sustainability

The Verdugo Wash will be the beacon for urban sustainability and social equity in Glendale, enhancing the City's natural environment and addressing the climate change and biodiversity crises, and incorporating equitable design and access.

The Verdugo Wash Visioning process requires many considerations, including those related to culture, mobility, environment, health and wellbeing, and economic vitality. As an amenity space that has the potential to connect multiple neighborhoods, there is an additional opportunity to establish ecological and transit corridors. The sustainability framework that will be developed during this visioning process will articulate the goals and strategies for environmental sustainability and climate resiliency as they relate to the Verdugo Wash.

The framework will consider and integrate collected data, existing efforts, and historical context. This includes the site's environmental history (and pre-development condition), as well as current barriers and consequences resulting from the channelization of the Wash. The framework will identify opportunities to enhance the natural environment, address climate change, and encourage habitat restoration. This will help to identify locations for design interventions and provide an initial high level understanding of how the Verdugo Wash can contribute to citywide sustainability efforts such as reducing the urban heat island effect, treating stormwater, reducing greenhouse gas emissions, and greening the City. Lastly, the sustainability framework will also seek to identify opportunities to address social factors such as equitable design and equitable access to benefit the entire community.

Key elements of the sustainability plan will guide the vision to address environmental and social factors in the area. These elements will both align with existing goals and targets and incorporate newly identified opportunities and needs within the community. These key elements are expressed through the following sustainability goals:

- *Enhance the natural environment*
- *Encourage habitat restoration*
- *Mitigate climate change*
- *Benefit the entire community by incorporating equitable design and access*

Existing Efforts - Sustainability

The City of Glendale executed the "Greener Glendale Plan" in 2011, addressing sustainability and climate change in local government operations.

The plan outlines seven focus areas of improvement: **energy, water, waste, transportation, urban design, urban nature, and environmental health.**

At the regional level, the Los Angeles County Board of Supervisors adopted "OurCounty": the Los Angeles County-wide Sustainability Plan in 2019, which provides a regional framework for local governments and stakeholders to enhance community sustainability, adapt to climate change, and reduce damage to the natural environment. OurCounty specifically focuses on communities that are disproportionately affected by environmental pollution. These plans are foundational to future Glendale sustainability frameworks, and relevant initiatives and goals will be brought into the Verdugo Wash Visioning process.

One example of a relevant strategy or action is Glendale's Citywide Pedestrian Plan spotlight on adding pedestrian head starts and high visibility crosswalks in high collisions intersections. Additional examples can be found in the Sustainability Plan which sets objectives to increase the City's tree canopy coverage by 20,000 trees by 2035 as well as ensure that there is accessible park and recreational open space to serve residents.

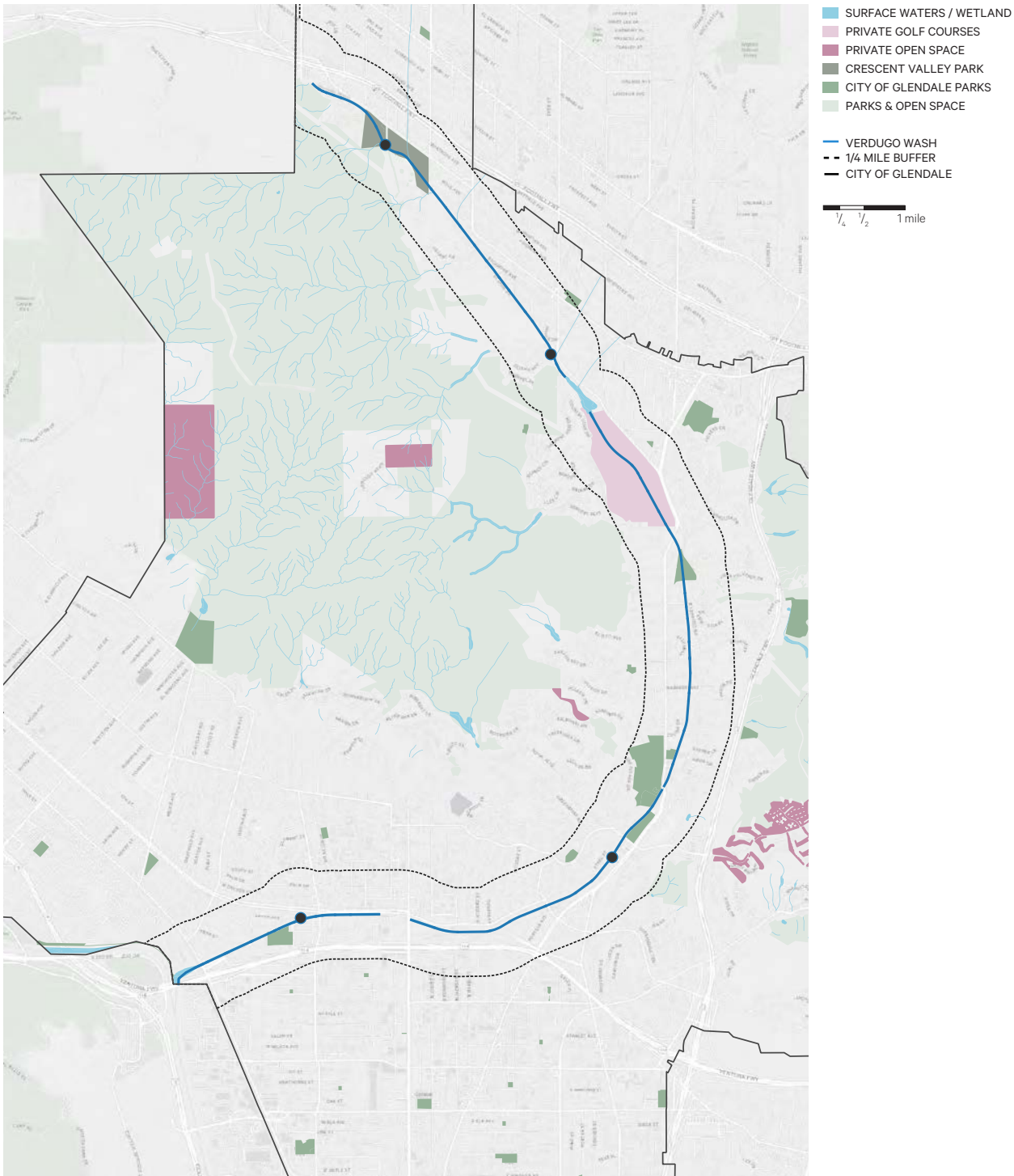
The County also recently completed the LA River Master Plan, which outlines development and management goals for the 51-mile section of the LA River running through Los Angeles County. At large, the plan identifies strategies and goals to reduce flood risk, improve resiliency, provide open space, support ecosystems, enhance arts and culture, address potential adverse impacts, and promote healthy, safe water. The plan also identifies how it will work within existing and future planning documents.

At the State level, the Verdugo Wash is assessed within the Mountains Recreation and Conservation Authority (MRCA)'s Upper Los Angeles River and Tributaries (ULART) Revitalization Plan, addressing future opportunities and projects to revitalize waterfronts throughout north LA County. The plan, completed in 2020, has an emphasis on disadvantaged communities along the Verdugo Wash, Aliso Canyon Wash, Pacoima Wash, Tujunga Wash, Burbank Western Channel, Arroyo Seco, and Upper LA River. The plan's outreach process helped highlight specific community needs and desires for the Verdugo Wash. These included safe access design features, inclusion of small gathering spaces, and incorporation of trails and pathways. The plan also identifies and scores various revitalization opportunities for the tributary. These include but aren't limited to adding an educational facility, creating multi-use and mountain biking trails, and locations for enhancing wildlife corridors.

Existing Conditions - Parks & Open Space

Parks and open space are an integral part of the Glendale identity. Not only was the city initially sited within the natural beauty of three distinct hillside/mountain ranges (Verdugo Mountains, San Rafael Hills, and San Gabriel Mountains), but nearly one-third of the city's land area is either parkland or open space (including private lands). From an equity perspective, approximately 90% of Glendale residents reside within 1/3-mile of a public park or recreational open

space; a notable exception being South Glendale, which lacks adequate open space. The city boasts 43 public parks as well as public school yards open to the public after-hours, and many open space trails. The City also takes on reforestation and implements habitat protection measures. These initiatives and their impacts are further discussed in the Biology section of this report.



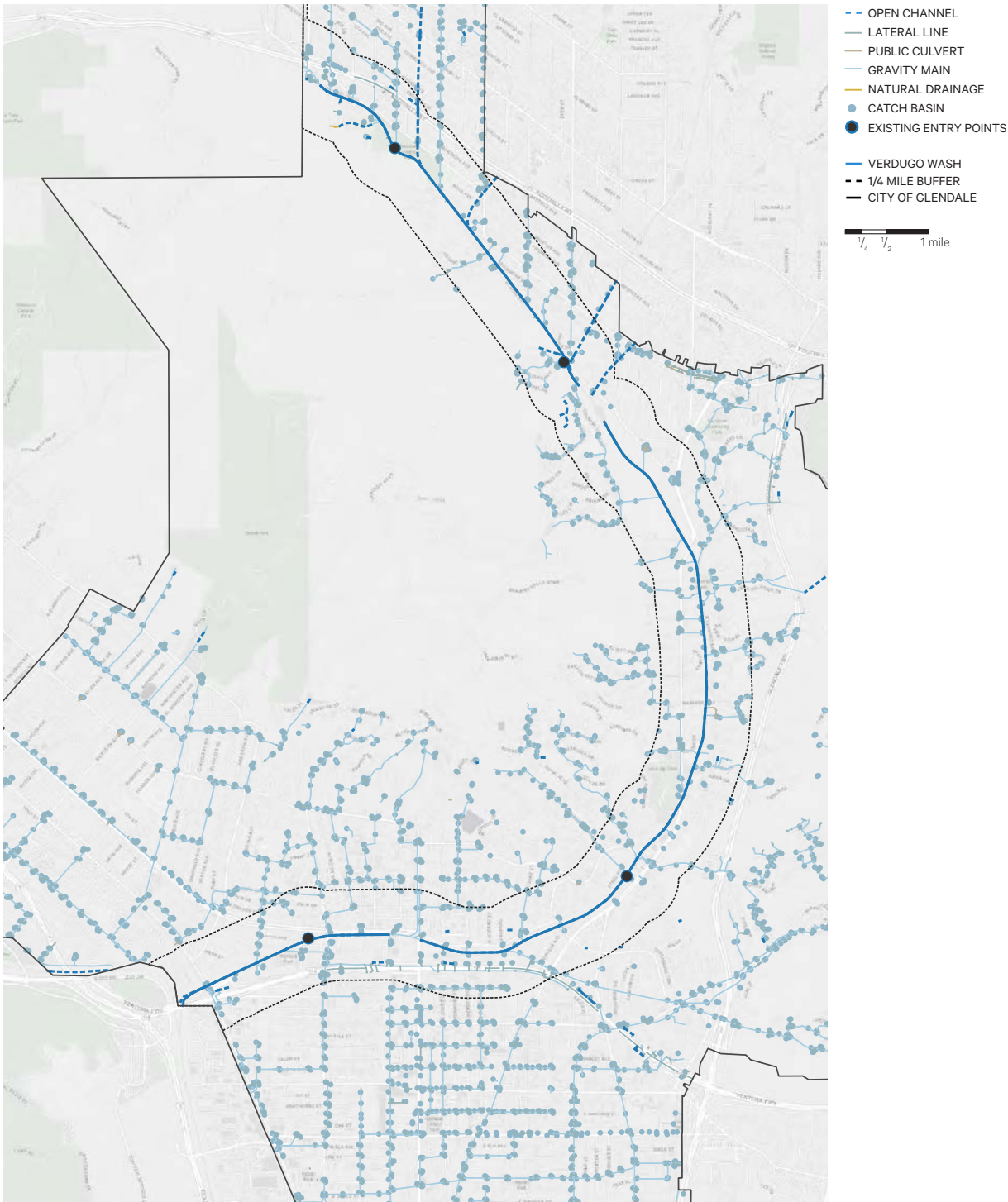
Parks and open space

data source(s): City of Glendale Public Works, Los Angeles County Department of Public Works, Los Angeles Department of Sanitation.

Existing Conditions - Water

Especially in southern California, water quality and water management are important tenets of sustainability. About seventy percent of Glendale's water supply is provided from the Metropolitan Water District (MWD), which is conveyed over long distances from 1) northern California (via the State Water Project) and 2) the Colorado River (via the Colorado River Aqueduct.)

The Verdugo Wash is a central asset in Glendale's stormwater infrastructure. For these reasons, existing conditions and future precipitation levels will influence the final design vision. Water is also connected to other key sustainability themes like urban ecology, extreme heat, and climate change mitigation efforts.



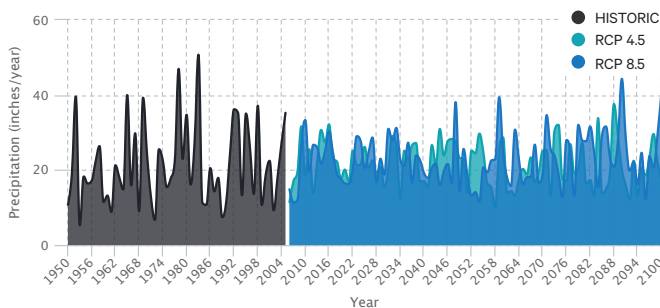
Stormwater infrastructure
data source(s): City of Glendale Public Works, Los Angeles County Department of Public Works, Los Angeles Department of Sanitation.

The City of Glendale experiences a Mediterranean climate with dry hot summers and mild wet winters, though winter-drought has been common in recent years. On average, the city receives approximately 19 inches of rain per year. The rainiest months of the year, January and February, each experience approximately 3-4 inches of rain. The city contains both year-round and seasonal streams as well as extensive stormwater infrastructure.

As the Wash was channelized and the surrounding area was developed, the soil's ability to absorb rainwater decreased and runoff increased. Green infrastructure, including vegetative surfaces, can help to increase infiltration and reduce runoff from certain rain events, but stormwater infrastructure is essential in managing runoff from heavy rain events and storms, particularly for downstream and low-lying areas.

Minimal changes are expected for the annual precipitation in Glendale under both low and high emission scenarios. The average observed historical 1-day maximum is 2.8-inches, with a projected mid-century increase of 0.1-0.2 inches.

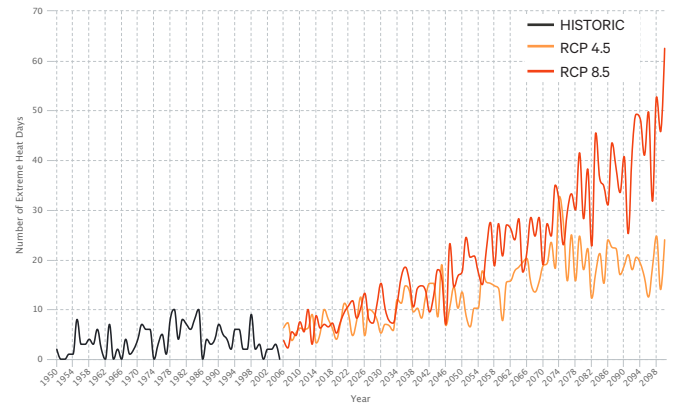
There is a projected increase of about one week in maximum lengths of dry spells compared to the historic average of 128 days. While averages aren't expected to change much in the Glendale area, California is projected to have more severe variation in wet and dry years. This can lead to "whiplash events" which are particularly important in that they contribute to and intensify various other climate hazards.



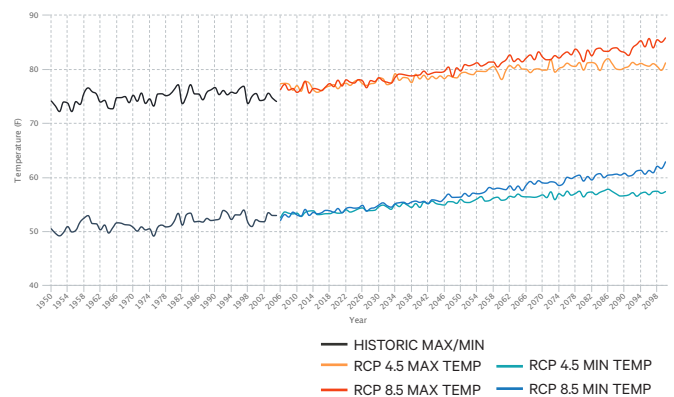
Precipitation in inches, per year in Glendale under low and high emission scenarios with observed historical values (source: Cal-Adapt)

When dry years are followed by very wet years, mudslides and landslides are more likely to occur. This is due to declines in vegetation during the dry years which otherwise offer soil stabilization. When wet years are followed by dry years, wildfires are much more likely. This is because the wet years allow a lot of new vegetation to grow, but it eventually dries out in the drought period – leading to increases in fuel sources for fire.

The Los Angeles Climate-Smart Cities analysis, performed by The Trust for Public Land, has identified areas where the potential for groundwater infiltration projects is highest. Their model, which accounts for riparian areas, flood-prone areas, permeable soils, wetland areas, groundwater basins, historic channels, and slope identifies much of the Verdugo Wash project area as having high potential for infiltration projects.



Number of extreme heat days in Glendale under both emission scenarios with observed historical values. The threshold (98th percentile) for an extreme heat day in this community is 97.61 degrees Fahrenheit. (source Cal-Adapt)



Annual average (maximum & minimum) temperature projections in Glendale, under low & high emissions scenarios (source Cal-Adapt)

Data from the City's latest Urban Water Management Plan shows that over 81% of water usage is from residential homes (both single family and multi-family), around 12% is from commercial use, and the remaining is split between industrial, municipal, and landscape irrigation. In 2020, the annual water usage was just over 21,000 acre-feet in total, or an average of 95.3 gallons per person per day.

Not many modifications have occurred to the Wash itself since the 1930s, but additional flood control support structures and projects have been added in the area. These projects were predominately led by the Los Angeles County Department of Public Works and United States Army Corps of Engineers. They include additional debris basins in the Verdugo and San Gabriel Mountains, as well as additional concrete lining of other major channels in the region.

There are also 5 dams and reservoirs within the City of Glendale, which were all constructed between 1930 and 1950. These include Brand Park, East Glorietta, Chevy Chase 1290 Reservoir, Glenoaks Reservoir, and Diedrich Reservoir.

Early stormwater management infrastructure was largely set in the 100-year base flood standard, grounded in frequency-based design that has proven challenging for modern day standards. The "new normal" of climate change has deemed prior storm-predictions less reliable, and has presented areas of opportunity for more sustainable, resilient, and equitable approaches. Reducing flood vulnerability in one

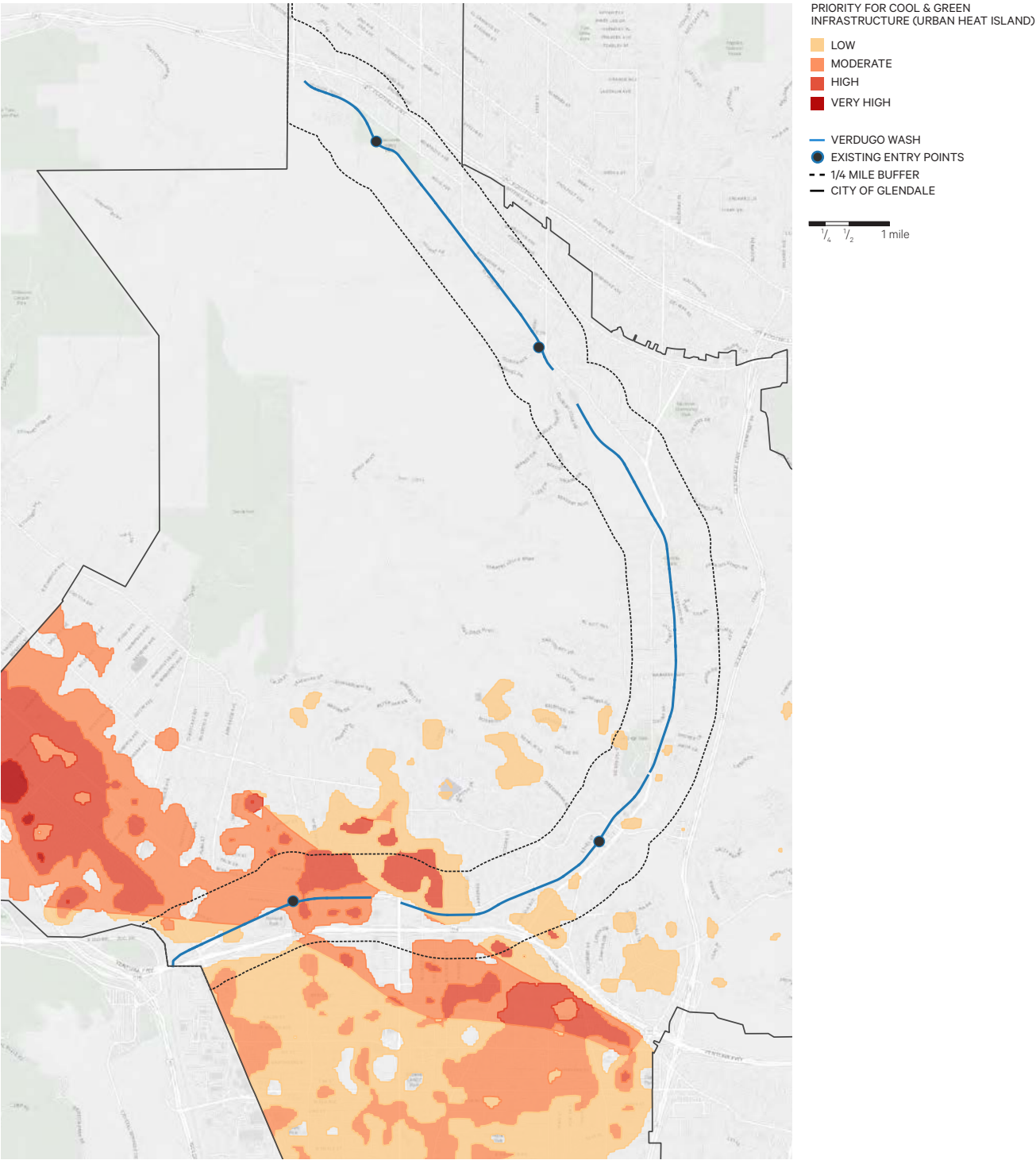
region may increase vulnerability in another. Therefore, sustainable urban drainage systems have introduced a more interdisciplinary and inclusive approach to current urban infrastructure design criteria.

Re-envisioning the stormwater management systems around the Verdugo Wash as a holistic network, rather than solely concrete channels, will provide a more equitable and sustainable future.

Existing Conditions - Heat

Globally, temperatures have steadily increased since the 1950s, with five of the hottest years on record occurring in the last six years.

Changes in air temperature will increase the occurrence of extreme heat, heat waves, warm nights, drought, and wildfires. When populations are exposed to extreme



Urban heat island priority areas
data source(s): City of Glendale Public Works, Los Angeles County Department of Public Works,
The Trust for Public Land (Climate-Smart Cities).

temperatures, heat stress can lead to broader welfare and economic impacts. This includes heat illnesses such as heat stroke, heat exhaustion, heat fatigue, and heat cramps. Heat waves have also been shown to contribute to increased mortality rates. Extreme heat is the leading cause of weather-related deaths within the US, accounting for over a quarter of weather-related fatalities since 1990. During a 2006 California heat wave, mortality rates increased by 5% across the state, with a 12% increase in at-home deaths. In that same heat wave, the south coast region experienced a 5.6% increase in hospitalizations during peak heat-wave days. These impacts are magnified in cities due to the Urban Heat Island (UHI) effect.

Both annual average temperatures and the frequency of extreme heat days are projected to increase in the City of Glendale. The current historic average number of extreme heat days, where temperatures reach over 97.6°F, is around 4.3 days per year. By mid-century, the number of extreme heat days are projected to increase by 9.3 to 15.9 days.

The annual average maximum temperature in Glendale is expected to increase by 4.4°F to 5.8°F by mid-century, and 5.7°F to 8.6°F by late century. The annual average minimum temperatures are also expected to increase by 4.5°F to 5.9°F by mid-century and 5.7°F to 9.0°F by late century.

There is opportunity within the Verdugo Wash for additional cool and green infrastructure, to mitigate UHI effects and provide respite for residents during extreme heat days. Efforts can be focused on moderate to very high need areas, such as near the West Glenoaks entry point. These design interventions may include, but are not limited to increased tree canopies, shade structures, drinking fountains, and splash pads.

Glendale is an urban heat island, experiencing higher temperatures than outlying areas.

The Los Angeles Climate-Smart Cities analysis has identified areas where the potential for cool and green infrastructure is greatest. Extreme heat conditions occur when summer temperatures are hotter or more humid than average, reaching 10 degrees or more above average and lasting two to three days. UHIs are a direct result of a warming planet, causing infrastructure to absorb and re-emit heat at higher levels than natural landscapes. Greening of the Verdugo Wash and surrounding areas may assist in the reduction of UHI effects.

Existing Conditions - Environmental Justice

Environmental justice is defined within State law to mean “the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation and enforcement of environmental laws, regulations, and policies.” It is critically important in the Greater Los Angeles region, where the burden of environmental pollution is unequally distributed. Air pollution, proximity to industrial pollutants, and water and soil pollution are examples of the types of hazards that impact health that

<p>pollution burden (exposures)</p> <ul style="list-style-type: none"> - PM2.5 - OZONE - DIESEL PM - PESTICIDE USE - TRAFFIC - TOXIC RELEASES FROM FACILITIES - DRINKING WATER CONTAMINANTS 	<p>population characteristics (sensitive populations)</p> <ul style="list-style-type: none"> - ASTHMA - CARDIOVASCULAR DISEASE - LOW-BIRTH WEIGHT INFANTS
<p>environmental effects</p> <ul style="list-style-type: none"> - CLEANUP SITES - SOLID WASTE SITES & FACILITIES - IMPAIRED WATER BODIES - GROUNDWATER THREATS - HAZARDOUS WASTE GENERATORS & FACILITIES 	<p>socioeconomic factors</p> <ul style="list-style-type: none"> - POVERTY - UNEMPLOYMENT - EDUCATIONAL ATTAINMENT - LINGUISTIC ISOLATION - HOUSING BURDENED LOW INCOME HOUSEHOLDS

Pollution & population factors

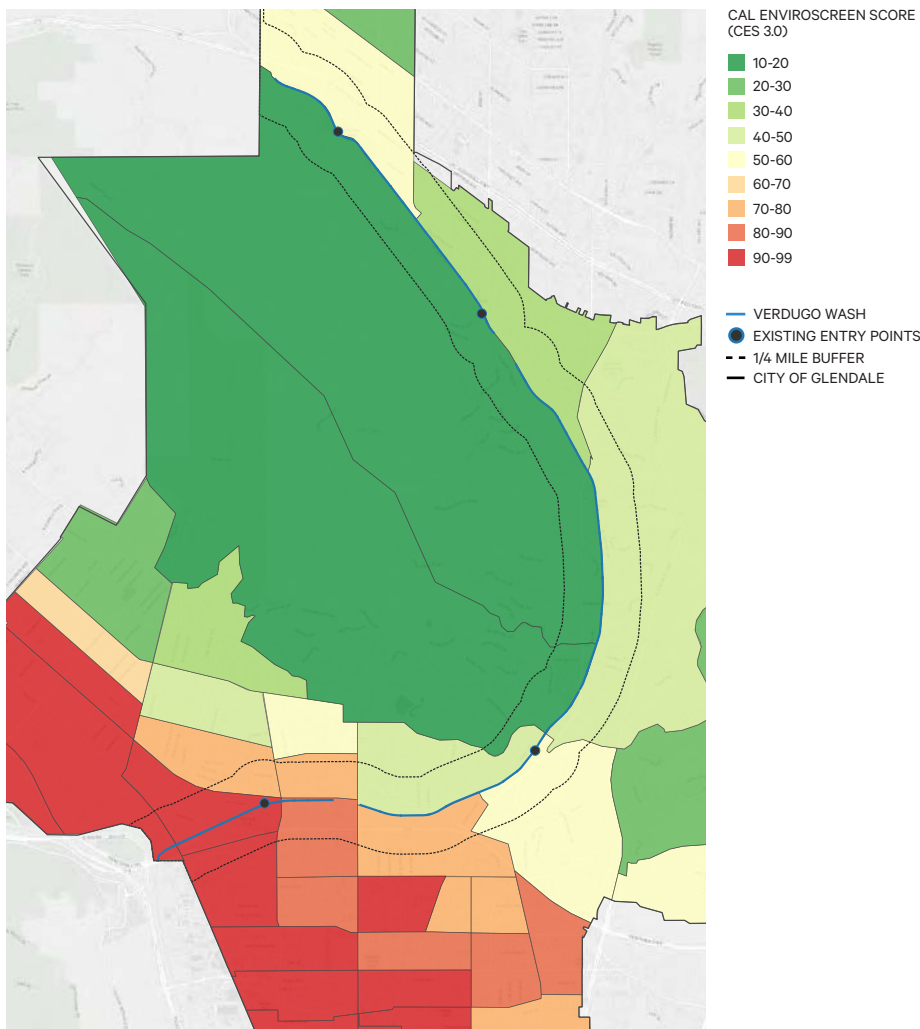
environmental justice communities tend to bear. It is also important to note that race is a more powerful predictor of pollution exposure than social class; racial minorities are more likely to be exposed to environmental pollution than whites of the same social class. Los Angeles County is also characterized by a particularly high level of residential segregation by race and ethnicity, and especially evident in Glendale due to its history as a sundown town.

CalEnviroScreen (CES 3.0) is a state-wide screening methodology that uses environmental, health, and socioeconomic information to identify California communities that are disproportionately burdened by multiple sources of pollution and sensitive to the effects of such pollution. CES 3.0 is a composite score of 20 indicators across 4 main components, exhibited in the following matrix, and is used as a tool to reduce pollution and prioritize State infrastructure investments.

Opportunities for Sustainability

The Verdugo Wash sustainability framework can help enhance the natural environment and encourage habitat restoration while mitigating climate change.

It will ensure that equitable design and access to recreate and commute are incorporated from the beginning of the process. In doing so, it will look to include goals and policy-making recommendations outlined in UC Berkeley’s targeted universalism framework. Targeted universalism aims to create universal goals, identify gaps, and address barriers in access. There are additional opportunities to reduce runoff and improve water infiltration and lessen the impacts of the Urban Heat Island in the area.



Pollution & population map: this figure outlines the CES 3.0 scores for census tracts within Glendale. The highest pollution burden is concentrated around Downtown and the western border of Glendale, intersecting the Verdugo Wash. CES 3.0 emphasizes that these census tracts experience pollution from more than one source, where populations facing socioeconomic vulnerability can be further susceptible to negative health effects.

data source(s): City of Glendale Public Works, Los Angeles County Department of Public Works, California Office of Environmental Health Hazard Assessment.

The Verdugo Wash also has an opportunity to align with and build upon strategies identified in the Greener Glendale Plan and other existing reports. These strategies may include, but are not limited to encouraging natural, low water use landscaping in yards and parkways, exploring the design of recreation areas that can hold runoff, and enhancing wildlife corridors and the native habitat. There will also be efforts to identify significant ecological areas, wildlife corridors, and habitats for preservation, including oak woodlands.

