Reforming the Los Angeles River through Greenspace

Final Project Report

Client: Los Angeles Waterkeeper

Advisor: Emma Barnosky

Team Members:

Lauren Stack

Eve Gross-Sable

Joshua Matsuda

Skye Sun

Jarod Minasian

Jacky Aflaki

Table of Contents

1. Introduction

The City of Los Angeles as we know it today is a densely populated "concrete jungle," largely devoid of greenspace and natural elements. The Los Angeles River (LA River) and the communities adjacent to it are also highly developed, and lacking in natural elements. Among these LA watershed communities, there currently exists major disparities in community access to greenspace and parks, particularly pronounced in many lower-income neighborhoods and communities of color. Generally, communities along the southern portion of the LA River watershed such as Compton, South Gate, Long Beach, and Maywood have less access to greenspace when compared to those within the northern LA River watershed.

To address this problem of inequitable access to parks and urban greenspace, LA County and the LA County Department of Public Works are now targeting various sections along the LA River for the creation of additional greenspace. These ambitions are outlined in a public document titled the "LA River Master Plan," which envisions a future LA River that has been largely replanned for the benefit of both natural ecosystems and the human communities in the LA region. Within this document, LA County has controversially proposed the addition of a series of "platform parks" at specific locations across the LA River channel, which would consist of massive concrete infrastructure being constructed over portions of the river and the addition of parks on top. At first glance, these platform parks appear to address many of the major greenspace inequities along the LA River by providing some communities that are currently park-poor with easy public access to parks. However, such development would be prohibitively expensive and would not serve as a long term solution to the river's restoration, as the additional concrete infrastructure would lock in the river channel, preventing future naturalization of the watershed.

Our client, LA Waterkeeper, has worked with multiple UCLA IoES practicum teams in recent years to advocate for their proposal of constructing a network of neighborhood pocket parks in lieu of the County's proposed platform parks. These small neighborhood greenspaces would be much less costly and have the potential to benefit a larger number of communities along the LA River watershed, and they would address the same equity concerns and perceived greenspace benefits as those provided by the platform parks. In pursuing this concept, our team sought to examine the suitability of a number of vacant lots in some of these park-starved communities where pocket parks could potentially be developed. Through GIS spatial analysis and background investigations of various sites, our team selected three vacant lots located in the communities of South Gate and Compton that seemed most viable for park development. We also conducted community outreach within these communities via a survey in order to better understand public perceptions of current park need, desired park amenities, and potential benefits they would desire from parks within their community.

2. Motivation

In 2022, Los Angeles County published an updated version of the LA River Master Plan, which expanded upon the original document that was released 26 years prior in 1996. In the 2022 LA River Master Plan, the County lays out how they hope to address the myriad of social and environmental issues that are associated with the highly-industrialized and channelized LA River, its expansive 834-square-mile watershed, and the surrounding communities ("LA River Master Plan", 2022). Despite the LA River Master Plan appearing comprehensive and well-researched, its approval has proven to be extremely controversial among environmental advocates because of the plan's vision of and support for platform parks.

These proposed platform parks are greenspaces that would be located on structural decks built over the course of the LA River channel (LA River Master Plan, 2022). Platform parks would be constructed on massive concrete planks and girders that would be grounded in and above the existing river channel walls (Sahagun, 2022). The construction of such platform parks would essentially lock in the LA River's channelized state for the foreseeable future and remove the possibility of ecological restoration efforts. Further, the proposed platform parks are exceedingly expensive to construct and develop when compared to examples of community parks and other natural local greenspaces. In fact, estimates state that upwards of 850 pocket parks could be developed with the same budget as the two proposed platform parks featured in the LA River Master Plan (Bergtraun et al., 2022). Pocket parks offer a valuable and cost-effective opportunity to integrate local sources of greenspace directly into many different communities in the Los Angeles region. Thus, a series of pocket parks can potentially address access issues in a more equitable and efficient manner as compared to the one or two platform parks.

This controversy around the LA River Master Plan and its proposed platform parks has resulted in LA Waterkeeper and the Center for Biological Diversity filing litigation in the LA Superior Court (Sahagun, 2022). LA Waterkeeper and the Center for Biological Diversity contest that the 2022 LA River Master Plan fails to treat the LA River as both a natural and living river, and consequently properly assess potential nature-based solutions in its remediation (LA Waterkeeper, 2022). Additional influential environmental groups, including Friends of the Los Angeles River, East Yard Communities for Environmental Justice, Heal the Bay, The Nature Conservancy, and Sacred Places Institute for Indigenous Peoples have all denounced the LA River Master Plan and spoken in favor of naturalizing and de-channelizing the LA River and its tributaries (Sahagun, 2022). Ultimately, the LA Waterkeeper and Center for Biological Diversity lawsuit aims to invalidate the 2022 LA River Master Plan and to bar Los Angeles County from developing any new river projects under the LA River Master Plan until the County conducts a thorough review of "all foreseeable significant impacts to the environment that the master plan will authorize" (Sahagun, 2022). This situation provides an opportunity for further investigation into alternatives to the LA River Master Plan's platform parks that simultaneously restore the ecological and hydrological integrity of the LA River watershed and facilitate equitable access to greenspace and community amenities in traditionally park-poor neighborhoods around LA.

Inspired by this opportunity to investigate alternatives, our team and LA Waterkeeper aimed to analyze how a series of local pocket parks can provide the same, or more, benefits to the LA River and its surrounding human and natural communities as the proposed platform parks and in a less invasive manner. Primarily the LA River Master Plan touts the platform parks as a way to bring parks and open space to traditionally park-poor, densely-populated areas while respecting regional flood risk management associated with the channelized river (LA River Master Plan, 2022). Further, they claim these platform parks will improve environmental conditions and connections to nature-based benefits like water resources (LA River Master Plan, 2022). Additional benefits listed include improved water quality and increased cultural connectivity (LA River Master Plan, 2022).

3. Objectives

Given the context of the LA River Master Plan and the goals of LA Waterkeeper, our research team developed three primary research questions that we aimed to address through our investigation. They are the following:

a. Which communities along the LA River watershed are the most prone to flooding? What areas would be most helpful to focus on from a stormwater retention perspective, and what potential is there to utilize stormwater management and treatment mechanisms at these sites?
b. How do green spaces within park-poor communities help to build and sustain ecosystem and community resilience?
c. Which of the proposed areas are the most park-poor, and how can greenspaces address the needs and perceived wants of these communities? What benefits can these greenspaces provide neighborhoods and their residents?

These questions worked as a guiding framework to ensure we addressed the overarching goals of the project, which included exploring whether a series of pocket parks can provide comparable community benefits as the proposed platform parks. By taking the holistic approach to the issue dictated by our research questions, we placed the ecological/hydrological character of the LA River in the context of the diverse communities that inhabit the region. This perspective allowed us to draw conclusions regarding the potential benefits of pocket parks on both an individual neighborhood-level and to the watershed as a whole. The perspective our research team took aims to provide LA Waterkeeper with a holistic path to identifying potential park sites and community integration in their design.

Our report aims to provide our client with the following:

- Comprehensive overview of the methodology used to select and prioritize sites based on both ecological/hydrological and community-based factors

- From our analysis, a list of the three viable park sites, as well as an explanation on the limitations that the other identified sites face that may impact their practicality as parks
- A survey and associated results on how communities view and prioritize park space and its associated amenities
- Final recommendations of which park features may be the most beneficial and desirable in communities that are traditionally park-poor

Given that nonprofit organizations have taken a large role in the various stages of park development and maintenance in the Los Angeles region, we hope these findings will inform LA Waterkeeper and other groups on the considerations of park development from a community-focused perspective in conjunction with ecological integrity and restoration (Rigolon, 2017). Beyond the methodological benefits, we hope this report can provide a backbone for streamlining potential park site development at these identified sites within the LA River watershed.

4. Scope Limitations and Equity Considerations

4.1. Scope Limitations

During the 2021-2022 academic year, a team of students from the UCLA IoES completed a complementary practicum project that identified seventeen sites for potential park development in the LA River region. While we acknowledge that there may be additional sites that are viable for park development along the LA River, we focused our analysis on the sites that had already been identified by the preceding practicum team. These sites can be found in Appendix A. In their report, the previous practicum team noted limitations in their site list, including a lack of community consultation and non-exhaustive site selection criteria (Bergtraun et al., 2022). While we attempted to address some of these concerns, particularly those relating to community input, we recognize that some of the underlying limitations may have played a role in our resulting conclusions.

4.2. Equity Considerations

Beyond just our methodological scope, our research team recognizes the limitations and potential equity concerns that arise with park development, primarily those involving green gentrification. Green gentrification is known to be the “increased property values, housing prices, and physical displacement of working-class residents and racialized groups and culture” that results from introducing greenspace into degraded urban spaces (Anguelovski et al., 2022). Such displacement not only impacts individuals by forcing out renters, but gentrifying displacement also poses a housing, economic, and health issue that impacts the social and cultural capital of an area (Zuk et al., 2018; CDC, 2017). In fact, there has been a noticeable increase in the percent, number, and density of non-minorities in areas of the LA River with

existing river revitalization projects, while the countywide presence of non-minorities has decreased (Garcia & Mok, 2017). For example, in Tropico, an area of northeast LA where there are active park developments and revitalization projects, the density of People of Color has decreased 19%, while the density of non-Hispanic whites has increased 168%. Income of the typical resident has also increased 18% (Garcia & Mok, 2017).

One of the main concerns raised about the LA River Master Plan and its platform parks is its potential to accelerate green gentrification and the associated displacement around the LA River-adjacent areas. While current literature acknowledges that the effects of gentrification cannot be prevented altogether, they do recognize that these negative impacts can be minimized by the cooperation of multiple stakeholders and creation of favorable policy programs (Castagnola, 2015). Thus, while we acknowledge we cannot eliminate the impacts of gentrification altogether, pocket parks and their emphasis on community participation may help to address these concerns. Overall, the benefits of greenspaces must be examined in conjunction with long-term community impacts and goals.

5. Methods

5.1. Introduction

The 2021-2022 practicum team identified 17 sites in park-poor LA neighborhoods that could be viable for park development. These sites included primarily vacant lots and empty spaces on school campuses in communities adjacent or near to the LA River or one of its tributaries. As previously mentioned, the list of potential park sites identified by the 2021-2022 team can be found in Appendix A. These identified sites provided our team with a valuable platform to further examine the park needs of communities in the LA River watershed in the context of the 2022 LA River Master Plan.

Before we embarked on narrowing down the sites, we worked to orient our team with the various elements of multibenefit park development. We began our project with a literature examination that analyzed the physical/social geography of the region, the LA River Master Plan, benefits of parkspace in communities, stormwater management potential, site viability and selection criteria, and the importance of community input in park planning.

Building on our initial research, we were then able to devise a feasible two-phase approach that would enable us to incorporate both quantitative and qualitative data into our park site selection and community survey design. The overwhelming evidence of the importance of community participation affirmed that it must be an element of our methodology, however it was clear that due to the time-intensive nature of developing and engaging in high-quality community outreach, we would not be able to implement it for all 17 sites. As such, we determined that the sites would initially be filtered based on how strongly they adhered to characteristics that would maximize their contribution to community health and wellbeing, ecological restoration, and flood control. Following this stage, we would develop and conduct community surveys for the few remaining sites in order to guide future decisions about park planning and development.

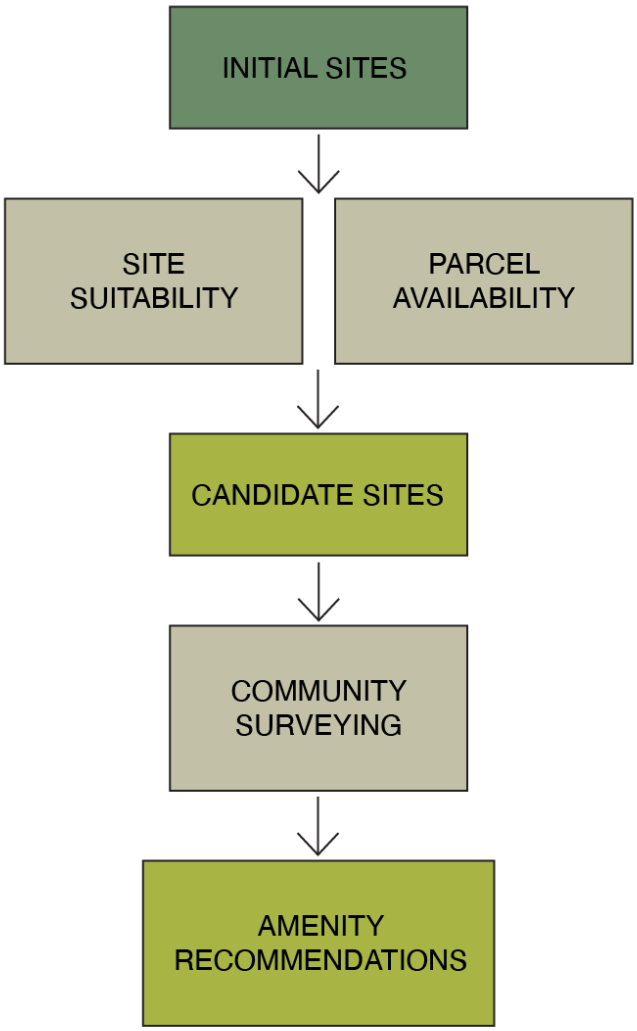


Figure 1. Simplified workflow diagram outlining the major steps in our process, from examining the initial list of 17 sites to making our final recommendations to LA Waterkeeper.

5.2. Phase I: Site Suitability

Given that only 6% of the greater LA region is considered undeveloped, our team recognized that it is essential to be conscious about the site selection process and how the site itself can dictate the resulting purpose and use of the greenspace (Ferrer et al., 2020). From this understanding, we began the process of narrowing down the original list of seventeen sites. We also consulted with Ms. Erin Coutts, Executive Director of the LA Regional Collaborative for Climate Action and Sustainability at UCLA, for guidance on which geospatial data and other data we should consider in our process. At the client's recommendation, we removed all sites that were located at schools from the candidate pool. The client cited that they often face more difficulty establishing multi-benefit parks on those properties, in addition to the fact that they have another task force dedicated to greening schools. This left us with 12 sites to analyze.

A. Availability

To ensure that our study was worthwhile, it was necessary to confirm that the candidate sites were actually available for park development. Therefore, each potential site was assessed for existing plans or pre-identified development inhibitions, including previous uses.
Site status was determined using a combination of proprietary Real Estate data repositories (Fidelity National Title Company and First American Financial Corporation) showing the chain of title while also, personally reaching out to municipal planning departments, as not all of the information online had been recently updated. These departments were contacted via phone and via email.

B. Site Suitability and Benefit Potential

Existing, accessible data from the LA City and LA County geohubs and the USGS were used to determine if any of the sites were geophysically or hydrologically incompatible with green stormwater infrastructure (GSI), in addition to their susceptibility to flooding, prevalence of vegetation and parks, and ease of access. Additionally, the sites were evaluated against the Los Angeles River Master Plan's indices for park need, water need, and flood risk reduction need, which use a weighting and aggregation scheme to create standardized rankings based on a combination of relevant attributes, some of which were also measured in our own analysis.

Table 1. Screening criteria for site suitability

Attribute	Points of interest
Hydrology	Sites that are on or near LA River tributaries would have increased potential for revitalizing the river's natural ecosystem. They can also provide more convenient and safer drainage of excess water.
Landslide zones	Potential hazard, especially when combined with GSI
Liquefaction zones	Liquefaction zones describe areas where saturated soils can become liquified during earthquakes or other seismic disruptions. This risk makes them inhospitable to development of buildings or transit infrastructure, and, as such, they are typically more suited to park development than the latter.
Slope	Valuable information for feasibility of GSI such as permeable pavement (slope is generally recommended to be less than 20 degrees, so long as there is an underdrain)
Depth to groundwater	Depth to groundwater should be 10 feet or more, as regulations for many types of GSI typically specify this. Less than 10 ft would limit potential for GSI and, if it were implemented, could pose a flood risk.

Aquifers	Unconfined aquifers are suited to recharge through the GSI strategies commonly implemented in parks, while confined aquifers are confined by impermeable material and require injection wells to be actively recharged
Significant ecological areas	Placing a park in a significant ecological area could help preserve habitats and connectivity
Proximity to transit (bus stops)	Nearby transit stops can increase park accessibility and usage

Rather than conducting a rigid site suitability analysis using weighting and aggregation, we chose to analyze the data holistically, as the sites' existing conditions had already been refined by the previous practicum group. This decision was made in an effort to avoid losing any of the data in an oversimplified aggregate score, which, while helpful and far more efficient when dealing with large sample sizes, was not necessary given that there were only 17 sites to begin with.

Simultaneously, we conducted research on each municipality's prioritization of green space to gain a general sense of how each city may function as a key stakeholder in park development. This included reviewing planning documents, recent legislation, and publicly available information on the stances and actions of local officials. From this analysis, it was clear that each municipality had a set of overarching goals that informed their policies and actions.

- Compton: As stated in Compton's 2030 Comprehensive General Plan Update, some key goals that the City of Compton is pursuing by 2030 include creating an interconnected trail network, which would create a sense of equity by connecting people to natural spaces and using undeveloped or vacant land to develop parks ("City of Compton…", 2014).
- Paramount: The City of Paramount had both an environmental justice report and a Climate Action Plan (CAP). In the CAP, Paramount outlined that parks are part of an equity plan that would give access to all residents, and Strategy LU1a lays out a plan to establish a policy that would increase access to public parks ("City of Paramount…", 2021). Additionally, the CAP mentions the idea of having parks be connected to a recycled water system.
- Long Beach: The City of Long Beach created their own strategic plan which serves as a framework that they could use in the coming years to decide how they will utilize their resources to make changes to their existing parks. Their strategic plan was also heavily based around equity and community engagement ("Parks Make Long Beach…", nd).
- South Gate: South Gate's policies showed similarities to the Long Beach goals in that they envisioned increasing equity, establishing more parks in areas deprived

of green space, and even making potential renovations to existing parks. The South Gate Parks and Recreation Master Plan of 2008 mentioned that the parks in their city were in need of renovations, as their amenities did not meet the needs of residents ("City of South Gate…", 2008).

- Vernon: Vernon lacked any documents mentioning park projects, their benefits, or their equity considerations. There was one feasibility study about establishing a bridge over the LA River published.
- Bell Gardens: Bell Gardens did not have any documents that mentioned parks or plans. The city has plans to develop an aquatic center but there were no mentions of any proposed greenspaces or policies surrounding them.

From the analysis of various documents and research into plans of greenspaces, Compton, South Gate, Paramount, and Long Beach, appeared to have established policies that demonstrate an awareness of their lack of equitable greenspace and a commitment to addressing it. Every city had some sense of action plans or best vision. While we did not use this examination alone to eliminate any sites, it served as a reference point to the relative commitment of various cities to address the issue.

Following the elimination of 9 more sites, which were removed for reasons outlined in Appendix C-Table 2, we visited the remaining 3 (Compton 1, Compton 2, and South Gate 2) to validate our assumptions on the ground and further assess their physical qualities. These visits were also conducted to contextualize the sites within their surrounding communities and the types of development immediately adjacent to them.

5.3. Phase II: Community Surveying

Following Phase I, in which our potential sites were parsed down to three select sites located in the communities of South Gate and Compton, our next goal was to incorporate the voice and desires of the communities in which these sites are located. In this way, each community's perceived needs and desires are made the primary forces guiding preliminary park planning on these sites. To accomplish this, Phase II of our project involved community outreach, specifically in the form of a survey distributed in both Compton and South Gate, which assessed how a multibenefit park could best serve these communities.