Additionally, it will be important to identify areas that are not within walking distance of recreational open space, to develop strategies for providing more equitable and universal access to the added amenities. The Verdugo Wash site has the potential to incorporate aspects of the Grayson Repowering Project. The City of Glendale Department of Water and Power has proposed to repower the Grayson Power Plant as a more reliable and efficient clean-air facility. The plant will be turned into a 260-megawatt net modern power generator with estimated commercial operation in summer of 2022.

Glendale's Tree Power Program for free shade trees is a successful project that helps eligible residential customers

save energy by offering them up to three free shade trees to plant on their property. Properly planted shade trees can help residents save 10%-50% in air conditioning costs.

Challenges & Gaps for Sustainability

There are a range of upcoming challenges and study gaps that would benefit from citywide planning processes (independent of the Verdugo Wash Visioning process).

A primary task of the Visioning sustainability framework is to identify areas that are not within 1/3-mile distance of an existing public park or open space and developing strategies to provide park space for them. It will also be beneficial to produce a citywide canopy coverage inventory and analysis and adopt a canopy coverage plan.

The project will also require the development of a sustainable urban watershed planning process that addresses the ecological integrity of all Glendale water sources.

6. mobility

The Verdugo Wash will act as a multimodal corridor and spine that compliments and enhances the existing pedestrian and cyclist network.

The Verdugo Wash is adjacent to local and regional transit networks connecting residents within Glendale, to the Greater Los Angeles Area, and beyond. The Wash has the potential to become a functional corridor that encourages multimodal transportation use. Identifying access points and network connections is critical for transforming the Verdugo Wash into a successful and equitable mobility spine.

Prior to conceptual design stages, an evaluation of existing conditions is necessary to identify areas of opportunity and assess challenges or gaps.

Glendale is an urban, medium density, well-connected city with plans for regional BRT and additional bike infrastructure. Verdugo Wash entrances and access points should align with future mobility plans and maximize the use of existing transit systems. Establishing connections to schools, parks, and open space will encourage community members of all ages to interact with the Wash. A special emphasis should be placed on transit equity, addressing the needs of nearby communities that will benefit most from improved walking conditions.

Existing Efforts - Mobility

There is a breadth of existing plans and report that directly coincide with the Verdugo Wash, on both city and regional scales. The Glendale Bicycle Transportation Plan, Glendale Citywide Pedestrian Plan, Glendale General Plan Circulation Element chapter, and North Glendale Community Plan provide guidance, strategies, and policies for activating the Wash and engaging with community members. Major stakeholders for the Verdugo Wash include Be Street Smart Glendale and Walk Bike Glendale (see Appendix).

The Glendale Bicycle Transportation Plan published in 2012 outlines the City's plan and guide for new and upgraded bicycle facilities for the following 20 years. Participants in the plan development highlighted desires to add connections between parks, schools, and libraries, to increase amenities for commuters, and to increase bicyclist and motorist education. Priority areas include the Verdugo Wash, Verdugo Road, Brand Boulevard, and Cañada Boulevard. The plan identified goals/actions including improving the bicycling environment, promoting health, reducing GHGs, and promoting bicycle safety among others. The City outlines existing conditions for bicycling infrastructure, including 10.9 miles of Class II bike lanes and 11.1 miles of Class III bike routes.

Glendale's Citywide Pedestrian Plan (authored in 2017 and adopted with no changes in 2021) explores existing conditions and plans to improve pedestrian infrastructure. The plan identified existing challenges for pedestrians

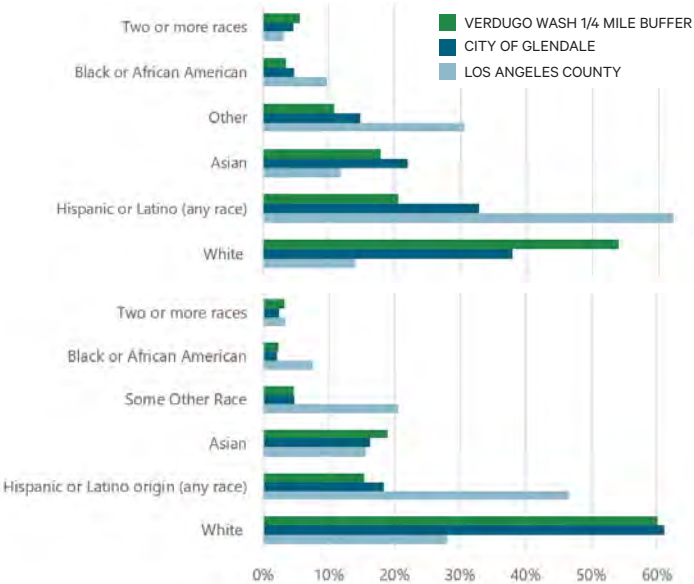
including the built environment, driver and pedestrian behavior, and city policies. The plan establishes monitoring goals and performance indicators for the following categories: making walking safer, creating connected and complete communities, building walking places for all, and organizing implementation of these projects. The Verdugo Wash mobility framework will reflect the active transportation strategies enacted in the plan.

The Circulation Element chapter from the Glendale General Plan of 1998 outlines long term goals for circulation within Glendale and plans for implementation (this element is required to be updated every 15-20 years). Goals pertain to reducing non-local vehicular traffic in some areas, minimizing congestion and air pollution, creating functional and safe streetscapes, and implementing land uses that can be supported with existing or planned infrastructure. These lasting infrastructure improvements will assist in creating a transit network within and around the Verdugo Wash. The 2011 North Glendale Community Plan covers future development of North Glendale, including community vision, principles, places, and policy framework which guides the neighborhood. This plan also includes comprehensive design guidelines for specific building types and falls within the Verdugo Wash ¼-mile buffer.

Existing Conditions - Mobility

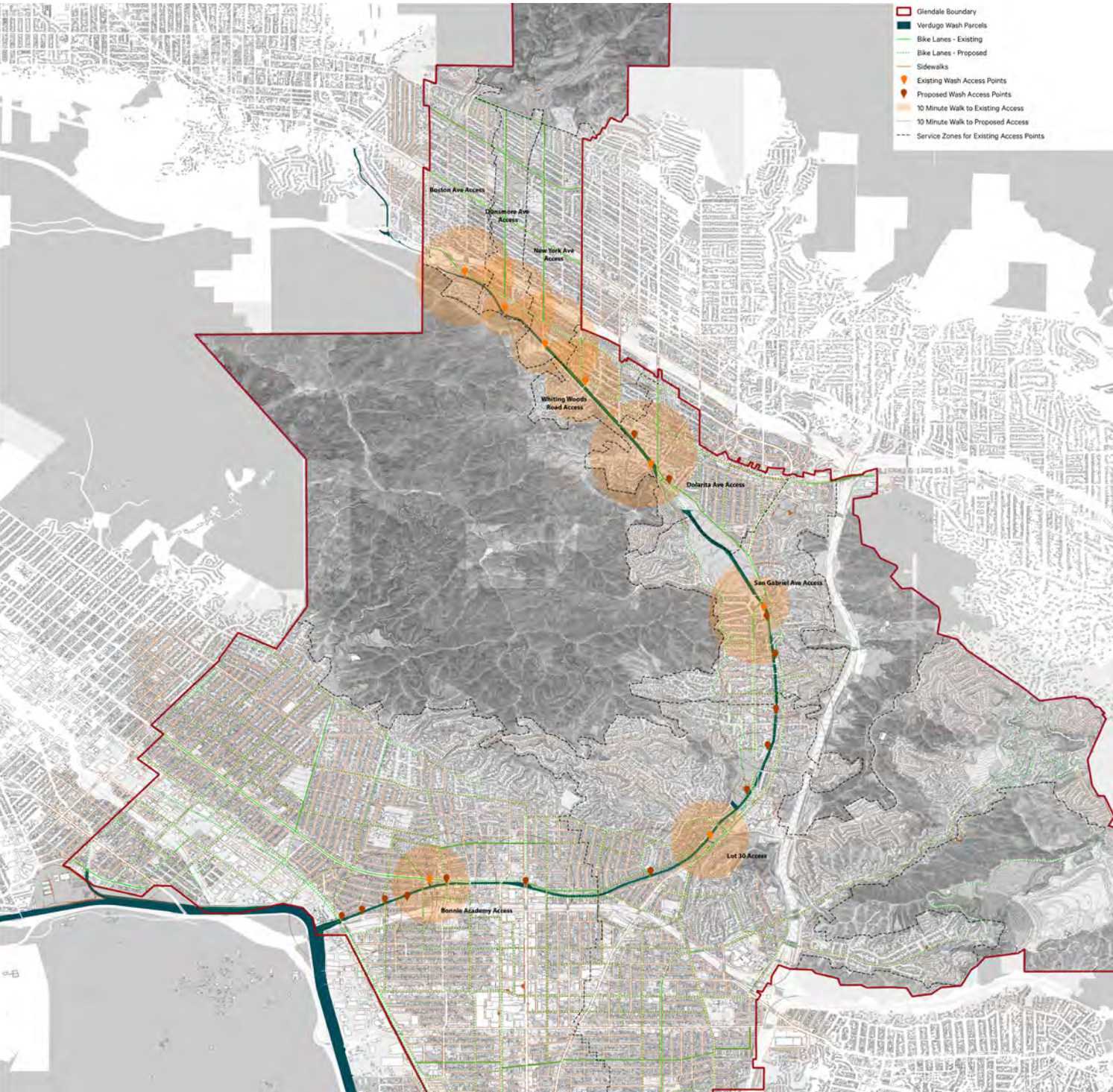
Despite functioning as a vehicle-centric city, Glendale exists in between major cities of Burbank and Pasadena, northeast Los Angeles, and the suburbs of La Crescenta-Montrose.

Due to this geographic positioning, Glendale is at the core of multiple major transportation networks, consisting of not only freeways, but also commuter rail, local and regional buses, and active transportation corridors.



transit equity statistics: (top) commuters who “took public transportation, walked, or biked” (bottom) commuters who “drove alone”

what is the current connectivity and access in / around Verdugo Wash?



key access points of Verdugo Wash



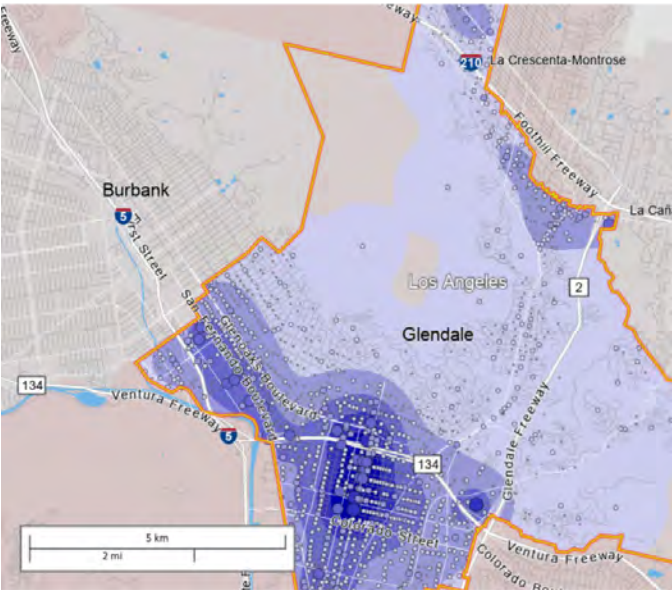


Commute Patterns

There are two employment hubs within the City of Glendale: Downtown Glendale and Montrose, functioning as major and minor commercial hubs located at either end of the Wash.

As identified in the following graphic, the highest job density exists in Downtown Glendale, extending towards the Burbank border.

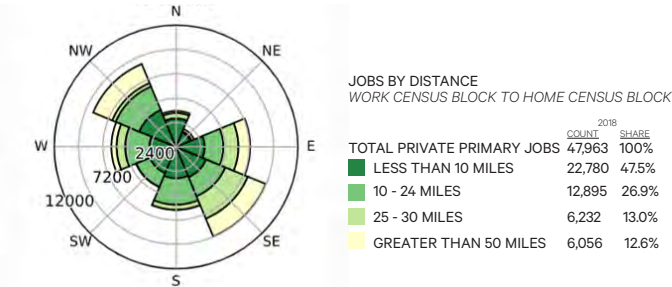
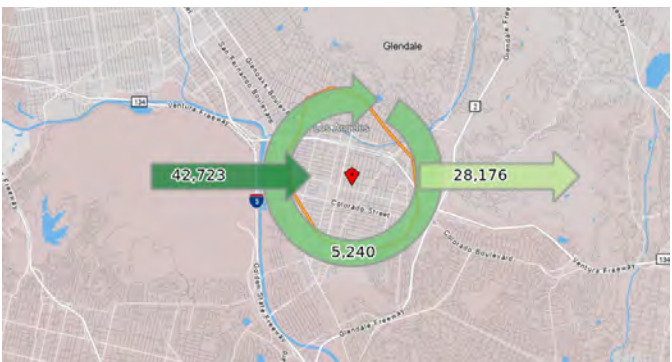
This region is of much higher population density in comparison to northern Glendale and Montrose. The geographic positioning of the Verdugo Wash between these two job centers ensures the continuous demand for a safe, efficient mobility corridor.



Job density within Glendale

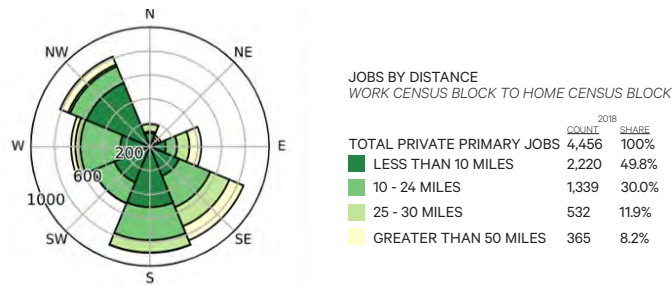
JOBS / SQ.MILE	
5 - 1,509	
1,510 - 6,022	
6,023 - 13,544	
13,545 - 24,076	
24,077 - 37,616	

Downtown Glendale is a major commercial center that employs 42,724 individuals who live elsewhere. Roughly 28,176 individuals live in Downtown Glendale but are employed elsewhere. Only 5,240 individuals both live and work in Downtown Glendale.



Commuter flows in Downtown Glendale

Montrose is a smaller commercial district that employs 4,361 individuals who reside elsewhere. Roughly 2,030 individuals reside in Montrose but are employed elsewhere. There are 95 individuals who both live and work in the suburb of Montrose, as exhibited in the figures below. There is a significant influx of commuter activity to Montrose, which exists at the upper end of the Verdugo Wash.



Commuter flows in Montrose

The central spider diagrams of the above figures portray that about 50% of commuters to both job centers travel a work-home distance of less than 10 miles. Opening the Wash to commuter bike travel will capture a portion of these vehicle trips, particularly the flows from northeast to southwest and reverse.

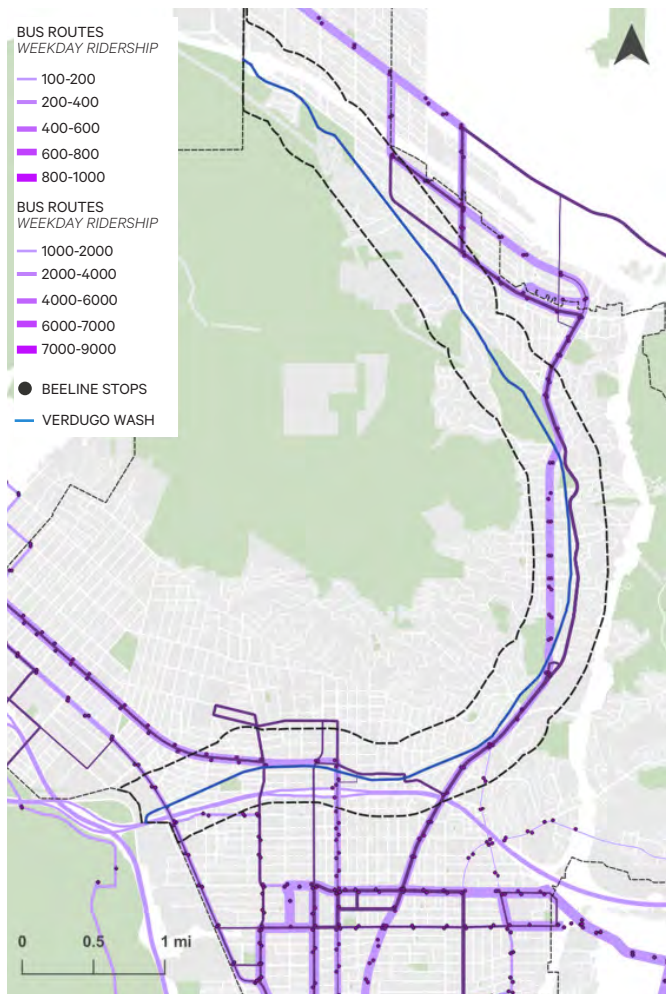
Transit Accessibility

The City of Glendale operates and maintains the Beeline, a local bus system.

The Beeline runs 13 routes, providing service to Glendale and portions of northern suburbs, La Crescenta-Montrose, and La Cañada Flintridge.

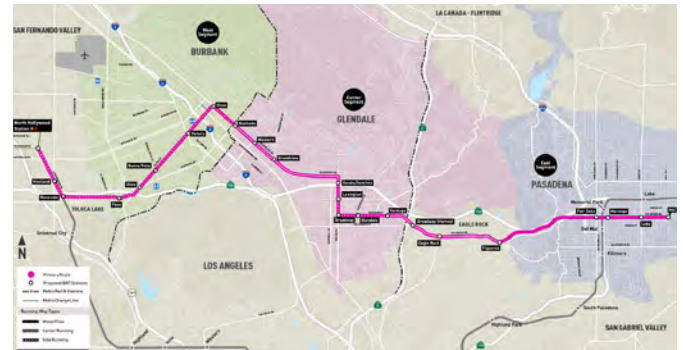
The 13 routes connect directly with Los Angeles Metropolitan Transportation Authority (“Metro”) bus lines and Metrolink. Metrolink is a commuter rail system for Southern California with three routes that stop in Glendale. On weekdays, Metrolink connects an average of 43,000 riders. Routes stopping in Glendale begin as far north as Ventura and Lancaster, traveling to Los Angeles Union Station, with one route continuing to San Diego.

The figure below details the weekday ridership on both Beeline and Metrolink. Both transit networks function within the Verdugo Wash buffer, traveling north and south. There is much opportunity for Beeline and Metrolink to connect with the Verdugo Wash, providing an alternative active transportation route to major transit systems.



Transit Ridership and Stops
source: Glendale Community College

The Los Angeles Metropolitan Transportation Authority (“Metro”), the public transportation authority for the county of Los Angeles, is currently planning a bus rapid transit (“BRT”) extension from North Hollywood to Pasadena, crossing through Glendale. The BRT will link together the San Fernando and San Gabriel Valleys with connections to existing Metro rail lines, Metrolink, Beeline, and other municipal bus networks. The following image displays the proposed BRT routes, including multiple stops in Downtown Glendale.



Future Metro BRT
source: Los Angeles County Metropolitan Transportation Authority

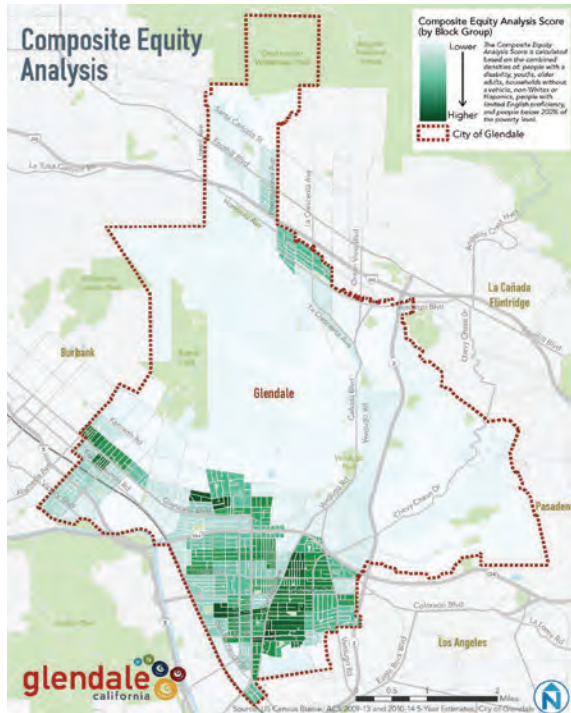
Potential access points to the Wash should be evaluated by their proximity to Beeline, Metrolink, and future transit stops. Additionally, existing stops have the potential to become micro-mobility hubs with access to shared bike and scooter facilities.

The following figure details transit accessibility within Glendale. Multiple transit stops do not have convenient crossings, particularly along Verdugo Road and Cañada Boulevard. This limits access for people with disabilities and older adults, and negatively affects the safety of all users.



Transit accessibility
source: Glendale Citywide Pedestrian Plan, 2021

Also relevant are the areas of Glendale with the highest concentration of people who may have a greater need for walking improvements and programs, such as safe routes to schools, increased vehicle traffic enforcement, first and last mile transit access, and more visible crosswalks. This includes the neighborhoods of Citrus Grove, Mariposa, and Pacific-Edison. Additional satellite neighborhoods include Verdugo Viejo, Glenwood, Grandview, and Montrose.



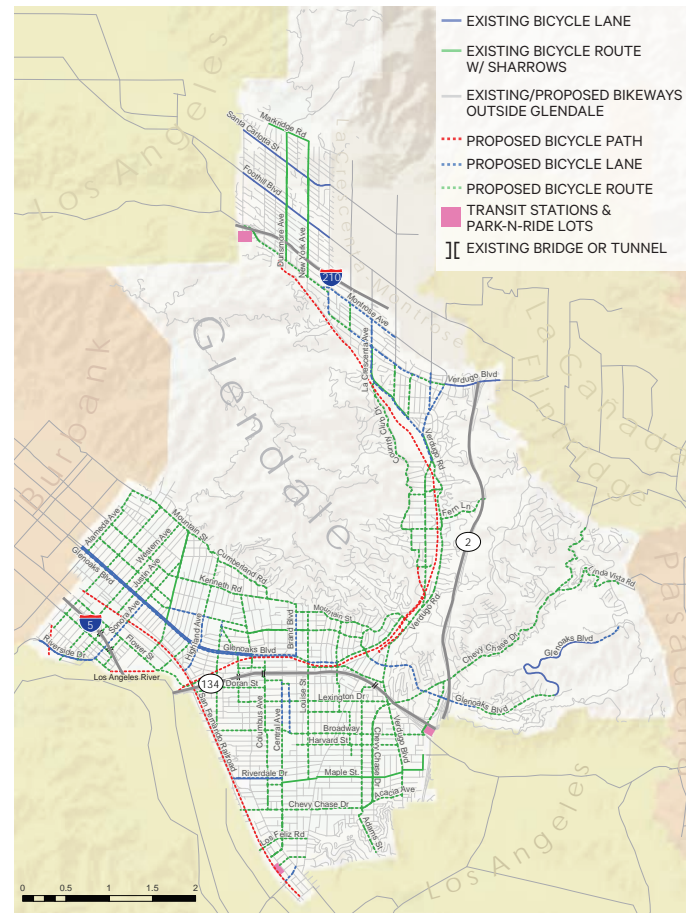
Transit equity
source: Glendale Citywide Pedestrian Plan, 2021

In addition, Park & Ride facilities allow for public transportation commuters to park their vehicles at communal lots and transfer to a transit system or carpool. Riders will retrieve their vehicles at the end of the day to return home.



Fairmont (top) and Lowell (bottom) Park & Ride stations

This commute type alleviates vehicle traffic pressure and incentivizes the use of public transportation. In addition, the City of Glendale has four Park & Ride facilities: *Fairmont, Harvey, Verdugo, and Lowell*. Fairmont Park & Ride is managed by the City of Glendale Public Works office and is the smallest facility in the City, containing 61 parking spaces. The Fairmont Park & Ride is meant to serve everyone as a public parking asset but also provides connections to the Glendale Beeline 121, Metro 94 and 183, and Metro Rapid 794. Lowell Park & Ride is managed by the State of California and provides 150 free spaces for connections to Commuter Express 409.

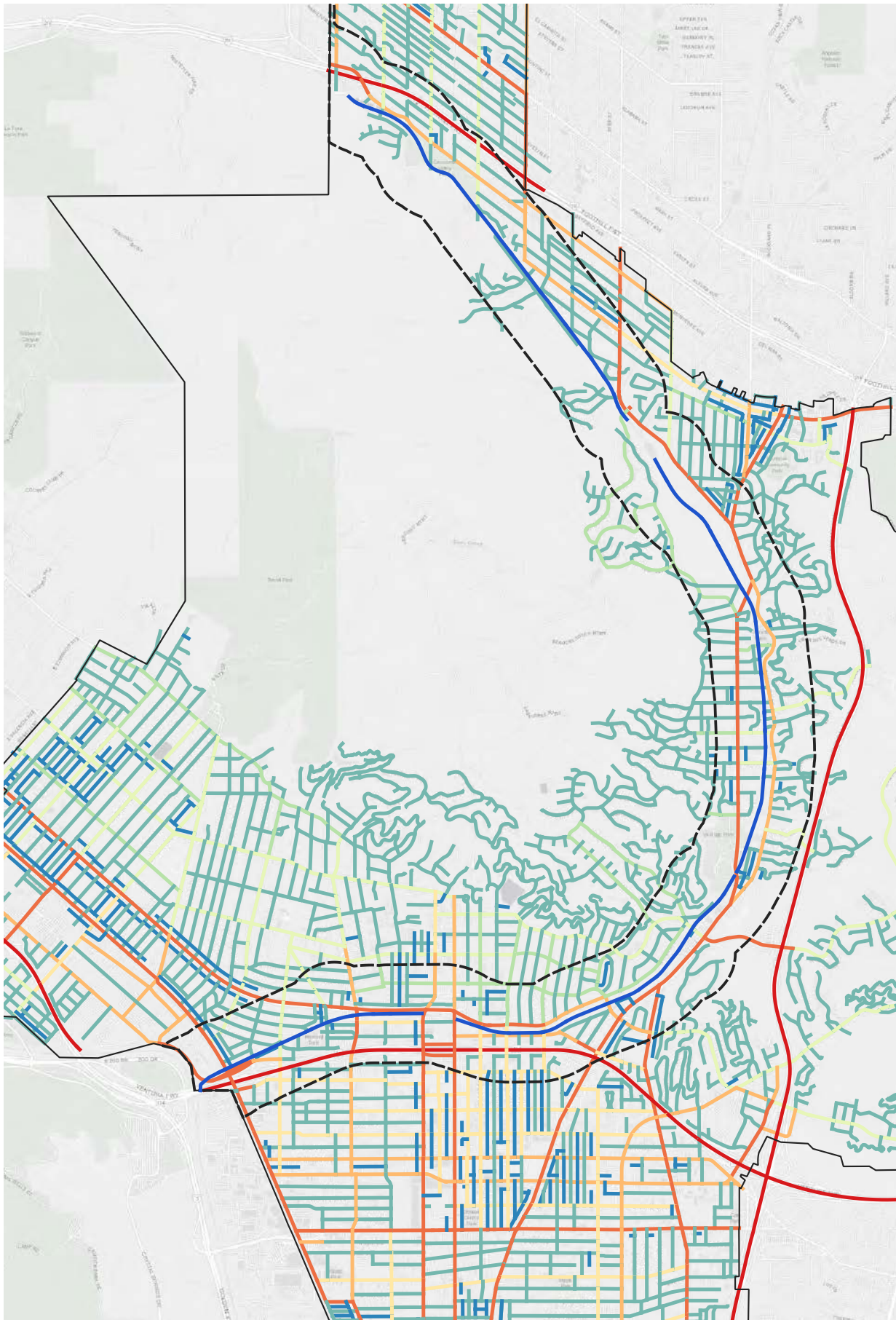


Park & Ride services

Introducing a protected active transportation corridor at the Verdugo Wash may encourage residents to use alternate modes of commuting, reducing the need for parking and vehicle traffic to Park and Ride stations.

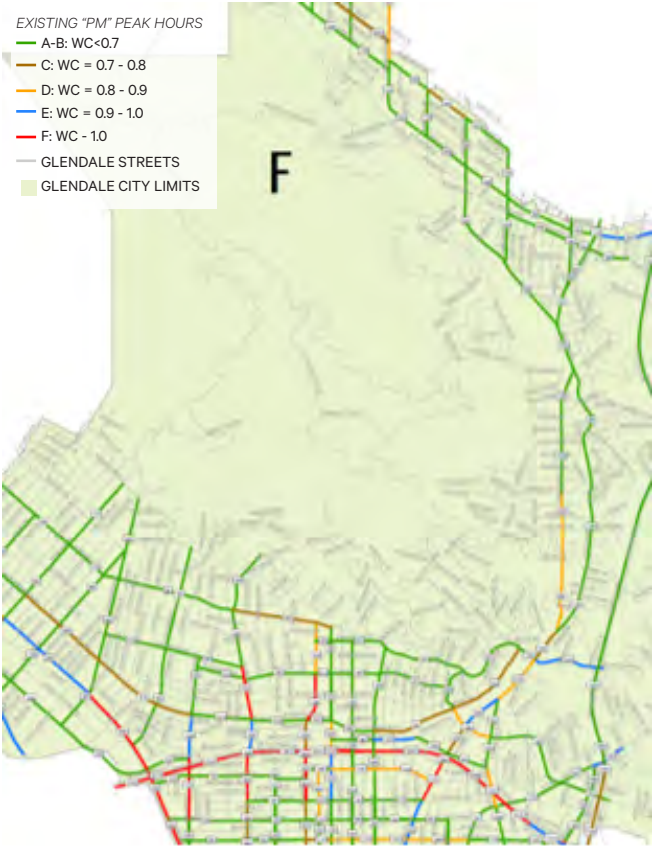
Vehicular Traffic

The main transit mode for Glendale residents is by car, with two major freeways and multiple arterials passing through the Verdugo Wash buffer. The lower Verdugo Wash is surrounded by collector roads and arterials, while the upper region is heavily residential with minor and local roads. Entrances to the Wash may be best sited on local roads with on-street parking and low traffic volumes.



Glendale road hierarchy

Currently, the only vehicular connections between north and south Glendale are via large, high-speed highways and arterials. Due to this lack of smaller, low-speed corridors better suited to active transportation modes like walking and biking, many users resort to using local roads or alleyways for safety. While roads that have residual capacity could be redistributed to integrate these active modes, the roads surrounding the Wash buffer experience low-to-medium traffic levels of service during peak PM hours, and therefore are not well suited for re-allocating road space for active modes. The re-imagined Verdugo Wash could play an important role in addressing this gap.