A. Survey Design

This survey consisted of questions designed to:

1. Get a sense of people's current perception of park need within their community
2. Identify people's incentives for visiting public parks within their community
3. Identify specific park features, amenities, programs, and services that people would like to see in a new park
4. Determine desirability of parks within their community

We took inspiration for our survey design from looking at a number of other parks surveys that have been administered by universities, state agencies, and nonprofits. The California State Parks' "California's Health in Parks Survey" was used as a particularly helpful model to develop our structure and basic content.

B. Consultation and Collaboration

Throughout the process of developing our community survey, we consulted with LA Waterkeeper staff and UCLA academic faculty Dr. Bemmy Maharramli, Associate Director of Strategic Initiatives for UCLA's Center for Community Learning, and Ms. Erin Coutts, Executive Director of the LA Regional Collaborative for Climate Action and Sustainability at UCLA. Both Maharramli and Coutts have extensive experience in communicating with the public and various communities within the LA area. We began our drafting process after an initial meeting with Maharammli and Coutts that oriented our team on the proper procedures of survey drafting.

After an initial draft was completed, we met with LA Waterkeeper staff, including Bailey Duarte and Ben Harris, to present our preliminary survey draft and discuss how to ensure the survey addressed LA Waterkeeper's overarching goals for the project and their organization. During this meeting, the LA Waterkeeper staff also provided a number of contacts for our team to connect with to assist in the distribution of the survey in South Gate and Compton.
After making the associated revisions to align with LA Waterkeeper's scope and objectives, we met with Maharramli and Coutts a second time to review the draft, where they provided feedback and guidance on improvements that could be made. With LA Waterkeeper, Maharramli, and Coutts's help, our team was able to shorten and simplify our survey for the public's ease, and reword certain questions to make them more inclusive, accessible, and unbiased. The survey that was administered to the public can be found in Appendix E.

C. Outreach

Following completion of our community survey, our team conducted research on community organizations centered in Compton and South Gate that could give us an opportunity to connect with community members and get their input. We primarily utilized email as our main form of communication, and we specifically inquired about events that we could potentially participate in that would allow us to administer our survey. The organizations we contacted include Alma Backyard Farms, The Compton Initiative, the City of South Gate, the City of Compton, Communities for a Better Environment, Rotary Club of Compton, and LA Neighborhood Land Trust. We received responses from Communities for a Better Environment, the City of South Gate, and Alma Backyard Farms. While it was determined that we could not collaborate with the City of South Gate this year through correspondence with South Gate public works management analyst Isaac Bravo, it was noted that we could potentially participate in City events next year. We also successfully connected with the Communities for a Better Environment to have a member of their staff, Youth Program Coordinator Dilia Ortega,

administer our survey with a group of students in South Gate. Upon contacting Alma Backyard Farms, our team coordinated with Operations Director and Co-Founder Erika Cuellar to table at one of their bi-monthly community farm stands, located in Compton.

D. Community Survey Distribution

On Sunday April 30th, 2023, our team visited Alma Backyard Farm's bi-monthly community farm stand in Compton. We brought a table and UCLA display banner, as well as a box of small succulent plants to distribute as incentive/reward for people to take our survey. In addition, we prepared 50+ paper copies of both Spanish and English translations of our community survey, along with a paper with QR codes and links to electronic versions of both translations. In this way, people had the option of either filling out a hardcopy version of the survey, or an online Google Forms version of the same survey. During this outreach event, we greeted people as they walked into the community garden and allowed them to approach our table as they deemed fit. We also approached and engaged with individuals as they waited in line to order brunch food that was being sold at the site.

In addition, our team collaborated with Dilia Ortega, Youth Program Coordinator at the non-profit organization Communities for a Better Environment, to distribute digital copies of our survey to a group of high school students she was working with in South Gate.

One member of our team also conducted survey distribution in the neighborhood adjacent to the South Gate park site. She got responses from people visiting St. Helen Catholic Church (8912 S Gate Ave, 90280), in the Starbucks two blocks away from the church (8924 Long Beach Blvd, 90280), and walking their dog in State Street Park (South Gate, 90280).

Lastly, another member of our team sent out our survey to a group at neighboring Gardena Valley Baptist Church, located in the City of Gardena.

5.4. Legitimization through Literature

We aimed to supplement the results of our survey and GIS analysis with an academic literature review to explore how our findings compared to related research on ecological benefits, park needs, and community engagement. Given our concerns of potential bias in our sampling methods, we saw examining peer-reviewed literature as a way to compare our results and potentially affirm our conclusions. Thus, after we completed our GIS and survey data analysis, our team examined a number of academic articles to compare our findings. Given the goals of our project and the survey, we placed a particular emphasis on comparing patterns in park amenity needs and visitation demographics present in our data with published research. We paired our GIS analysis of the local hydrological conditions with associated academic literature on stormwater benefits of parks to inform our associated recommendations.

6. Results

6.1. Phase I: Site Suitability Results

Table 2. Geospatial Analysis Results

Site Name	Flood Risk Reduction Need	Park Need	Water Supply Need	Average Slope	Bus stops within 500 ft.
Bell Gardens	1.67	2.99	3.18	1.46	0
Compton 1	1.67	2.94	3.18	0.7	1
Compton 2	0	4.44	3.18	3.7	3
Long Beach 1	0	2.59	3.18	4.77	0
Long Beach 2	0	2.59	3.18	3.26	0
Long Beach 3	0	2.59	3.18	3.87	0
Paramount 1	1.67	3.9	3.18	0.37	1
Paramount 2	1.69	2.95	3.18	0.58	0
South Gate 1	1.67	2.97	3.64	2.13	0
South Gate 2	0	4.46	3.64	0.62	2
Vernon 1	0	2.97	3.18	4.16	0
Vernon 2	0	2.97	3.18	0.39	2

A. Geospatial Analysis

Table 2 illustrates how the sites ranked when assessed for the quantitative attributes listed in Table 1, in addition to the LA River Master Plan indices. Maps can be found in Appendix B. In general, there were no explicitly unsuitable sites defined by these criteria. Notably, over half of the sites (including all Long Beach and Vernon sites) ranked near zero on the flood risk reduction need index, however because this index is relative, it did not indicate that these areas could not benefit from flood risk reduction. As the Long Beach and Vernon sites also ranked on the relatively lower end for park need, and the Vernon sites were the only ones not located in a liquefaction zone, this analysis indicated that those five sites were lower priority candidates out of the list for park development.

This data did not indicate that any sites were overtly unsuitable for GSI implementation, but did signal that additional investigation would be necessary to gain a complete understanding of their capacity for runoff diversion and groundwater recharge. They are all located over the Central Basin and West Coast Basin aquifers, which are comprised of subbasins and local aquifers that are mostly confined. As is evident from Map 8, the Vernon sites were the only sites

located in areas that LARMP identified as unconfined aquifers. Only unconfined aquifers can be recharged through GSI, and it is therefore unlikely that the remainder of sites would have the capacity to store large volumes of water in the ground unless connected to a groundwater injection well or barrier project (Los Angeles County Department of Public Works, 2023). Furthermore, because they are located in liquefaction zones, the southern watershed sites possess qualities more suited to safely operating lower volume, ecologically oriented GSI, as opposed to high-volume storage and recharge-focused GSI. We were not able to acquire recent, specific depth to groundwater data, as this would need to be measured at the individual sites.

B. Municipal Research: *Site APNs and Land Use*

Each site in our study is associated with an Assessor Parcel Number (APN), a legally recognized identifier for the parcel. While the street address is specifically utilized for police and emergency purposes, we relied on GPS coordinates or APNs to identify the vacant lots we examined. The information we obtained from Fidelity Title Company's proprietary Real Estate data repositories, including the Chain of Title, provided a comprehensive history and length of ownership for each parcel. This enabled us to accurately pinpoint the parcels under investigation. Our findings revealed a mix of privately owned and corporate-owned parcels, which provided a quintessential tool in narrowing down the potential sites when liaising with the municipal planning departments. Given that all the cities in question are part of Los Angeles County, the planning departments fell under the jurisdiction of each city. Furthermore, the specific zoning designation of each lot played a crucial role as it determined whether the construction of a park was even feasible. For instance, lots situated in industrial or commercial zones were deemed unsuitable for the creation of community green spaces. To ensure a thorough evaluation, we reached out to the Planning Divisions of Bell Gardens, Compton, Long Beach, Paramount, South Gate, and Vernon, and engaged in discussions regarding each proposed parcel and its viability as a potential park site. In Appendix C, Table 1, you will find detailed notes for each lot, along with the reasons leading to their elimination from our prospective park plans.

C. Site Elimination

To ensure a meticulous process of elimination for potential park sites, we created the Site Elimination Results Table (Appendix C, Table 2), which encapsulates the succinct yet salient reasoning behind each decision. The Bell Gardens Vacant Lot was excluded from consideration due to the implementation of an affordable housing plan that superseded the park proposal. In Long Beach, three vacant lots were eliminated based on their industrial zoning and close proximity to existing parks, making them less suitable for park development. Furthermore, Paramount Vacant Lot 1 was removed from consideration due to its adjacency to already existing parks and the potential utilization of solar energy by its current ownership. Paramount Vacant Lot 2 faced elimination owing to its proximity to utilities and a suggestion put forth by the planning department. South Gate Vacant Lot 1, on the other hand, was eliminated as it is currently undergoing a transformation into an urban orchard, which is not aligned with the park

development objectives. Lastly, both Vernon Vacant Lots were excluded Lotfrom contention. Vernon Vacant Lot 1 is slated to be developed into a concrete warehouse, while Vernon Vacant Lot 2 sits adjacent to companies dealing with hazardous materials. Moreover, park development in Vernon poses additional challenges due to its status as an industrial city.

D. On-Ground Site Observations

To get a gauge of the current state of the sites and an understanding of their surroundings, our team conducted site visits at the three potential sites on April 11, 2023. The photos from the site visits can be seen in Appendix D.

- Compton Lot 1: Compton Lot 1 was enclosed by fences that were difficult to see through, which was consistent with Google Earth imagery that we had previously examined. The site was populated with storage containers and trucks and appeared to be in active use as a parking site for school buses. On two sides, it faced the residential blocks of Tamarind Ave and Indigo S, while the other side of the lot faced the highly-trafficked Alameda St. On the day of the site visit, the site also featured a sign advertising joint occupancy opportunities through a local commercial real estate service.

- Compton Lot 2: Compton Lot 2 was an open, unused space nestled between the channelized LA River tributary known as Compton Creek, Compton Blvd with retail stores and churches, and a residential community. Along this tributary there was a local bike path that appeared unmaintained with overgrown foliage and large cracks in the concrete. The path was also littered with trash where it bordered the site. Urban wildlife, such as Canadian geese, were seen in the channelized Compton Creek. The site itself had a broken chain link fence around its border.

- South Gate Lot 2: South Gate Lot 2 was located on a heavily-trafficked section of Firestone Blvd, near to the major intersection of Firestone and Long Beach Blvd. The site extended back from the main street and into an adjacent residential community between Garden View Ave and Gate Ave. It was paved entirely in asphalt and marked with a for-sale sign. A number of utility lines ran through the site with their associated utility poles. Another park was located one block away from this site.

6.2. Phase II: Survey results

As previously described, our team created a community survey to gauge public opinion of existing community parks and desire for additional elements in a potential new park. This survey was made available in both English and Spanish, and respondents were given the option of either taking the survey digitally or on paper.

Our team received a total of 59 responses to this community survey. While tabling at Alma Backyard Farms, which ran from 8AM to 1PM, we collected a total of 29 English responses and 3 Spanish responses. Upon sending a digital copy of our survey to the non-profit organization Communities for a Better Environment, we received an additional 13 responses. In addition, we received an additional three responses at St. Helen Catholic Church in South Gate, one response at a Starbucks close to this church, two responses from State Street Park, also in South Gate, and eight responses from a church group at Gardena Valley Baptist Church in neighboring Gardena.

A. Survey Results

See Appendix F for the raw results for some selected questions which were deemed most important to our analysis.

When asked whether or not their community has a sufficient amount of parks, 61% of respondents disagreed with this statement, with 23.7% agreeing and 15.3% not sure (see Appendix, Fig. F1). Along the same vein, then asked whether or not their community would benefit from the addition of more parks, 93.2% of respondents agreed, with only 3.4% of respondents disagreeing and not sure, respectively (Fig. F2). Frequency of park visitation was fairly variable, with around a quarter of respondents selecting "A few times each week," "Weekly," "Monthly," and "Rarely/Never," respectively (Fig. F3).

When asked about motives for visiting public parks in their neighborhood, we allowed respondents to select multiple options that they deemed applicable. The top choice was "Exercise" (69.0%) followed by "Be with family or friends" (60.3%), "Relax and relieve stress" (56.9%), "Have fun or play" (55.2% of respondents), "To experience nature" (51.7%), "Walk pets" (44.8%), "Cultural/social events" (39.7%), and "Social services" (13.8%) (Fig. F4). When asking about features/amenities that would be most important to the target park visitors, the most popular feature was a community garden (82.8% of respondents), followed by biking/walking trails (74.1%), playground (60.3%), wetlands/natural habitat (50.0%), community center (46.6%), dog park (44.8%), athletic field (43.1%), basketball court (31.0%), and tennis court (29.3%) (Fig. F5). Additionally, some of the respondents advocated for a flower garden, yoga area, restrooms, washing station, and playground for kids at all ages. Regarding specific activities and engagement programs that would give respondents more incentive to visit a new park, we got 45 (77.6%) responses for Cultural/community-oriented festivals, 39 (67.2%) for Concerts/Live entertainment, 32 (55.2%) for Child care/recreation teams, and 23 for sports events (39.7%) (Fig. F6). Lastly, when asked whether or not nature and ecological systems should be prioritized in a public park, an overwhelming majority (96.6%) of respondents agreed with this statement (Fig. F7).

B. Analysis of Survey Response Data

As stated above, our community survey served a few major purposes, which included getting a sense of people's current perception of park need within their community, identifying

people's motives for visiting public parks within their community (as well as some potential benefits parks could provide), and identifying specific park features, amenities, programs, and services that people would like to see in a new park. After compiling the data from this survey, our team conducted some analysis of the data in order to identify meaningful trends, as well as address the goals above.

I. Walking trails and use of parks for exercise

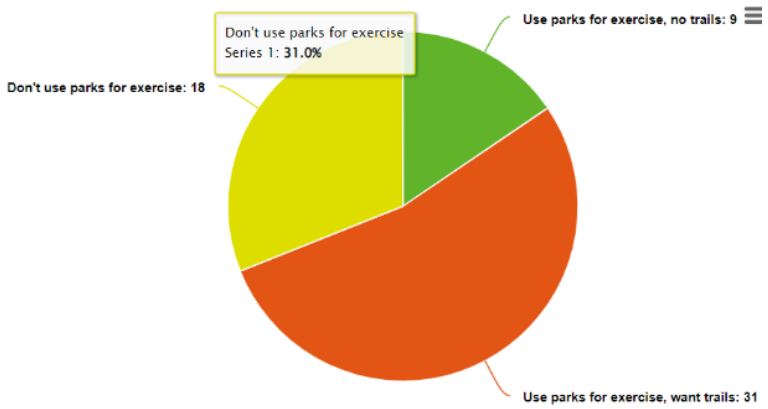


Fig. 2: Of the 40/58 respondents that claimed to use parks for exercise, 31 of them wanted trails while 9 respondents did not want trails.

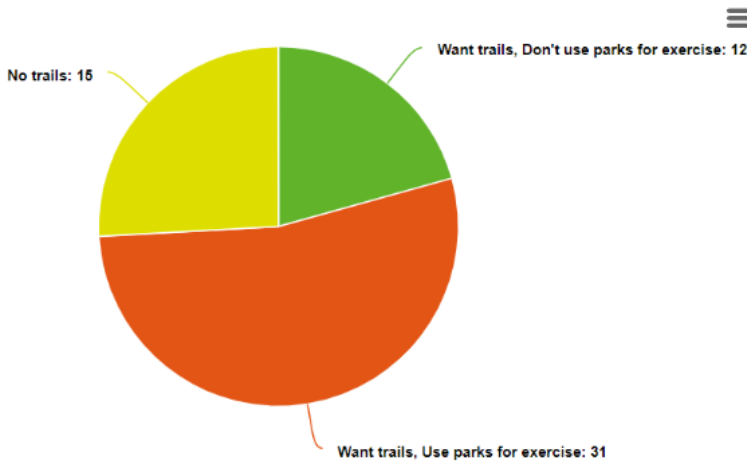


Fig. 3: Of the 43/58 respondents who wanted trails, 31 of them also claimed to use parks for exercise while 12 claimed not to use parks for exercise.

One takeaway from the data was that among the possible park facilities that were listed as options on our survey, among the most popular was walking and biking trails. 43 of the 58 respondents that responded to this question indicated that the addition of multi-purpose trails within a new park in their community would be important to them (Fig. 3). In addition, this high support for trails was seemingly correlated with a high proportion of respondents who currently use parks for the purpose of exercising (40/58 respondents) (Fig. 2). This is important, as it indicates that the addition of walking and biking trails are likely to go hand in hand with more

exercise at parks, which has been identified as a major public health benefit of neighborhood pocket parks. Of the 43 respondents who thought that trails were important to include, 72% of them also stated that they typically use parks for exercise, among other things (Fig. 3). In the same vein, of the 40 respondents who reported to use parks for exercise, 77% of them also indicated that they think walking/biking trails are important (Fig. 2).

This finding of walking and biking trails being among the most popular park features is also consistent with what has been observed in previous studies. For instance, one study looking at the public health benefits of parks had found that parks with more exercise-related facilities, including trails/paths, playgrounds, and sports facilities were more likely to attract users for active purposes (Kaczynski et al., 2008). Among these features, having a paved or unpaved path for walking, running, or cycling was the best determinant of park use for active activities (Kaczynski et al., 2008). This link between the presence of trails and use of parks for exercise-related activities was also supported with the findings of Cohen et al., which found that the presence of a walking loop or trail system led to the largest increase in park active use among all park facilities (2016).

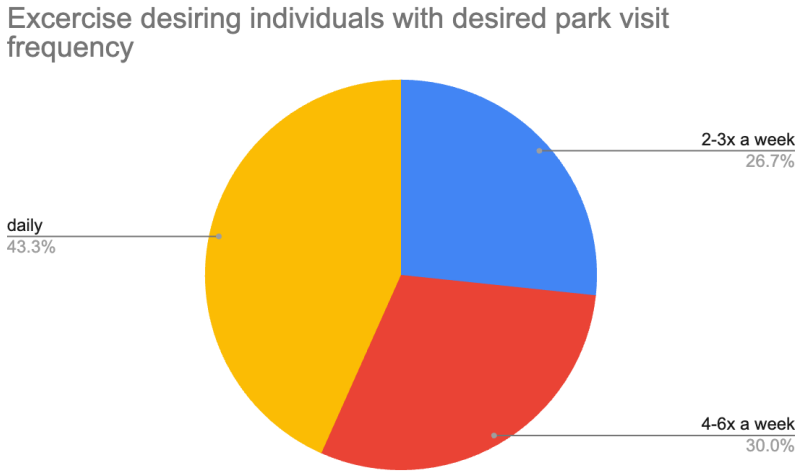


Fig. 4: Among respondents who claimed to use parks for exercise, 43.3% stated that they would visit parks daily, 30% for 4-6 times per week, and 26.7% for 2-3 times per week.

In addition to looking specifically at the potential benefit of exercise in neighborhood parks, our team also looked at how individuals would desire visiting a potential park in their community, as well as what their general perceptions about health and wellness within their community would be like. A significant number of respondents selected exercising as one activity that they would desire in a potential park. Nearly all of the respondents who visit parks for exercise also selected in the survey that they would ideally like to visit a park daily to 4 times a week (Fig. 4), while respondents not visiting parks for exercise displayed a slightly lower visitation frequency. From these results, we conclude that there is a general desire for additional opportunities for physical activity within these communities, which naturally comes with various health and wellness co-benefits.

II. Frequency of park visitation and presence of children in the household

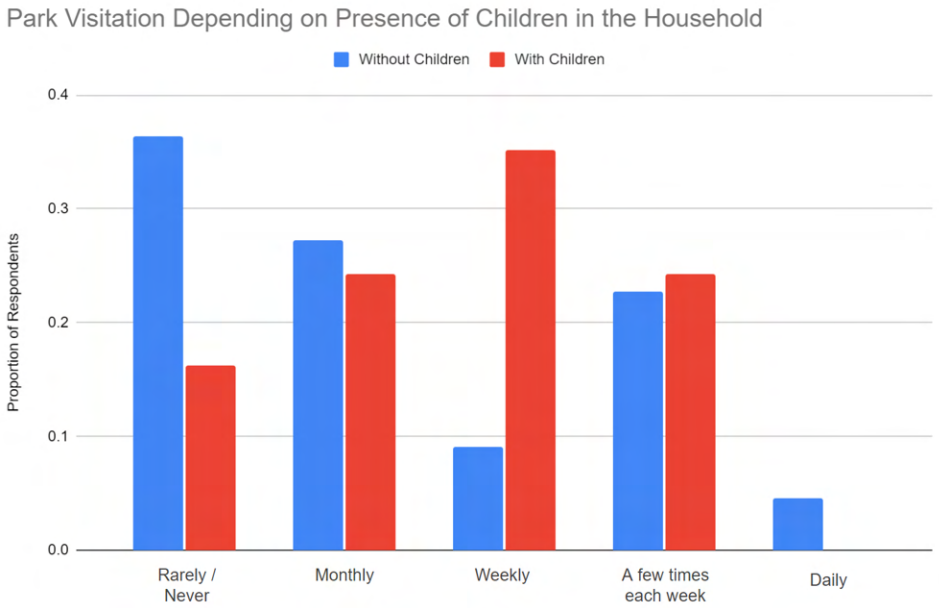


Fig. 5: Frequency of park visitation by respondents from households with children (red) and without children (blue), respectively.

Another aspect that we examined included to what extent and how different demographic characteristics of the surrounding community impact park usage. In doing so, we compared survey responses from individuals having children under the age of 18 living in the household (37 samples) with those who did not (22 samples), and graphed their responses to the survey question regarding existing park visitation habits. To ensure we were able to compare groups with differing sample sizes, we standardized the data by looking at the relative proportions of each group. As can be seen in Figure 5, there appears to be a correlation between having children living in the home and increased frequency of park visitation. As the frequency of the park visitation increased from "Rarely/Never" to "Weekly", the proportion of responses from those with children showed a general increase, while those without children showed a general decrease. However, this relationship did not seem to continue when considering the most frequent visitation options: "A few times each week" and "Daily". Overall, this data suggests that individuals that have children under the age of 18 living in their household may be slightly more inclined to visit local parks and greenspaces. In fact, this observation corroborates data from other studies. Researchers in the UK examined park visitation in inner-city parks, where they reported that people who did not visit parks were less likely to have children under 16 living with them (Kaźmierczak, 2013).

III. Support for Natural Habitat in Parks

Our team also aimed to examine the local community's opinions on prioritizing environmental objectives in multibenefit park design. In order to gauge this, we designed two

questions to test the topic's relative importance. The first question asked all respondents to select amenities from a list that they would like to see in a potential new park, in a "select all that apply" format. This question included a total of nine choices, ranging from walking/biking paths to a community center. We also included "Wetlands/Natural Habitat" as one of the available answers as an indicator of preference for nature-based amenities. The second question asked generally whether or not nature and ecological systems should be prioritized in a public park, with answer choices including "Yes," "No," and "Not Sure." From these two questions, we examined the difference in the proportion of respondents who selected a nature-based emphasis (the "Wetlands/Natural Habitat" option) from an at-large list, compared with those who responded "Yes" when asked directly whether nature should be prioritized in parks.

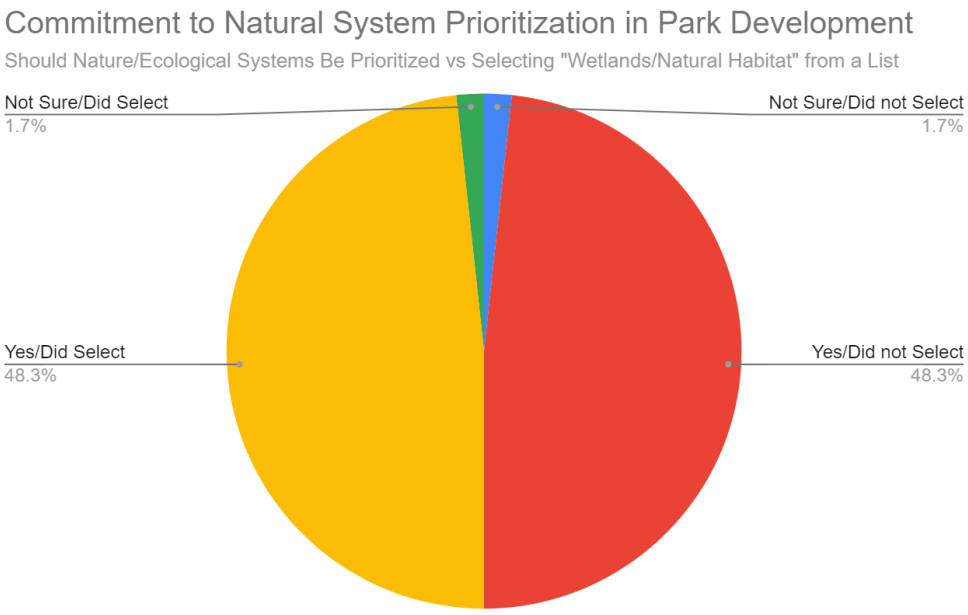


Fig. 6: Commitment to Natural System Prioritization in Park Development. While 96.6% of respondents stated in a "Yes/No/Not Sure" format that nature and ecological systems should be prioritized in parks, exactly half of respondents actively selected "Wetlands/natural habitats" from a list of potential choices of park facilities/amenities.

Our results showed that 96.6% of the 58 individuals who responded to the Yes/No/Not Sure question indicated that nature and ecological systems should be prioritized in a public park. Further, 29 of 58 respondents (50%) selected "Wetlands/Natural Habitat" from a list of potential park amenities that they would like to see in their community. Of those who selected "Yes" to the Yes/No/Not Sure ecological question, exactly 50% of those 56 individuals selected "Wetlands/Natural Habitat" from the select all that apply question.

Despite a significant difference in results, we observed that 50% of respondents chose the option "Wetlands/Natural Habitat" from a list of nine answer choices, while a vast majority of our sample (96.6%) indicated in a formulaic "Yes/No" format that nature should be prioritized in a public park. This suggests that half of our sample may actively seek and advocate for

ecological system emphasis in park development, and nearly the entire sample would potentially support it.

7. Recommendations

7.1. Procedural Workflow

Following the measures that we took to select park sites from the initial pool, we created a revised workflow diagram that reflects on the workflow in Figure 1. Figure 7 outlines what we believe to be an appropriate guide for park site selection and community engagement. This sequence of events includes the methods that we employed in our study, but ordered in a way that makes the most sense logically and will be conducive to a more efficient decision making process.

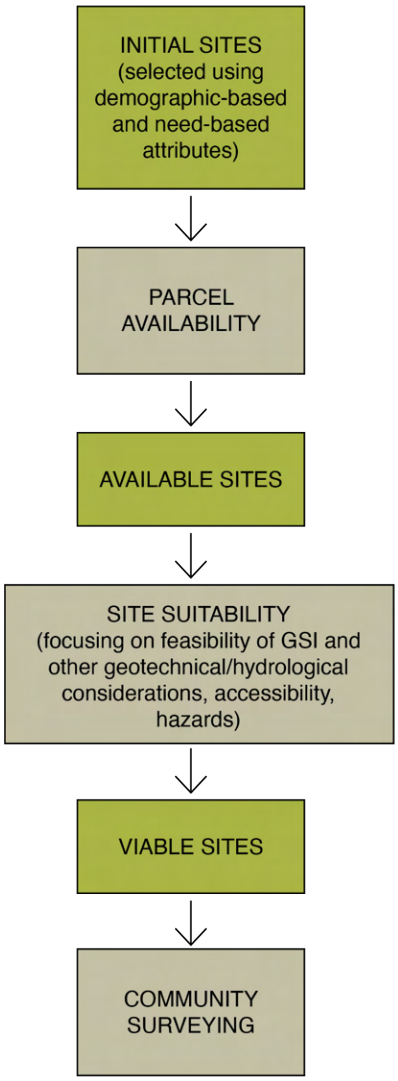


Figure 7. Workflow for park site selection and community engagement

7.2. Written Recommendations of Potential Park Features

A. Recommendations of Park Amenities

Based on our site selection criteria and the associated site visits, we recommend that our client and local park developers focus their efforts on developing pocket parks in traditionally park-poor communities of Los Angeles, as these pocket parks are able to provide an array of community and ecological benefits directly to neighborhoods. Of the seventeen selected sites that we worked with, we recommend developers put a particular emphasis on three different lots: Compton Lot 1, Compton Lot 2, and South Gate Lot 2. These three sites all bring unique characteristics to the table that could potentially benefit the local communities that they are a part of. Compton Lot 2 is of particular interest because it lies directly on Compton Creek, a tributary of the LA River, providing potential opportunities to make ecological restoration efforts directly on the river channel. The site also lies along an existing walking/biking path that lacks regular maintenance, but poses a unique opportunity to build upon community desires for the amenity (74.1% of respondents) and help facilitate the use and maintenance of existing community infrastructure.

We recommend that potential park developers view the amenities they choose in the context of simultaneously working to benefit the surrounding human community and improve the ecological and hydrological integrity of the LA River. Through our survey, we aimed to examine how park development can be shaped by community input and needs. This particular investigation manifested in the analysis of which amenities would be the most popular as well as the types of community programming that would be most beneficial. From our survey results, we gathered that the most desired amenities were a community garden (82.8%), bike/walking trails (74.1%), playground (60.3%), and wetlands/natural habitat (50.0%). Thus, we recommend that a combination of these three features, potentially in conjunction with others, be incorporated into park development plans in the areas of South Gate and Compton. In our data analysis, we noted that people with children living in their household were more inclined to visit parks more frequently than those who do not have children living in their homes. This suggests a need for child-specific amenities, which include playgrounds. We do recognize that there may be sources of bias that skew our data towards a particular result, especially by tabling at a community garden farm-stand event.

Beyond just the amenities that can be featured in a community park, we also wanted to establish what types of community programming and cultural connections could be fostered given a desire by the community. Studies have shown that an integrated and well-managed greenspace can help to reduce deviant behavior, so ensuring community buy-in and support of the space is imperative (Kuo & Sullivan, 2003). Of the responses we received, 77.6% indicated that they would like to see cultural/community-oriented festivals at the park, while 65.5% and 56.9% reported that they would enjoy seeing concerts/live entertainment and childcare/recreation teams respectively. Thus, we recommend that park developers consider and integrate community-oriented spaces, programming, and management into their plans in order to ensure the continued success of the greenspace.

B. Recommendations of Ecological and Hydrological Features

Beyond the solely-human benefits, greenspaces offer a valuable opportunity to integrate ecological and hydrological improvements as well. By examining the existing local ecological and hydrological systems through GIS analysis, we placed our findings in the context of academic literature to provide our ecological recommendations.

The conversion of land into greenspace would increase stormwater infiltration capabilities of already heavily-impervious areas and assist in alleviating pressure on local sewer systems by draining and naturally filtering stormwater (Feldman et al., 2019). Decreasing urban stormwater runoff helps to minimize flood risk to communities and helps to improve local surface water quality (Müller et al., 2020). Thus, since the plots identified are in areas of particular flood risk due to their low elevation and high percentage of impervious surfaces, their conversion to parkspace provides a valuable opportunity to assist local communities and the natural environment. Certain GSI features, such as bioswales, rain gardens, and permeable pavement, can facilitate water infiltration and increasing bioretention, which in turn decreases stress on local overloaded sewer systems (US EPA, 2017). As noted in Results, these sites are positioned over the Central Water Basin and the West Coast Basin, two mostly confined aquifers, which means GSI-infiltered water would not be able to penetrate to the main aquifer (Johnson & Njuguna, nd). Furthermore, spreading grounds, which are areas along the river that allow water to percolate into groundwater basins for later pumping, are located mostly along tributaries in the northeast and northwest directions from the southern watershed (LADPW, 2023). This indicates once again that parks in those areas would likely be more suited to high-capacity flood risk reduction infrastructure that would make a meaningful difference downstream, where it is so clearly needed. This information, in addition to the fact that nearly all sites are located in liquefaction zones, indicates that caution should be exercised to ensure that the appropriate GSI features are outfitted with sufficient drainage to the storm drain network or river, if necessary. If over-implemented, GSI can lead to liquefaction in these already liquefaction-prone zones by supplying water volumes exceeding the soil storage capacity. Viable GSI strategies would focus on enhancing vegetation to help absorb excess stormwater and slow flow, which would include creating vegetated swales and rain gardens, in addition to installing carefully placed permeable pavements. Upon further analysis of the plots, it is possible that there may be potential for water storage infrastructure suited to reuse in an irrigation system.

Further, local parks can provide habitat for urban flora and fauna. Having plants and unpaved spaces can assist in reducing the urban heat island effect and mitigating impacts of noise and air pollution (Cohen et al, 2014). Urban areas are often characterized by high road density, more air and soil pollution, higher air temperatures (heat island effect), and more soil compaction/alkalinity than surrounding areas, which precludes the establishment of native plant populations and thus animal species (Alvey, 2006). By incorporating a community garden with native species (some non-native yet non-invasive species are fine), urban parks can become important sources of native habitat in urban communities, allowing for a greater diversity of animal species. Some examples of native plant species that can help improve habitat connectivity

and provide greenery suitable for California's climate include the Bush Anemone, Catalina Perfume, and California Buckwheat (Pasillas et al., 2016). Importantly, all species that are incorporated into landscaping plans should be selected and placed based on site characteristics, including level of soil compaction/salinity and available crown space when the trees are fully grown (Alvey, 2006).

C. Recommendation Summary

In sum, please reference the summary list below of the top features that we recommend implementing in local park development, based on our analysis of both community-based surveys and academic research. These features actively work to benefit the long-term integrity and resilience of both the LA River ecosystem and the communities that live in its watershed, while providing comparable benefits to the proposed platform parks in the LA River Master Plan. Reference Table 3 to see how the benefits of these features map onto the benefits identified from the proposed platform parks and provide additional, specific improvements.

- Community Features/Amenities
    - Community Garden
    - Bike/Walking Paths
    - Playground
    - Wetlands/Natural Habitat
- Programming
    - Cultural/Community-Oriented Festivals
    - Child Care/Recreation Teams
    - Concerts/Live Entertainment
- Ecological Features
    - Bioswales
    - Rain Gardens
    - Permeable Pavement
    - Native Plants

Table 3: Platform Park Benefit Comparison to Recommendations

Type of Recommendation	Feature	How does this address the benefit of a platform park?
Park Amenity	Community Garden	Provides community connection ● Opportunity for socialization ● Potential local produce production Facilitates connection with nature ● Opportunity and motivation to go outside
	Bike/Walking Path	Provides community connection ● Opportunity for socialization Increases recreational opportunities ● Place to run/walk/bike ● Improved mental and physical health Facilitates connection with nature ● Opportunity and motivation to go outside

	Playground	Provides community connection ● Opportunity for socialization ● Place for children to play Increases recreational opportunities ● Introduces space for play ● Improved mental and physical health
	Wetlands/Natural Habitat	Addresses flood risk and hydrological integrity ● Reduces runoff ● Increases infiltration ● Increases water quality Increases greenspace ● Provides vegetation cover ● Improved morale ● Habitat for urban wildlife ● Creates habitat connectivity patches ● Reduces the urban heat island effect
Park Programming	Cultural/Community-Oriented Festival	Provides community connection ● Opportunity for socialization ● Sharing of culture
	Concerts/Live Entertainment	Provides community connection ● Opportunity for socialization ● Sharing of culture
	Child Care/Recreation Teams	Provides community connection ● Opportunity for socialization ● Community service Increases recreational opportunities ● Introduces space for play ● Improved mental and physical health
Ecological	Bioswale	Addresses flood risk and hydrological integrity ● Reduces runoff ● Increases infiltration ● Increases water quality
	Rain Garden	Addresses flood risk and hydrological integrity ● Reduces runoff ● Increases infiltration ● Increases water quality Increases greenspace ● Provides vegetation cover ● Improved morale ● Habitat for urban wildlife ● Reduces the urban heat island effect
	Permeable Pavement	Addresses flood risk and hydrological integrity ● Reduces runoff ● Increases infiltration ● Increases water quality
	Native Plants	Increases greenspace ● Provides vegetation cover

		• Improved morale • Habitat for urban wildlife • Creates habitat connectivity patches • More adapted to local climate (water need) • Improves soil quality • Reduces the urban heat island effect

7.3. Park Drawings as Inspiration

Given the recommendations above, our team aimed to provide preliminary park plan sketches for the three chosen sites that can serve as inspiration for future park development. We based our suggestions off of our survey results, the site visits conducted, and what is currently known of the hydrological nature of the sites. We recognize that our team lacks the technical expertise required to provide detailed park plans, but hope that our visions for these sites can inform future efforts to incorporate these essential park elements, which have been specifically identified by the communities surrounding these sites.

A. Prospective Park Plan for Compton Lot 1

Our prospective park plan for Compton Lot 1 takes into consideration the existing function of the site as a parking lot for school buses and a storage place for school supplies, while also transforming it into a park that offers various amenities and features for the community. The following are some potential features that could be included in the development:

1. School Bus Parking and Storage: Maintain the current functionality of the southeast corner of the site as a parking lot for school buses and a storage area for school supplies. This is essential to continue supporting the operations of the Compton Unified School District.
2. Recreational Area: Allocate the western portion of the site as a recreational area that caters to people of all age groups. This area can include facilities such as playgrounds, open green spaces, and walking paths. These features provide opportunities for children, teenagers, and adults of all ages to engage in recreational activities.
3. Urban Farm: Introduce an urban farm within the park, which could serve as an educational opportunity for children to learn about crop production, community well-being, and carbon reduction. The farm could offer workshops and programs for the residents, promoting sustainability and healthier eating habits.
4. Picnic Area: Designate a space within the park for picnic areas, where community members can gather and enjoy social time together. These areas can include picnic tables, seating areas, and barbecue facilities.
5. Sports Facilities: Include sports facilities such as a tennis court, basketball court, and swimming pool. Such facilities can encourage physical activity and contribute to the

overall well-being of the community by providing opportunities for exercise and socialization through organized sports activities.