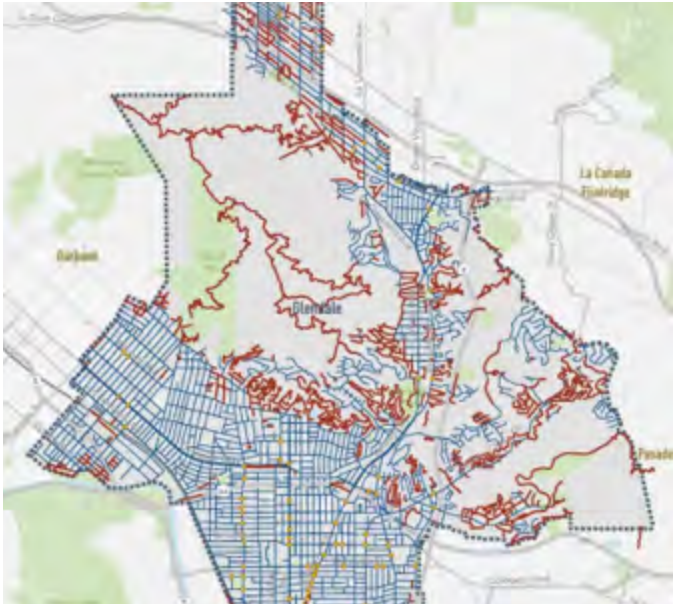


Glendale traffic - levels of service

Walkability

Despite a low frequency of pedestrian activity city-wide, the existing sidewalk infrastructure of Glendale is generally well-maintained with multiple high visibility crosswalks in major commercial areas. The area surrounding the Verdugo Wash lacks in sidewalk infrastructure, likely due to shifting topography near the Verdugo foothills and narrowed right-of-way on local residential roads. The Glendale Citywide Pedestrian Plan (2021) highlights opportunities for local roads as future bicycle and pedestrian greenways, due to the reduced vehicle traffic speeds and existing tree canopy.

Entrances to the Verdugo Wash within areas lacking sidewalk infrastructure will require wider-scale connectivity measures to ensure integration with the surrounding environment. Sidewalk infrastructure is directly related to pedestrian safety. The following figure exhibits pedestrian



Existing pedestrian infrastructure
source: Glendale Citywide Pedestrian Plan, 2021

collisions within Glendale. Crossings along higher speed streets, particularly in the Downtown area near North Brand Boulevard, have a high concentration of pedestrian-involved collisions. Creating entrances to the Wash creates alternatives for pedestrians away from fast-moving traffic.



Pedestrian collisions, 2015-2019
source: Transportation Injury Mapping System (TIMS), Safe Transportation Research and Education Center, University of California, Berkeley, 2021

Schools are a key consideration when evaluating Wash entrances due to their potential to increase educational activity, improve commuting, and provide leisure access. As depicted below, multiple public and private K-12 schools are located within proximity of the Wash. Verdugo Woodlands Elementary School on North Verdugo Road is located directly along the Wash.



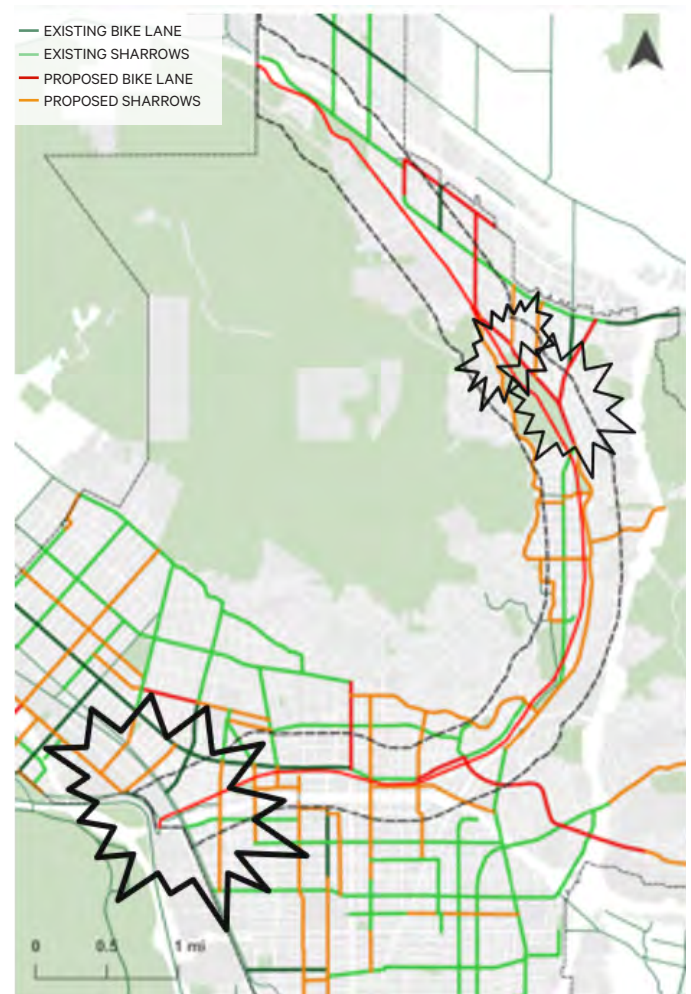
Public and private schools in Glendale

Although not outlined on the map, Glendale Community College (GCC) is a major community hub for educational and recreational activity, spanning 147-acres with 19,207 students enrolled. The Verdugo Wash runs directly alongside the GCC campus. Creating a mobility corridor within the Wash has the potential to connect thousands of local students daily via active transportation.

Bicycle Networks

Glendale is an extremely car-centric city with minor bicycle infrastructure. However, the City has proposed a significant number of new bike lanes and shared lane arrows (or “sharrows”). It is necessary to identify the lack of connections surrounding the Wash to increase system catchment. Currently, the main gap has been identified at Confluence Park, located at the western end of the Wash, with additional gaps at Oakmont Country Club golf course and the dam situated just above the course. Connecting the Verdugo Wash mobility corridor to Confluence Park will transfer users to and from the Glendale Narrows and the greater LA River Bike Path, which extends nearly 24 miles through Los Angeles, adjacent to the river.

Forming a link between the Verdugo Wash and LA River Path would create a regional network of protected bike lanes. Bikers and pedestrians will also enjoy access to Griffith Park via the proposed Garden River Bridge, which will cross over the Los Angeles River from Confluence Park. The Garden River Bridge will span 300-feet and include two canopied seating areas with expansive views.



Bike networks in Glendale

Most bicycle-involved collisions occur within Downtown Glendale, though multiple have occurred within the Verdugo Wash buffer area. Fast-moving traffic without protected bike lanes increases the risk of collisions. Creating a bike corridor within the Verdugo Wash will significantly improve cyclist safety, providing an alternative to the nearby major arterials.



Bicycle collisions, 2015-2019
source: Transportation Injury Mapping System (TIMS), Safe Transportation Research and Education Center, University of California, Berkeley, 2021

Opportunities for Mobility

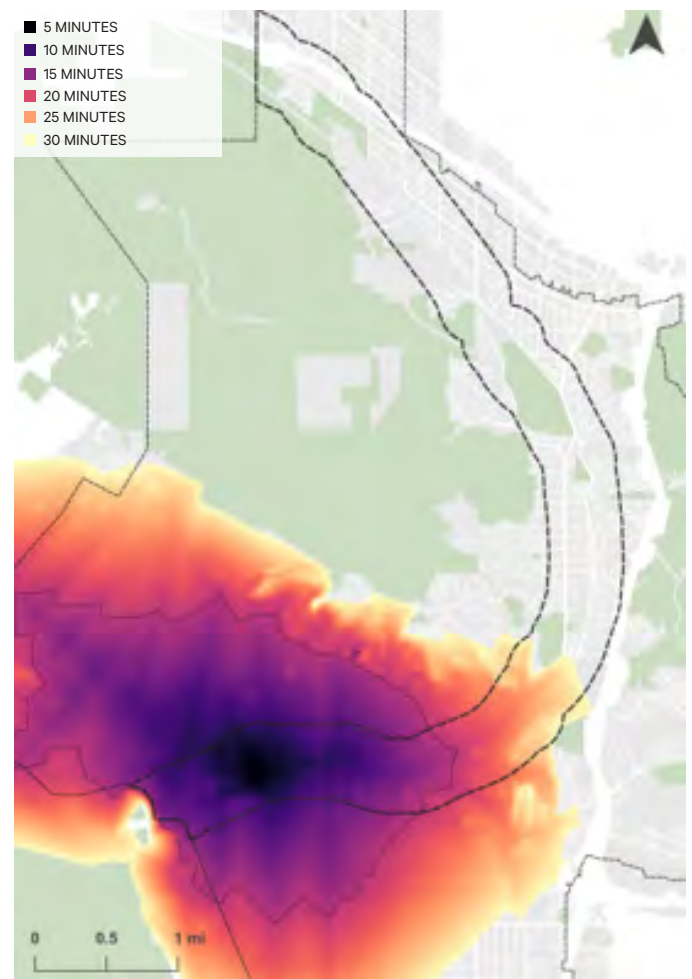
The Verdugo Wash's positioning and surrounding networks provide great potential for a future multimodal mobility corridor. Strategically positioned entry points will greatly improve the Wash's frequency by welcoming youth activity, encouraging an active lifestyle, seamlessly connecting commuters to major transit hubs, and providing a safe alternative for bicyclists and pedestrians.

To model a future cycling network, an isochrone analysis was performed on the Verdugo Wash cycling network. An isochrone analysis presents numerous travel lines, all originating from the same point simultaneously to display efficiency and accessibility. Assumptions of this analysis

were that the average speed on a road without a bike lane is 5mph, with a bike lane is 10mph, and within the Wash is 20mph. Shown below is an isochrone analysis of present-day cycling times, originating from Downtown Glendale. The most efficient bike travel is limited to the Downtown commercial hub and employment center, averaging 15 minutes or less.

If the Verdugo Wash opened tomorrow, utilizing only the existing entrance points, the analysis portrays the increased accessibility along the entire Wash; specifically improving efficiency within residential settings north of Downtown Glendale. There is a wider east to west reach, connecting to existing bike infrastructure. Bike travel efficiency to the suburb of Woodbury and Glendale Community College would also improve.

If additional entrances were added to the Verdugo Wash opening, the full impact of an integrated transit corridor can be projected. Bike travel cycling times under 10 minutes expand in Downtown Glendale and average 10 to 15 minutes within the ¼-mile Verdugo Wash buffer, significantly improving accessibility within Woodbury and Verdugo Woodland. This scenario also expedites travel to the LA River Bike Path and adjacent bike networks.



Existing cycling times

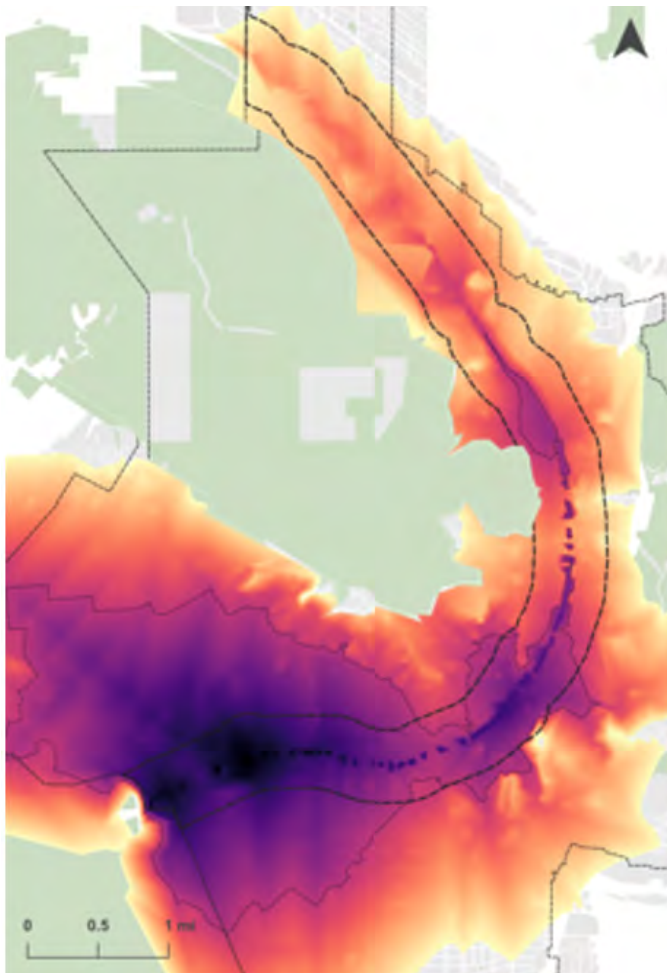
Ultimately, the Verdugo Wash should prioritize new entrance locations based on proximity to transit corridors and stops with higher ridership. Entrances should also be situated near Park & Ride lots to increase regional accessibility. Bike share and micro-mobility options should be integrated into existing transit service locations to maximize use. Connections to the LA River bike network should be established, mainly at the LA River and Verdugo Wash junction of Confluence Park. Additional Wash entrances will also create opportunities for improved accessibility and transit equity in neighborhoods with limited mobility options.

The evaluation of entrance locations should include road hierarchy levels and the presence of on-street parking to accommodate new traffic flows. These increases will necessitate road diets, traffic calming, and adjusted speeding limits. Identifying criticalities and priority areas for pedestrian safety enhancements should be prioritized, including studying the potential integration of school trips by analyzing youth walkability and school bus routes.

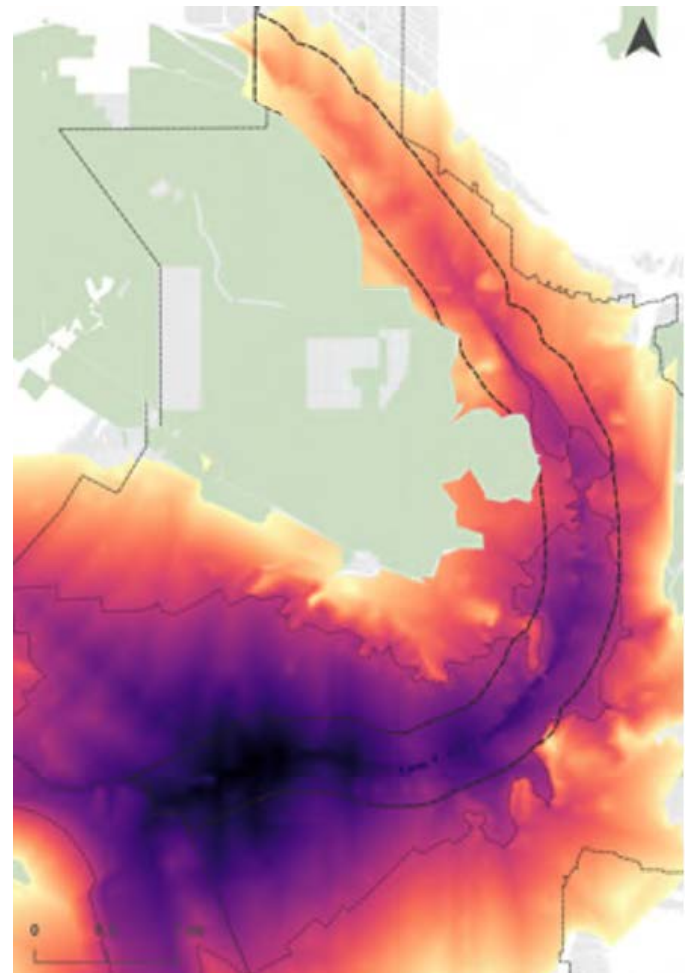
Gaps and Challenges for Mobility

A significant challenge for Verdugo Wash engagement will be the transition from driving to cycling or walking for commuting. Reconfiguring the public space will potentially encourage active transportation options and reduce the probability of fatal injuries due to pedestrian vehicle collisions. However, strategies need to be established as to what types of commutes the Wash will serve. The Wash could assist in commutes to work or school, recreational use, access to events or open spaces, and local to citywide mobility. Users of the Wash will not be limited to Glendale residents, as visitors and commuters will be welcome. Individuals of all ages will interact with the Wash, including people with disabilities. The increased biodiversity will also welcome the presence of wildlife.

Establishing a transit corridor requires evaluations of all potential modes of transportation. Precedents tend to primarily attract pedestrians and bicyclists, but active transportation also includes the use of manual or electric scooters and skaters, even stretching to delivery robots, drones, and equestrian travel. The Verdugo Wash mobility infrastructure will need to accommodate a wide range of modal activity.



Projected cycling times



Projected cycling times with additional entrances

what are some examples of other projects that have successfully integrated similar modes of mobility?

Arroyo Seco Bike Path

Located along the Arroyo Seco river channel in Northeast Los Angeles, the Arroyo Seco Bike Path extends just over two miles and is located below street level. The path permits biking, inline skating, and pedestrian activity, with low frequency of ramp access only existing at the end points of the path. Car parking is available at either end of the path. The Arroyo Seco Bike Path's geographic setting, surrounding population density, and urban form are like that of the Verdugo Wash. Similarly functioning below street level, the Verdugo Wash has the potential to support in-channel user activity and infrastructure, allowing locals to fully enter the revitalized space.

LA River Bike Path

This asphalt bike path will extend 23.9 miles alongside the Los Angeles River, providing ramp access to biking, inline skating, wheelchairs, and pedestrians. The path will exist at street level or below and will connect two disconnected segments of the existing LA River Path. There will be a low frequency of access at path endpoints, with car parking at several points.

The LA River Path and Verdugo Wash both have limited right-of-way space for active transportation infrastructure. The LA River Bike Path has explored cantilevered pathways, in-channel pathways, and suspended bridges that may provide a framework for future Wash structures.

Ballona Creek Bike Path

The Ballona Creek street-level path is 15 feet wide and extends nearly seven miles from Culver City to the beachfront Coast Bike Path in Playa Del Rey. The Ballona path links with the newly opened Park to Playa Regional Trail, a 13-mile regional corridor originating in Baldwin Hills that joins a network of existing trails and open spaces. The striped concrete path provides local access via ADA-compliant ramps for pedestrians, bikers, and skaters. There is a high frequency of access, with parking at varying entrance points.

Ballona Creek channelized in the 1930s for flood control and stormwater maintenance functions, like the Verdugo Wash. The channel's concrete berms were used solely as maintenance roads for service vehicles until reactivation efforts in the 1970s, which introduced native landscaping, bike path improvements, benches, drinking fountains, and public art. Ballona Creek also passes through some heavily residential areas that previously lacked access to the waterfront. The Ballona Creek project strategies for accessible entrance points via local engagement efforts can inform the design vision for the Verdugo Wash.

Trinity River Park Skyline Trail

The Trinity River Park Skyline Trail is a 4.6-mile path extending along the Trinity River in Downtown Fort Worth, Texas. Paved with concrete, the trail has ramp access for bicyclists, skaters, wheelchairs, and pedestrians, with car parking at the end points.

Trinity River has fostered an active transportation network, with seamless connections to major destinations, within its surrounding urban core. The river trail provides access to green space within Fort Worth's commercial districts, improving biodiversity and generating commuter thoroughfares. In parallel, the Verdugo Wash has the potential to connect residents to Downtown Glendale while simultaneously restoring riparian habitats and improving sustainability.

Dequindre Cut Greenway

The Dequindre Cut is a 20-foot wide and 2.5-mile-long greenway that runs parallel to St. Aubin street in Detroit, beginning just north of the riverfront. The greenway welcomes pedestrians and bicyclists via frequent direct street-level entrance ramps. The path is predominantly below street level in a former rail corridor and contains a bike sharing station at the first entrance point.

The Dequindre Cut hosts an abundance of community-centric events, such as graffiti weekends for local artists. These placemaking strategies assist in reconnecting locals with the previously underutilized space while inspiring creativity and promoting a healthy lifestyle. The Verdugo Wash is currently an inactive space that would benefit from similar placemaking strategies for cultural prosperity and community-building.

what can we learn from projects that have connected to existing transit networks at different levels?

The introduction of bridges and creative pathways may improve the Verdugo Wash experience and sense of place

Twisted Valley Alicante, Spain

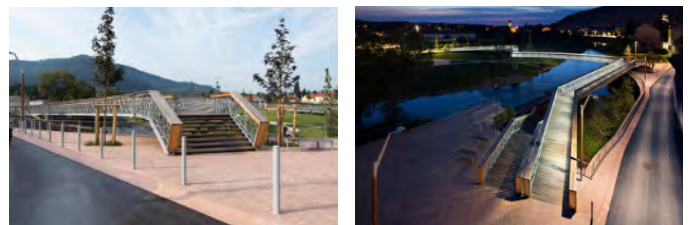
Twisted Valley is a pedestrian pathway with bridges suspended over the Vinalopo river, aiming to recover the pedestrian traffic footprint. Underutilized for years, the concrete channel now generates recreational activity and wildlife restoration. Unlike the other precedents, this pathway does not relate to the city's grid but rather imitates the river's path.



Twisted Valley - Alicante, Spain

Development Bank of the Meurthe Raon l'Étape, France

This landscape project was developed along banks of the river Meurthe, which flows through a commune in northeastern France. The project created both natural and public spaces, connecting urban centers to the river and fostering future sustainability. The jagged bridge design highlights the area's unique atmosphere and mimics the winding river path, while welcoming alternative modes to the vehicle-dominated town. Bridge designs may provide placemaking opportunities for the Verdugo Wash to showcase Glendale's distinct geographic placement and topographic form.



Development Bank of the Meurthe - Raon l'Étape, France

Velenje City Center Pedestrian Zone Promenada Velenje, Slovenia

The Velenje promenade is a public open space and thoroughfare surrounding the Paka, a torrential river within the city center. The promenade weaves around existing structures and fosters user interaction. The river swells intermittently although remaining shallow throughout the year, like the hydrologic flows of the Verdugo Wash. The Velenje promenade design accommodates swelling with the stepped riverfront and amphitheatre design, utilizing bridges for pedestrian access.



Velenje City Center Pedestrian Zone Promenade - Velenje, Slovenia

Section 6: “Sustainability” bibliography

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US Census Bureau, 2019

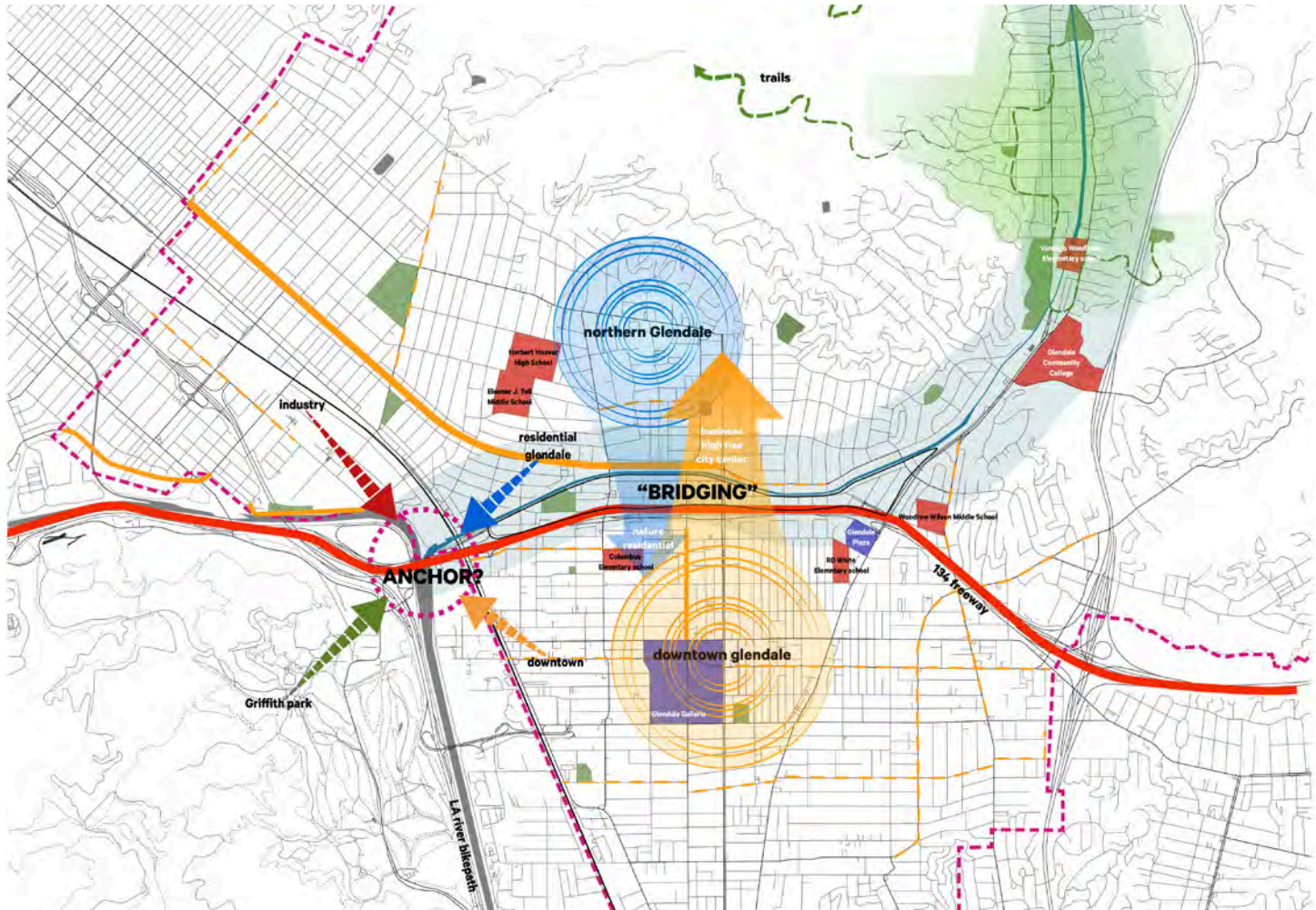
7. possibilities

Effectively, Verdugo Wash was constructed with a single-purpose in mind: to reduce flood risk. In 1930s Glendale, and in light of flood events, this might have made sense! Glendale today neither looks the same as 1930s Glendale, nor are the needs of its residents the same as those who lived there in the 1930s.

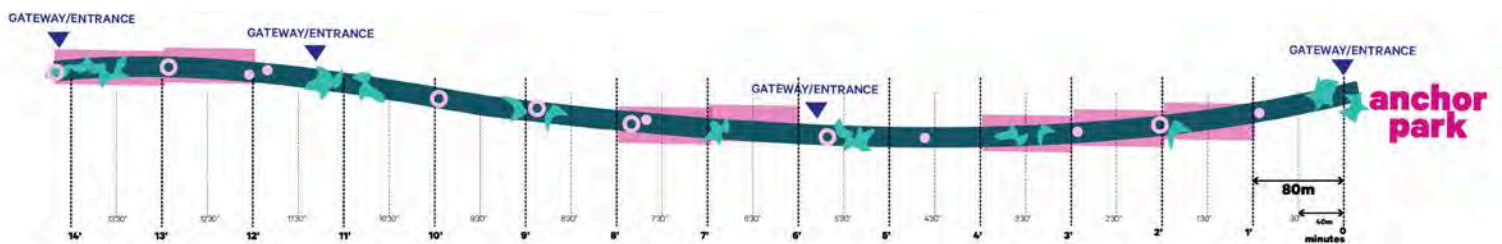
Today we are hearing that other goals are important to Glendale residents, such as: *community health &*

wellness; parks & open space; recreation; access & connectivity; improved commuting; economic development opportunities; water quality; ecology.

It is our goal, in this very important Visioning Stage for Verdugo Wash, to ensure that the channel remains an active, functioning piece of hydrology infrastructure, while at the same time, addressing larger goals and aspirations - to ultimately heal a “scar” within the fabric of Glendale.



“sphere of influence” - notional urbanistic transformations for the Verdugo Wash channel in order to ultimately create a multi-purpose community amenity (graphic ©!melk)



A rhythm of interventions: to break up the potential monotony of a linear pedestrian corridor, the concept of “interventions” can help attract and navigate pedestrians along the length of the Verdugo Wash. To achieve this, we envision integrating a “micro-rhythm” of interventions that enrich the walking experience minute by minute, which translates into intervals of approximately 250-feet. These interventions can, for example, consist of artwork, a kiosk, a pavilion, or a water feature. As a second layer, we envision a “macro-rhythm” of “iconic moments” that for example coincide with gateway plazas/pocket parks at designated entrances. These moments will function as places of “intensity,” strategically located along the length of the Verdugo Wash. (graphic ©!melk)

which parcels along the corridor could elevate the future wash experience?

A number of factors constrain the potential of today's Verdugo Wash from transforming into a multi-purpose community amenity that continues to mitigate flood risk.

Major constraints include:

- A hard physical boundary; the Wash is a utilitarian concrete stormwater channel varying in width from as narrow as 10ft to 87ft wide at its maximum where it merges with the Los Angeles River.
- The Wash is sunk an average of 10-12 feet below Glendale's city fabric, which makes safe bicycle, pedestrian, and ADA connections more challenging. Additional elevational barriers that challenge access and mobility include the Verdugo Wash Debris Basin and spillway, as well as open the numerous channelized tributaries that contribute stormwater flows to the wash proper.
- Public Safety: careful consideration for public safety will be needed as it relates to the sunk condition of the wash (and potential lack of sight lines from the adjacent city fabric), and the wash's varying water levels during seasonal rainfall and flash storm events.
- The majority of the Wash lacks an adjacent Right-Of-Way, which typically supports wash maintenance activities or could serve as potential connection routes along the upper banks of the channel. A related constraint is the fact that there are many established home and businesses whose properties directly back up to the wash, further challenging any mobility routes that could be snaked just outside the channel's banks.
- Any interventions within the wash would require heavy agency permitting efforts.

Most importantly, the Verdugo Wash has not been abandoned as stormwater infrastructure, nor will it be. Glendale's physical situation in and around mountainous terrain, the City's continued development over the decades, and climate change scenarios all indicate the city is as prone to flooding as ever. In this way, it is unlike the High Line project (New York, NY), which was a long-abandoned elevated railway before it was transformed into a beloved linear park for New Yorkers and visitors alike. The re-imagined Verdugo Wash must continue to function as stormwater infrastructure at its current design capacity (100 year storm event),

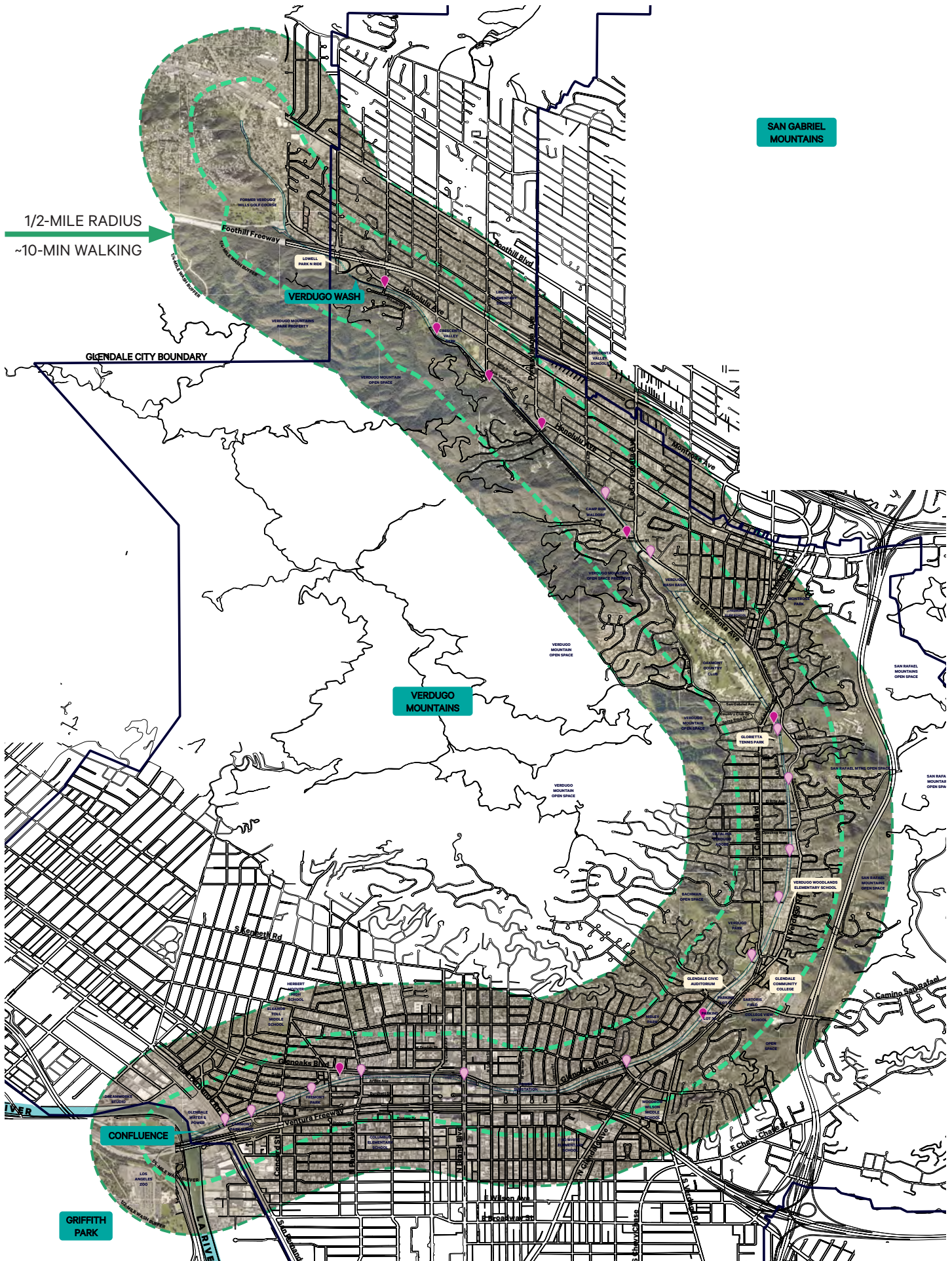
Imelk studied the Verdugo Wash "corridor" as defined by a 1/2-mile buffer, which is the distance that is comfortable for most people to walk in about 10 minutes. We studied the urban fabric on the basis of architecture, open space, land use, owner, scale, shape, proximity to the wash, access, and other factors to highlight a number of **"opportunity" parcels** that we intend to keep in mind during the following design phases of this visioning study.

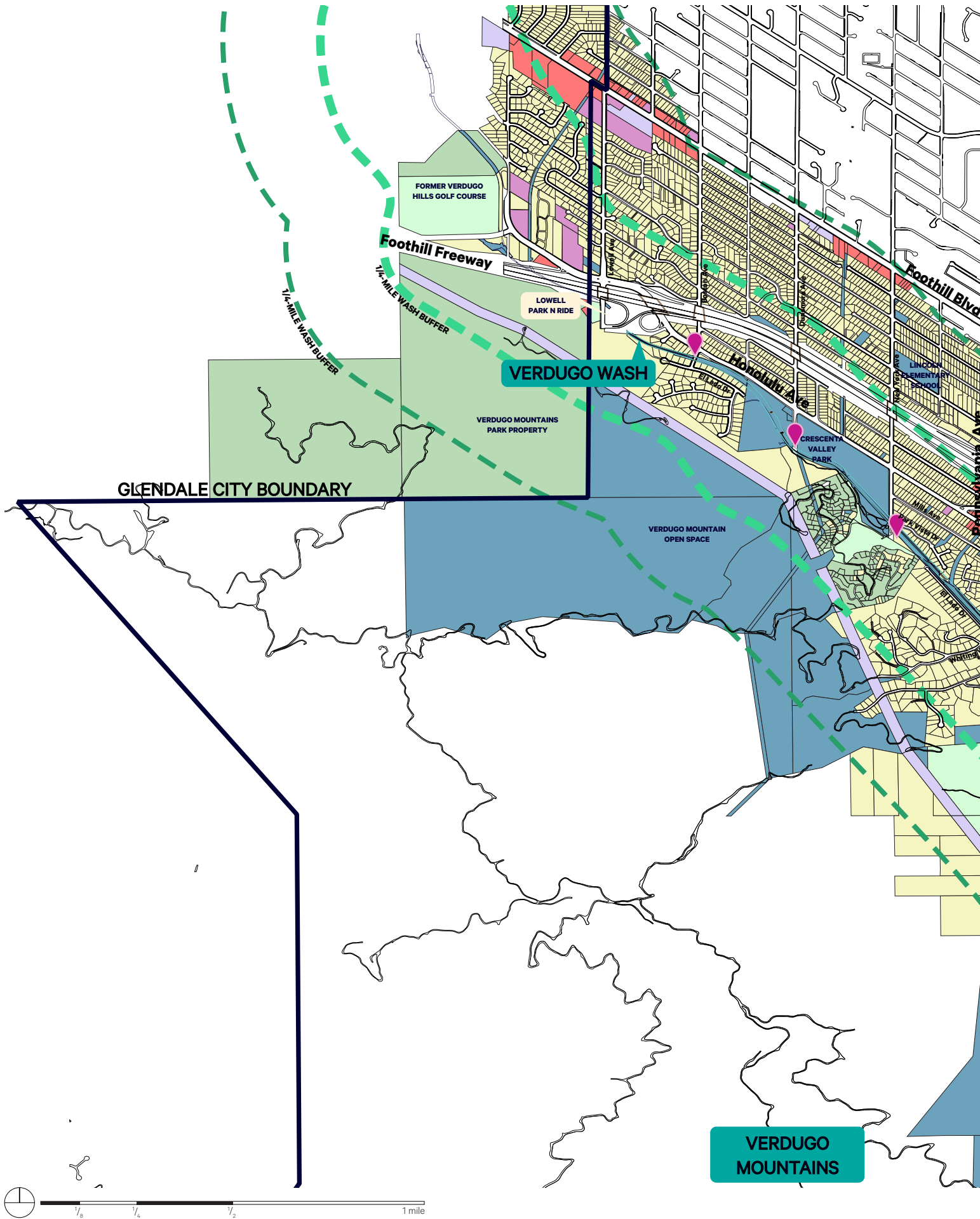
"Opportunity Parcels," in short, are properties whose direct or indirect integration with the re-imagined Verdugo Wash would enhance the future wash experience (and therefore the greater Glendale experience!)

More specifically, an "opportunity parcel" could mean:

- Buying a property from an interested owner to increase the footprint of the project
- Working with an adjacent property owner to provide access to the wash (e.g. restaurant owner wants customers to be able to access their business via the wash)
- Transition an adjacent property, in a phased approach, to be in mutual relationship with the Wash (e.g. a city-owned park that is due to be revitalized, and whose future planning accommodates wash access, strong sight lines into the wash, and potentially mutual programming)

Note this is an uncategorized, "working list" of parcels that will evolve as community outreach efforts continue and the design progresses.





SAN GABRIEL MOUNTAINS

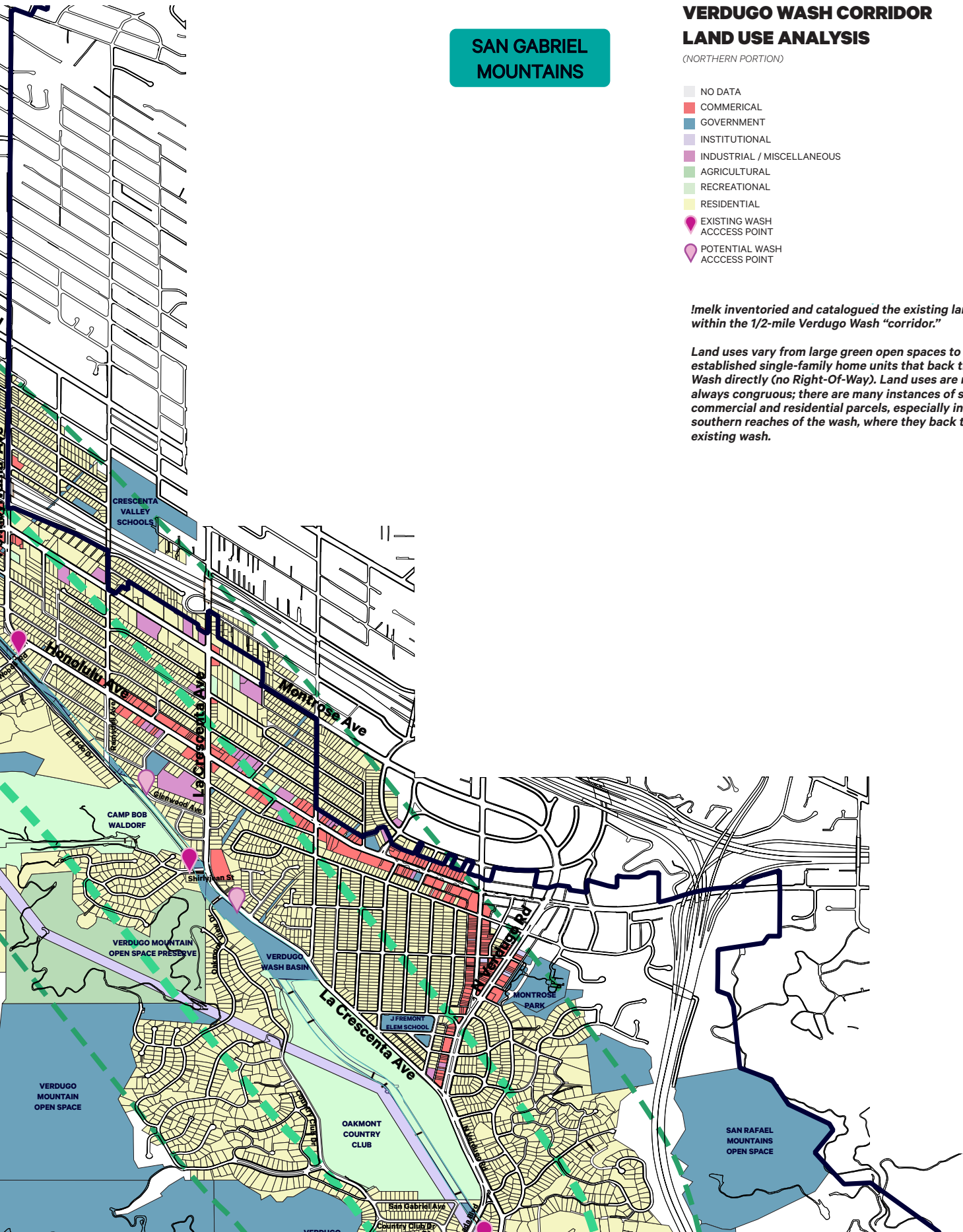
VERDUGO WASH CORRIDOR LAND USE ANALYSIS

(NORTHERN PORTION)

- NO DATA
- COMMERCIAL
- GOVERNMENT
- INSTITUTIONAL
- INDUSTRIAL / MISCELLANEOUS
- AGRICULTURAL
- RECREATIONAL
- RESIDENTIAL
- EXISTING WASH ACCESS POINT
- POTENTIAL WASH ACCESS POINT

Imelk inventoried and catalogued the existing land use within the 1/2-mile Verdugo Wash "corridor."

Land uses vary from large green open spaces to established single-family home units that back the Wash directly (no Right-Of-Way). Land uses are not always congruous; there are many instances of singular commercial and residential parcels, especially in the southern reaches of the wash, where they back the existing wash.

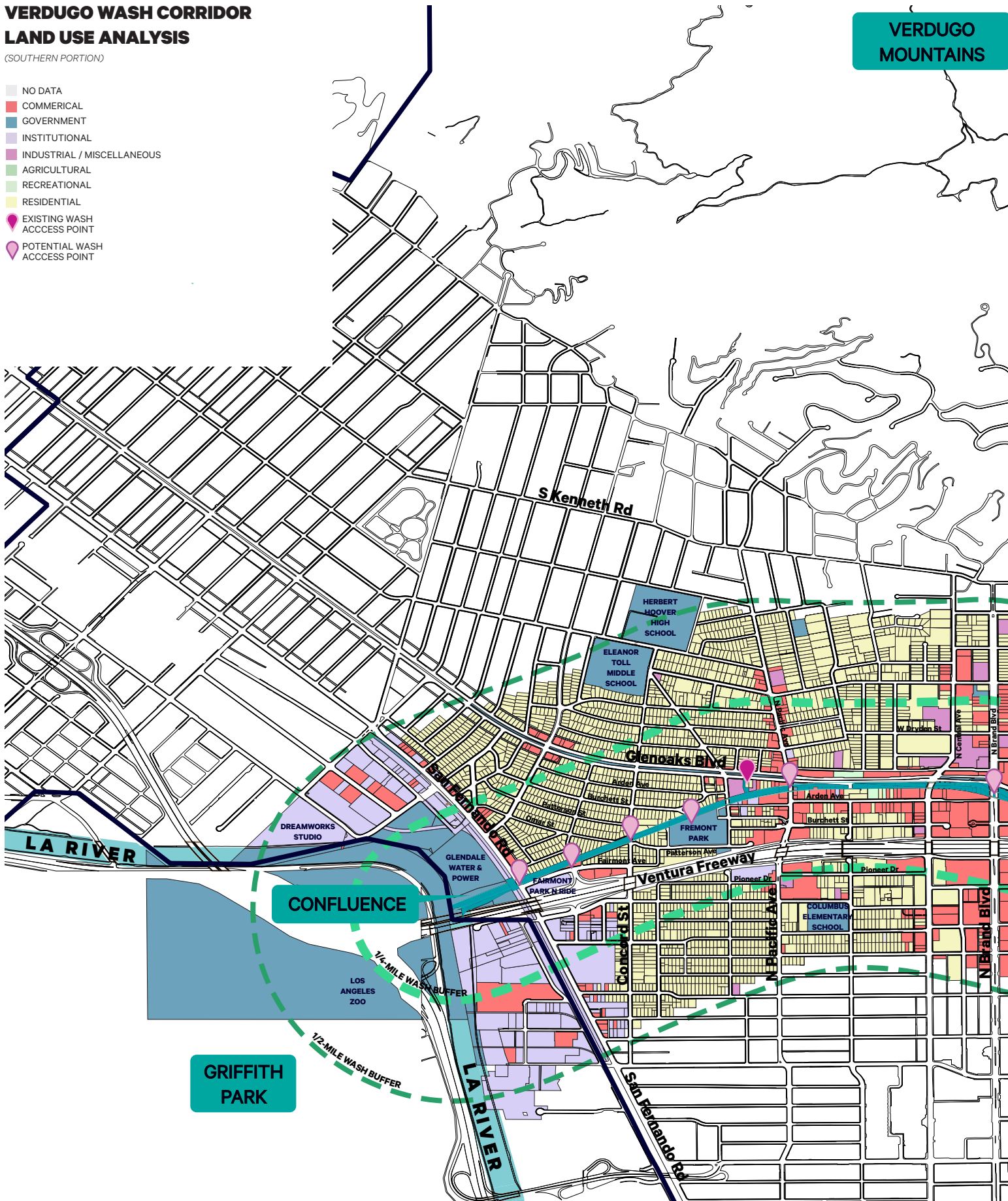


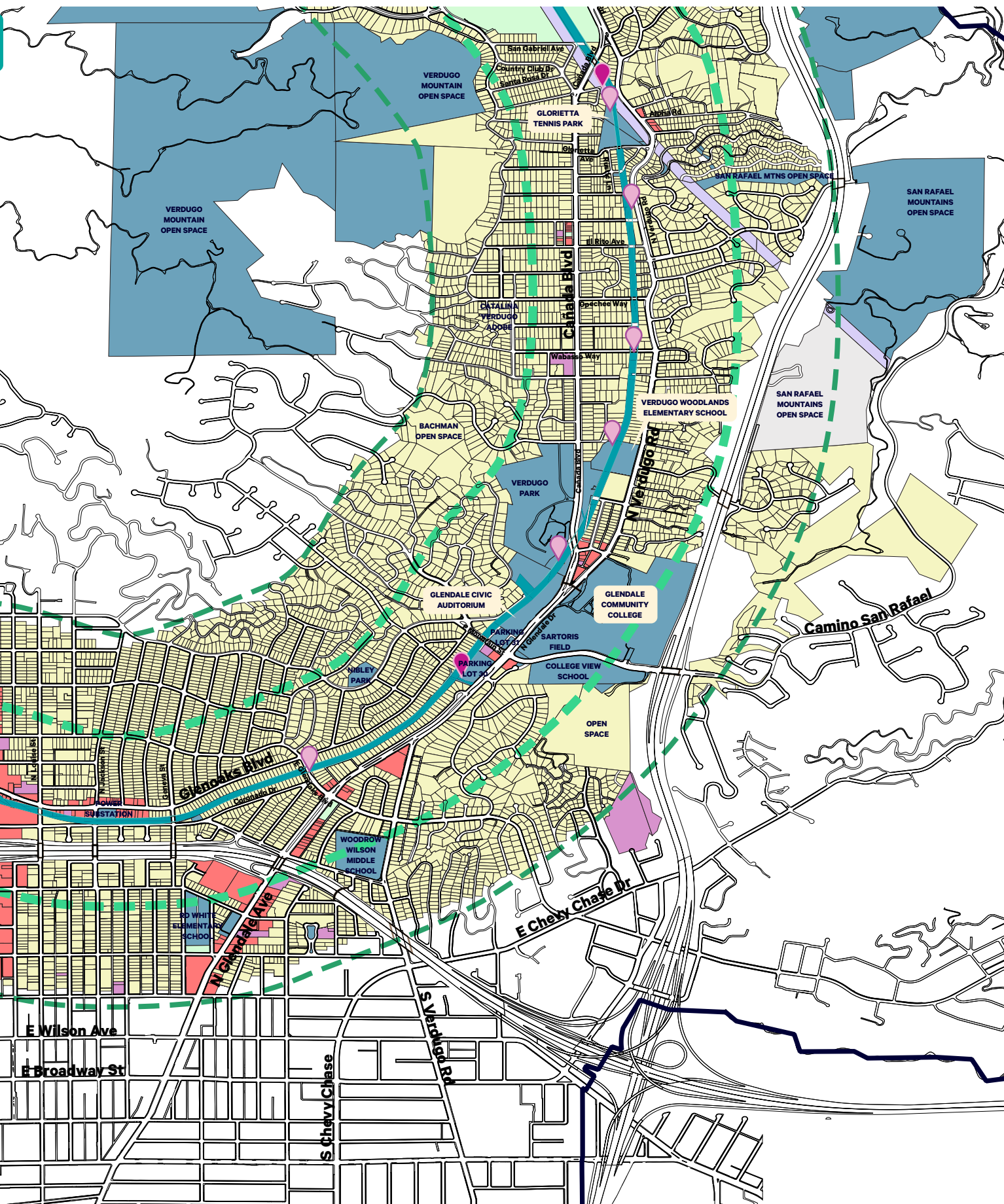
VERDUGO WASH CORRIDOR LAND USE ANALYSIS

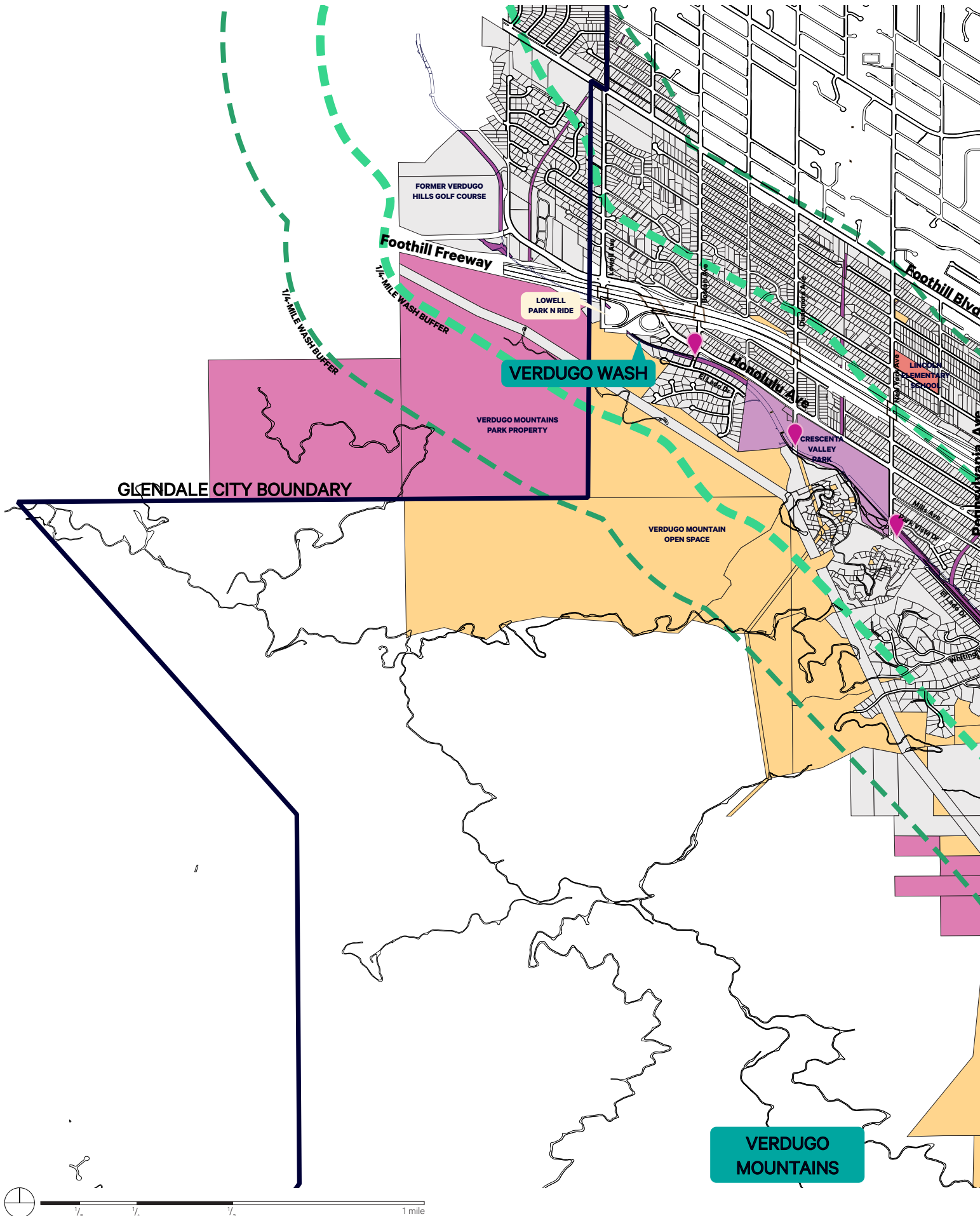
(SOUTHERN PORTION)

VERDUGO
MOUNTAINS

- NO DATA
- COMMERICAL
- GOVERNMENT
- INSTITUTIONAL
- INDUSTRIAL / MISCELLANEOUS
- AGRICULTURAL
- RECREATIONAL
- RESIDENTIAL
- EXISTING WASH ACCESS POINT
- POTENTIAL WASH ACCESS POINT







SAN GABRIEL MOUNTAINS

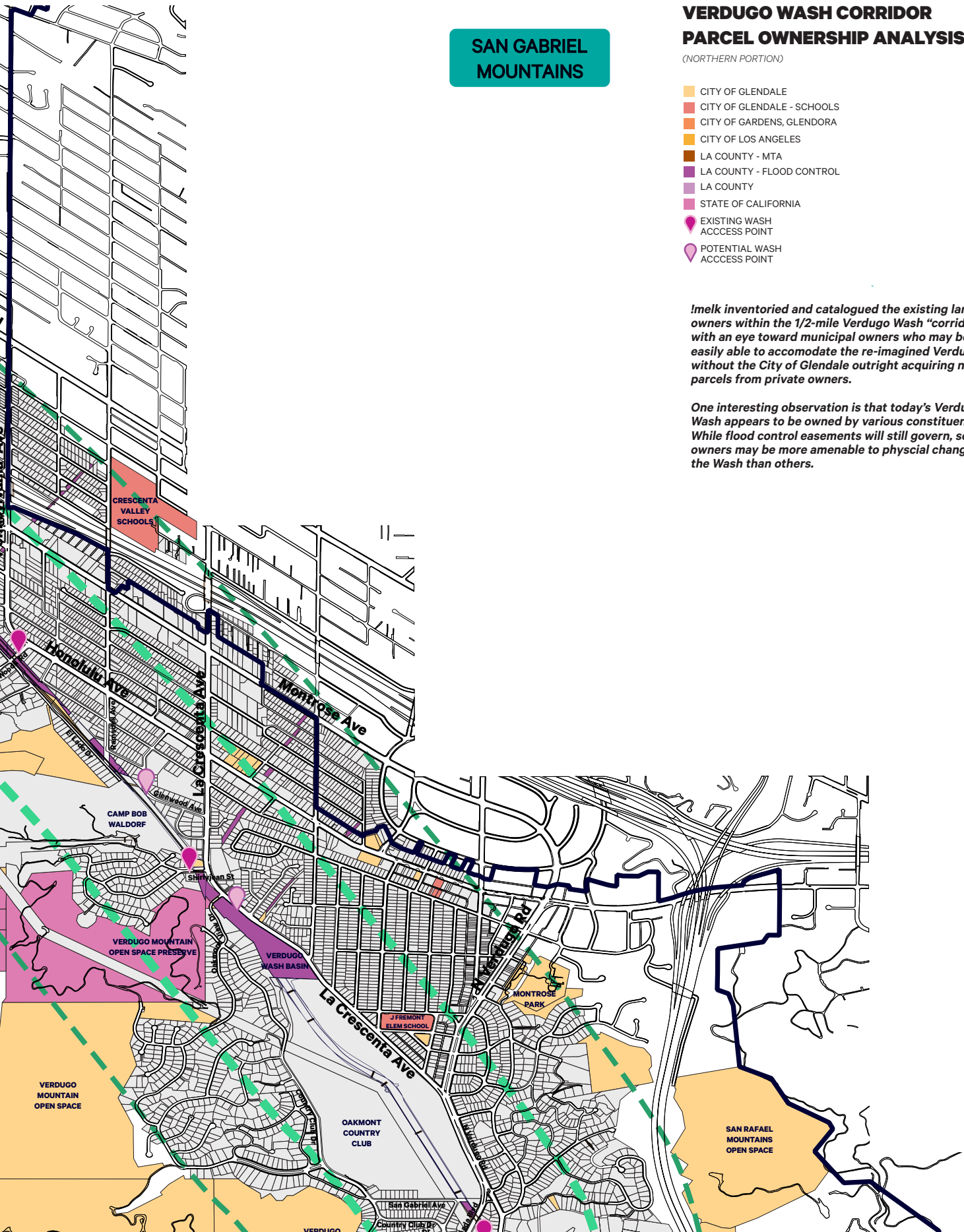
VERDUGO WASH CORRIDOR PARCEL OWNERSHIP ANALYSIS

(NORTHERN PORTION)

- CITY OF GLENDALE
- CITY OF GLENDALE - SCHOOLS
- CITY OF GARDENS, GLENDORA
- CITY OF LOS ANGELES
- LA COUNTY - MTA
- LA COUNTY - FLOOD CONTROL
- LA COUNTY
- STATE OF CALIFORNIA
- EXISTING WASH ACCESS POINT
- POTENTIAL WASH ACCESS POINT

Imelk inventoried and catalogued the existing land use owners within the 1/2-mile Verdugo Wash "corridor" with an eye toward municipal owners who may be more easily able to accommodate the re-imagined Verdugo Wash without the City of Glendale outright acquiring new parcels from private owners.

One interesting observation is that today's Verdugo Wash appears to be owned by various constituents. While flood control easements will still govern, some owners may be more amenable to physical changes in the Wash than others.