6. Community Garden: Establish a community garden on the western side of the park, providing additional natural elements within the park and facilitating a personal connection with nature. The garden can be divided into plots that individuals or groups can maintain, fostering a sense of community, promoting healthy eating habits within the community, and promoting gardening as a leisure activity.
7. Bioswale or Rain Garden: Integrate a bioswale or rain garden within the community garden area. Such features can help to reduce runoff, increase infiltration of rainwater, and improve water quality. In doing so, stormwater management features like these can add a natural and sustainable element to park design.
8. Community Center: Construct a community center near the center of the park, as is pictured below the bioswale and garden in Figure 7. This facility could serve as a central feature of the park site, offering educational programs for children and providing indoor spaces for community meetings, workshops, and gatherings. In addition, the structure's design can incorporate an open-air atrium or courtyard to maximize natural light and provide a space for outdoor gatherings and events.
9. Walking and Biking Path: Create a walking and biking path that runs from north to south along the east side of the site. In keeping with the strong emphasis from our community survey on visiting parks for exercise, this path encourages a variety of active activities, including walking, jogging, skating, and biking, allowing residents to utilize the park space for physical exercise.

By incorporating the features listed above, we propose that Compton Lot 1 can be developed into a multifunctional park space that caters to the perceived needs and desires of the community. This can be accomplished through providing spaces for recreation and physical activity, educational opportunities, stormwater management, and retaining the essential functions of the school bus parking and storage area.

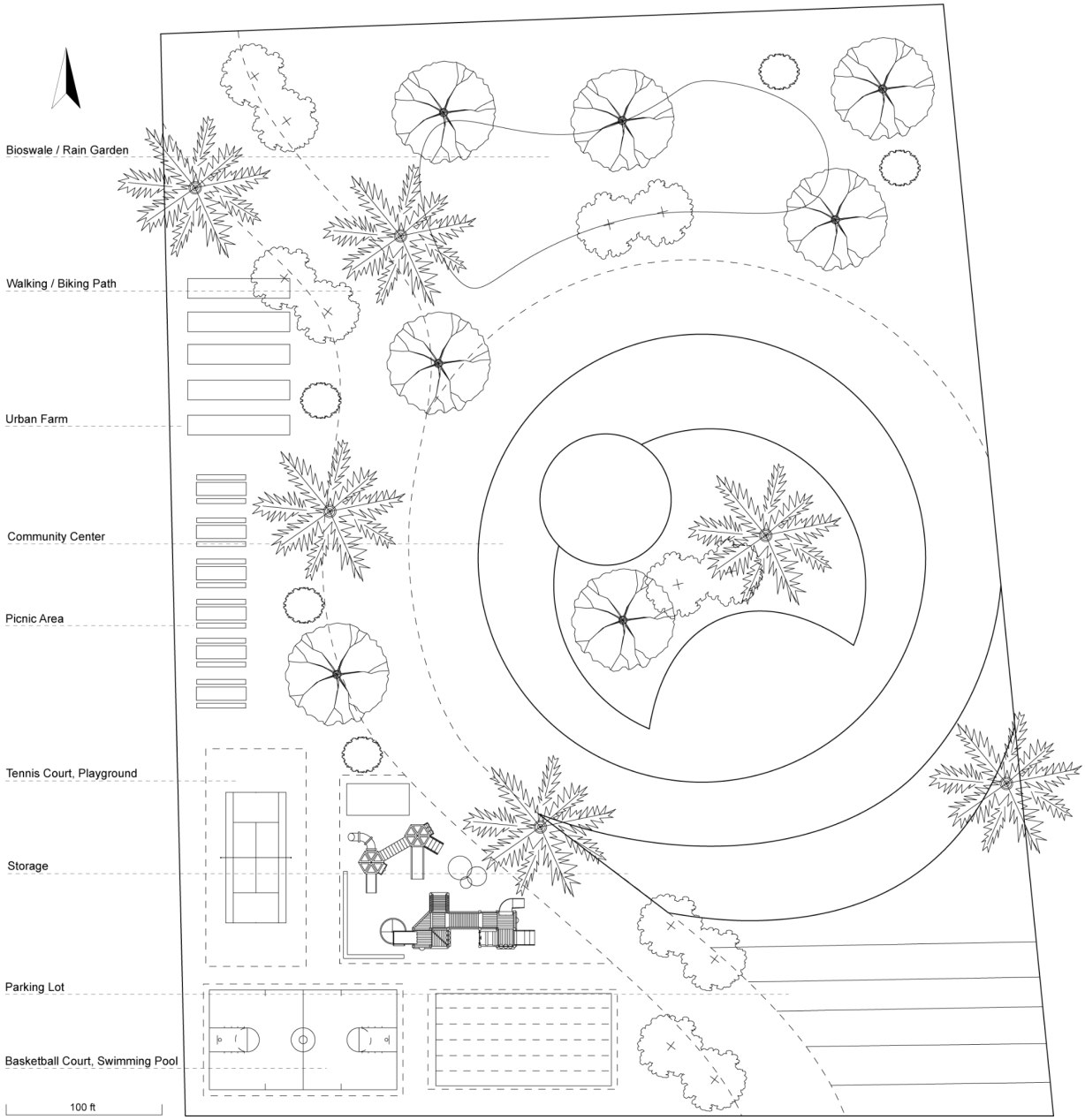


Fig. 7: Prospective park plan for Compton Site 1.

B. Prospective Plan for Compton Site 2

The inspiration for the following plan for Compton Site 2 focuses primarily on the potential for the restoration of hydrological and ecological function, including stormwater infiltration. This site has a particular potential for these features, as it is located directly on the channelized Compton Creek, which serves as a tributary to the LA River.

During our site visit, our team observed urban wildlife utilizing the creek area adjacent to the site, including a pair of Canadian Geese. Their diet includes, but is not limited to forbs, succulents, grasses, and aquatic vegetation ("Canada Geese…", 2021). Thus, incorporating

various forbs, grasses, and succulents could address the diets of these wild birds, while simultaneously providing the natural rainwater filtration benefits associated with greenspaces and rain gardens.

While any California native variety of these three plant families may provide benefits, we propose that an emphasis be placed on the perennial varieties of grasses, succulents, and forbs because of their ability to offer greenery year-round. Sunflowers stood out as a member of the forb family for their ability to grow year-round, while California poppies stood out for their general popularity (Ardoin, 2023). Berkeley Sedge and Wild Rye are two potential options for grasses that could provide a component of the geeses' diet and aid in rainwater capture. For succulents, any native species that grows year round can serve a benefit to the park for the same reasons. In addition to smaller plantlife, which serves as part of the bioswales and geese diet, larger shade trees that are native to California would also be beneficial, as they provide both shade and important sources of native habitat in the midst of highly urbanized communities.

While our team focused on the ecological benefits that this proposed park site would potentially provide, we also considered the amenities that were desired by community members from our survey sample. We highlighted a number of features that they had selected, including a playground that would provide children and their families with the opportunity for outdoor activity and a dog park that would give residents an opportunity to experience outdoor spaces with pets. Additional amenities that we chose to highlight include benches that would provide social opportunities and give residents the chance to gather with other community members as well as a revitalized walking trail that would run adjacent to the site and provide many exercise-related health and fitness benefits.

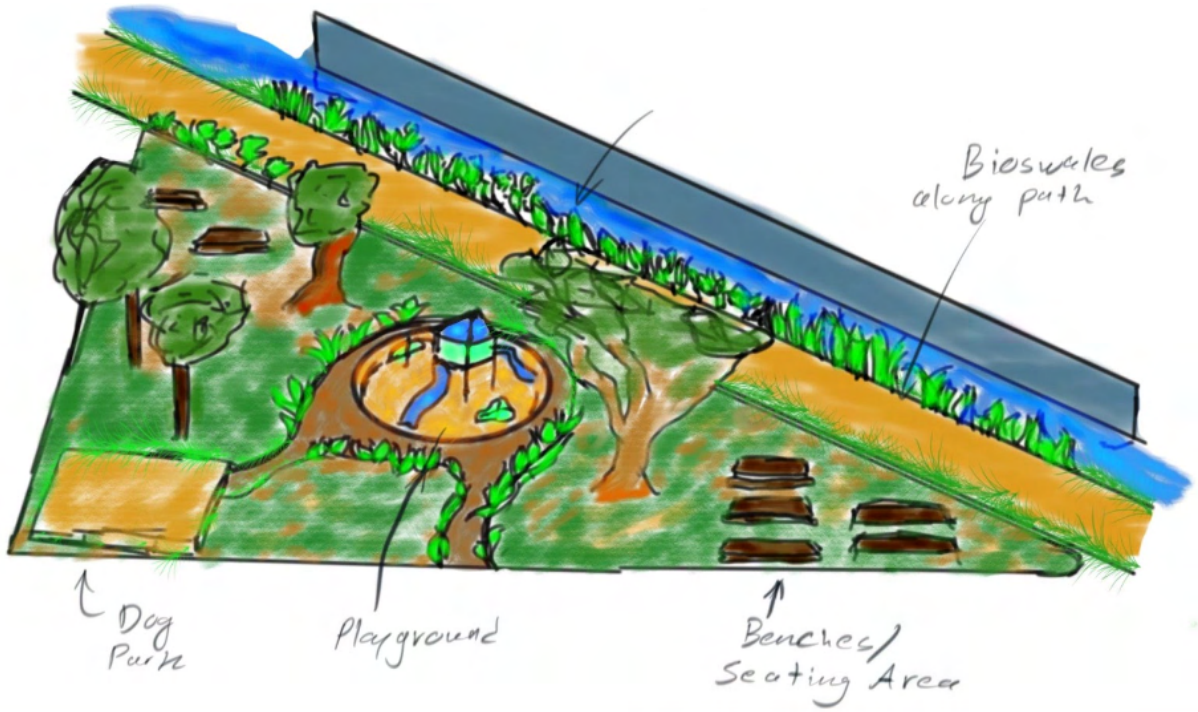


Fig. 8: Prospective park plan for Compton Site 2.

C. Prospective Plan for South Gate Site 1

When our team initially toured the South Gate site, the site's location between a heavily-trafficked road and a residential neighborhood stood out. Given its location directly adjacent to residential spaces, the park could potentially add greenspace within walking distance of a number of homes. The location along a busy street poses an opportunity to assist in the reduction of noise pollution and air pollution.

Our ideas for this site were to establish a community center with a community garden, with aspects of green sustainability implemented. Our analysis of the site also showed that it was in a liquefaction zone over a confined aquifer, so there was little potential for direct stormwater collection. Rather, we aimed our focus on creating a space that would slow stormwater runoff and facilitate stormwater filtration. The building for the community center would be one story and would have a roof with a rain garden to collect and drain rainwater to the surrounding native plants. In one section of the lot, there would be round tables with umbrellas to serve as a social space for gatherings of community members.

Given the popularity of the community garden response in our survey, we saw that having a community garden could support the community and potentially be a sustainable way of producing local crops in addition to having a local economy. The space would provide for any desired crops that the community members desire to grow.

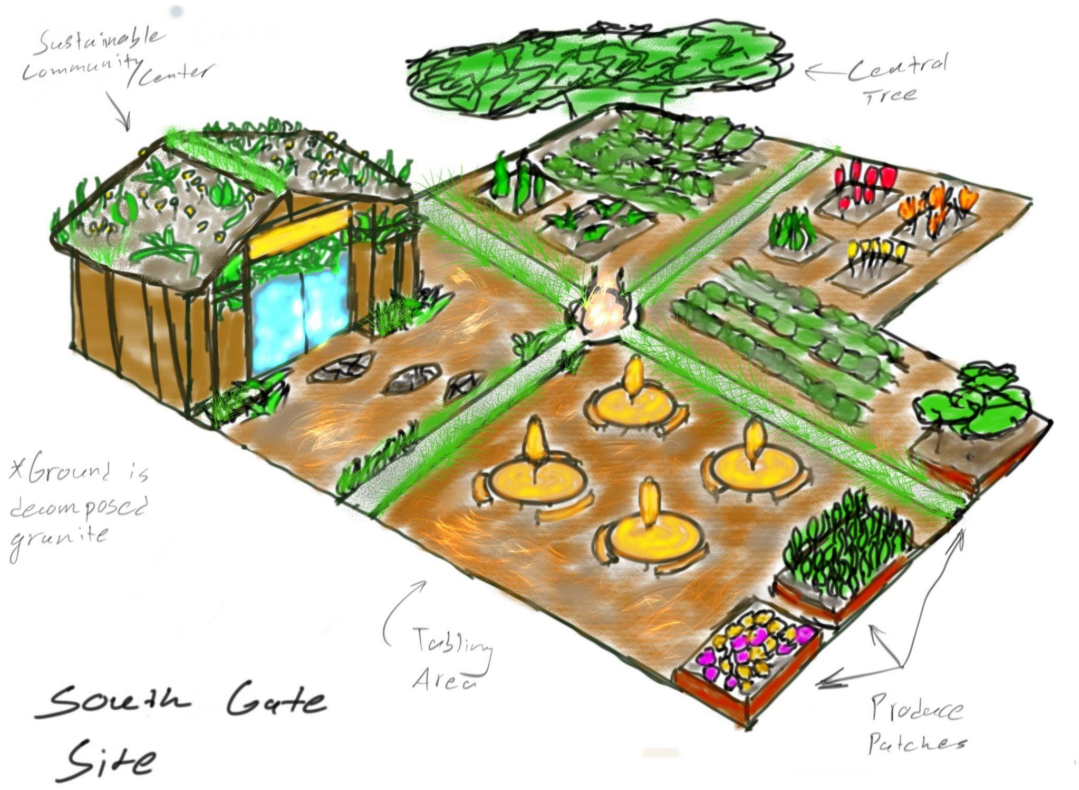


Fig. 9: Prospective park plan for South Gate Site 2.

Fig. 10: Community Garden Concept Art

8. Recommendations for Future Research

We anticipate that additional research and work be conducted to help facilitate the development of pocket parks in the LA River watershed's traditionally park-poor communities. Though our guiding questions and principles aimed to provide a holistic and comprehensive overview of the state of potential greenspace development in the LA River region, we recognize that our analysis may be limited in scope in its implementation. From our project, we recognize a number of methodological and technical limitations that may be present in our results and can be used as benchmarks for further research.

8.1. Recommendations in Site Selection Methodology

Given the increased frequency and intensity of storm flooding along the LA River corridor, one aspect of our project was to identify the sites' potential for stormwater capture and flood risk reduction. However, we acknowledge that a true and thorough examination of these factors would have required far more expertise, resources, and time than was available to us. Despite these limitations, our site selection process incorporated a general analysis of a variety of flooding and green stormwater infrastructure-related attributes that could be implemented at these sites, helping us to assess the potential for parks to utilize and incorporate such infrastructure for flood mitigation purposes. However, we recommend that future teams further

explore such opportunities using more specific and detailed strategies, including on-site geotechnical and hydrological testing.

In addition, when selecting sites for actual park development, we recommend considering additional feasibility concerns, such as accounting for the costs of site acquisition and development, as well as potential site remediation costs. Depending on the group(s) heading the project and their funding opportunities, the cost of developing some sites may be beyond what is feasible given available resources. For instance, developing a small, uncontaminated residential lot may cost a fraction of the cost of developing a park on a large industrial site. In the site selection process, it is also important to estimate and factor in the cost of remediating contaminated land, which may occupy a substantial portion of the total project budget. See Table 4 for examples of cost breakdown for similar park development projects within the LA region. Interestingly, one of these projects, the Maywood Riverfront Park project, stands out in that nearly 80% of the project's $50.5 million budget was allocated specifically to land remediation (Pasillas et al., 2016). Altogether, this suggests that in the site selection process, future teams should seek to provide accurate cost estimates for each site, taking into account all aspects of the park development process.

Table 4: Examples of cost breakdowns of parks in LA County (Pasillas et al., 2016)

Name	Size	Cost	Previous Land Use
Cudahy River Park	0.25 acres	$378,000 for design/construction (Site acquisition costs unavailable)	Vacant residential
Marsh Park Phase II	3.1 acres (part of multiphase project)	$8 million: $3.6 million for acquisition + $4.4 million for design/construction	Industrial
Sunnynook River Park	5 acres	$1.7 million for design/construction (Site acquisition costs unavailable)	Vacant public property
Maywood Riverfront Park	7.4 acres	$50.5 million: $5.9 million for acquisition + $4.6 million for design/construction + $40 million for remediation	Industrial

8.2. Recommendations for Survey Distribution and Drafting

In regards to our community survey, we recognize that there are potential sources of bias introduced both within the survey itself and through the means of distribution, which could

potentially skew the response data. If future teams decide to implement a similar surveying process to get additional community input, we recommend taking various precautions to avoid or at least minimize some of these biases.

First off, given our team's limited timeframe for the community outreach portion of this project, our sample size was relatively small at 59 respondents. This generally made it more difficult to accurately interpret meaningful trends within the data. Given that time and resources allow for more extensive surveying, we recommend that future teams obtain a larger sample size containing a representative sample of the age, gender, socioeconomic status, and ethnic backgrounds of the communities we worked in. This would allow for a more comprehensive analysis of public opinion, as well as a more accurate analysis of trends within the survey data.

In addition, our team recognizes that there are potential sources of bias introduced within the survey itself that could potentially skew the response data. In our initial draft of the community survey, many of the questions contained non-inclusive language and were worded in such a way that respondents may be more likely to choose one option over another, introducing bias. After receiving feedback on this, our team created a revised version of the survey, which can be found in Appendix E . However we recognize that this survey may still implicitly introduce sources of bias, and we recommend future teams to modify and adjust our revised survey as seen fit.

Survey biases can be introduced not only through the survey itself, but also through the means of survey distribution. In this vein, we realized that our method of sampling may have introduced a number of biases, due in part to both the location of sampling and the limited diversity of people that we sampled. For example, a majority of our surveys came from a farm-stand event at a local community garden, which may have skewed the results towards individuals who would like to see community gardens in their local parks. In addition, conducting surveys at only parks may introduce the bias of reaching primarily those who would likely support parks and visit them often. In order to address biases like this, we suggest that future teams administer community surveys at a wider variety of locations within the communities of interest in order to sample from a larger selection of community residents.

9. Conclusion

Across Los Angeles, there currently exists vast inequities in greenspace, both in terms of coverage and community access. In order to address these inequities and provide increased park accessibility for disadvantaged communities, Los Angeles County has shown support for the creation of river-channel platform parks that are featured in the 2022 LA River Master Plan. While these parks could provide additional greenspace access, they would not only be extremely expensive to construct, but would also create additional concrete infrastructure across portions of the LA River, precluding future efforts to further renaturalize and restore the LA River watershed.

This report aims to examine the feasibility of using local pocket parks around LA County as a more economical and environmentally-friendly alternative to platform parks. Unlike the proposed platform parks, pocket parks provide an opportunity to integrate greenspace directly into the communities that need it most, while simultaneously extending essential ecosystem goods and services, such as stormwater infiltration, flood risk reduction, and natural habitat patches. Taking this into account, our team sought to build upon efforts from a previous IoES practicum team to evaluate viable lots within a few of LA County's traditionally park-poor neighborhoods which could potentially become future sites for pocket park development.

We utilized multiple avenues during our analysis to create a holistic examination of the potential sites, including GIS spatial analysis and municipal policy research. This extended beyond the site selection process to the amenity selection, where we consulted community members through surveying and its subsequent analysis, as well as academic literature on park use. This approach aimed to examine the issues of site selection through the lens of both the people that live in the communities and the ecosystems that we are inherently a part of. From these steps, three potential sites in Compton and South Gate were selected as well as their corresponding recommended amenities and features, including trails and stormwater capture technologies.

While we acknowledge that our team's scope and methods may have had limitations, we are optimistic that pocket parks can be a viable option in all communities burdened with inequitable access to greenspace, and similar benefits can be provided in each neighborhood in which they are implemented. Through this examination, it became clear that environmental justice goals like park access are not at odds with ecological goals. In the case of the LA River watershed, we do not need to sacrifice the long-term ecological and hydrological integrity of the region or widespread access to local park space to achieve the other. In fact, these two goals have proven to be complementary and essential to restoring the health of traditionally underserved communities and the LA River itself.

10. Acknowledgements

For this project, our team partnered with the non-profit organization LA Waterkeeper. We would like to thank Ben Harris, Staff Attorney at LA Waterkeeper, who worked closely with us and helped to guide the direction of the project and ensure that our work was in line with LA Waterkeeper's goals. Additionally, we give our gratitude to Bailey Duarte, the LA Waterkeeper community operations manager, for sharing her advice on how to engage with community members, and connecting our team with potential organizations to partner with to perform community outreach efforts.

We would also like to thank Dr. Bemmy Maharramli and Ms. Erin Coutts for sharing their expertise in helping us craft clear and concise surveys for our community outreach phase, in addition to providing guidance for sourcing and selecting geospatial data.

Lastly, we would like to thank both Erika Cuellar of Alma Backyard Farms, who gave us the opportunity to table at their bi-monthly farm stand in Compton, as well as Dilia Ortega, who provided us with valuable advice on community outreach and offered to share our survey with additional members of the South Gate community.

11. Appendices

11.1. Appendix A

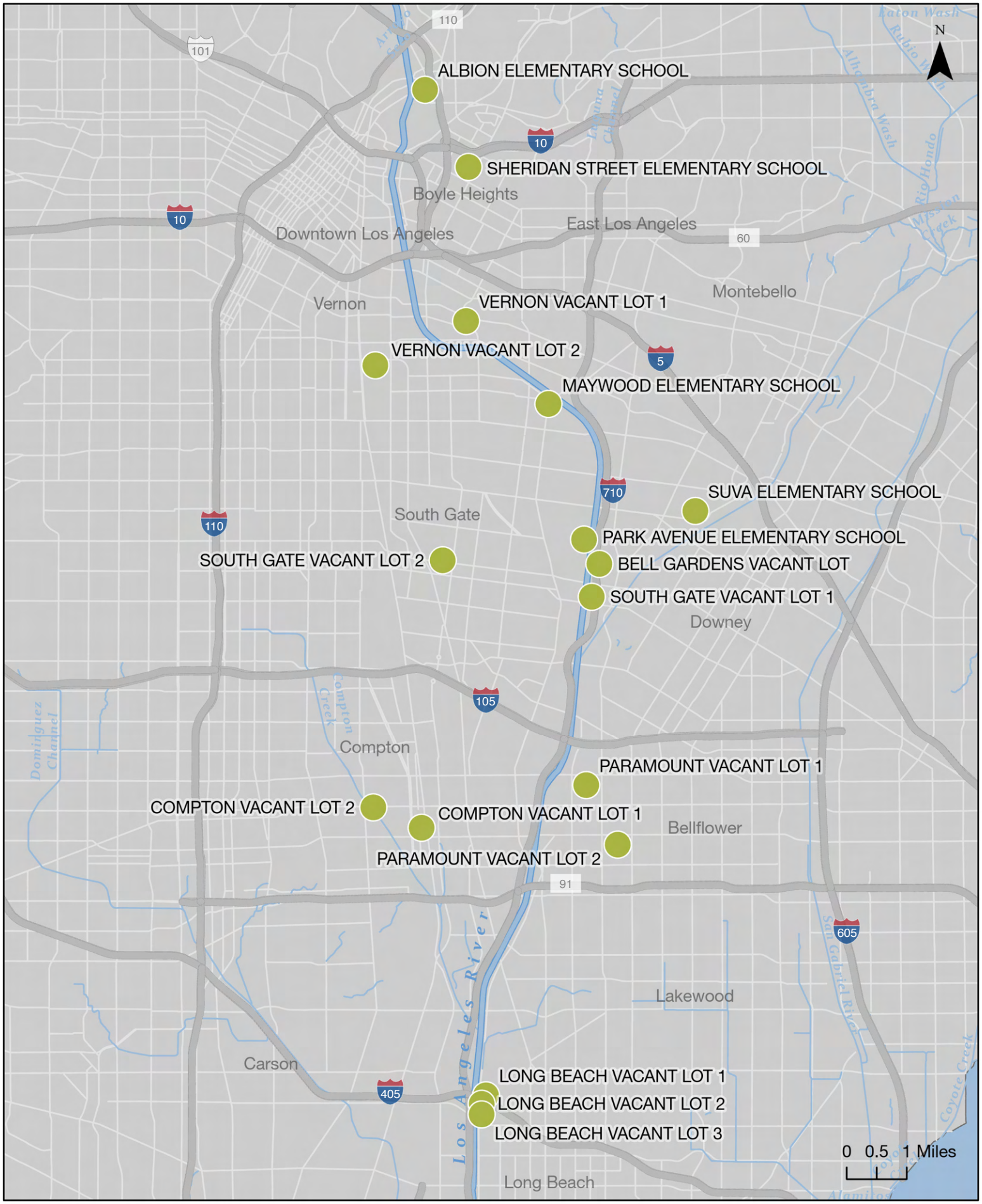
Sites from 2021-2022 IoES Practicum Team (Bergtraun et al., 2022)

Site Name	Neighborhood	Approximate GPS Coordinates	Parcel Area (Acres)	Land Use Type
Bell Gardens Vacant Lot	Bell Gardens	33.95475, -118.16963	0.62	Vacant Lot
Suva Elementary School	Bell Gardens	33.96756, -118.14182	5.63	Open Space and Recreation
Sheridan Street Elementary School	Boyle Heights	34.05053, -118.20783	3.50	Education
Compton Vacant Lot 1	Compton	33.89079, -118.22101	8.71	Transportation, Communications, and Utilities
Compton Vacant Lot 2	Compton	33.89569, -118.23503	0.77	Vacant Lot
Park Avenue Elementary School	Cudahy	33.96062, -118.17409	4.05	Vacant Lot
Long Beach Vacant Lot 1	Long Beach	33.82621, -118.20221	9.81	Open Space and Recreation
Long Beach Vacant Lot 2	Long Beach	33.82415, -118.20345	4.76	Vacant Lot
Long Beach Vacant Lot 3	Long Beach (North)	33.82159, -118.20346	1.07	Vacant Lot
Albion Elementary School	Los Angeles (East)	34.06914, -118.22050	3.04	Education
Maywood Elementary School	Maywood	33.99335, -118.18449	0.43	Education
Paramount Vacant Lot 1	Paramount	33.90118, -118.17333	17.36	Transportation, Communications, and Utilities
Paramount Vacant Lot 2	Paramount	33.88681, -118.16418	0.55	Vacant Lot
South Gate Vacant Lot 1	South Gate	33.94680, -118.17182	6.90	Vacant Lot
South Gate Vacant Lot 2	South Gate	33.95555, -118.21507	0.69	Vacant Lot
Vernon Vacant Lot 1	Vernon	34.01332, -118.20844	3.13	Vacant Lot
Vernon Vacant Lot 2	Vernon	34.00259, -118.23474	0.91	Vacant Lot

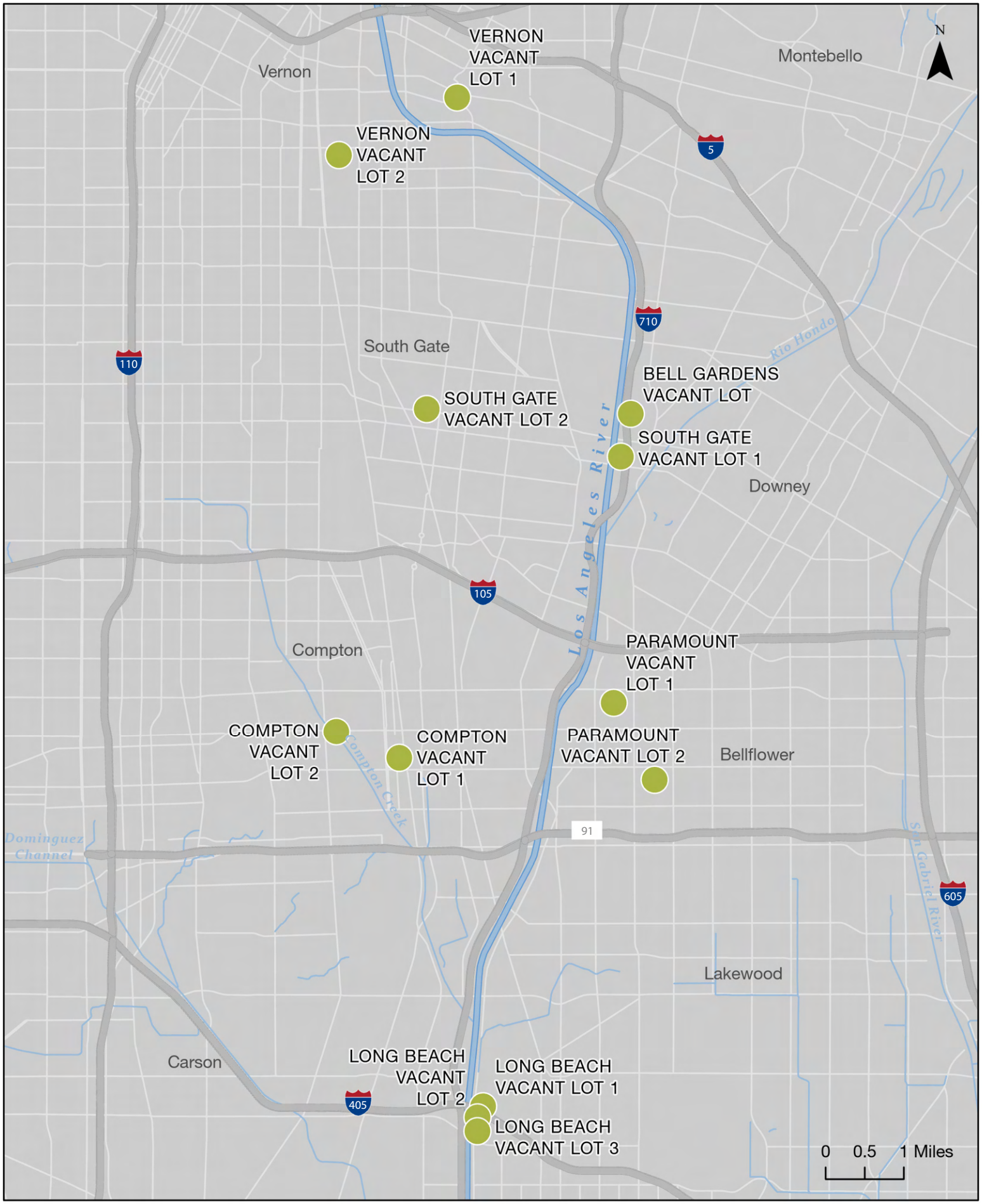
11.2. Appendix B

See the Maps listed below on the following pages.

Map 1. Potential Park Sites
Map 2. Potential Park Sites (schools excluded)
Map 3. Sites by Area
Map 4. Landslide and Liquefaction Zones
Map 5. Water Supply Need
Map 6. Flood Risk Reduction Need
Map 7. Park Need
Map 8. Aquifers

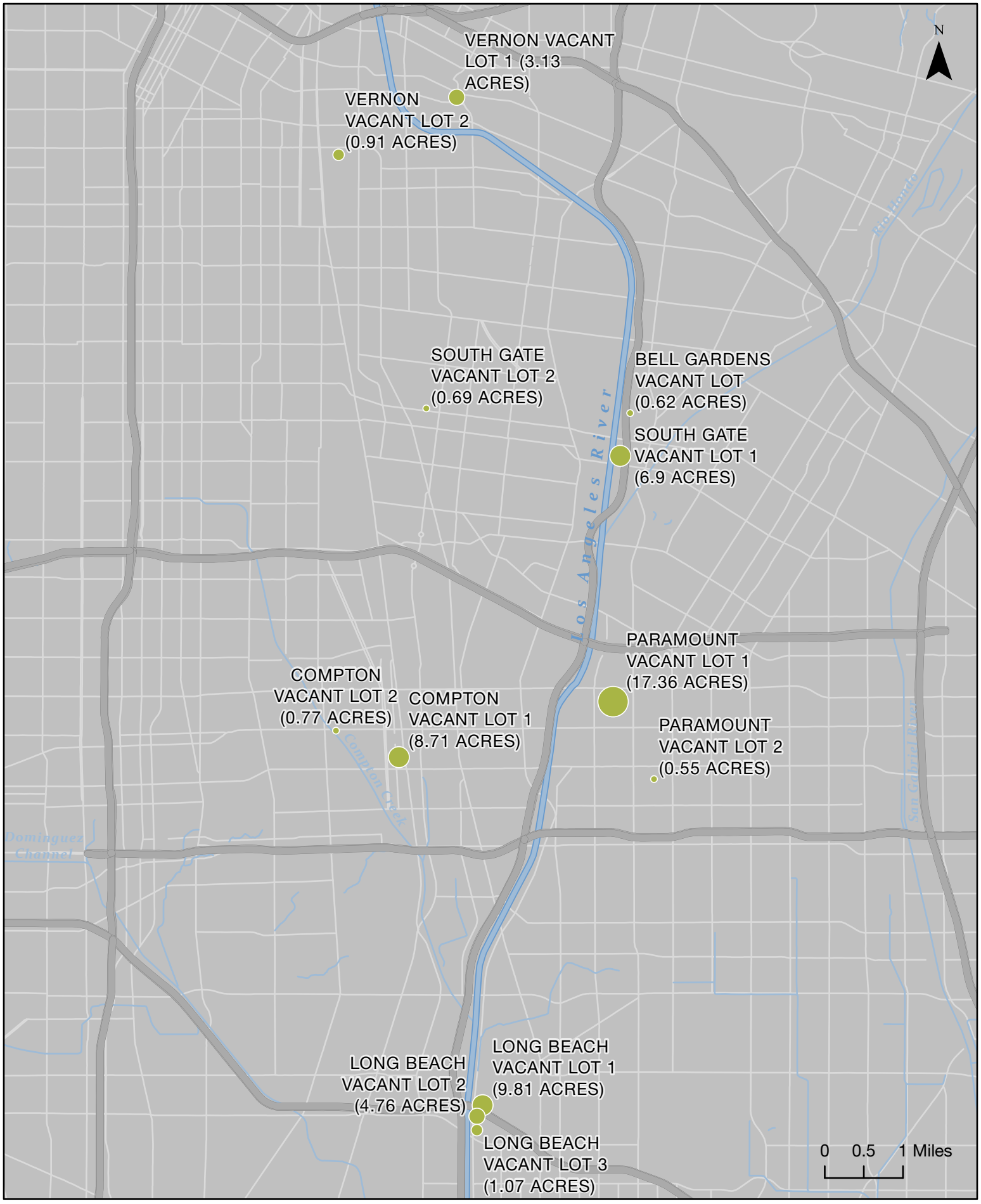


Potential Park Sites



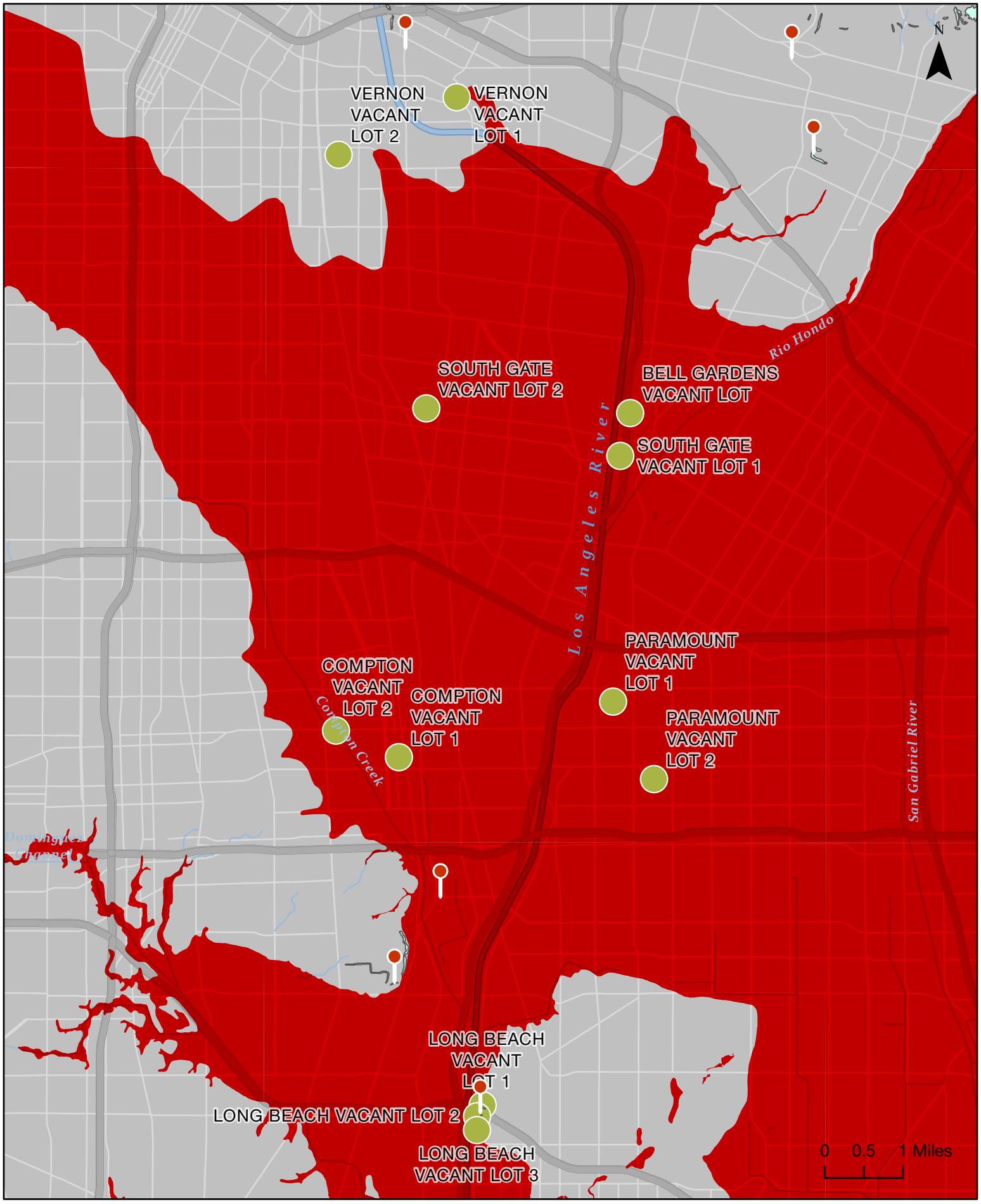
Map 2.

Potential Park Sites (schools excluded)



Map 3.