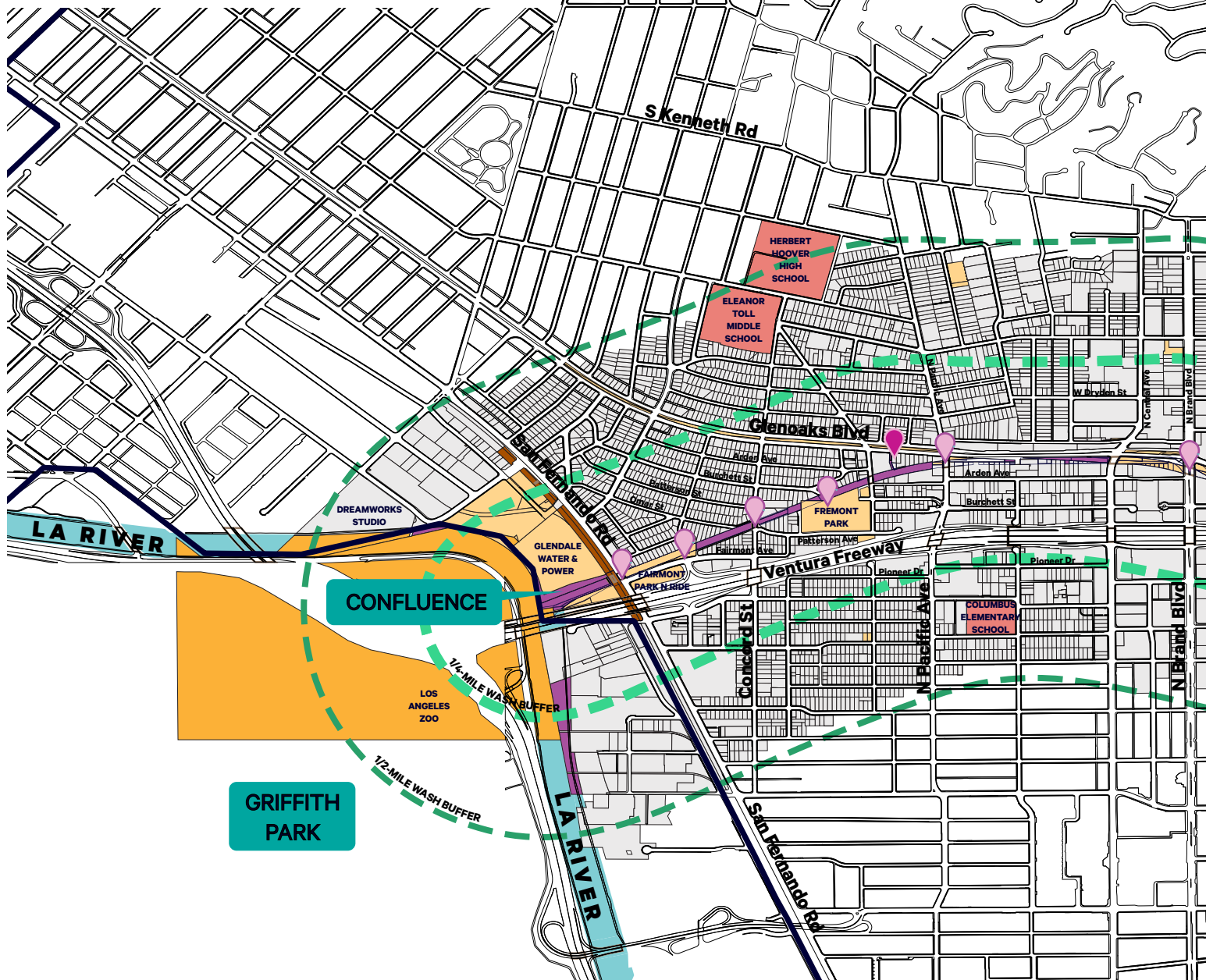


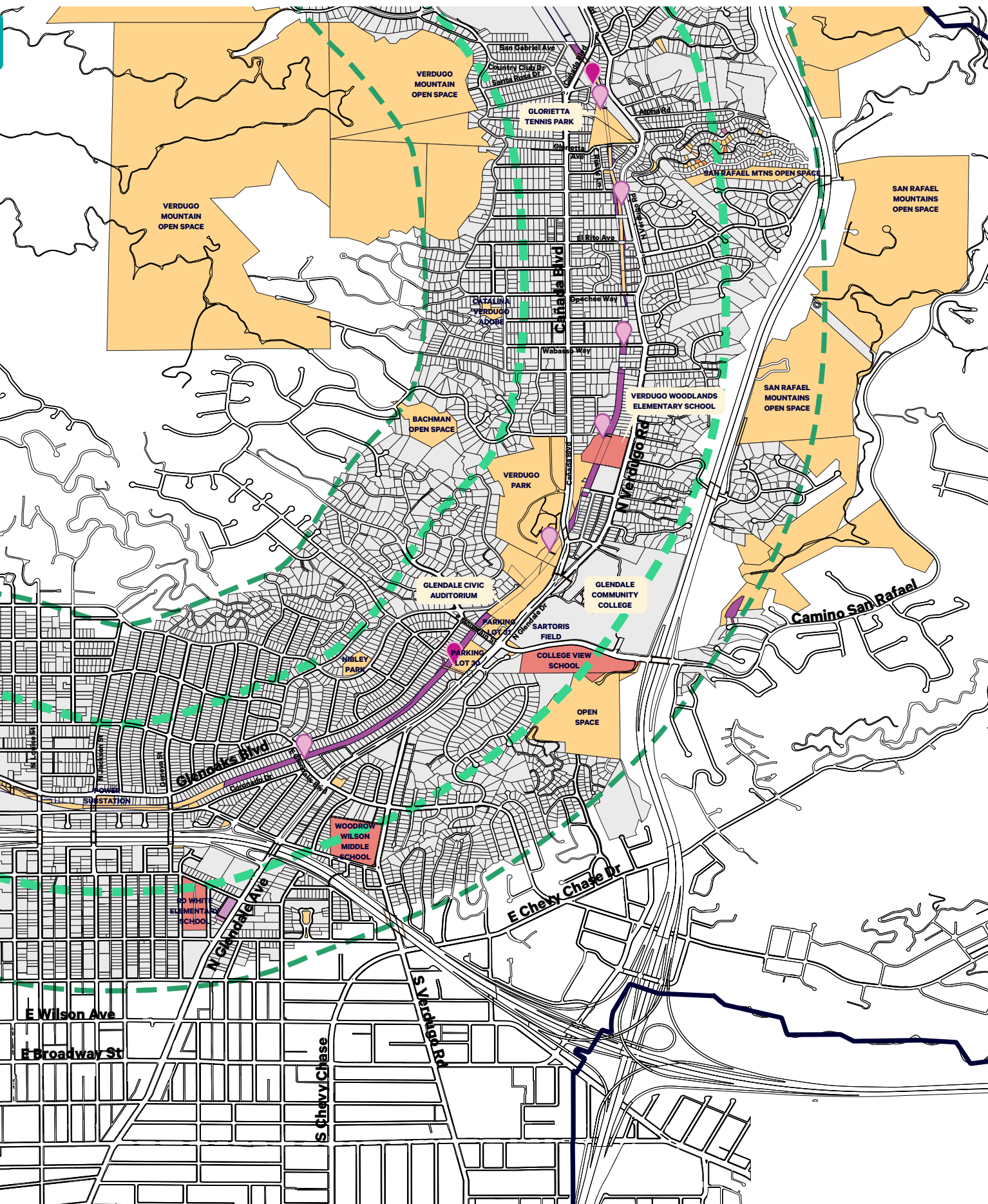
VERDUGO WASH CORRIDOR PARCEL OWNERSHIP ANALYSIS

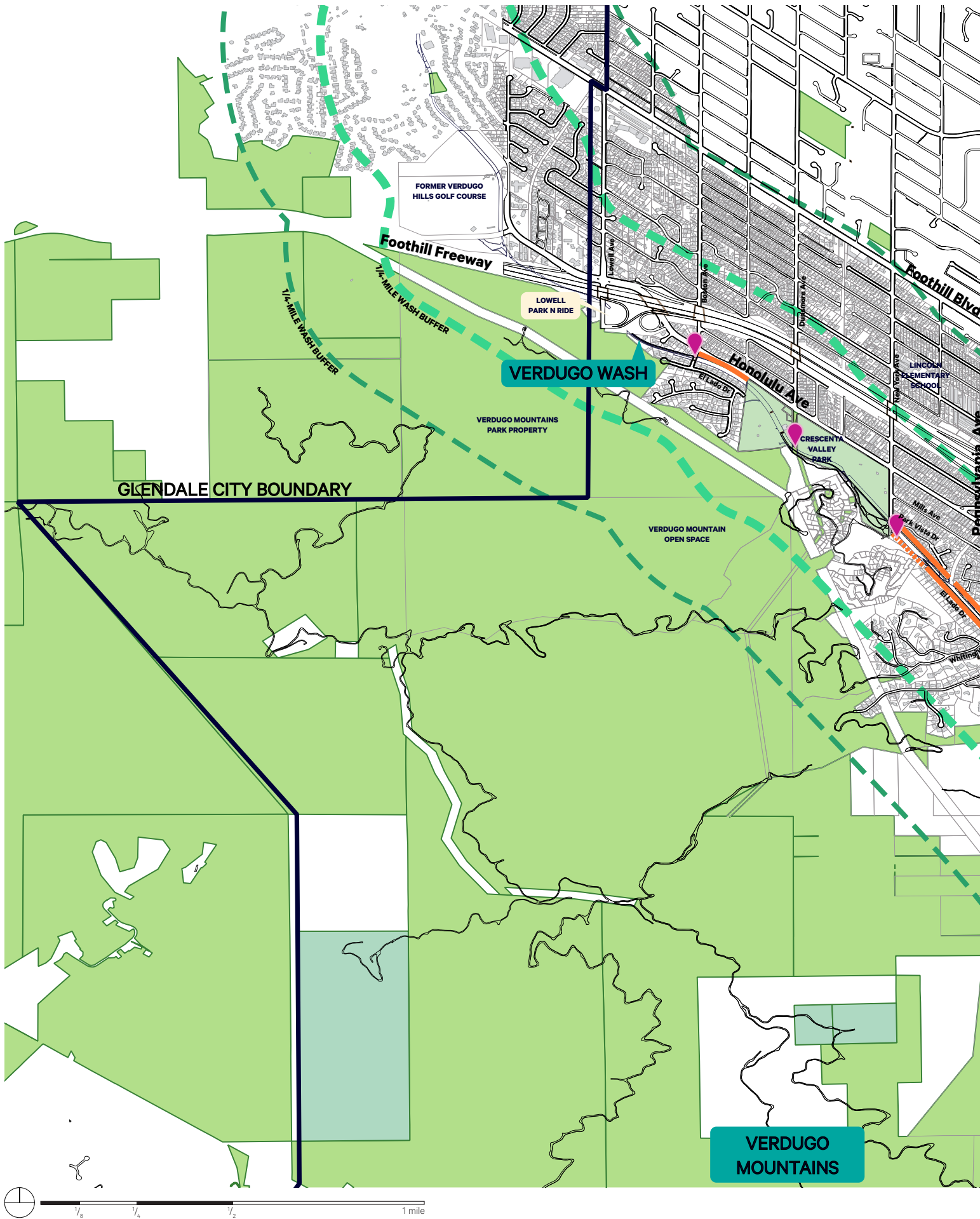
(SOUTHERN PORTION)

VERDUGO
MOUNTAINS

- CITY OF GLENDALE
- CITY OF GLENDALE - SCHOOLS
- CITY OF GARDENS, GLENDORA
- CITY OF LOS ANGELES
- LA COUNTY - MTA
- LA COUNTY - FLOOD CONTROL
- LA COUNTY
- STATE OF CALIFORNIA
- EXISTING WASH ACCESS POINT
- POTENTIAL WASH ACCESS POINT







SAN GABRIEL MOUNTAINS

VERDUGO WASH CORRIDOR RIGHT-OF-WAY ANALYSIS

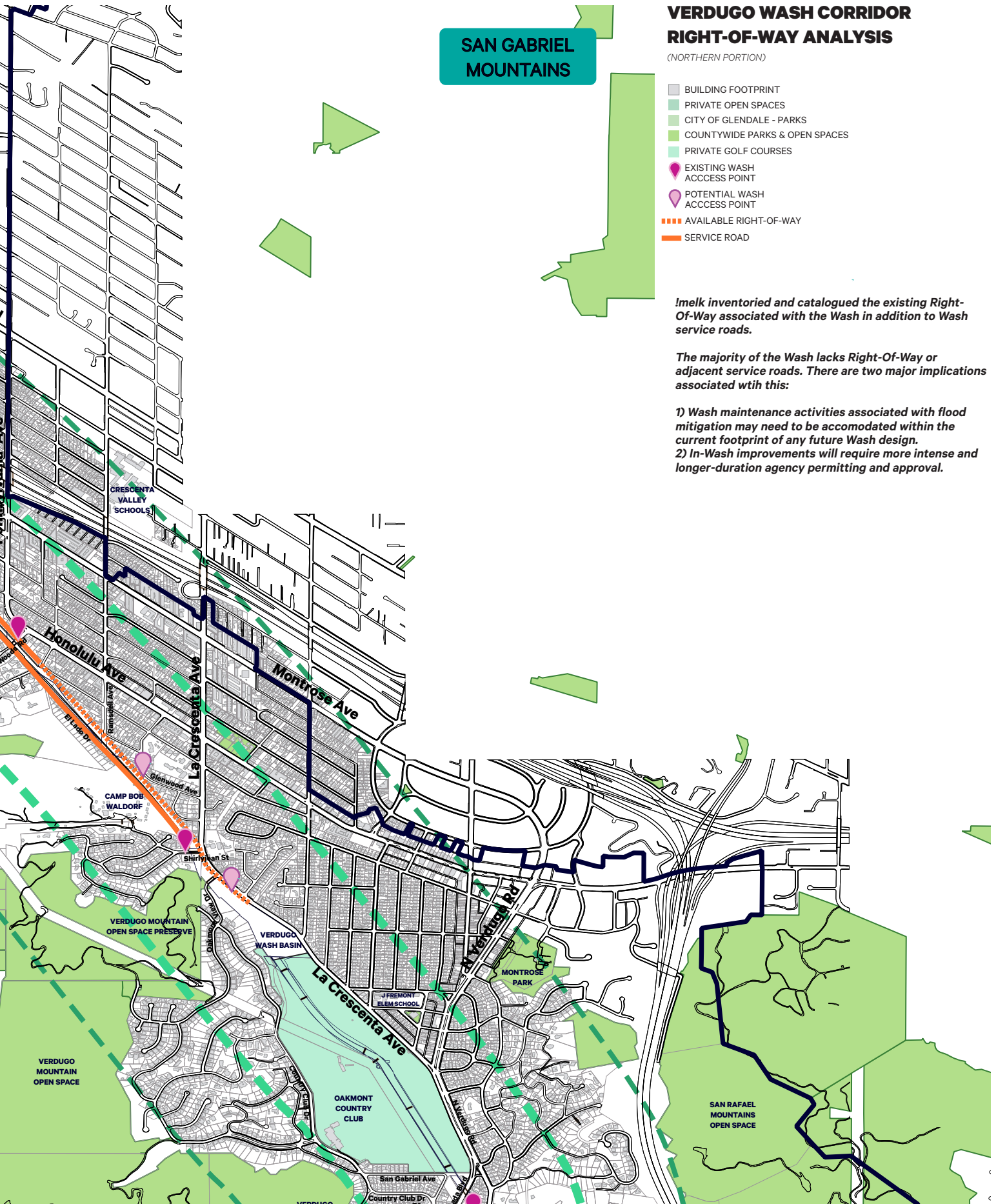
(NORTHERN PORTION)

- BUILDING FOOTPRINT
- PRIVATE OPEN SPACES
- CITY OF GLENDALE - PARKS
- COUNTYWIDE PARKS & OPEN SPACES
- PRIVATE GOLF COURSES
- EXISTING WASH ACCESS POINT
- POTENTIAL WASH ACCESS POINT
- AVAILABLE RIGHT-OF-WAY
- SERVICE ROAD

Imelk inventoried and catalogued the existing Right-Of-Way associated with the Wash in addition to Wash service roads.

The majority of the Wash lacks Right-Of-Way or adjacent service roads. There are two major implications associated with this:

- 1) Wash maintenance activities associated with flood mitigation may need to be accommodated within the current footprint of any future Wash design.
- 2) In-Wash improvements will require more intense and longer-duration agency permitting and approval.

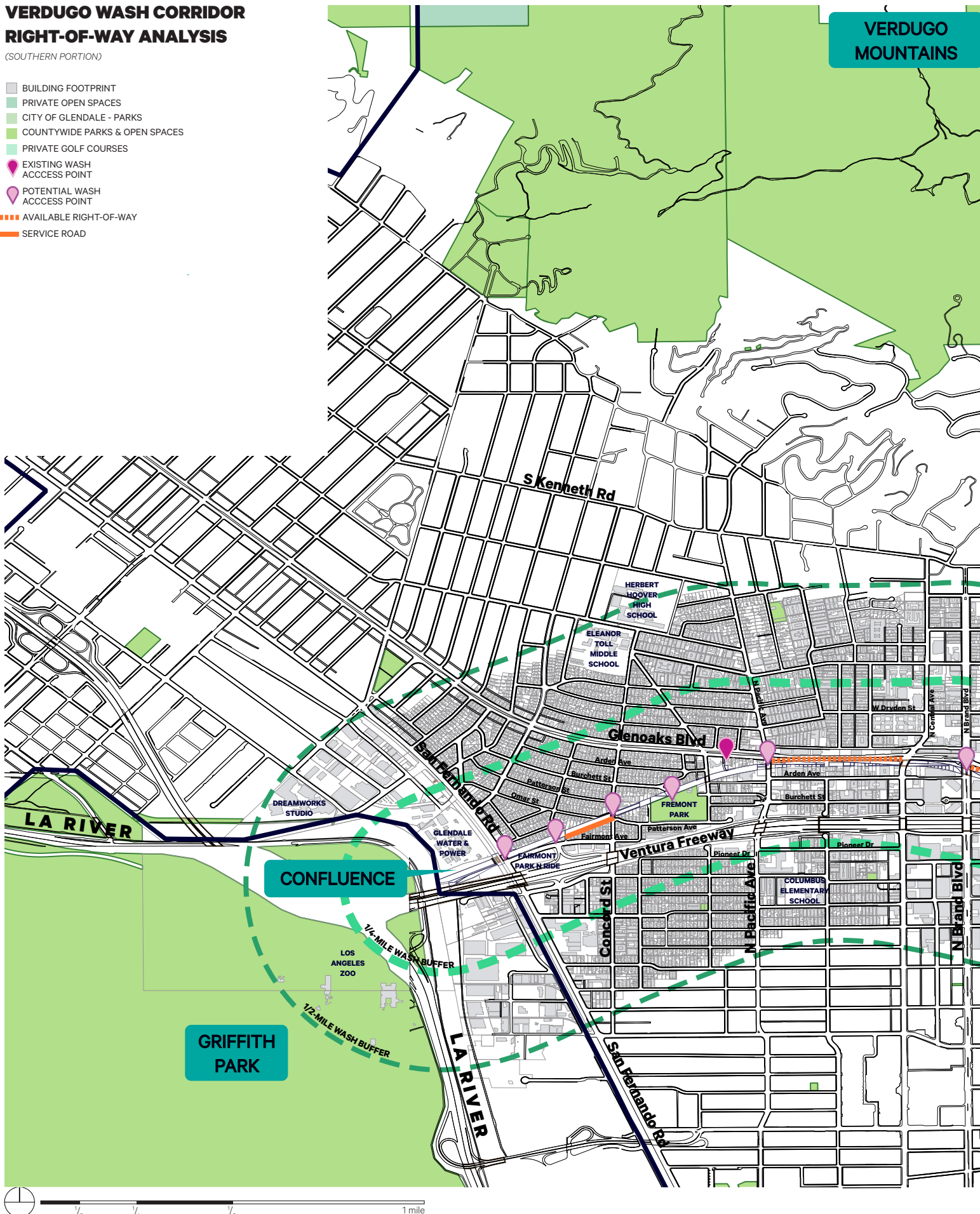


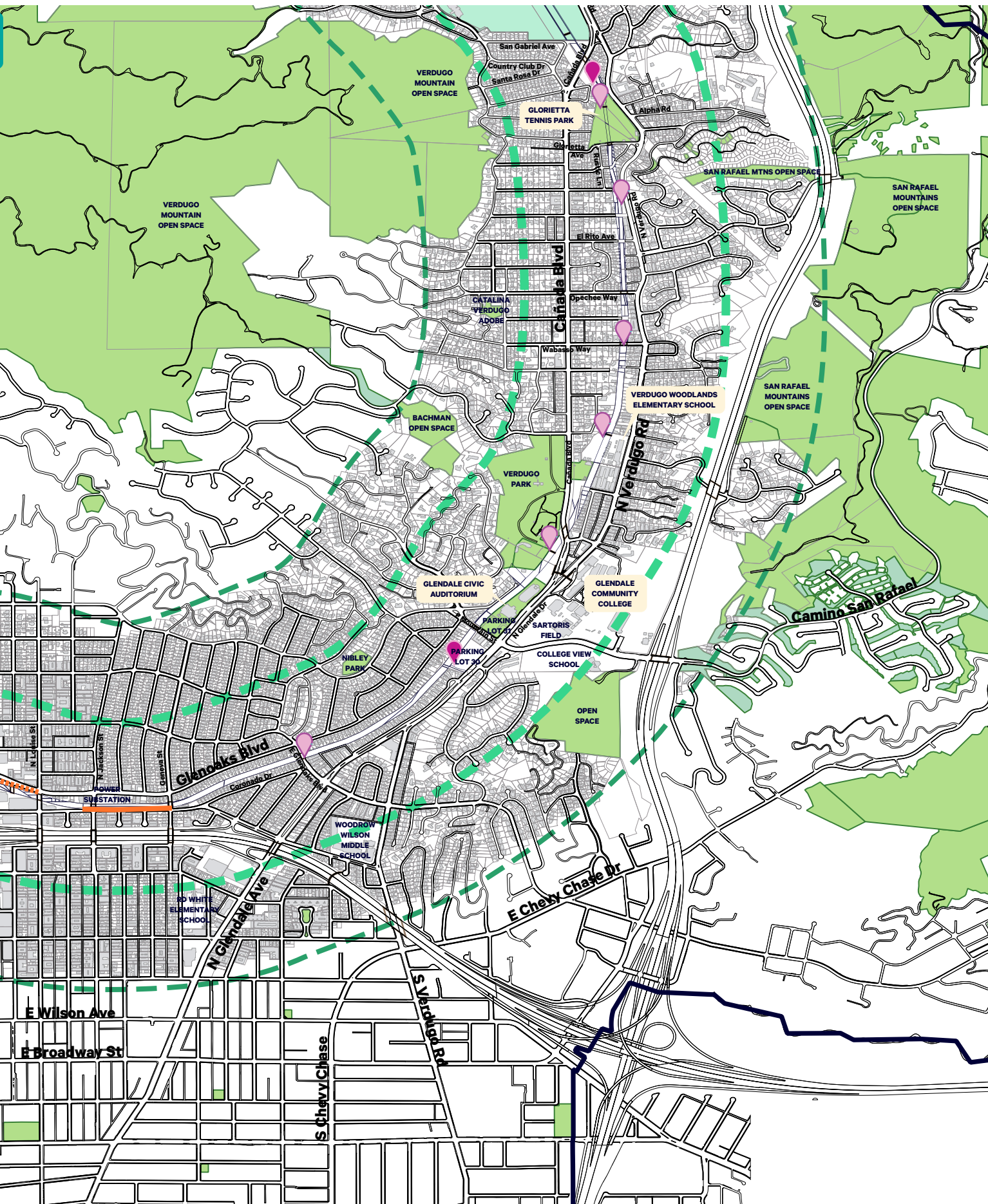
VERDUGO WASH CORRIDOR RIGHT-OF-WAY ANALYSIS

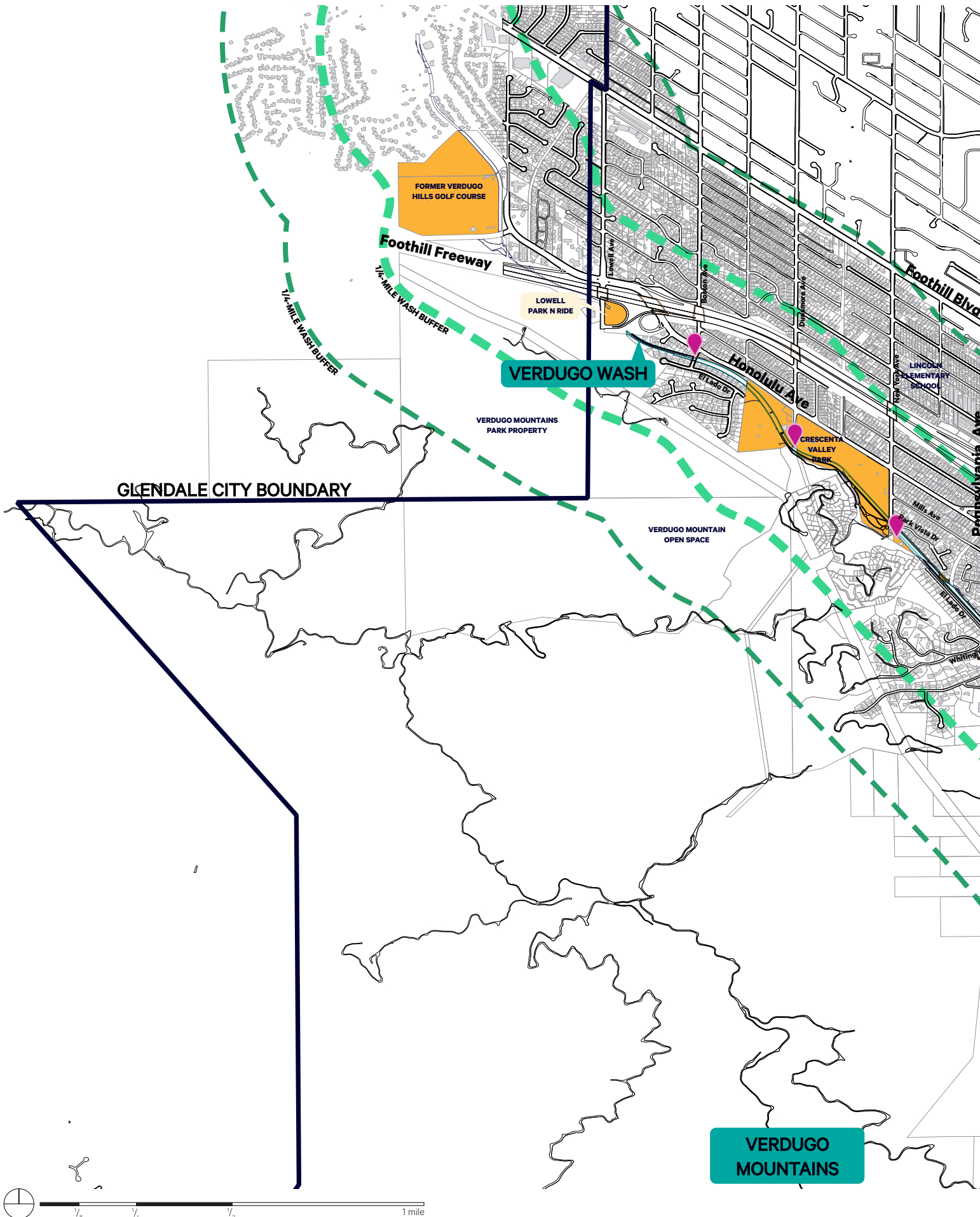
(SOUTHERN PORTION)

- BUILDING FOOTPRINT
- PRIVATE OPEN SPACES
- CITY OF GLENDALE - PARKS
- COUNTYWIDE PARKS & OPEN SPACES
- PRIVATE GOLF COURSES
- EXISTING WASH ACCESS POINT
- POTENTIAL WASH ACCESS POINT
- AVAILABLE RIGHT-OF-WAY
- SERVICE ROAD

VERDUGO
MOUNTAINS











SAN GABRIEL MOUNTAINS

VERDUGO WASH CORRIDOR PARCEL OPPORTUNITIES

(NORTHERN PORTION)

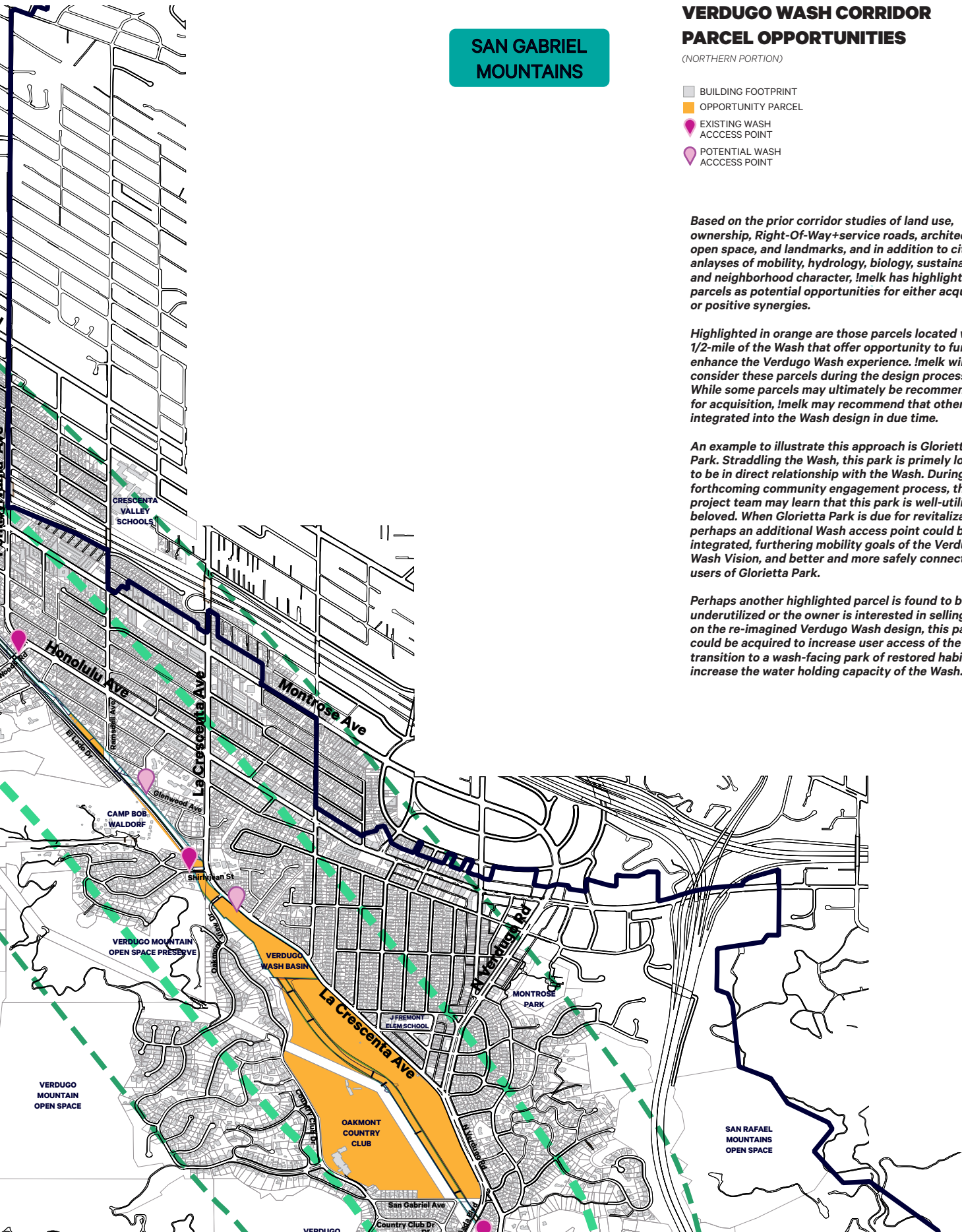
-  BUILDING FOOTPRINT
-  OPPORTUNITY PARCEL
-  EXISTING WASH ACCESS POINT
-  POTENTIAL WASH ACCESS POINT

Based on the prior corridor studies of land use, ownership, Right-Of-Way+service roads, architecture, open space, and landmarks, and in addition to city-wide analyses of mobility, hydrology, biology, sustainability, and neighborhood character, Imelk has highlighted parcels as potential opportunities for either acquisition or positive synergies.

Highlighted in orange are those parcels located within 1/2-mile of the Wash that offer opportunity to further enhance the Verdugo Wash experience. Imelk will consider these parcels during the design process. While some parcels may ultimately be recommended for acquisition, Imelk may recommend that others be integrated into the Wash design in due time.

An example to illustrate this approach is Glorietta Tennis Park. Straddling the Wash, this park is primarily located to be in direct relationship with the Wash. During the forthcoming community engagement process, the project team may learn that this park is well-utilized and beloved. When Glorietta Park is due for revitalization, perhaps an additional Wash access point could be integrated, furthering mobility goals of the Verdugo Wash Vision, and better and more safely connecting users of Glorietta Park.

Perhaps another highlighted parcel is found to be underutilized or the owner is interested in selling. Based on the re-imagined Verdugo Wash design, this parcel could be acquired to increase user access of the Wash, transition to a wash-facing park of restored habitat, or increase the water holding capacity of the Wash.