Sites by Area

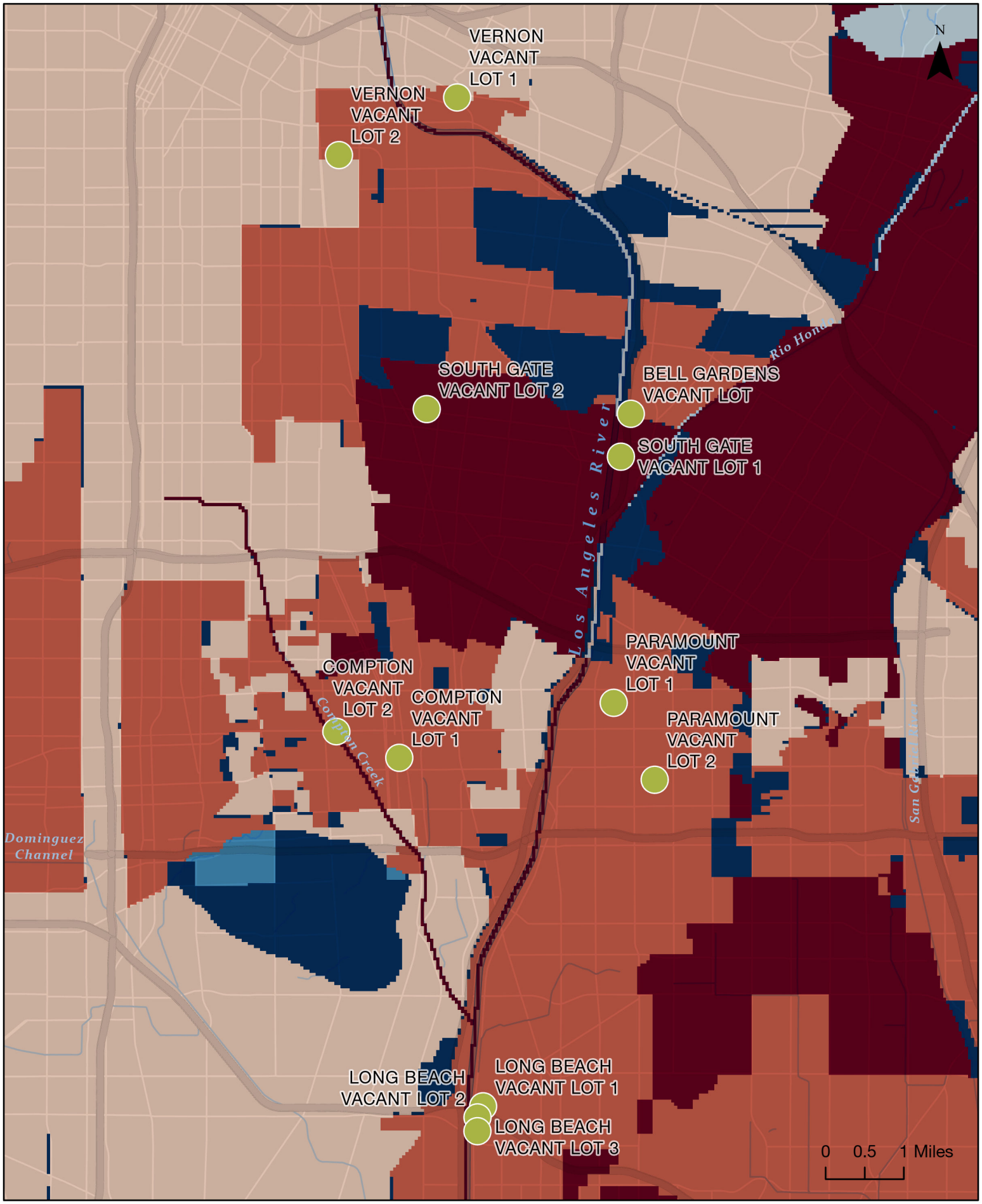


Map 4.

Landslide and Liquefaction Zones

Landslide zones

Liquefaction zones

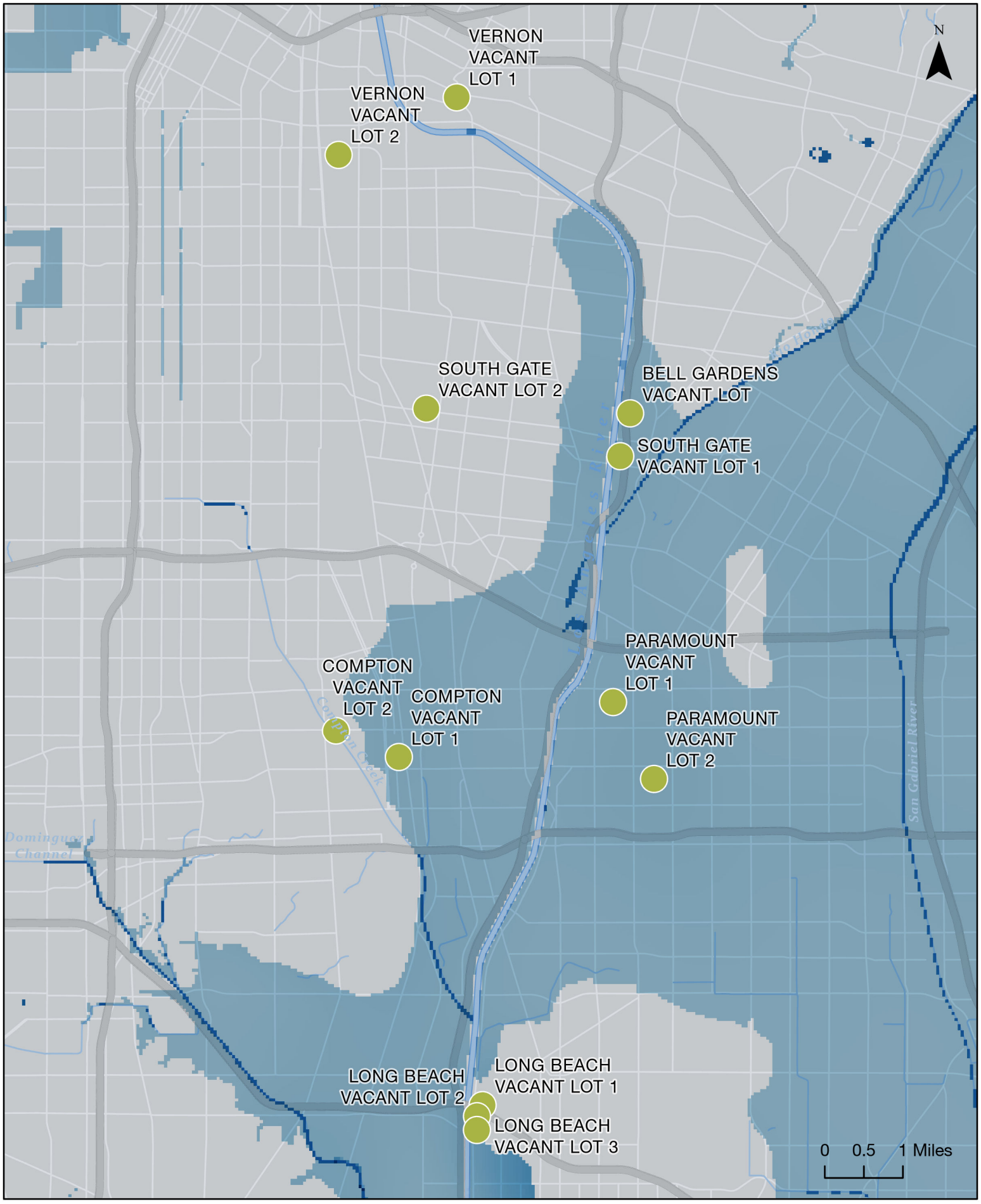


Map 5.

Water Supply Need

5 (Highest need)

0 (Lowest need)

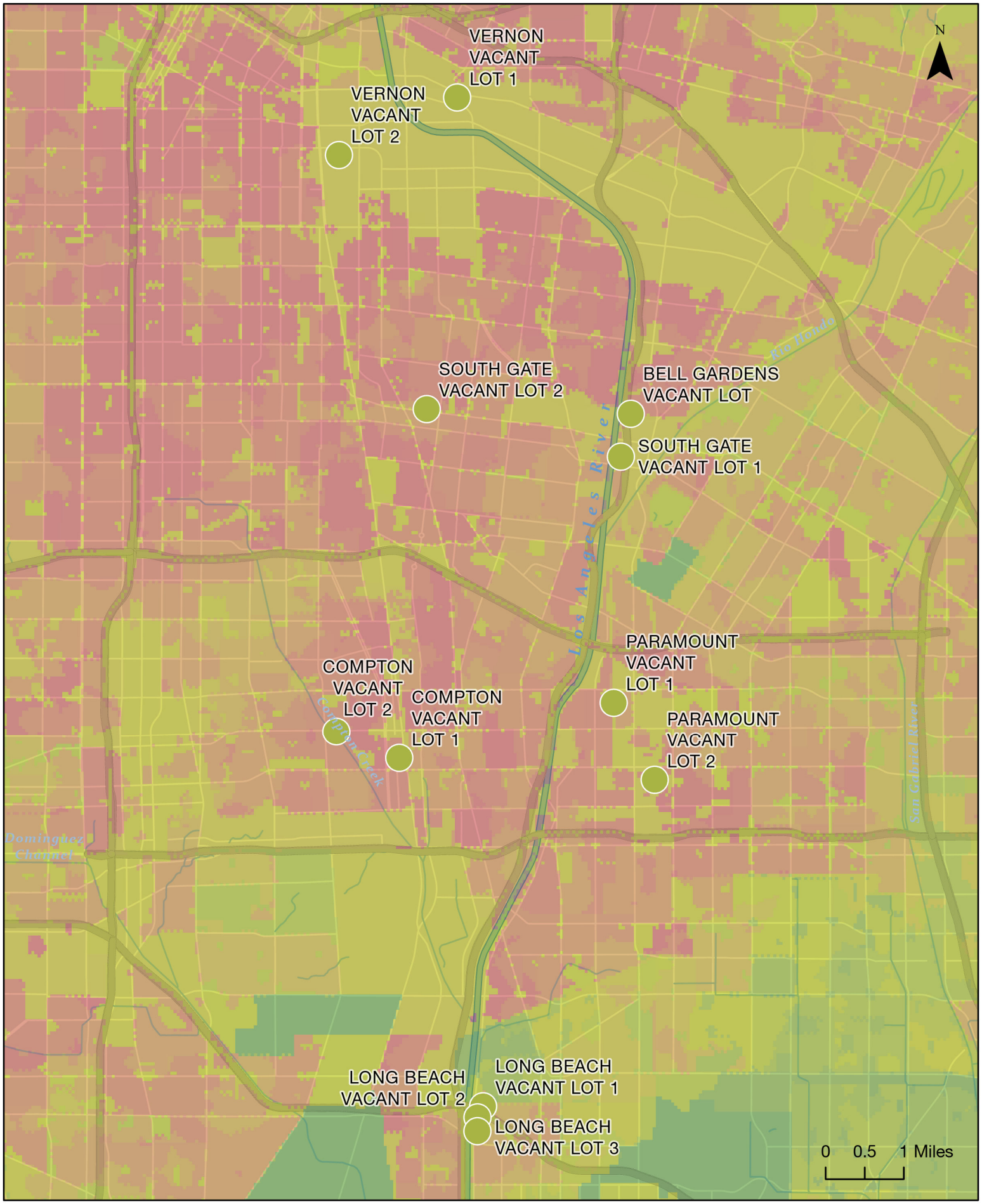


Map 6.

Flood Risk Reduction Need

5 (Greatest need)

0 (Lowest need)

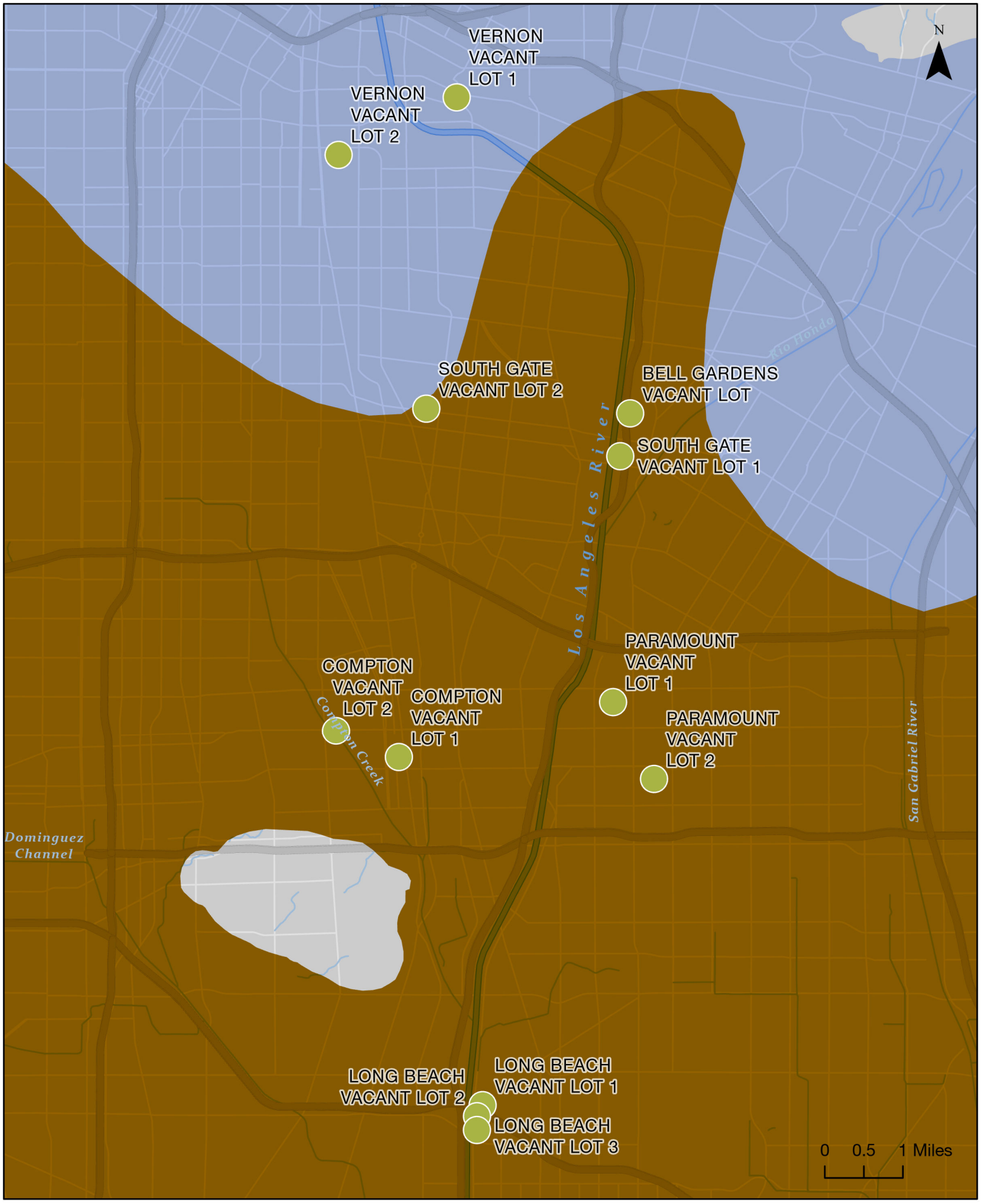


Map 7.

Park Need

5 (Greatest need)

0 (Lowest Need)



Map 8.

Aquifers

Unconfined

Confined

11.3. Appendix C

Links to additional results tables

Table 1. Site APNs and Use

Site Name	Neighborhood	GPS Coordinates	APN	Use/Zoning	Owner	Lot Size (SF/AC)	Notes/Planning
Bell Gardens Vacant Lot	Bell Gardens	33.95475, -118.16963	6227-034-900 6227-034-901 6227-034-902 6227-034-905 6227-034-903 6227-034-904 6227-034-906	Government - Vacant Land Government - Vacant Land Government - Vacant Land Parking Lot Private Utility (electric, water, gas, nuclear, solar, wind, etc. Parking Lot Manufacturing (light)	REDEVELOPMENT AGENCY OF BELL GARDENS CITY		affordable housing early stages developer in the process of planning
Compton Vacant Lot 1	Compton	33.89079, -118.22101	6160-024-900	Government - Vacant Land	COMPTON UNIFIED SCHOOL DIST	379,495/8.71	no- but check with the school district
Compton Vacant Lot 2	Compton	33.89569, -118.23503	6161-012-135	Commercial - Vacant Land	AF PROPERTIES 2015 LLC	33,474/.77	no-but violations for trash and debris
Long Beach Vacant Lot 1	Long Beach	33.82621, -118.20221	7140-014-034	Industrial - Vacant Land	ARTESIA ACQUISITION COMPANY LLC		no
Long Beach Vacant Lot 2	Long Beach	33.82415, -118.20345	7203-002-001	Industrial (General)	OIL OPERATORS INC		no
Long Beach Vacant Lot 3	Long Beach (North)	33.82159, -118.20346	7203-002-005	Industrial - Vacant Land	OIL OPERATORS INC		no
Paramount Vacant Lot 1	Paramount	33.90118, -118.17333	6240-008-801 6240-008-802	Private Utility (electric, water, gas, nuclear, solar, wind, etc.)	SO CALIF EDISON CO SB OF E PAR 1 MAP 148 (19-19) A		Private - contact edison M1 - manufacturing zone change - process switch to city
Paramount Vacant Lot 2	Paramount	33.88681, -118.16418	7102-017-808 7102-017-810 7102-017-813 7102-017-809	Private Utility (electric, water, gas, nuclear, solar, wind, etc.)	UNION PACIFIC R R CO SBE 843 (19 24) L PAR 47		M2- heavy manufacturing
South Gate Vacant Lot 1	South Gate	33.94680, -118.17182	6222-001-916 6222-001-020 6222-001-021	Industrial - Vacant Land	SOUTH GATE CITY KUDCO DIVERSIFIED INC KUDCO DIVERSIFIED INC	300,520/6.9 5,251/.12 5,251/.12 Total = 7.14ac	Head planner (Norma) said there is development to be a park. Urban orchard
South Gate Vacant Lot 2	South Gate	33.95555, -118.21507	6204-006-055 6204-006-054 6204-006-057 6204-006-056	Parking Lot Parking Lot Commercial - Vacant Land Commercial - Vacant Land	J AND Y 26 FIRESTONE LLC	11,976/.27 17,998/.41 Total = 1.32ac	delinquent in taxes 2022
Vernon Vacant Lot 1	Vernon	34.01332, -118.20844	5169-022-010 5169-022-270	Industrial - Vacant Land	CRP VERNON LLC L A CITY DEPT OF WATER AND POWER		New warehouse being planned spoke with Pepe & sergio
Vernon Vacant Lot 2	Vernon	34.00259, -118.23474	6308-013-034	Industrial - Vacant Land	LIGHTON PROPERTY LLC	39,546/.91	Rematious - surrounded by hazourdous companies with hazerdous chemicals A lot of the lots in Vernon are industrial

Table 2. Site Elimination Reasoning

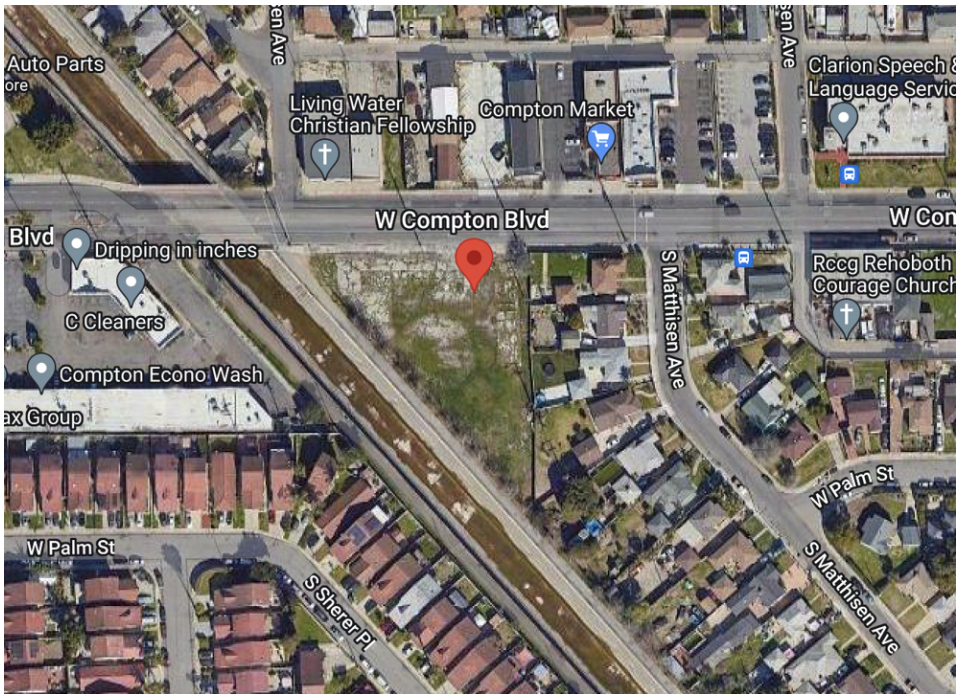
Site Name	Status	Why Eliminated
Bell Gardens Vacant Lot	X	Affordable housing plan
Compton Vacant Lot 1		
Compton Vacant Lot 2		
Long Beach Vacant Lot 1	X	Zoned industrial, existing proximity to parks
Long Beach Vacant Lot 2	X	Zoned industrial, existing proximity to parks
Long Beach Vacant Lot 3	X	Zoned industrial, existing proximity to parks
Paramount Vacant Lot 1	X	Prox to existing parks, potential use by existing ownership (solar)
Paramount Vacant Lot 2	X	Located near to utilities/suggestion from planning department
South Gate Vacant Lot 1	X	In process of becoming an urban orchard
South Gate Vacant Lot 2		
Vernon Vacant Lot 1	X	Plans to be concrete warehouse
Vernon Vacant Lot 2	X	Adjacent to companies with hazardous materials, park will be touch in the city of Vernon because it is an Industrial City