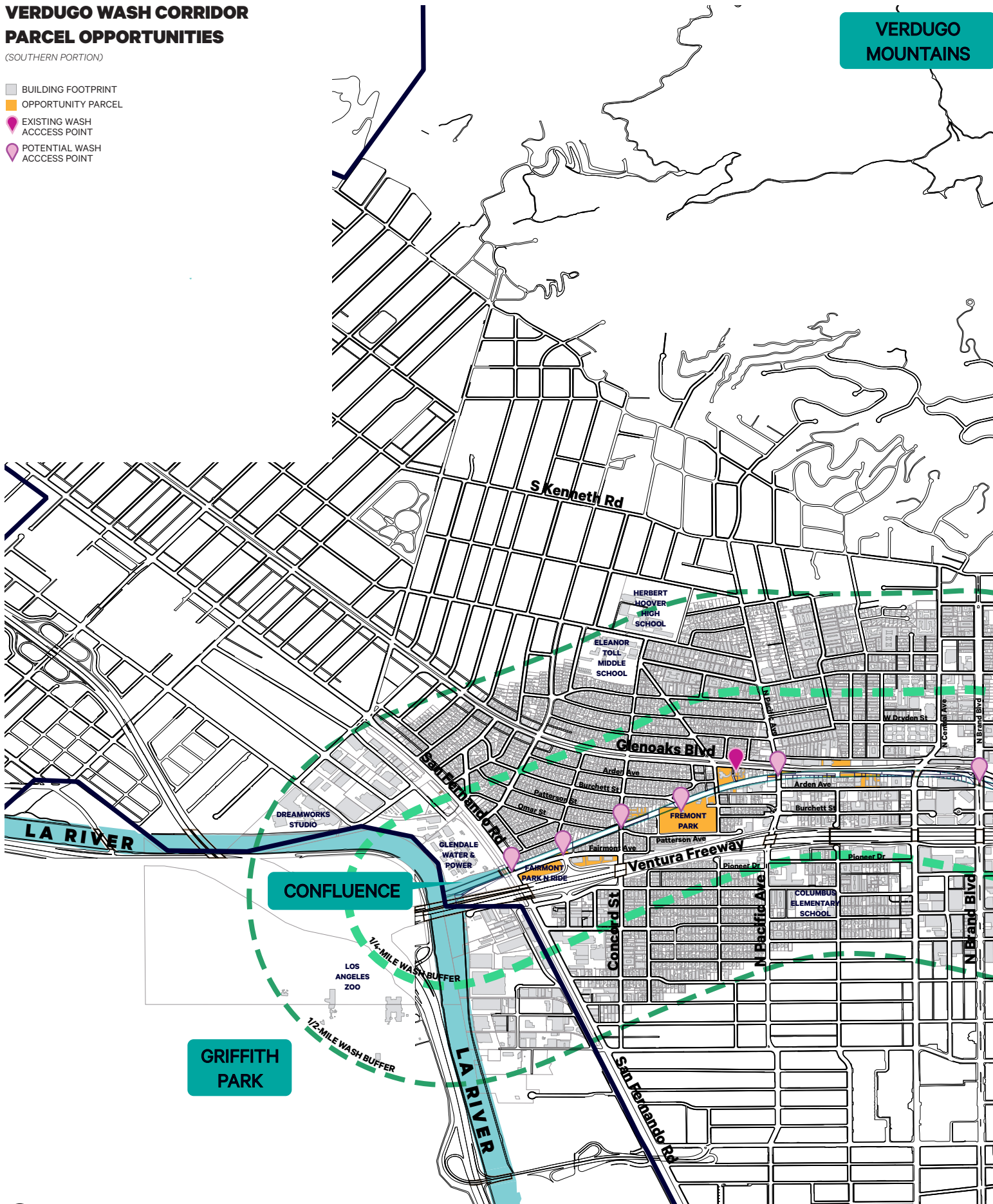


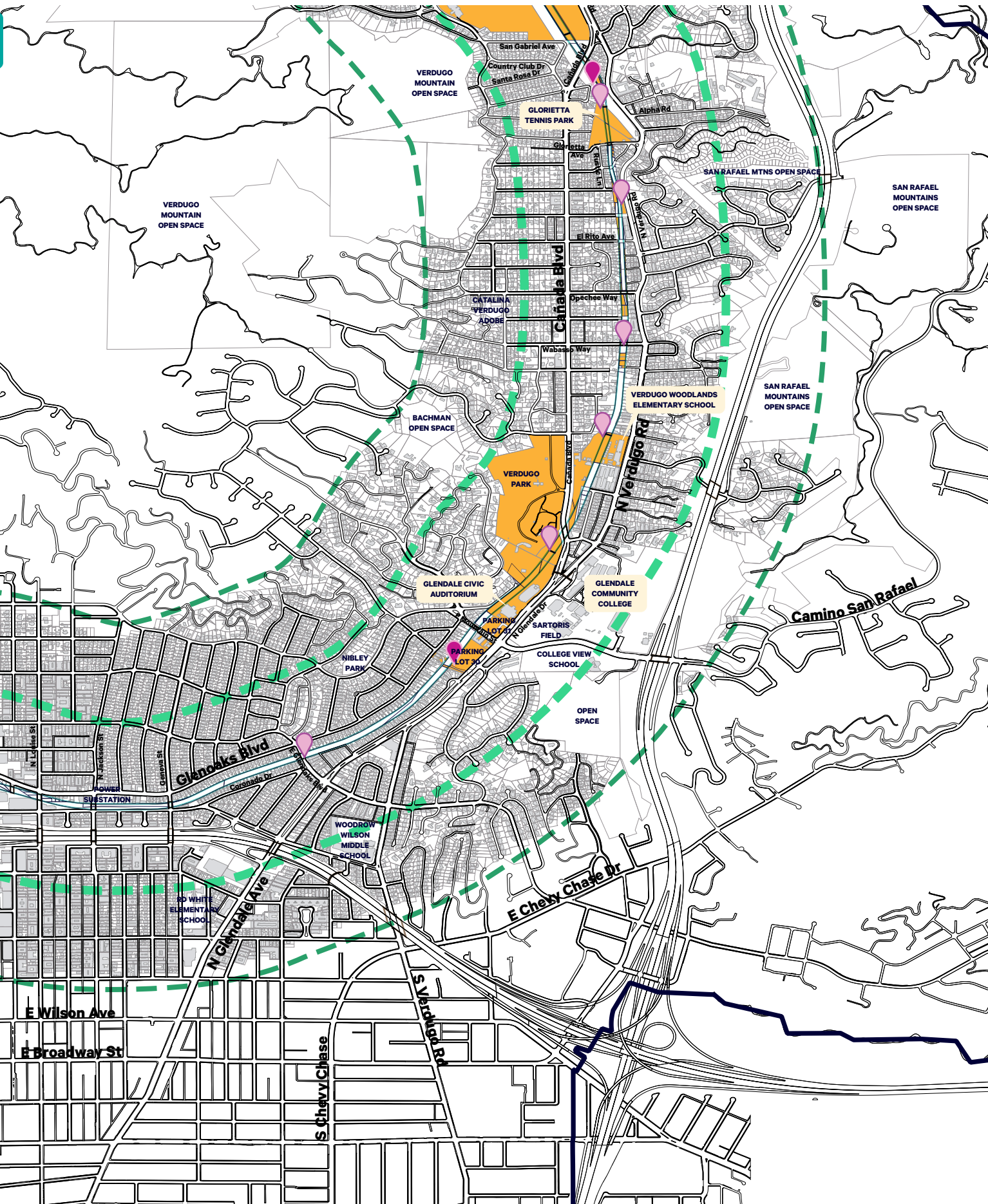
VERDUGO WASH CORRIDOR PARCEL OPPORTUNITIES

(SOUTHERN PORTION)

VERDUGO
MOUNTAINS

- BUILDING FOOTPRINT
- OPPORTUNITY PARCEL
- EXISTING WASH ACCESS POINT
- POTENTIAL WASH ACCESS POINT





how can we transform Verdugo Wash into a multi-purpose community amenity?

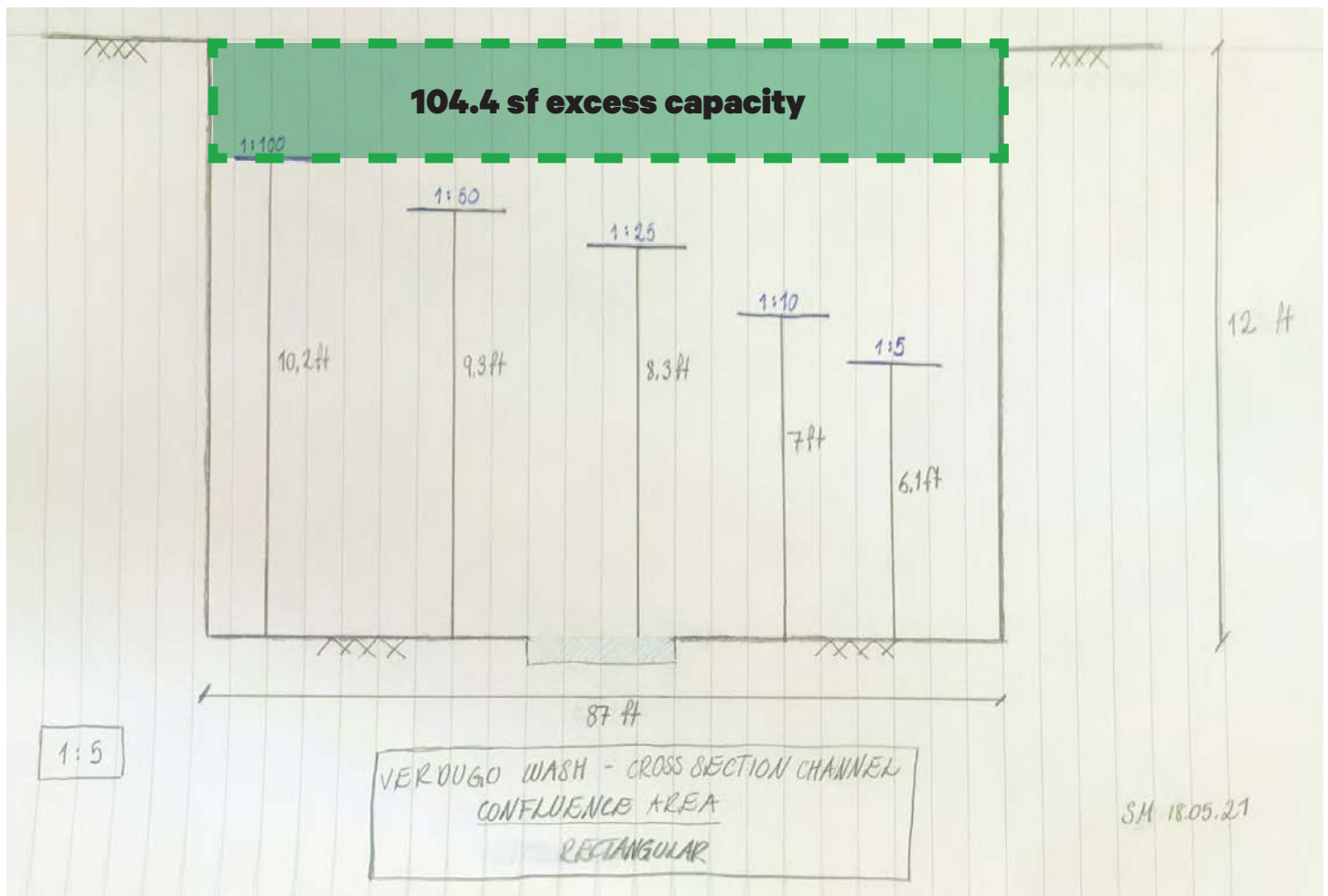
Imagine Verdugo Wash as if it were a glass that holds water when it rains, and that glass was sized to contain the amount of water (on average) that is anticipated for the 1 in 100 year storm event.

Any design elements (like planting or bicycle paths) in the “new” Verdugo Wash will act like “ice cubes” that displace water in the glass and raise the water level.

In order to continue to safeguard the community from flooding, the number of design elements is limited, and varies according to their location along the Wash. These are important parameters to consider as the vision for Verdugo Wash is conceived.



The transverse section below was cut at this location of the Verdugo Wash near the "Confluence," where the wash flows into the Los Angeles River.



Above: an early analysis sketch by the Buro Happold hydrology team analyzing the current stormwater design capacity of today's Verdugo Wash near the Confluence. The physical section of the Wash changes in width and height as one travels the Wash. So, too, does the stormwater capacity based on flows into the Wash as they travel to meet the LA River.

The green-highlighted area above indicates stormwater capacity in excess of the design storm event at this point in the Wash. Note again, any additional storage capacity likewise changes as one travels the length of the Wash as the physical section and water flows change. Based on this analysis, !melk proposed five early concepts for maintaining the Wash's primary purpose of mitigating flood risk, while integrating multi-purpose benefits.

Some basic arithmetic is needed to understand this strategy:

$87' \text{ wide} \times 10.2' = 887.4 \text{ square feet of stormwater carrying capacity that must be maintained at this particular location in the Wash. This leaves room for } 104.4 \text{ square feet of "design" to increase multi-purpose community benefit.}$

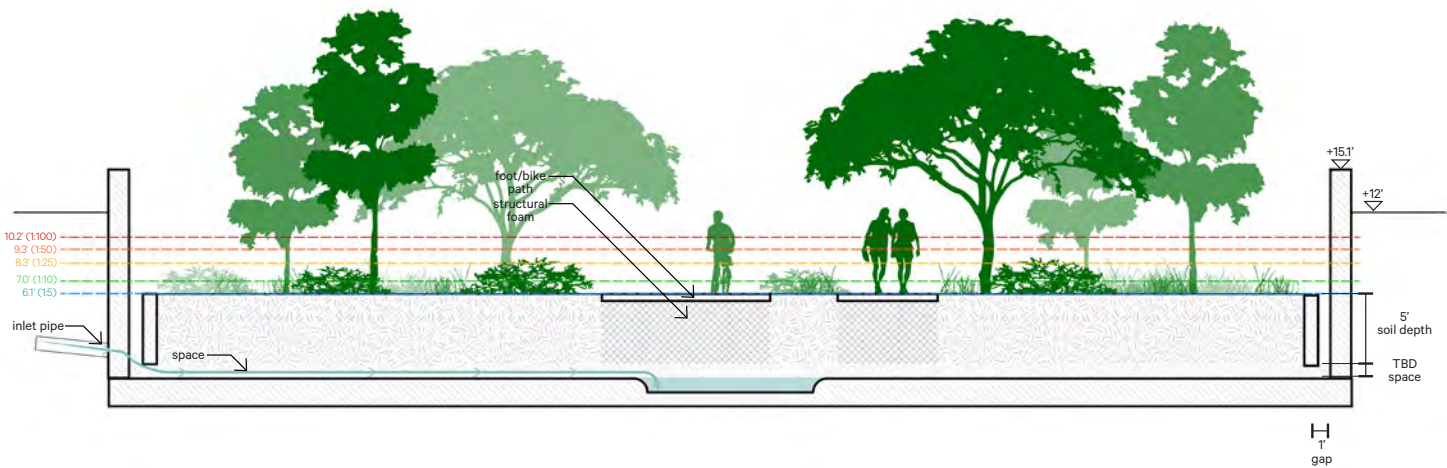
EARLY DESIGN CONCEPT 1

BASE ASSUMPTION: approximately 890 square feet of the future Wash must remain available for flood waters during extreme rain events. Design must be resilient to flooding.

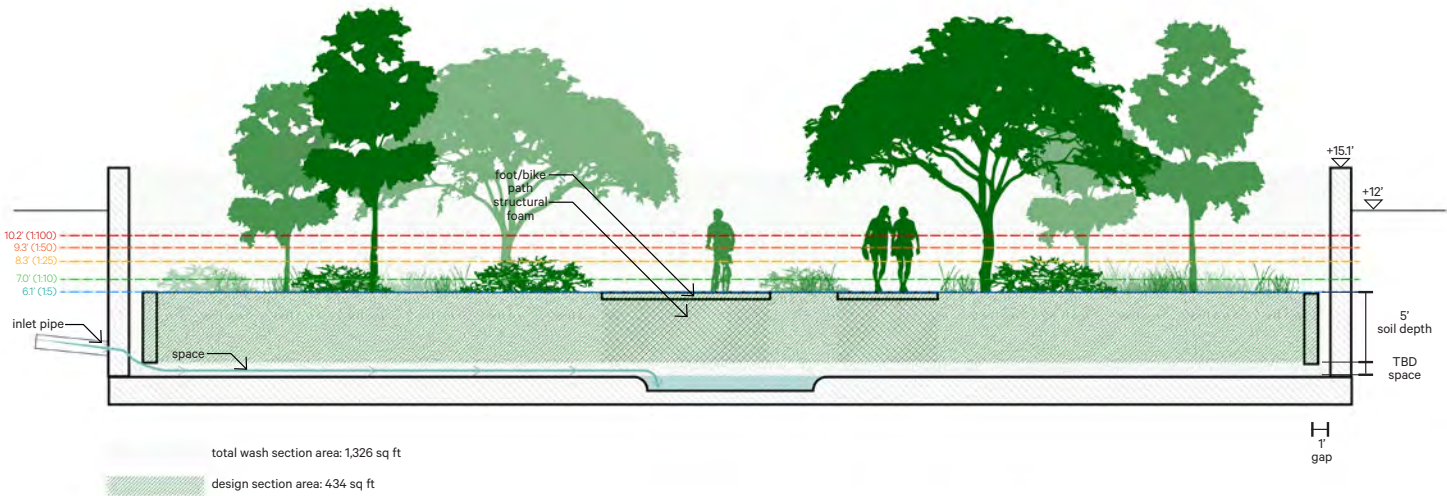
DESIGN STRATEGY: create a new datum above the existing Wash as a stage to host a multi-benefit design such as biking and walking paths, shade and ecologically-rich planting.

CONSTRUCTION CONCEPT: utilize void-based fill such as round gravel (assume 50% void space).

CONCLUSION: this design results in need to increase Wash wall elevations from (+12.00) to (+15.1) to maintain flood design capacity (890sf). Elevational access from adjacent parcels is moderate.



below: same design as above annotated with green highlights indicating areas indicate the "design" that takes away floodwater capacity



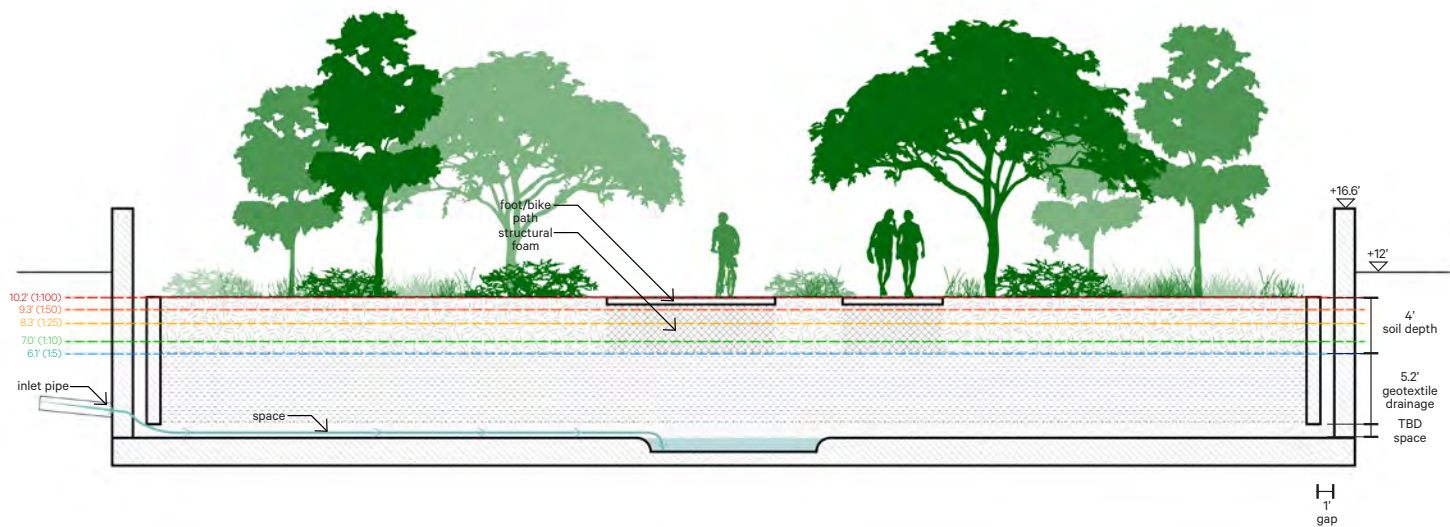
EARLY DESIGN CONCEPT 2

BASE ASSUMPTION: approximately 890 square feet of the future Wash must remain available for flood waters during extreme rain events. Design must be resilient to flooding.

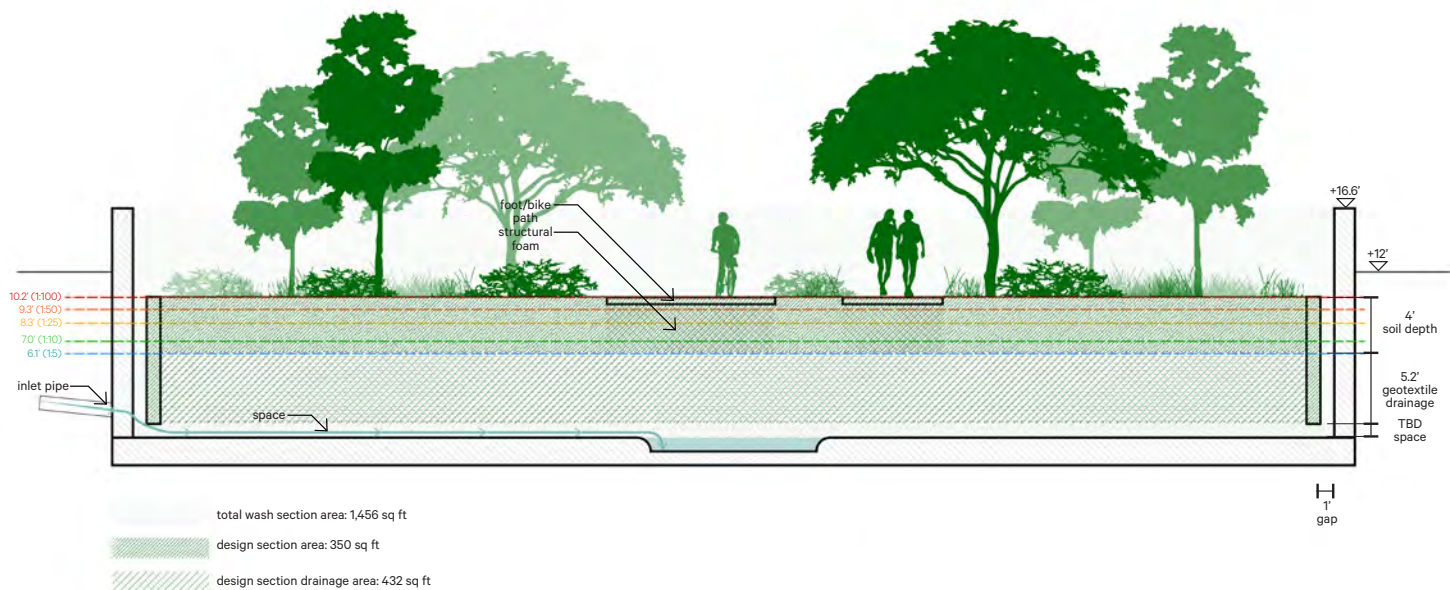
DESIGN STRATEGY: create a new datum above the existing Wash as a stage to host a multi-benefit design such as biking and walking paths, shade and ecologically-rich planting.

CONSTRUCTION CONCEPT: utilize void-based fill such as round gravel (assume 50% void space).

CONCLUSION: this design results in need to increase Wash wall elevations from (+12.00) to (+16.6) to maintain flood design capacity (890sf). Elevational access from adjacent parcels is mild.



below: same design as above annotated with green highlights indicating areas indicate the "design" that takes away floodwater capacity



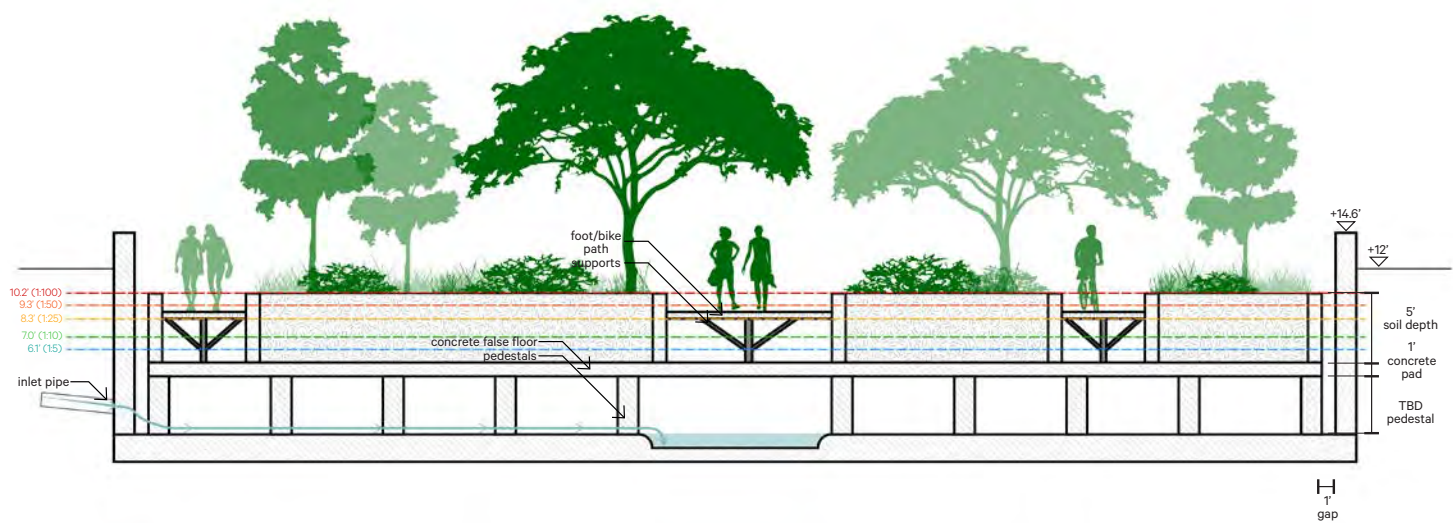
EARLY DESIGN CONCEPT 3

BASE ASSUMPTION: approximately 890 square feet of the future Wash must remain available for flood waters during extreme rain events. Design must be resilient to flooding.

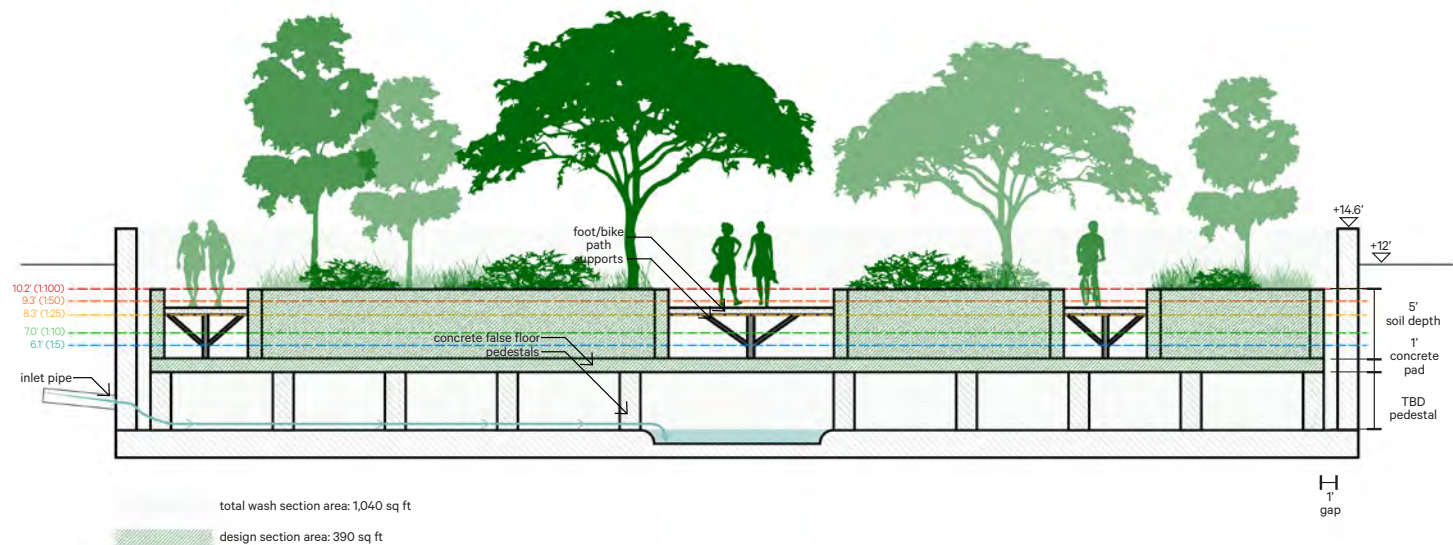
DESIGN STRATEGY: create a new datum above the existing Wash as a stage to host a multi-benefit design such as biking and walking paths, shade and ecologically-rich planting.

CONSTRUCTION CONCEPT: utilize simple concrete slab supporting by piers.

CONCLUSION: this design results in need to increase Wash wall elevations from (+12.00) to (+14.6) to maintain flood design capacity (890sf). Elevational access from adjacent parcels is mild.



below: same design as above annotated with green highlights indicating areas indicate the “design” that takes away floodwater capacity



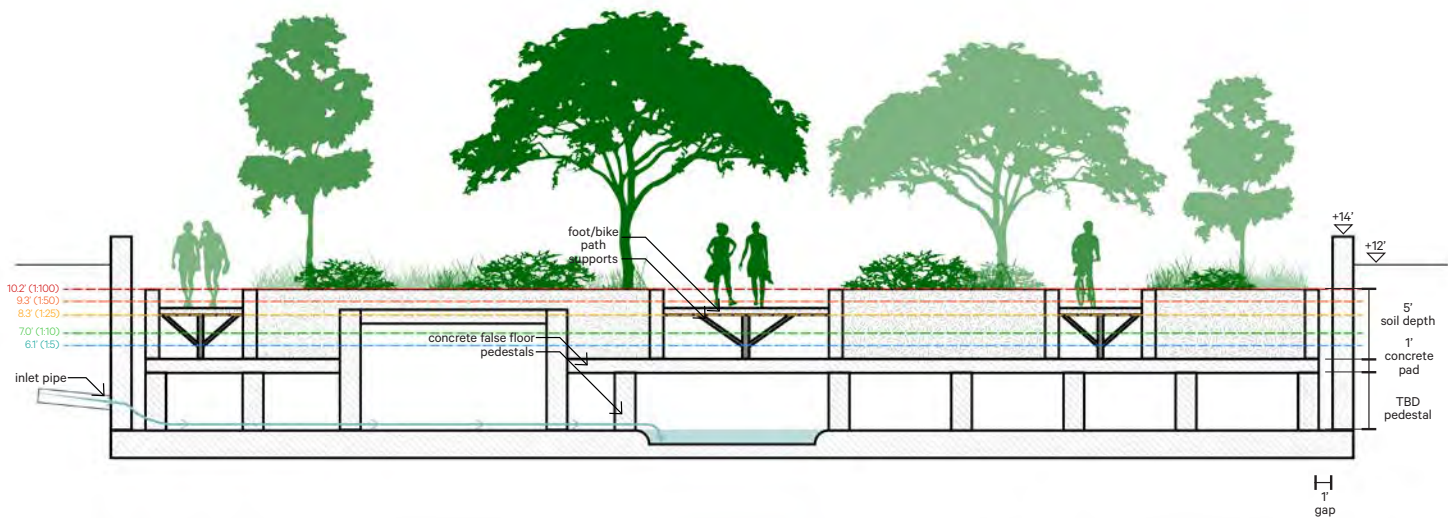
EARLY DESIGN CONCEPT 4

BASE ASSUMPTION: approximately 890 square feet of the future Wash must remain available for flood waters during extreme rain events. Design must be resilient to flooding.