11.4. Appendix D

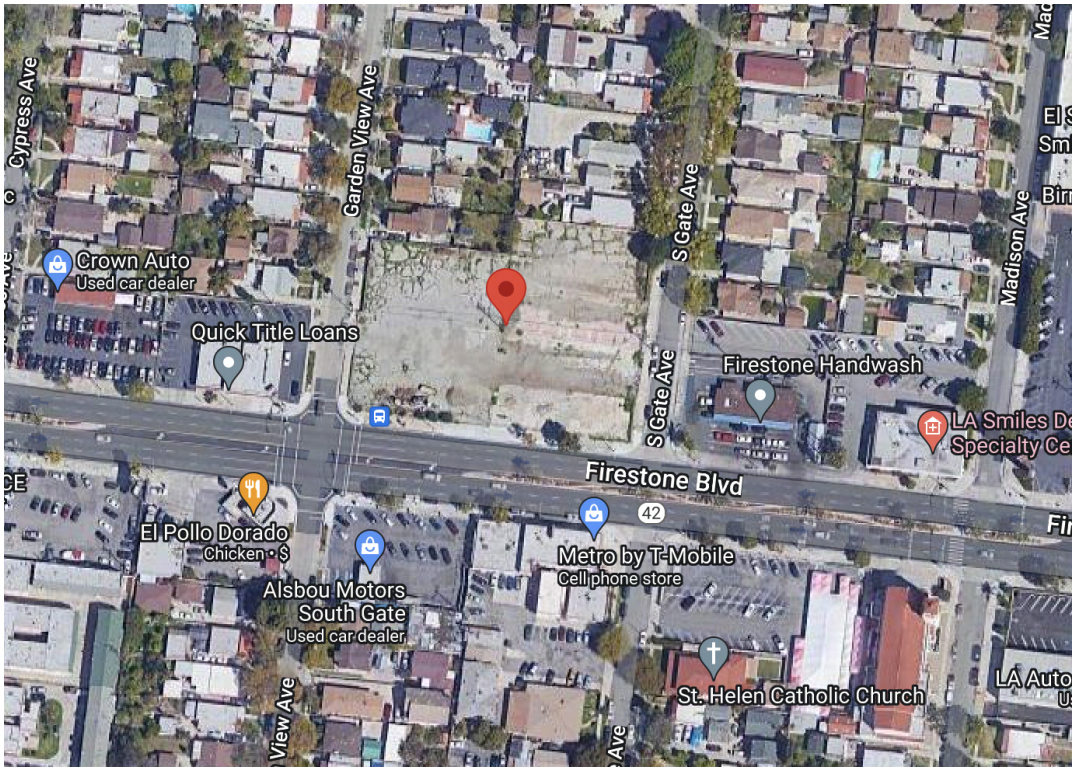
Pictures from Site Visits (Compton Lot 1, Compton Lot 2, South Gate Lot 2)

a) Compton Lot 1

b) Compton Lot 2



c) South Gate Lot 2




FOR SALE - LAND DEVELOPMENT SITE
3125 Firestone Blvd., South Gate, CA 90280
•Multi-Family Apartments
•Retail Shopping Center
•Owner User Development
•±57,600 SF of Land
•Zoned: SGCM-R3
•±300 Ft of Frontage
ARMANDO AGUIRRE
213-926-5595
SHERETTA MORRIS
213-842-2670
www.LegendaryCRE.com

11.5. Appendix E

Initial Draft of Community Survey

Survey and Interview Questions

Los Angeles Waterkeeper and UCLA IoES Practicum Team

Questionnaire: ***Background Information***

"Our team of UCLA undergraduate students is working together with a local non-profit organization, LA Waterkeeper, to increase access to neighborhood parks and other greenspace in your community. Please give us 5 minutes of your time to respond to 10 quick questions. Your responses are completely voluntary. This will help decision makers understand what parks and recreational improvements are needed for the overall health of your community, and how you and everyone in your community can benefit from them. Thank you for sharing your opinion!"

**This survey was modified from the California State Parks "California's Health in Parks Survey."*

1) This survey seeks to cater to the specific needs of your community. To help us identify your community, please respond to the following prompts. All information collected is used for survey purposes only and will not be shared or used outside of this study.
    - Zip Code of residence _____
    - How long have you resided here?
        - ☐ 0-5 years
        - ☐ 6-10 years
        - ☐ 11-20 years
        - ☐ 20+ years
    - How many people are currently living in the household? ____
    - Are there any children under the age of 18 residing at your primary residence?
        - ☐ Yes
        - ☐ No

2) For each of the following statements, indicate whether you agree or disagree with the following statements.
    - My community has a sufficient amount of parks
        - ☐ Agree
        - ☐ Disagree
        - ☐ Not sure
    - My community would benefit from more parks
        - ☐ Agree
        - ☐ Disagree
        - ☐ Not sure

3) On average, how often do you visit parks in your neighborhood?
    - ☐ Daily
    - ☐ A few times each week
    - ☐ Weekly
    - ☐ Monthly
    - ☐ Rarely/never

    3.1) If applicable, how do you typically travel to a park in your neighborhood? (Check all that apply)
    - ☐ Car/SUV/Truck
    - ☐ Motorcycle
    - ☐ Walk
    - ☐ Bicycle
    - ☐ Public transportation (please specify): _____
    - ☐ Other (please specify): _____
    - ☐ N/A

    3.2) How long does it currently take to commute to your most frequently visited park?
    - ☐ 0-5 mins
    - ☐ 5-15 mins
    - ☐ 15-30 mins
    - ☐ 30+ mins
    - ☐ N/A

4) How often would you be likely to visit a park within your neighborhood if one was in walking distance?
    - ☐ Daily
    - ☐ 4-6 times a week
    - ☐ 2-3 times a week
    - ☐ Once a week
    - ☐ Other (please specify): _____
    - ☐ N/A

Park Features and Elements

5) Think about the public park that you visit the most often. Why do you visit this park? (Check all that apply)
    - ☐ Exercise
    - ☐ Be with families or friends
    - ☐ To experience nature
    - ☐ Relax and relieve stress
    - ☐ Have fun or play
    - ☐ Cultural/Social Events (art, music, farmer's market, etc.)
    - ☐ Social service such as food distribution
    - ☐ Walk pets
    - ☐ Other _____

6) If a new park were built in your community, which features/amenities would be most important to you? Select all that apply.
    - ☐ Playground
    - ☐ Bike/Walking Trails
    - ☐ Dog Park
    - ☐ Community Center
    - ☐ Basketball Court
    - ☐ Tennis Court
    - ☐ Athletic Field
    - ☐ Community Garden
    - ☐ Wetlands/Natural Habitat
    - ☐ Other: _____

7) Imagine that a new public park is being established in your neighborhood. What types of activities/engagement programs would give you more incentive to visit this park? Select all that apply.
    - ☐ Concerts/live entertainment
    - ☐ Sports events
    - ☐ Cultural/community-oriented festivals
    - ☐ Child care/recreation teams
    - ☐ I would not use community programming
    - ☐ Other: _____

Park Benefits

8) Should nature and ecological systems be prioritized in a public park (stormwater capture, native plants, habitat restoration, etc)?
    - ☐ Yes
    - ☐ No
    - ☐ Not sure

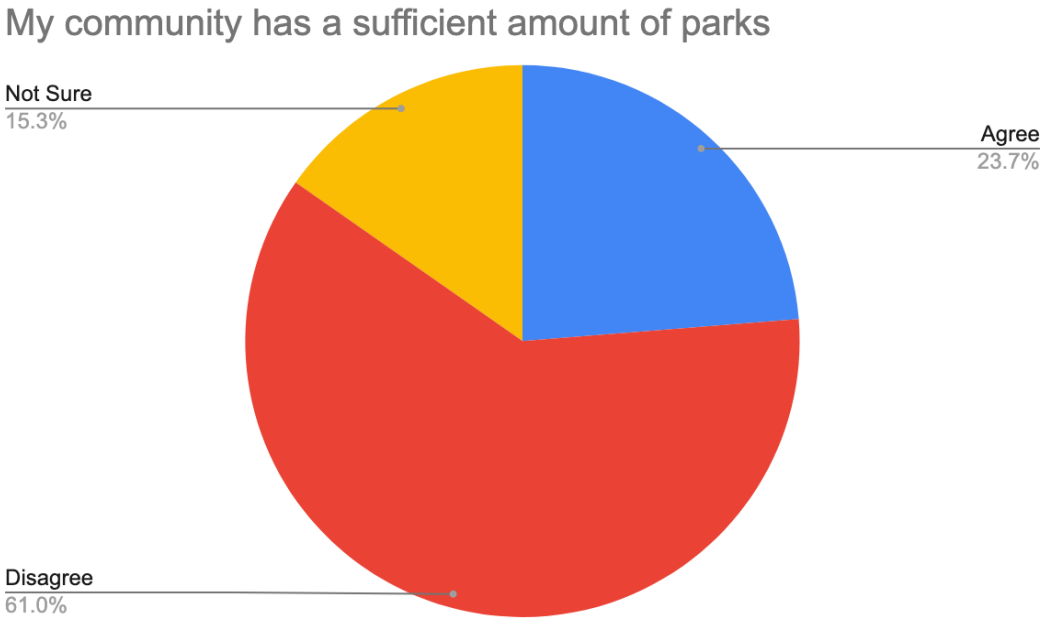
9) Would a new public park in your neighborhood help to improve your overall physical health and/or reduce your overall level of stress?
    - ☐ Yes
    - ☐ No

Is there anything else you would like to share with us about the park and recreation needs of your community? Is there anything else we should be asking?

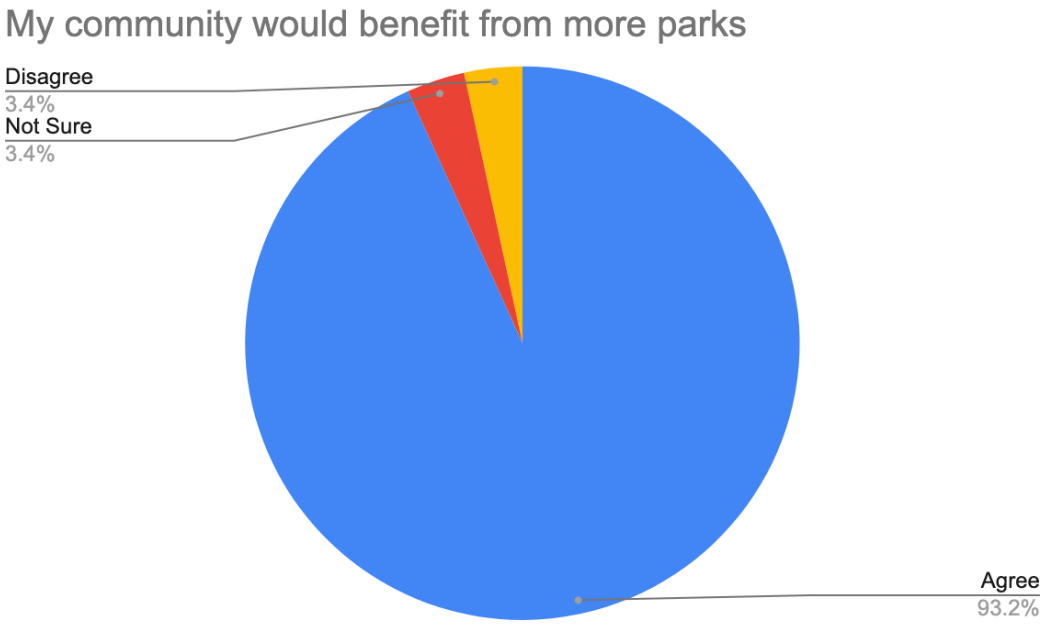
11.6. **Appendix F**

Visualizations of Community Survey Responses (Raw Data)