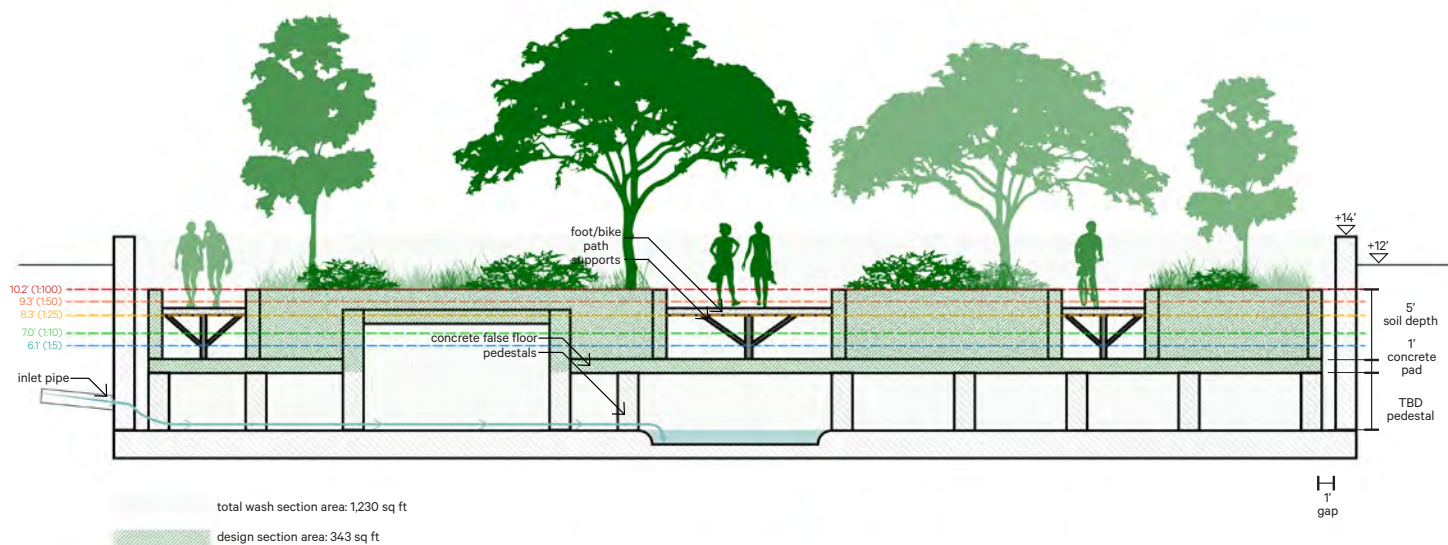
DESIGN STRATEGY: create a new datum above the existing Wash as a stage to host a multi-benefit design such as biking and walking paths, shade and ecologically-rich planting.

CONSTRUCTION CONCEPT: utilize concrete deck supporting by piers. Maintain concrete deck as high as possible while accomodating design (for example, trees require more planting soil depth than groundcover vegetation.)

CONCLUSION: this design results in need to increase Wash wall elevations from (+12.00) to (+14.0) to maintain flood design capacity (890sf). Elevational access from adjacent parcels is mild.



below: same design as above annotated with green highlights indicating areas indicate the "design" that takes away floodwater capacity



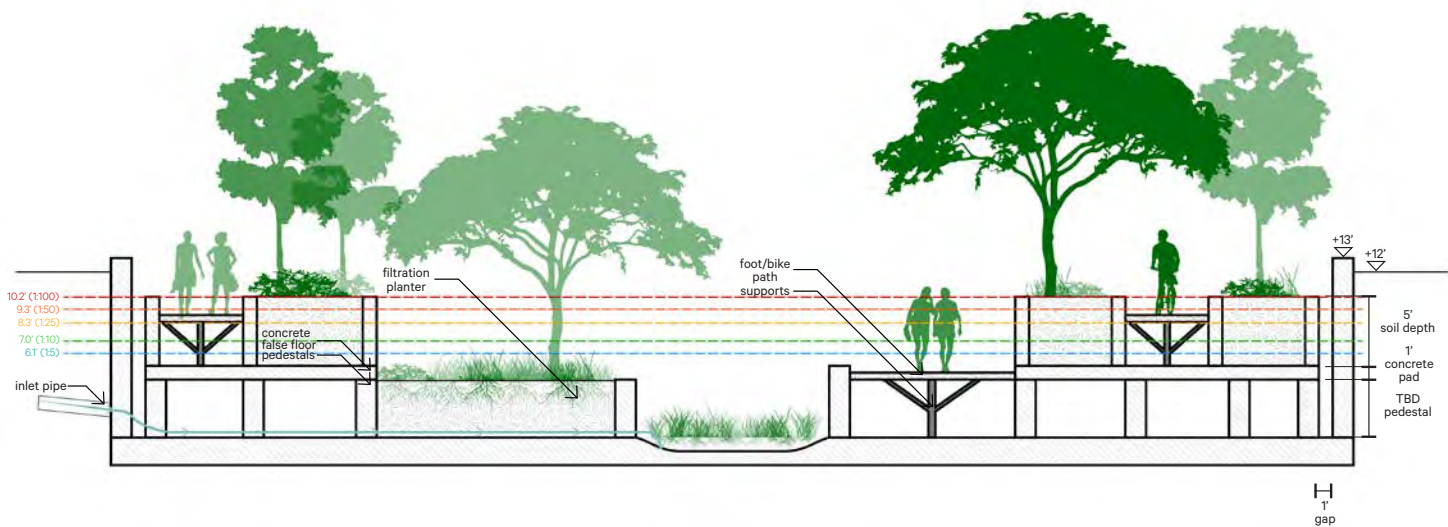
EARLY DESIGN CONCEPT 5

BASE ASSUMPTION: approximately 890 square feet of the future Wash must remain available for flood waters during extreme rain events. Design must be resilient to flooding.

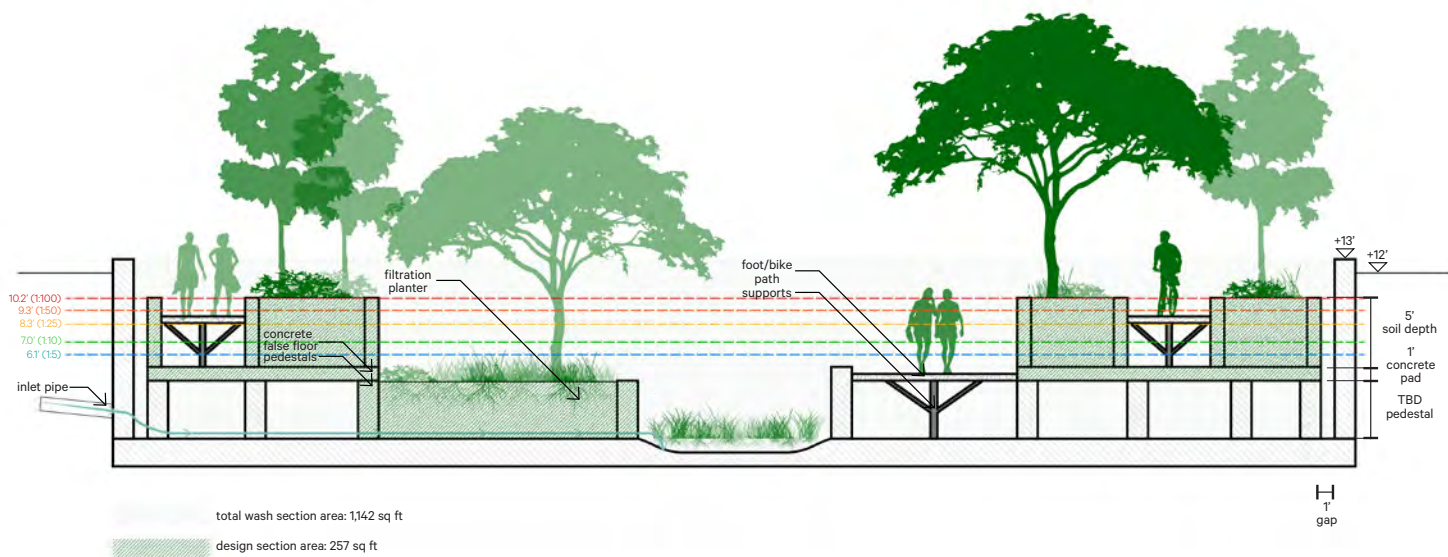
DESIGN STRATEGY: create stepped design with datum above the existing Wash where needed to serve as a stage to host a multi-benefit design such as biking and walking paths, shade and ecologically-rich planting. Integrate waterbiofiltration planters whose vegetation utilizes excess organic nutrients from city runoff and contributes cleaner water to the LA River.

CONSTRUCTION CONCEPT: utilize simple concrete slab supporting by piers.

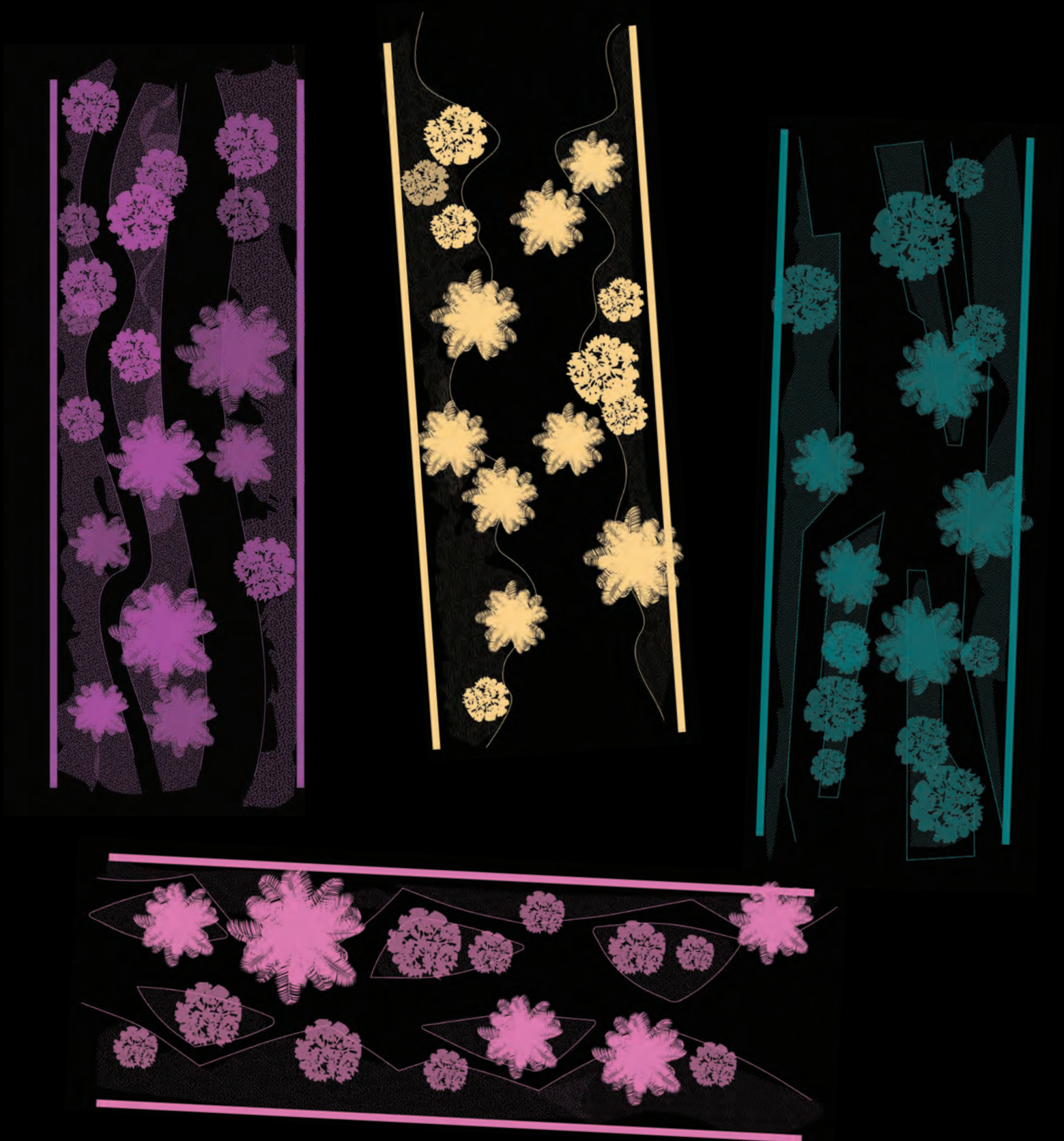
CONCLUSION: this design results in need to increase Wash wall elevations from (+12.00) to (+14.6) to maintain flood design capacity (890sf). Elevational access from adjacent parcels varies but is initially mild.

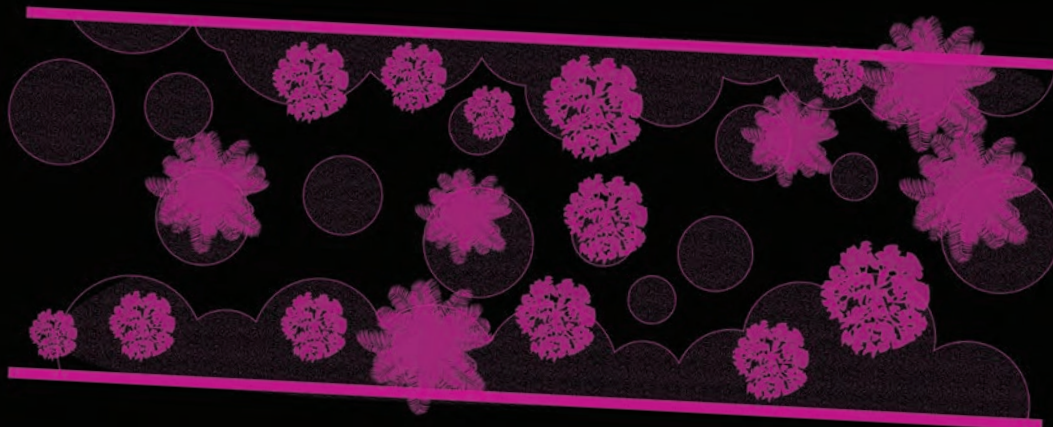
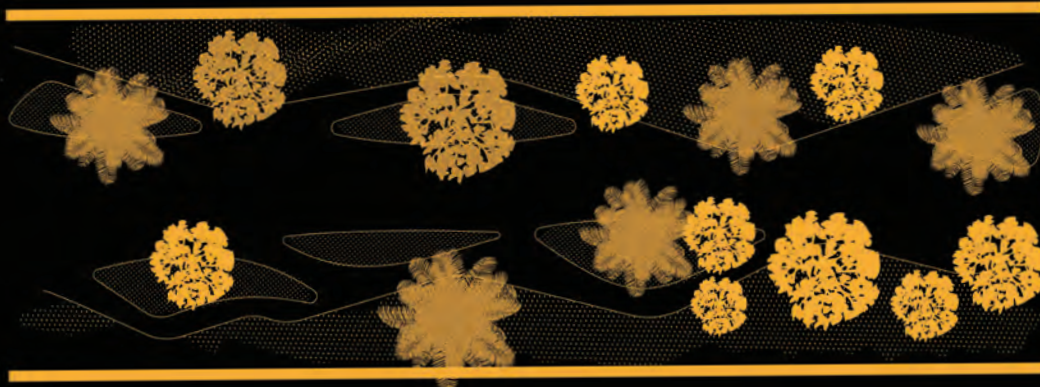


below: same design as above annotated with green highlights indicating areas indicate the “design” that takes away floodwater capacity



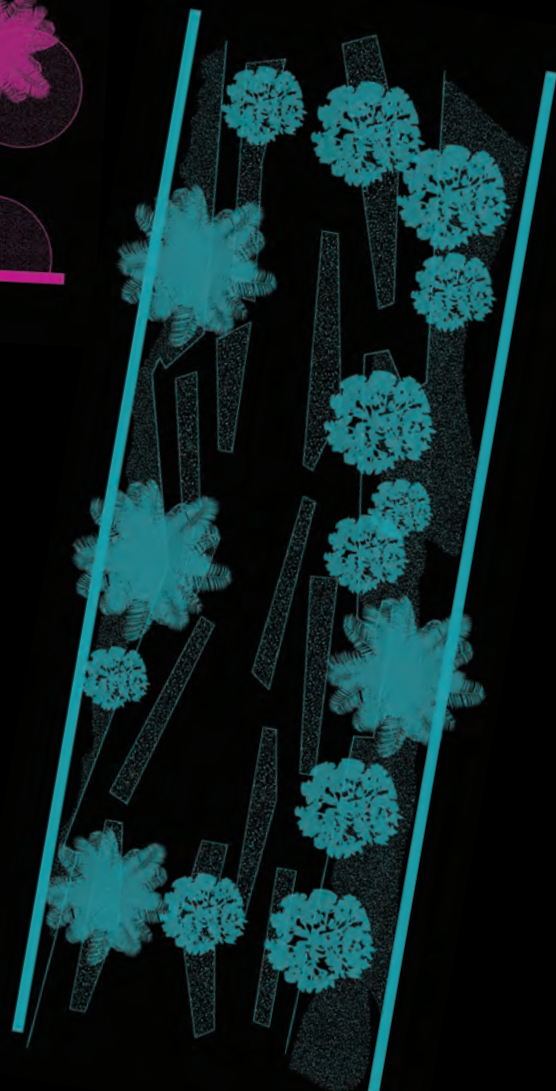
which formal design vocabulary should Verdugo Wash take on?





In order to break up the potential “monotony” of a linear pedestrian corridor, a variety of gestures will be explored. These early sketches depict that - even within the (sometimes narrow) confines of Verdugo Wash - we can provide ample rights-of-way for all anticipated modes of mobility, while creating an experiential and highly immersive connective corridor.

The vision for Verdugo Wash will also be replete with a suite of immersive spaces and places to pique one’s interest and curiosity!



next steps

On behalf of the **!melk+BuroHappold** team, it is an absolute pleasure to present this pre-design report to the City of Glendale. We hope that our enthusiasm and commitment to the full realization of the Verdugo Wash Visioning comes across in this document.

The contents of this report captures the most salient initial findings based on thorough analysis of the project site, its context, and climate. These methods of analysis will remain active during the concept design stage of the project, and we aim to refine and invent other methods of analysis to lay the foundation of a responsive and appropriate landscape design that is “uniquely *Verdugo Wash*.”

Ever since our site visit in April 2021, we have been captivated by this place, and its incredible potential!

Using the data and analysis from this stage, as well as the feedback from community engagement and stakeholder consultation, the **!melk+BuroHappold** team will begin developing a variety of design alternatives and interventions for Verdugo Wash! This will include potential route alternatives for pedestrians and cyclists, identifying locations for public space improvements, types of open space, areas for habitat restoration, design approaches to respond to different neighborhood contexts, as well as built-in sustainability strategies.

!melk's designs are always appropriate to context, implement the latest innovations in sustainability, and feature iconic elements that are instantly recognizable and which become hallmarks of each and every project. We see the great potential with the Verdugo Wash, and are excited to be able to create an experience that is driven by both landscape and hydrology.

This is just the initial stage of our process, and we continue to look forward to our working relationship with the City of Glendale to bring this project to fruition. Verdugo Wash deserves to be one of the most sought after destinations in the world!

appendix 1: key stakeholders

Below is a current working list of key stakeholder that will likely grow as the Verdugo Wash Visioning continues with community outreach efforts.

Arroyo and Foothills Conservancy (AFC)

<https://arroyosfoothills.org/>

Nonprofit conserving and creating important ecological areas in communities along the foothills of the San Gabriel Hills and Verdugo Mountains.

Friends of the LA River (FoLAR)

<https://folar.org/>

Nonprofit organization that aims to restore community and natural ecology along the LA River

Glendale Chamber of Commerce

<https://www.glendalechamber.com/>

Member-based organization working closely with the City of Glendale and other civic institutions; dedicated to serving the needs of business and improving the quality of life in Glendale, California.

Glendale Environmental Coalition (GEC)

<https://gec.eco/about/>

Grassroots organization dedicated to ensuring a healthy and sustainable environment for all. Through active community engagement and advocating for sound environmental and climate policy, they seek to make Glendale a model of environmental stewardship.

Glendale Healthier Community Coalition (GHCC)

<https://www.healthyclendale.org/about/about-ghcc>

Plans and implements projects that promote disease prevention, health education, clean and safe environments, adequate housing, affordable and quality education, and community revitalization.

Glendale Homeowners Coordinating Council

Group of representatives from the Homeowners' Associations of Glendale working closely with the City.

Glendale Parks and Open Space Foundation

<http://www.glendaleparksfoundation.org/about/mission/>

Nonprofit supporting park projects, recreation programs, and trails and open space activities that enrich the entire community.

GoGlendale

<https://goglendale.org/>

Membership-based nonprofit organization working with local employers and property managers to reduce traffic congestion, improve air quality, accessibility, and mobility in Glendale, CA.

LARiverWorks

<https://www.lariver.org/>

Specialized interdepartmental team of Los Angeles Mayor, Eric Garcetti, to revitalize the Los Angeles River.

Los Angeles Regional Open Space and Affordable Housing (LA ROSAH)

http://web.mit.edu/nature/projects_21/cases/LAROSAH-case%20study-duenasgerriksen.pdf

Collaborative of non-profit organizations and public agencies that seeks to provide equitable access to green spaces and affordable housing to low-income communities in the LA Region without paving the way for displacement.

Mujeres de la Tierra

<https://www.mujeresdelatierra.org/>

Environmental equity nonprofit building grassroots community leadership for underinvested/historically unrecognized communities. Led by women and their children to take ownership of the neighborhood and local community issues.

North East Trees (NET)

<https://www.northeasttrees.org/about/>

Community-based, design-build, environmental non-profit organization. Dedicated to employing local youth, restoring land, planting trees, and designing and building parks and other open spaces throughout Los Angeles County.

Regional Parks and Open Space District (RPOSD)

<https://rposd.lacounty.gov/>

Awards cities, LA County departments, and CBOs with grants to improve and rehabilitate parks, trails, recreational facilities, and open space lands.

River LA

<https://www.riverla.org/>

Works across all 51 miles of the LA River on design and infrastructure advocacy to bring community, water, and nature together.

Southern California Assoc of Governments (SCAG)

<https://scag.ca.gov/about-us>

State and federally recognized association of local governments and agencies from six counties and 191 cities that voluntarily convene as a forum to address regional issues such as transportation, sustainable communities, housing, and growth forecasts.

Walk | Bike Glendale

<https://walkbikeglendale.wordpress.com/about/>

Grassroots organization that advocates for vibrant and safe places to walk and bike, promotes walking and bicycling as fun and sustainable alternatives to driving, and educates to increase safety on Glendale's streets.

appendix 2: permitting & regulatory requirements

An important component of the pre-design report is identifying potential permits and assessments that may be required to implement the Verdugo Wash Visioning project. This appendix builds upon the key stakeholders listed in the hydrology and biology section and appendix 1 by listing a more comprehensive set of permits and references associated with relevant outside agencies.

Potential permits required by outside agencies

Important resources

- Los Angeles County Public Works - Permit Center
- Los Angeles County Public Works - Flood Permit References
- LACFCD Flood Permit Guidance Document
- Sample of LA River Landscape Improvements, Pedestrian
- Trail and Pedestrian Bridge Overcrossings Project
- Storm Drain System Ownership (including channels, drains, catch basins, and maintenance holes)
- Los Angeles River Maintenance Responsibility Areas
- Right-of-Way maps for Verdugo Wash

Flood construction permits

- Bridging
- Catch Basin Relocation
- Catch Basin Retrofit
- Connection
- Crossing
- Encroachment
- Excavation
- Landscaping
- Modification
- Overbuild
- Transfer Drain

United States Army Corps of Engineers (USACE)

- The Verdugo Wash is listed on the Corps Projects which may require Section 408 permission for alteration or occupation or use.
 - Section 408 Permitting Information
 - Section 408 Permission – NEPA Compliance Submittal Checklist

Potential biological assessments required by the governing agencies within the project area

- LAFCD permitting is required for activities such as:
 - Landscaping and habitat enhancement
 - Recreational and greenway improvements
 - Modifications to existing facilities

USE Environmental Review Checklist for 408 Permit - Biological Resources

- Are there any State or Federal Threatened or Endangered Species (TES) present?
- Has California Department of Fish and Wildlife (CDFW) consultation been initiated? (applicable only if the above question was answered “yes”)

Potential California Environmental Quality Act (CEQA) requirements

As part of the future CEQA compliance process it may be required to obtain a cultural resource record search from the South Central Coastal Information Center (SCCIC). The section below provides some key excerpts and contact information from the SCCIC website.

The South Central Coastal Information Center (SCCIC) is one of twelve regional Information Centers that comprise the California Historical Resources Information System (CHRIS). CHRIS works under the direction of the California Office of Historic Preservation (OHP) and the State Historic Resources Commission (SHRC). The SCCIC houses information about historical resources (e.g. location, size, age) within Ventura, Los Angeles, and Orange Counties per CHRIS standards. Information about historical resources is maintained in various forms such as 7.5 USGS Quadrangle Maps, historical resource records and reports, and computerized data. SCCIC clients are generally archaeologists, historians, architectural historians, developers, and public agencies. Information Centers provide historical resources information to local governments and individuals with responsibilities under the National Environmental Policy Act (NEPA), National Historic Preservation Act (NHPA), and California Environmental Quality Act (CEQA). A fee is charged for maintaining the information and any assistance provided.

The center is housed within California State University, Fullerton and can be contacted at:

T: +1 657-278-5395

F: +1 657-278-5542

E: scbic@fullerton.edu

appendix 3: potential external funding sources

In addition to the direct funding of infrastructure improvements, the City of Glendale may be able to access external funding sources and free technical assistance to implement a re-imagined Verdugo Wash. A initial list of potential funding sources are listed in the table below:

Program Administrator	Program Name	Geography	Funding Agency	Type of Funding	Amounts	Type
America Walks	America Walks: Technical Assistance Program	US	Non-profit	Technical Assistance	N/A	Active Transportation
America Walks	America Walks: Community Change Grants	US	Non-profit	Grant	Unknown	Active Transportation
CAL FIRE	CAL FIRE Urban and Community Forestry Grant Program	CA	State	Grant	\$150,000-\$1,500,000	Greening
CalEPA	Environmental Justice Small Grants and Funding Opportunities	CA	State	Grant	Up to \$50,000	Greening
California Coastal Commission	Coastal Resource and Public Access Program	CA	State	Grant	Variable	Greening, Education
California Department of Parks and Recreation	Recreational Trails Program	CA	Federal	Grant	Unknown	Active Transportation
California Department of Parks and Recreation	Land and Water Conservation Fund	CA	Federal	Grant	Up to \$6 million	Active Transportation
California Department of Parks and Recreation	Outdoor Recreation Legacy Partnership Program	CA	Federal	Grant	\$300,000-\$5,000,000	Greening, Recreation
California Transportation Commission	Local Streets and Roads Program	CA	State	Grant	Unknown	Active Transportation
California Transportation Commission	Solutions for Congested Corridors Program (SCCP)	CA	State	Grant	Unknown	Active Transportation
California Transportation Commission	Active Transportation Program	CA	State and Federal	Grant	Variable	Active Transportation
CalRecycle	Community Composting for Green Spaces Grant Program	CA	State	Grant	Unknown	Greening
Caltrans	Sustainable Communities Competitive	CA	State	Grant	\$50,000 to \$699,999	Active Transportation

Program Administrator	Program Name	Geography	Funding Agency	Type of Funding	Amounts	Type
Caltrans	Active Transportation Funding	CA	State	Grant	Variable	Active Transportation
CARB	Clean Mobility Options	CA	State	Grant	Variable	Active Transportation
CARB	Sustainable Transportation Equity Project	CA	State	Grant	Variable	Active Transportation
Fruit Tree Planting Foundation	Fruit Tree Planting Foundation	US	Non-profit	Materials	N/A	Greening
FTA	Metropolitan Transportation Planning and State Metropolitan Planning and Research	US	Federal	Grant	Variable	Active Transportation
Ibank	Infrastructure State Revolving Fund	CA	State	Loan	Variable	Public Infrastructure
LA County	Safe, Clean Water Program	Los Angeles County	County	Grants	Variable	Stormwater, Greening
LA County Metro	Measure M	Los Angeles County	County	Grant	Variable	Active Transportation, Transportation
LA County Regional Park and Open Space District	Measure A: Competitive Grants: Natural Lands, Local Beaches, Water Conservation and Protection	Los Angeles County	County	Grants	Variable	Parks
LA County Regional Park and Open Space District	Measure A: Competitive Grants: Regional Recreation Facilities, Multi-Use Trails and Accessibility	Los Angeles County	County	Grants	\$50,000 - \$1,000,000	Active Transportation, Recreation
LA County Regional Park and Open Space District	Measure A: Competitive Grants: Acquisition Only	Los Angeles County	County	Grants	\$50,000 - \$1,000,000	Land Acquisition
National Endowment for the Arts	NEA Our Town, FY2022	US	Federal	Grant	\$25,000-\$150,000	Arts
National Fish and Wildlife Foundation	Five Star and Urban Waters Restoration Grant Program	US	Non-profit	Grant	Variable	Stormwater, Pollution
National Parks Service	Rivers Trails and Conservation Assistance	US	Federal	Technical Assistance	N/A	Active Transportation
Natural Resources Agency	Urban Greening	CA	State	Grant	Variable	Greening
Office of Traffic Safety	Office of Traffic Safety Grant Program	CA	State	Grant	Variable	Active Transportation

Program Administrator	Program Name	Geography	Funding Agency	Type of Funding	Amounts	Type
People for Bikes	People for Bikes	US	Non-profit	Grant	Unknown	Active Transportation
Rails-to-Trails Conservancy	Doppelt Family Trail Development Fund	US	Non-profit	Grant	\$10,000	Active Transportation
Safe Routes Partnership	Safe Routes to Parks	US	Non-profit	Grant	Unknown	Active Transportation
Salazar Center	Thriving Cities Challenge	US	Non-profit	Grant	Unknown	Other Nature-Based Solutions
SCAG	SCAG Sustainable Communities Program	CA	MPO	Grant	Unknown	Active Transportation
The Trust for Public Land	Conservation Finance Services	US	Non-profit	Technical Assistance	N/A	Legislation and Ballot Measures
US DOT	Congestion Mitigation and Air Quality Improvement (CMAQ) Program	US	Federal	Grant	Variable	Active Transportation
US DOT	Federal Lands Access Program (FLAP)	US	Federal	Grant	Variable	Active Transportation
US DOT	Transportation Alternatives	US	Federal	Loan	Variable	Active Transportation
US EPA	Clean Water State Revolving Fund (CWSRF)	US	Federal	Loan	Variable	Stormwater
US EPA	Urban Waters Small Grants Program	US	Federal	Grant	Variable	Stormwater, Pollution
USDN	Partners for Places	US	Non-profit	Grant	\$25,000-\$150,000	Other
USDN	Mini-Grants	US	Non-profit	Grant	Unknown	Other
USDN	Green Stormwater Infrastructure	US	Non-profit	Grant	Unknown	Stormwater
Waste Management	WM Community Impact	US	Other	Grant	Unknown	Other

appendix 4: relevant precedents

The 606 - Chicago, IL, USA

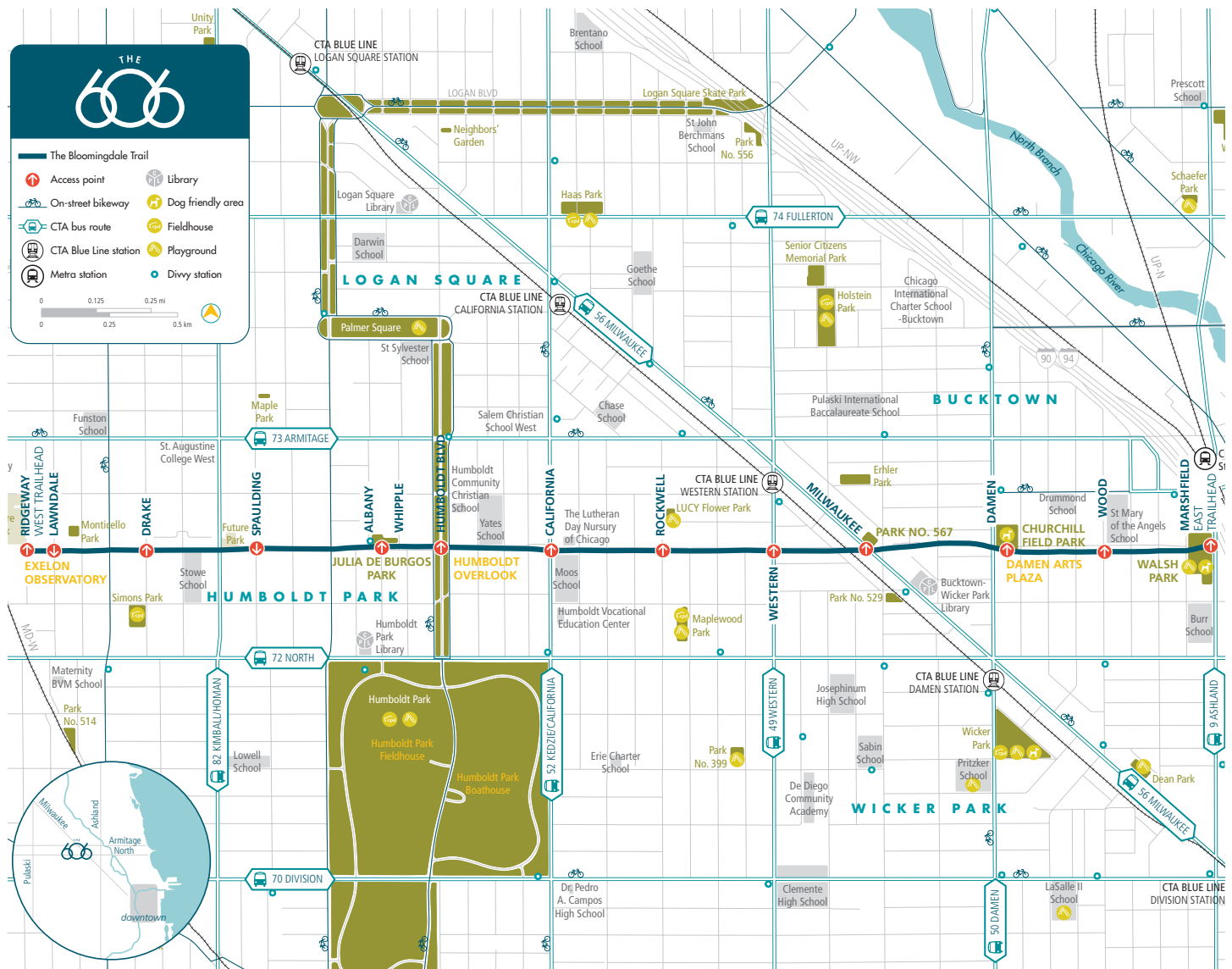
The 606 is a 2.77 mile elevated trail that transforms the unused Bloomingdale Line in the Logan Square neighborhood into 20 acres of public green space. Opened in 2015, The 606 brings multi-use trails, gardens, public art, event spaces, and a connection to history to the residents of Chicago. Like the Verdugo Wash, one of the primary uses of this corridor is the convenient alternative transportation routes it provides for bikers and pedestrians. Also similar to the Wash, the 606's design had to creatively incorporate the multi-use pathways and public programs into a narrow, linear park format.