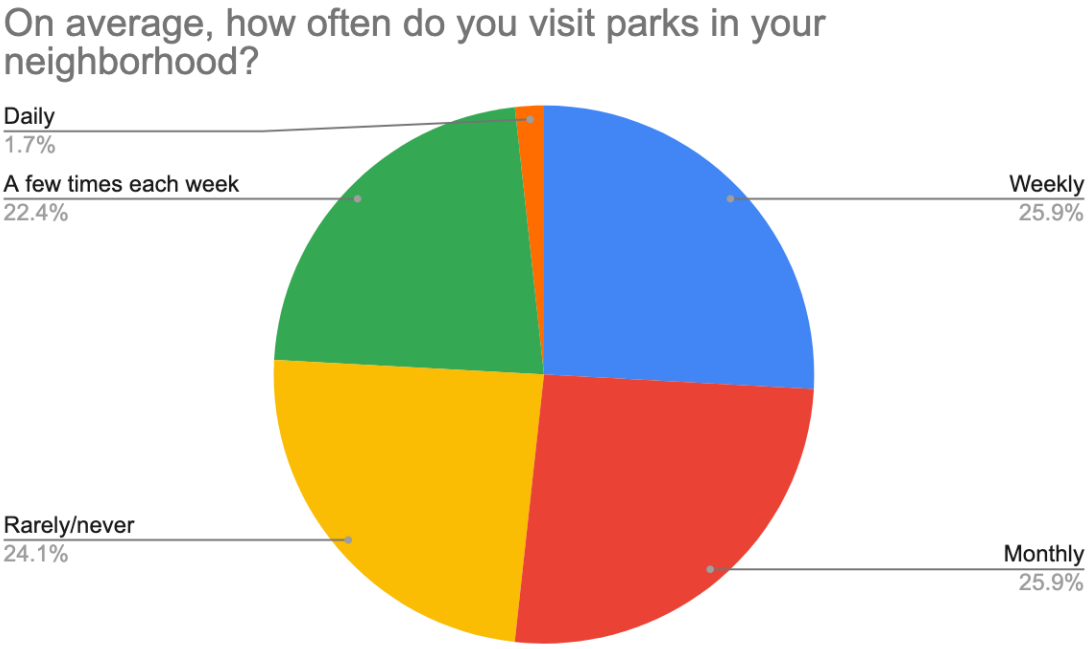
a) Fig. F1



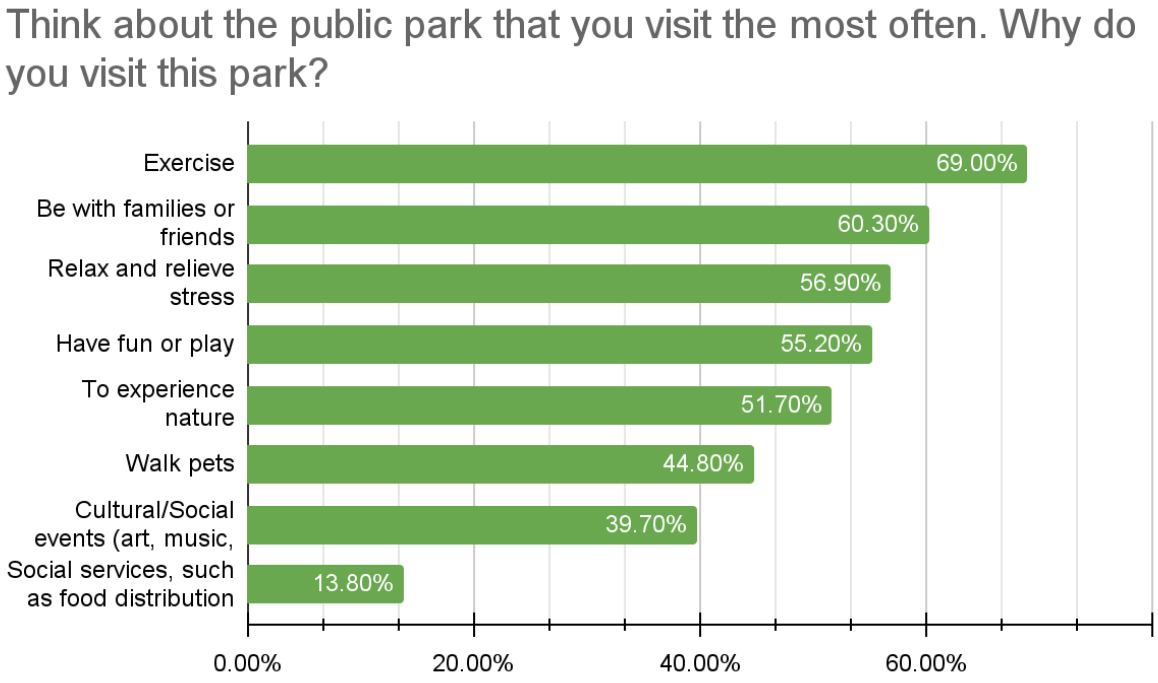
b) Fig. F2



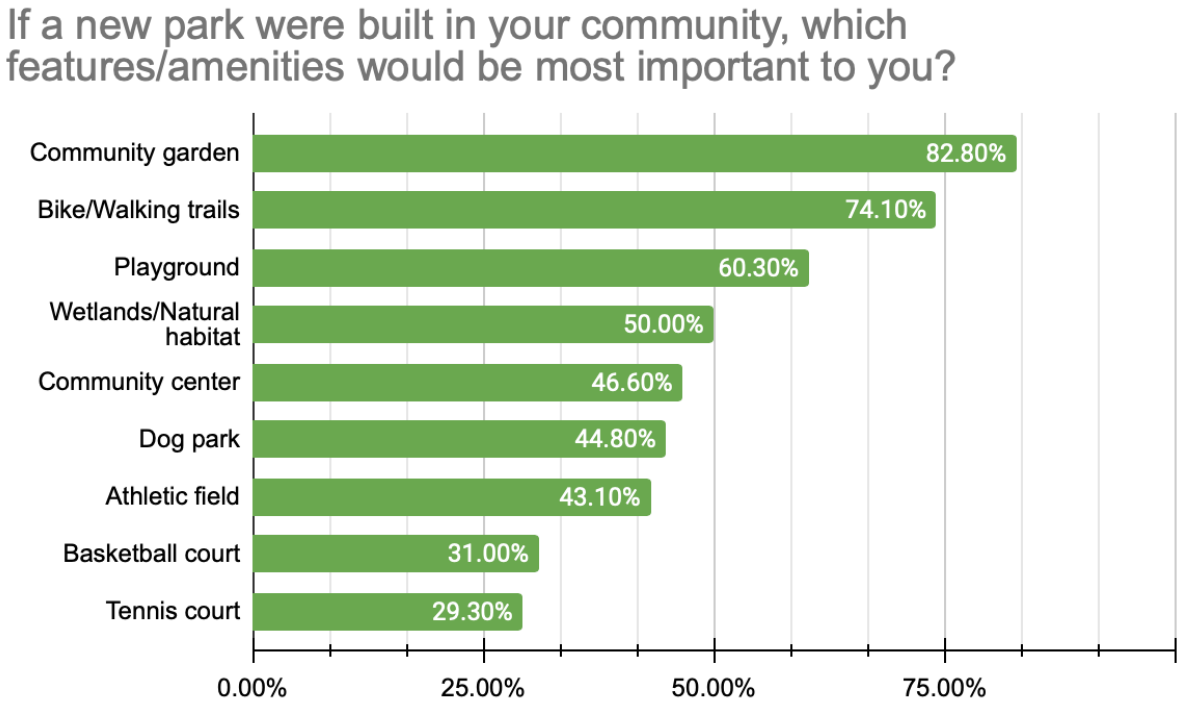
c) Fig. F3



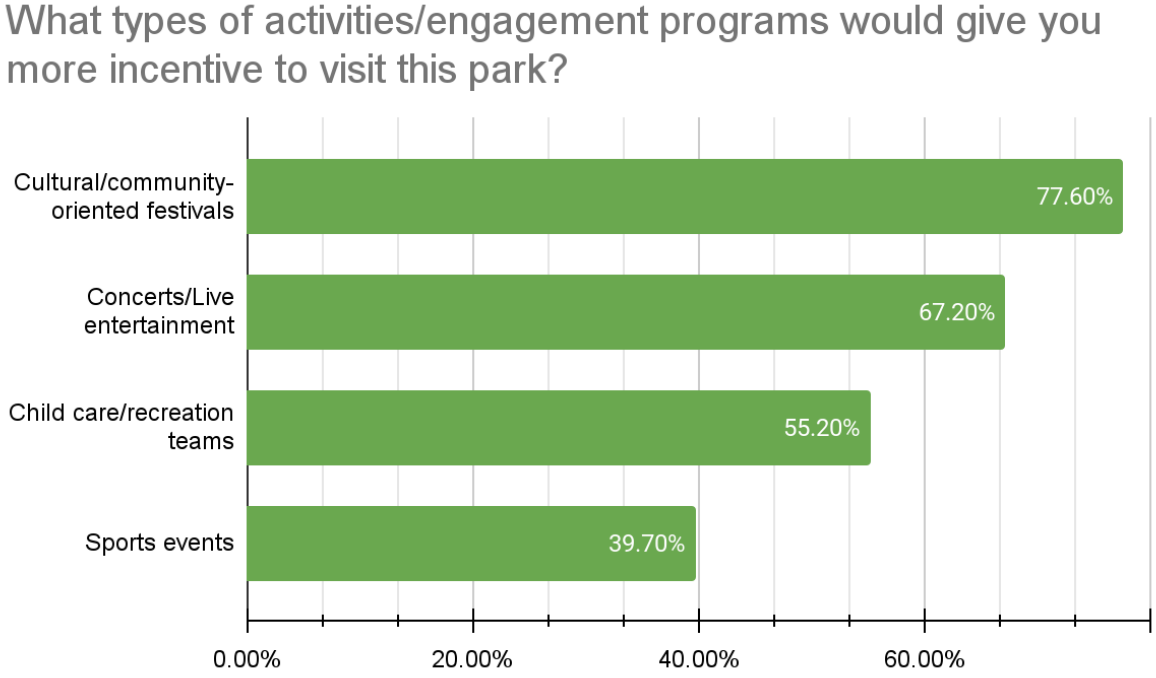
d) Fig. F4



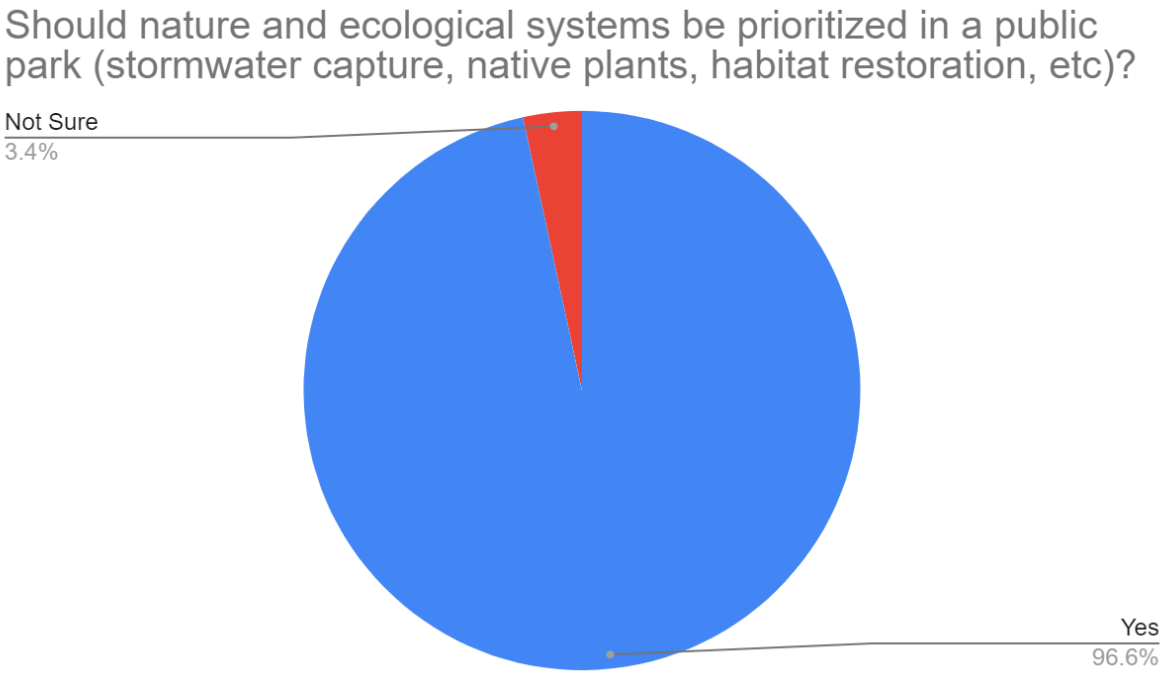
e) Fig. F5



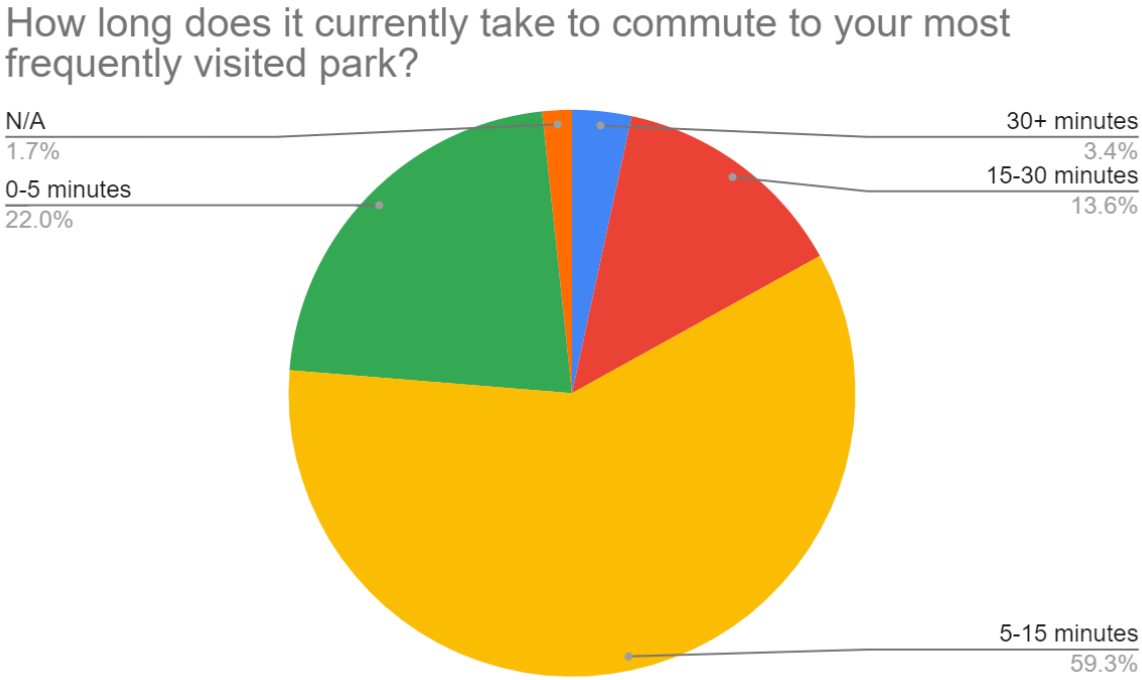
f) Fig. F6



g) Fig. F7



h) Fig. F8



11.7. Appendix G

Revised Draft of Survey Questions

Survey and Interview Questions

Los Angeles Waterkeeper and UCLA IoES Practicum Team

Questionnaire: ***Background Information***

"Our team of UCLA undergraduate students is working together with a local non-profit organization, LA Waterkeeper, to increase access to neighborhood parks and other greenspace in your community. Please give us 5 minutes of your time to respond to 10 quick questions. Your responses are completely voluntary. This will help decision makers understand what parks and recreational improvements are needed for the overall health of your community, and how you and everyone in your community can benefit from them. Thank you for sharing your opinion!"

**This survey was modified from the California State Parks "California's Health in Parks Survey."*

1) This survey seeks to cater to the specific needs of your community. To help us identify your community, please respond to the following prompts. All information collected is used for survey purposes only and will not be shared or used outside of this study.
    - Zip Code of residence _____
    - Please indicate your age range
        - ☐ Under 18
        - ☐ 19-34
        - ☐ 35-55
        - ☐ 55+
    - Are there any children under the age of 18 residing at your primary residence?
        - ☐ Yes
        - ☐ No

2) For each of the following statements, indicate whether you agree or disagree with the following statements.
    - My community has a sufficient amount of parks
        - ☐ Agree
        - ☐ Disagree
        - ☐ Not Sure
    - My community would benefit from more parks
        - ☐ Agree
        - ☐ Disagree
        - ☐ Not Sure

3) On average, how often do you visit parks in your neighborhood?
   - ☐ Daily
   - ☐ A few times each week
   - ☐ Weekly
   - ☐ Monthly
   - ☐ Rarely/never

   3.1) If applicable, how do you typically travel to a park in your neighborhood? (Check all that apply)
   - ☐ Car/SUV/Truck
   - ☐ Motorcycle
   - ☐ Walk
   - ☐ Bicycle
   - ☐ Public transportation (please specify): _____
   - ☐ Other (please specify): _____
   - ☐ N/A

   3.2) How long does it currently take to commute to your most frequently visited park?
   - ☐ 0-5 mins
   - ☐ 5-15 mins
   - ☐ 15-30 mins
   - ☐ 30+ mins
   - ☐ N/A

4) How often would you be likely to visit a park within your neighborhood if one was in walking distance?
   - ☐ Daily
   - ☐ A few times each week
   - ☐ Weekly
   - ☐ Monthly
   - ☐ Rarely/never

Park Features and Elements

5) Think about the public park that you visit the most often. Why do you visit this park? Select all that apply.
    - ☐ Exercise
    - ☐ Be with families or friends
    - ☐ To experience nature
    - ☐ Relax and relieve stress
    - ☐ Have fun or play
    - ☐ Cultural/Social Events (art, music, farmer's market, etc.)
    - ☐ Social service such as food distribution
    - ☐ Walk pets
    - ☐ Other _____

6) If a new park were built in your community, which features/amenities would be most important to you? Select all that apply.
    - ☐ Playground
    - ☐ Bike/Walking Trails
    - ☐ Dog Park
    - ☐ Community Center
    - ☐ Basketball Court
    - ☐ Tennis Court
    - ☐ Athletic Field
    - ☐ Stormwater Capture Features
    - ☐ Community Garden
    - ☐ Wetlands/Natural Habitat
    - ☐ Other: _____

7) Imagine that a new public park is being established in your neighborhood. What types of activities/engagement programs would give you more incentive to visit this park? Select all that apply.
    - ☐ Concerts/live entertainment
    - ☐ Sports events
    - ☐ Cultural/community-oriented festivals
    - ☐ Child care/recreation teams
    - ☐ I would not use community programming
    - ☐ Other: _____

Park Benefits

8) Should nature and ecological systems be prioritized in a public park (stormwater capture, native plants, habitat restoration, etc)?
   - ☐ Yes
   - ☐ No
   - ☐ Not Sure

9) Would a new public park in your neighborhood help to improve your overall physical health and/or reduce your overall level of stress?
   - ☐ Yes
   - ☐ No
   - ☐ Not Sure

10) Is there anything else you would like to share with us about the park and recreation needs of your community? Is there anything else we should be asking?

12. References

Alvey, A. A. (2006). Promoting and preserving biodiversity in the urban forest. Urban Forestry & Urban Greening, 5(4), 195-201.

Anguelovski, I., Connolly, J. J. T., Cole, H., Garcia-Lamarca, M., Triguero-Mas, M., Baró, F., Martin, N., Conesa, D., Shokry, G., Del Pulgar, C. P., Ramos, L. A., Matheney, A., Gallez, E., Oscilowicz, E., Máñez, J. L., Sarzo, B., Beltrán, M. A., & Minaya, J. M. (2022). Green Gentrification in European and North American Cities. Nature Communications, 13(1), 3816. https://doi.org/10.1038/s41467-022-31572-1

Ardoin, J. (2020, November 10). 32 Native Plants for California: Flowers, Succulents, Shrubs, and Trees. Lawnstarter. https://www.lawnstarter.com/blog/california/native-plants-california/

Bergtraun, R., Blanchette, A., Caballero, A., Cheng, C., Cheslick, S., Lidner, J., & Sulimov, K. (2022). Community Park Planning Along the Los Angeles River: An Equitable Approach Based on Environmental, Socioeconomic, and Health Metrics. UCLA. https://static1.squarespace.com/static/5f84d910a5bb1f76ec33550d/t/62cf49683ecbc05488f1d433/1657751920052/LA+Waterkeeper+Practicum+Final+Report.pdf

Canada Geese Behavior & Biology. (2021, January 29). Indiana Department of Natural Resources.https://www.in.gov/dnr/fish-and-wildlife/hunting-and-trapping/canada-geese-management/behavior-and-biology/

Castagnola, M. (2015). Gentrification without Displacement [Master in City Planning, Massachusetts Institute of Technology]. https://dspace.mit.edu/handle/1721.1/99071

CDC. (2017, June 8). Health Effects of Gentrification. CDC. https://www.cdc.gov/healthyplaces/healthtopics/gentrification.htm

City of Compton 2030 Comprehensive General Plan Update. (2014). https://2urbangirls.com/wp-content/uploads/2016/07/Compton-General-Plan-current-version-2016.pdf

City of Paramount Climate Action Plan. (2021). https://paramountenvironment.org/wp-content/uploads/2021/09/CAP_2021-06-25.pdf

City of South Gate Parks and Recreation Master Plan. (2008). https://www.cityofsouthgate.org/files/sharedassets/public/meetings/departments/police/parks-amp-recreation/documents/master-plan-final-2008_201412081440108091.pdf

Cohen, D. A., Han, B., Nagel, C. J., Harnik, P., McKenzie, T. L., Evenson, K. R., ... & Katta, S. (2016). The first national study of neighborhood parks: Implications for physical activity. American journal of preventive medicine, 51(4), 419-426.

Feldman, A., Foti, R., & Montalto, F. (2019). Green Infrastructure Implementation in Urban Parks for Stormwater Management. Journal of Sustainable Water in the Built Environment, 5(3). https://doi.org/10.1061/JSWBAY.0000880

Ferrer, A., Graziani, T., Woocher, J., & Frederick, Z. (2020). *The Vacancy Report: How Los Angeles Leaves Homes Empty and People Unhoused*. Saje, ACCE, UCLA Law. https://www.saje.net/wp-content/uploads/2020/09/The_Vacancy_Report_Final.pdf

Garcia , R., & Mok, T. (2017, September 5). Whitewashing the Los Angeles River? Gente-fication not Gentrification. Parks & Recreation Magazine, National Recreation and Park Association. https://www.nrpa.org/parks-recreation-magazine/2017/september/whitewashing-the-los-angeles-river-gente-fication-not-gentrification/

Johnson, T. A., & Njuguna, W. (n.d.). Aquifer Storage Calculations Using GIS and Modflow, Los Angeles County, California. Esri. Retrieved June 15, 2023, from https://proceedings.esri.com/library/userconf/proc02/pap0330/p0330.htm

Kaczynski, A. T., Potwarka, L. R., & Saelens, B. E. (2008). Association of park size, distance, and features with physical activity in neighborhood parks. American journal of public health, 98(8), 1451-1456.

Kaźmierczak, A. (2013). The Contribution of Local Parks to Neighbourhood Social Ties. Landscape and Urban Planning, 109(1), 31–44. https://doi.org/10.1016/j.landurbplan.2012.05.007

Kuo, F. E., & Sullivan, W. C. (2001). Environment and crime in the inner city: Does vegetation reduce crime? Environment and Behavior, 33(3), 343–367. https://doi.org/10.1177/0013916501333002

Los Angeles County Department of Public Works. (2023). Los Angeles County Flood Control District. https://pw.lacounty.gov/LACFCD/web/

LA River Master Plan. (2022). LA County. https://pw.lacounty.gov/uploads/swp/LARiverMasterPlan-FINAL-DIGITAL-COMPRESSED.pdf

LA Waterkeeper. (2022, June 23). The Fight for the LA River. LA Waterkeeper. https://www.lawaterkeeper.org/news/the-future-of-the-la-river\

Müller, A., Österlund, H., Marsalek, J., Viklander, M. (2020). The pollution conveyed by urban runoff: A review of sources, Science of The Total Environment, 709(136125), https://doi.org/10.1016/j.scitotenv.2019.136125.

Parks Make Long Beach: Department Of Parks, Recreation And Marine Strategic Plan . (n.d.). Retrieved June 15, 2023, from https://www.longbeach.gov/park/business-operations/about/prm-strategic-plan/

Pasillas, A., Tran, J., Robertson, C., Jessup, K., Callahan, C., & Burstein, M. E. (2016). *Creating a Complete Los Angeles River Greenway for All*. UCLA Luskin Center for Innovation. https://innovation.luskin.ucla.edu/wp-content/uploads/2019/03/Creating_a_Complete_LA_River_Greenway_for_All.pdf

Rigolon, A. (2017, May 3). The Role of Nonprofits in Improving Access to Parks in Los Angeles . CSUN's Valley Nonprofit Resources. https://www.csun.edu/sites/default/files/Rigolon%20-%20HIRI%20talk.pdf

Sahagun, L. (2022, July 14). Environmental groups allege L.A. River Master Plan was approved without proper review. Los Angeles Times. https://www.latimes.com/environment/story/2022-07-14/groups-file-suit-against-los-angeles-river-master-plan

United States Environmental Protection Agency. (2017). Green Infrastructure in Parks: A Guide to Collaboration, Funding, and Community Engagement. https://www.epa.gov/sites/default/files/2017-05/documents/gi_parksplaybook_2017-05-01_508.pdf

Zuk, M., Bierbaum, A. H., Chapple, K., Gorska, K., & Loukaitou-Sideris, A. (2018). Gentrification, displacement, and the role of public investment. Journal of Planning Literature, 33(1), 31–44. https://doi.org/10.1177/0885412217716439