The creation of the Framework Plan lasted 7 months from 2011 to 2012 and was developed by the design team of Arup, Ross Barney Architects, Michael Van Valkenburgh Associates (MVVA), Burns & McDonnell, and the Chicago

Public Art Group. Four months later, in 2012, the 90% design plans were completed by Collins Engineers, Lead Artist Frances Whitehead, and MVVA. Numerous public meetings were held throughout the project's development, and after incorporating community input, the final design was unveiled in June of 2013.

Construction lasted from 2013 to 2015, and the total project cost was \$95 million. Fundraising was organized by the Trust for Public Land, and included federal, state, and county sources, city resources, and private philanthropy.

According to a study by the Institute for Housing Studies at DePaul University, between 2012 and 2020, home prices along the west end of the trail have gone up 344%. In the trail's middle portion, the median sales price increased from



Plan of The 606 in The Logan Square neighborhood of Chicago
image source: http://www.the606.org/wp-content/uploads/2015/05/The606_printable_map.pdf

\$407,000 to \$605,000, and from \$661,250 to \$960,000 in the eastern portion.

These increases have lead many to criticize The 606's gentrification, as families were forced to leave due to rent hikes and increased property taxes. To combat this, in 2018 a \$1 million housing program was approved by City Council to preserve affordability for homeowners along The 606, and in 2020 City Council halted development for 6 months to work to develop solutions that would address gentrification. The solution that was reached was to require anyone looking to demolish existing buildings to pay a fee of \$15,000 that would go towards funding affordable housing projects across the city.

sources:

<https://www.the606.org/>

<https://network.thehighline.org/projects/the-606/>

<https://www.tpl.org/our-work/606>

<https://nhschicago.org/grants/grant-programs/606-bloomingdale>

<https://blockclubchicago.org/2020/01/15/6-month-development-ban-along-606-trail-gets-final-approval-from-city-council/>

<https://www.chicagotribune.com/opinion/editorials/ct-606-trail-gentrification-affordable-housing-edit-20170320-story.html>

<https://news.wttw.com/2021/03/22/push-slow-gentrification-pilsen-and-along-606-trail-demolition-fee-advances>



top row: **The 606 hosting a block party event (1), Bikers and pedestrians enjoying the trail (3)** bottom row: **Bike parade at the trail's west end (2)** image sources: (1) <https://www.the606.org/about/photos/> (2) <https://network.thehighline.org/projects/the-606/> (3) <https://www.choosechicago.com/articles/parks-outdoors/explore-the-606/>

appendix 4: relevant precedents

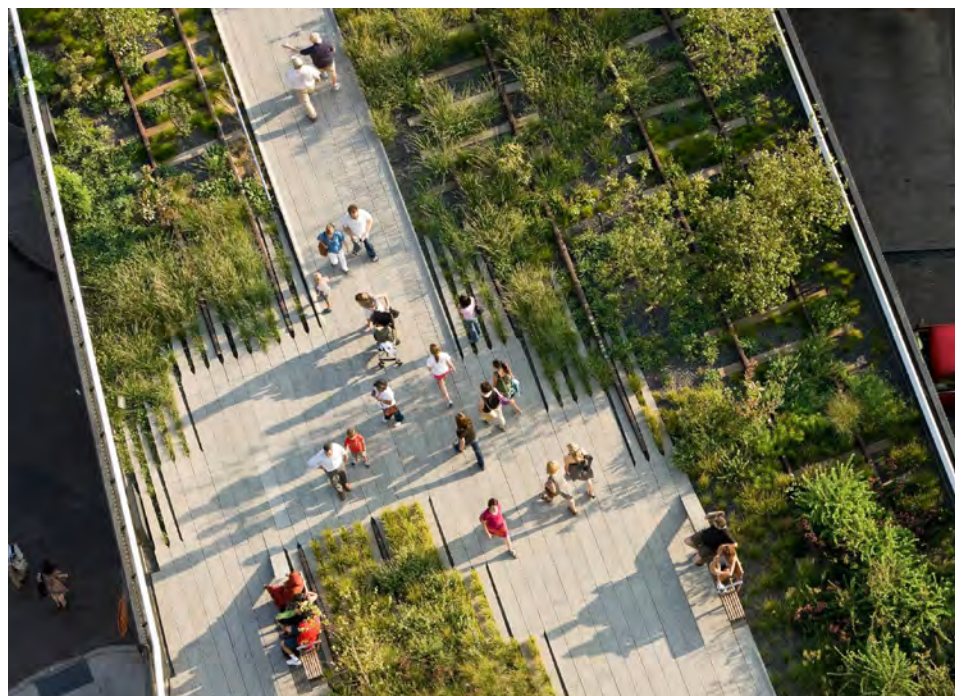
The High Line - New York, NY, USA

The High Line in the Chelsea neighborhood of Manhattan is one of the most well-known examples of rethinking urban infrastructure. This elevated 1.45 mile greenway provides an elevated linear park built on a historic abandoned rail line. Like the Verdugo Wash Visioning, this project takes an unconventional approach to repurposing existing infrastructure to create green, cultural spaces for the surrounding community. Also similar to the Verdugo Wash, the spaces created by the High Line are separated from the street-level, providing a sense of escape from the urban context.

The High Line was constructed in three sections - the first section opening in 2009, the second opening in 2011, and the final section opening in 2014. The first two sections combined cost \$152.3 million, while the third section cost

\$86.2 million. Funding included \$112.2 million from the City, \$20.3 million from the federal government, and \$400,000 from NY State. Remaining funds were raised privately by the Friends of the High Line, which has raised \$44 million to date.

The design process began in 2004 with the hiring of James Corner Field Operations, Diller Scofidio + Renfro, and Piet Oudolf selected as the core design team. The design process lasted 2 years before breaking ground on the first portion in 2006. Construction for the different sections took more than 2 years each, starting in 2006 and ending in 2014, lasting a total of 8 years. Today, the design is best defined by its historic, elevated site, and is known for its innovative creation of public space. It is known for its layers of programs - it is not just a park, but also a garden, a place for art and



left: **High Line Site Plan (1)**; right, top: **Aerial view of High Line looking south towards 20th Street (2)**; right, bottom: **Top view of the completed High Line, showing rail road tracks integrated into garden planting (3)**; image sources: (1) <https://www.landscapeperformance.org/case-study-briefs/high-line> (2) https://en.wikipedia.org/wiki/High_Line#/media/File:High_Line_Park_Section_1a.jpg (3) https://www.thehighline.org/photos/by-photographer/?gallery=5135&media_item=2320

performances, a food destination, and a place to connect with friends and neighbors. Real estate development has also been a defining success of the High Line. By 2010, the city gained \$100 million in property tax increases. In 2014, the High Line was projected to produce \$900 million in tax revenue over 20 years. The City has attributed two billion dollars in private investment and 12,000 new jobs to the opening of the High Line. It has raised adjacent housing values by 35%, and real estate along the highline has continued to increase in value even when other Manhattan properties depreciated.

One negative impact of this economic development has been exacerbated gentrification. The increase in rental prices left many without affordable housing, and many well-established businesses were forced to close. The High

Line has been heavily criticized for the negative impact on minority communities living in Chelsea. This spurred the High Line Network, a subsidiary of Friends of the Highline, which is working to find solutions to prevent gentrification in future infrastructure repurposing projects.

sources:

https://www.architectmagazine.com/design/the-high-line-network-tackles-gentrification_o
https://ccnmtl.columbia.edu/projects/caseconsortium/casestudies/128/casestudy/www.layout/case_id_128_id_903.html
<https://eportfolios.macaulay.cuny.edu/vellon18/gentrification/mirnanashed/the-gentrification-of-west-chelsea/>
<https://global.ctbuh.org/resources/papers/download/2463-the-high-line-effect.pdf>
<https://www.thehighline.org/design/>
<https://streeteasy.com/blog/changing-grid-high-line/>
<https://www.sciencedirect.com/science/article/abs/pii/S0169204619314574>



top left: **Performance of Sensation 1/This Interior by Ligia Lewis (1)**; top right: **The Floaters by Henry Taylor (2)**
 bottom left: **Pink Painting and Brown Painting by Ryan Sullivan (3)**; bottom right: **Banu Cennetoğlu (4)**
 image sources: (1) <https://www.thehighline.org/art/projects/ligia-lewis/> (2) <https://www.thehighline.org/art/projects/henrytaylor/> (3) https://www.thehighline.org/photos/high-line-art/?gallery=5172&media_item=14439 (4) https://www.thehighline.org/art/projects/plinth-shortlist-cycle-two/?gallery=21160-1&media_item=21186

appendix 4: relevant precedents

Buffalo Bayou Promenade - Houston, TX, USA

The Buffalo Bayou Promenade is a 160 acre urban open space with 3,000 linear feet of restored waterfront designed by SWA Group. The park is both functioning flood mitigation infrastructure and a socially significant cultural and recreational site. Much like the vision for the Verdugo Wash, it retains its critical infrastructure operations while creating a vibrant public amenity for the city. The waterfront is defined by its successful layering of overhead freeways and utilities above with the pedestrian and bike trails and naturalized bayou banks below.

Like Verdugo Wash, accessibility was a key consideration in planning the bayou. Increased street-level access points and four additional pedestrian bridges have helped the neglected space reach its potential as a community amenity.

The total cost of construction was \$15 million, and was funded through various public and private sources. In 2004, the project received a \$25,000 startup grant from the Houston Endowment, and was followed with a \$750,000 grant from the Wortham Foundation for funding planning and design.

The Buffalo Bayou Partnership coordinated a coalition of different public and private entities including the city of Houston, Texas Department of Transportation, Harris County Flood Control District, and other corporations, civic groups, and designers.

Together, the coalition raised \$3 million in private funds from local foundations, corporations, and individuals. In total, the



top: Masterplan view of program areas throughout the bayou (1); bottom: Aerial view showing the spatial relationship between Buffalo Bayou Promenade and Downtown Houston (1) image sources: (1) <https://www.swagroup.com/projects/buffalo-bayou-park/>

design and construction process lasted two years from the time of the initial grant to completed construction. A Landscape Architecture Foundation Case Study of Buffalo Bayou determined that it had increased employment around the Buffalo Bayou Promenade between 2008 and 2012.

During that time the number of establishments also increased from 54 to 236, and total retail sales increased from \$10,467,000 to \$57,281,000.

sources:
<http://landezine.com/index.php/2015/09/buffalo-bayou-promenade-by-swa/>
<https://casestudies.uli.org/wp-content/uploads/2016/06/Sabine-to-Bagby-Promenade.pdf>
<https://scenariojournal.com/strategy/buffalo-bayou-promenade/>



Before and after photos showing the promenade's drastic transformation from neglected waterfront to public amenity.
 image sources: <https://www.swagroup.com/projects/buffalo-bayou-park/>

appendix 4: relevant precedents

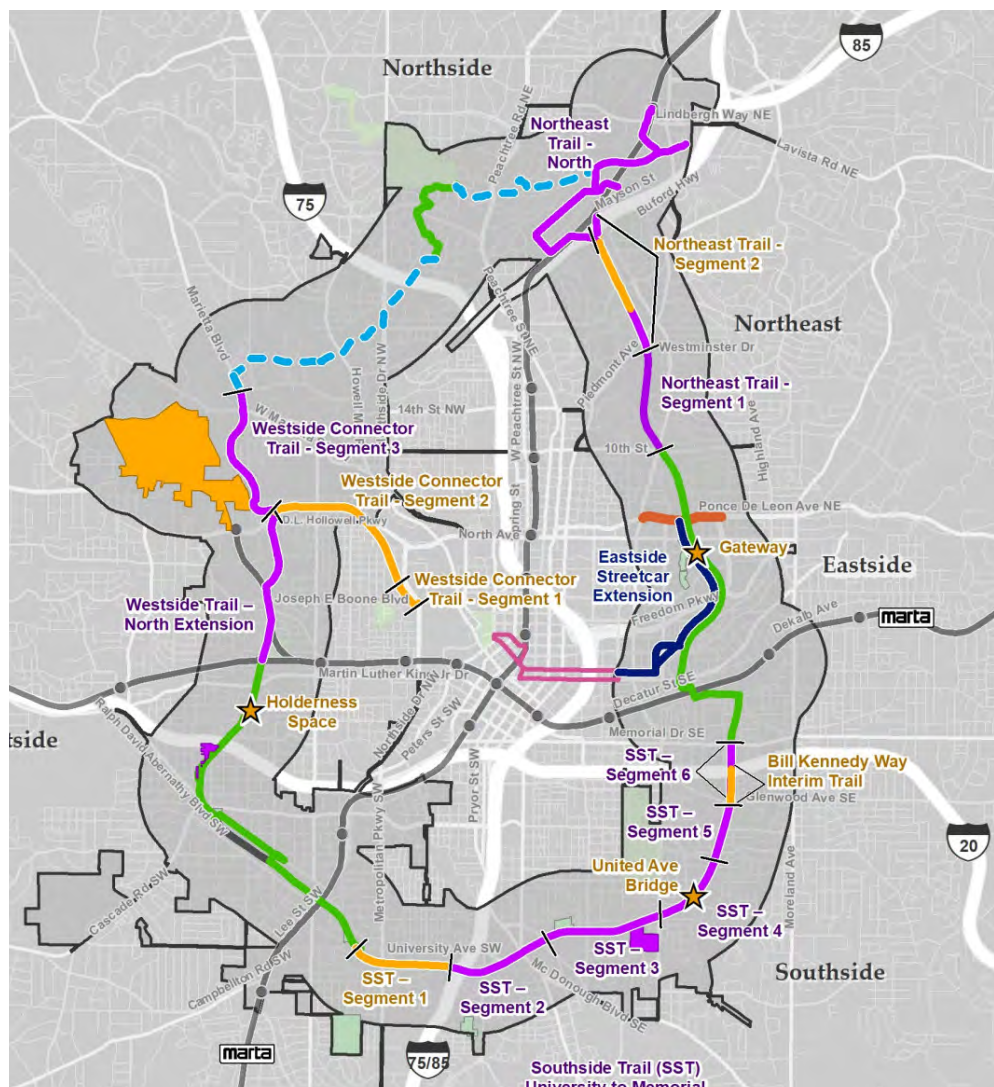
Atlanta Beltline - Atlanta, GA, USA

Circling the core of Atlanta, GA, the Atlanta Beltline is a project that is currently underway which is transforming a former 22-mile rail corridor into an extensive multi-use trail. Like the Verdugo Wash, this project's primary focus is enhancing city-wide mobility and connectivity while providing urban revitalization through increased accessibility to greenspace, with a particular attention to economic revitalization, equity and inclusivity. It has been 16 years since the Atlanta BeltLine Partnership was formed, and construction is projected to last until 2030. The design process to adopt the final master plans lasted 5 years.

The scope of the project includes 33 miles of multi-use urban trails which have already been completed and projected goals of: 1,300 acres of new greenspace, 46 miles of improved streetscapes, 22 miles of pedestrian-friendly

rail transit, and 1,100 acres of environmental cleanup. The total projected cost of construction is \$4.8 billion. Around \$600 million had been invested between 2005 and 2019 from a mix of multiple public and private sources. These sources include The Atlanta BeltLine Tax Allocation District, the City of Atlanta, private investment and philanthropic contributions, and grants from county, regional, state, and federal levels.

Additionally, to fund the project completion by 2030, slight property tax increases have been temporarily implemented in a "Special Service District." This slight increase could be in place for 15 to 20 years, and only applies to commercial and multifamily property owners. Owner-occupied homes, condos, and townhomes are exempt. With these raised taxes, a property appraised at \$1 million would pay an additional



Atlanta BeltLine map, showing design and construction progress as of January 2021
image source: <https://beltline.org/2021/01/29/atlanta-beltline-design-and-construction-updates-january-2021/>



Before and after: the Eastside Trail at the bridge over Ponce de Leon image source: <https://beltline.org/2015/04/09/the-atlanta-beltline-then-and-now/>

\$800 per year. Economically, one of the BeltLine's goals is to spur \$10 billion in economic development. By the end of 2018, it had led to \$4.6 billion in new private investment and created 33,450 one-year construction jobs. By the end of 2019, there had been \$2 billion in private development. Currently, full-time job growth is halfway to the final goal of 30,000 permanent jobs by the year 2030. In addition to new job creation, the BeltLine will provide improved transportation options that connect residents to job centers. This will allow for the development of new job centers, and create increased development opportunities for restaurants, retail, and housing.

To ensure inclusivity and equity, \$150 million of BeltLine trail construction funding will be allocated to firms owned by African Americans and other minority-owned businesses.

Equity and inclusivity is fundamental to the project vision. As part of this, one of the primary goals is creating or preserving 5,600 units of affordable workforce housing by 2030. Between 2006 and 2021, 3,966 affordable homes were already in place within walking distance of the BeltLine. These affordable housing units will allow seniors, working families, and legacy residents to enjoy all that the Atlanta BeltLine offers.

sources:

<https://beltline.org/>

<https://www.ajc.com/news/atlanta-news/atlanta-just-passed-a-new-tax-around-the-beltline-heres-what-you-need-to-know/RIIP3ZPWY5A2ZC2H27DIOGVW7U/>



Before and after: the popular splashpad at Historic Fourth Ward Park. image source: <https://beltline.org/2015/04/09/the-atlanta-belt-line-then-and-now/>



top: **Purple rain** by Addison Karil and Janus (1); middle: **The Endeavor** by Jessica Caldes (2); left: **Untitled** by HENSE (3) image sources: (1) <https://art.beltline.org/art/untitled-20/>; (2) <https://art.beltline.org/art/the-endeavor/> (3) <https://art.beltline.org/art/alex-brewer-hense/>

appendix 4: relevant precedents

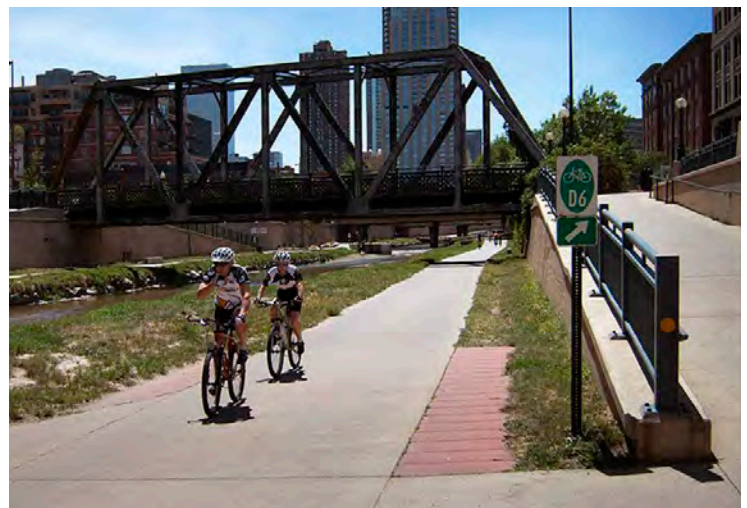
Cherry Creek Regional Trail - Colorado, USA

The Cherry Creek Regional Trail is a 40 mile trail that connects Arapahoe, Denver, and Douglas Counties. The trail starts at the Confluence Park in Denver and follows Cherry Creek through urban, suburban, and rural settings to the trail's end in Franktown. Much of the trail is composed of a simple 8-foot wide concrete path surrounded by a range of natural habitats. Like the Verdugo Wash, the trail ties together urban and suburban contexts, and creates a sunken shared mobility corridor in downtown Denver.

The initial section of the bike path was constructed sometime between 1976 and 1983, between Market Street and Confluence Park in Denver.

The next section's construction was initiated in 1986, connecting Cherry Creek State Park to Castlewood Canyon State Park. Another stretch was completed between 1986 and 1989, continuing the trail further south another 8 miles to the town of Parker.

Funding for the trail came from the Greenway Foundation, which received contributions from the Gates Foundation, Johnson Foundation, Piton Foundation, Boettcher Foundation, El Pomar Foundation, Denver Foundation, as well as additional funds from federal, state, and local agencies and numerous corporate and individual contributions. In 2020, the Cherry Creek Regional Trail was the recipient of a \$2 million Great Outdoors Colorado trail grant to improve trail connections.



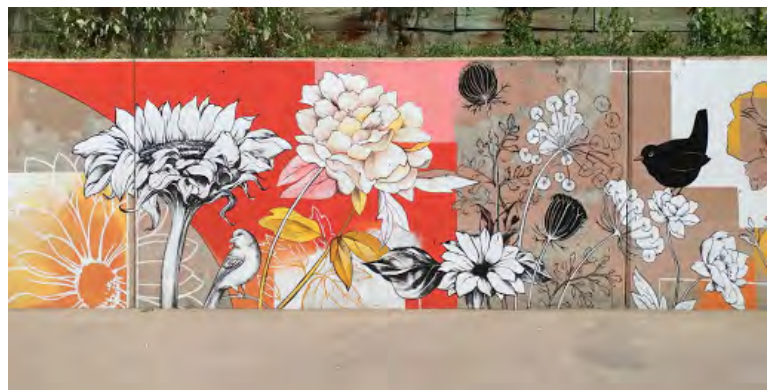
left: **Cherry Creek Trail map (1)**; right: **Bicyclists enjoying sections of the Cherry Creek trail (2)**

image sources: (1) <https://coloradobikemaps.com/2016/03/04/cherry-creek-trail-south/> (2) <https://greatruns.com/denver-cherry-creek/>

While there aren't concrete assessments about the trail's economic impact, the Cherry Creek trail has created a unique connection between the Cherry Creek Shopping District of Downtown Denver with nearby suburban and rural communities. Throughout the trail, there are also a wide variety of restaurants, cafes, breweries, museums, theaters, shopping centers, parks, and other attractions that are easily accessible for trail visitors.

sources:

<https://www.arapahoegov.com/Facilities/Facility/Details/Cherry-Creek-Regional-Trail-15>
<https://www.traillink.com/trail/cherry-creek-regional-trail/#trail-detail-about>
<https://www.uncovercolorado.com/hiking/cherry-creek-regional-trail/>
<https://www.denver.org/things-to-do/sports-recreation/bike-trails/#cherry>
<http://parkerrec.com/CivicAlerts.aspx?AID=1996&ARC=3104>
<https://www.thegreenwayfoundation.org/1980s.html>
<https://www.thedenverear.com/cherry-creek-trail-mapped/>



top left: **Untitled** by ELLE Street Art (1); top right: **Mastery** by Casey Kawaguchi (2) bottom left: **Paramount** by Alexandre Orion (2); bottom right: **Viva Colorado** by Yulia Avgustinovich (3) image sources: (1) <https://303magazine.com/2020/02/murals-denver-uaf-applications/> (2) <https://denverite.com/2020/08/14/heres-a-free-driving-tour-of-denvers-murals-curated-by-street-artist-koko-bayer/> (3) <http://yulia-art.com/project/floral-mural-cherry-creek-trail-denver/>

appendix 5: document review

Planning Information

- AERIALS | Aerial photography / Google Earth
- TOPOGRAPHY | Original LIDAR / 1-foot contour data / Digital Elevational Model
- STORMWATER | Storm Drains / Wash Inlets / Catch Basins / other Drainage Features / future improvements
- UTILITIES | Potable / Sanitary / Electrical / future improvements
- ROADWAYS | Curbs / Sidewalks / future improvements
- STRUCTURES | Building Footprints / Misc. Structures
- BOUNDARIES | Parcels / Ownership / Jurisdictional
- EASEMENTS | Right-Of-Way / Setbacks
- LAND USE | Current / Planned
- DEVELOPMENT | Planned / Proposed

Hydrology

- BOUNDARIES | Drainage Watershed / Jurisdictional
- HISTORIC FLOOD DATA
- HISTORY OF VERDUGO WASH | & related Regional Flood Mitigation Improvements
- RAINFALL DATA | Intensity / Duration / Frequency / Return Periods
- EXISTING HYDROLOGICAL WATERSHED MODEL
- GAGE DATA

Biology

- CLIMATE | Precipitation / Temperature / other Seasonal Patterns / Climate Change Scenarios
- LAND COVER DATA | green spaces/parks, woodland and other uncultivated land, agriculture
- EVALUATION | of site and regional ecological aspects including natural features, flora and fauna
- EXISTING RECORDS | relating to designated protection sites, important habitats and fauna/wildlife within or around the project site and connected waterways
- EXISTING POLICIES | relating to biodiversity, habitats and the natural environment and/or green infrastructure and associated guidance or requirements

Mobility

- ROADS | Existing & Proposed Network & Capacities / Studies / future improvements
- RAIL | Existing & Proposed Network & Capacities / BUS | Existing & Proposed Network / Regional (MTA, Metrolink) / Local (Beeline) / including Planned Bus Rapid Transit (BRT)
- BIKE / PEDESTRIAN | Existing & Proposed Networks / Bicycle/Pedestrian Counts / Conflict Data
- INTERSECTIONS / Major Intersection Improvements
- TRAFFIC | Flows / Safety Data / Traffic Light Plan & Timings
- PARKING | Policies / Standards / Guidelines / Assignments, Subsidies, Ratios / Inventory / Studies
- LOGISTICS | Centers / Truck Routes
- TMD programs / City-initiated Restricted Access Zones

Sustainability / Health

- EQUITY | Current & Targeted / Demographics / Socio-Economics / Access
- POLLUTION / Contamination / Air Quality / Water Quality
- SUSTAINABILITY POLICIES | Current & Targeted / Recycling / Hazardous Waste / Energy & Water Use Reduction, Food / Public Health
- AGENCY ACCREDITATION | Current & Targeted / LEED, Envision or other agency

Economic / Community Development

Not yet studied

Plans Reviewed

- Glendale Citywide Pedestrian Plan (2021)
- LA River Master Plan (2021)
- Upper Los Angeles River and Tributaries Revitalization Plan (2020)
- OurCounty Los Angeles Countywide Sustainability Plan (2019)
- Greener Glendale (2019)
- Profile of the City of Glendale (SCAG, 2019)
- Glendale Downtown Specific Plan (updated 2019)
- The Green Visions Plan for 21st Century Southern California; Chapter 22. Hydrology and Water Quality Modeling of the Los Angeles River Watershed (2019)
- Los Angeles County Comprehensive Floodplain Management Plan (2016)
- Reader's Guide for the LA River Ecosystem Restoration Project (2016)
- USACE Los Angeles River Ecosystem Restoration Feasibility Study (2013)
- The Greater Los Angeles County Open Space for Habitat and Recreation Plan (updated 2012)
- Los Angeles River State of the Watershed Report (2012)
- North Glendale Community Plan (adopted 2011)
- Glendale Urban Art Program Guidelines (adopted 2010)
- Glendale Safe & Healthy Street Plan (2008)
- Glendale Downtown Mobility Study (2006)
- Glendale Safety Element of the General Plan (2003)
- South Glendale Community Plan
- Glendale Registry of Historic Assets (online)
- Glendale Municipal Code, Ch 30.22-32 re: "Parking" (online)

Verdugo WASH

visioning pre-design report



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