Identifying Suitable Sites for Sheltering Outside in Long Beach, California

by

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To a special person, my lovely wife, Natalie

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Abbreviations

AIN	Assessor Identification Number
CoC	Continuum of Care
GIS	Geographic information system
GISci	Geographic information science
HF	Housing First
HR	Housing Readiness
HUD	Department of Housing and Urban Development
HSA	Homeless Survey Areas
LBC	Long Beach, California
LBMSC	Long Beach Multi Service Center
LULU	Local Unwanted Land Use
NIMBY	Not in My Backyard
PEH	People Experiencing Homelessness
PIT	Point in Time
SES	Socio-economic Status
SSI	Spatial Sciences Institute
USC	University of Southern California

Abstract

The rate of homelessness in the U.S. has steadily risen since 2016, prompting a focused effort to eradicate this crisis primarily through indoor shelters and permanent, affordable housing solutions. However, many unhoused individuals continue to camp nightly in various self-selected locations, lacking the basic necessities for habitation and doing so contrary to official public policy. Despite the inherent dangers and discomfort of outdoor living, some chronically unhoused individuals prefer it to traditional housing options. Emergency shelters present barriers to entry based on lifestyle, often don't meet the desire of unhoused individuals for a sense of community and belonging, and have proven inadequate in meeting public health mandates, such as those required during the COVID-19 pandemic. As an alternative, various forms of outdoor housing encampments for chronically unhoused adults have emerged, particularly in U.S. cities on the West Coast. This project focuses on identifying suitable sites within Long Beach, California for such an encampment, capable of providing potential residents with access to basic necessities including potable water and sanitation. Sites within walking distance of essential services (e.g., food assistance, health clinics) are evaluated for their suitability using a method of analysis known as weighted overlay where the weights are based on the preferences of the unhoused population, supported by empirical studies for justification. Additionally, a sensitivity analysis is conducted to account for parcels within 2,000 feet of schools and parks that are subject to heightened scrutiny due to legal and safety concerns. The project must balance community norms with the needs of the unhoused population. The "Not in My Backyard" (NIMBY) mindset often opposes initiatives that disrupt established norms or introduce locally undesirable land uses (LULUs). By re-imagining outdoor sheltering options and incorporating

insights from community dynamics, this project aims to offer more effective and compassionate solutions for the unhoused in Long Beach, California.

Chapter 1 Introduction

The number of homeless individuals, particularly the chronically unhoused, has been increasing annually since 2016. The 2020 Annual Report from the Department of Housing and Urban Development (HUD) revealed, "On a single night in 2020, nearly four in ten [unhoused persons] were in unsheltered locations such as on the street, in abandoned buildings or in other places not suitable for human habitation." Proposals for alternative solutions are needed as this national crisis continues unabated. Both the unhoused and housed citizens of communities across the U.S. are impacted by the crisis.

Despite gargantuan efforts to address the homelessness crisis, options for chronically unsheltered adults in the city of Long Beach, California (LBC) and the greater Los Angeles County region are insufficient. Traditional approaches (e.g., shelters, housing first) are unable to meet the demand for options. The reasons that persons remain unhoused range from a shortage of shelter beds and affordable housing options to the personal preferences, needs, and characteristics of unhoused individuals. When seeking to re-imagine outdoor housing alternatives, it is essential that the aforementioned reasons be considered in developing solutions that are most likely to be voluntarily accessed by unhoused adults.

To address the crisis at hand, this project pursues a fresh perspective where analysis in geographic information science (GISci) yields parcels of land most suitable for outdoor alternative housing intended for use by a population of chronically unhoused adults within the City of Long Beach. The intended social purpose of such an endeavor is to provide the population in question, who have been unable or unwilling to receive traditional services, a more livable, dignified option in lieu of ad hoc encampments where they may currently reside. Suitable sites would have access to potable water, sanitation, and other essential services.

Specifically, this analysis will focus on the chronically unhoused adult population and potential sites within the geographic area of LBC. As of January 2020, LBC is home to nearly half a million residents with an unhoused population of approximately 1,600 adults. The main objective of this project is to identify and assess potential public and private parcels of land that may serve as suitable sites within LBC based on factors such as location preference of unhoused adults currently sheltering outdoors in LBC, site proximity to community resources currently serving unhoused adults in LBC, essential services and availability of utilities.

The primary audience of such an analysis ostensibly are the leaders of Long Beach who through advocacy, ordinances and budget allocation may be able to realize this project. In particular, the Long Beach Homeless Services Advisory Committee, a body directly reporting to the city council, is currently exploring the possibility of accommodating the un-housed in sanctioned encampments. Monthly meetings are underway to address this matter where the committee is seeking ideas from the public. Beyond Long Beach, other cities may wish to adopt this approach to serve their unhoused constituents.

This analysis is not without a notable limiting factor: climate. Long Beach is blessed with arguably the best weather [228 perfect days] in a state, California, that already is heralded for its Mediterranean climate. A success in Long Beach may be easier to replicate in nearby, balmy Los Angeles, but prove more problematic in four season, Rockies-adjacent Denver. Mitigating measures in such climes would need to be explored. Depending on the severity of the weather extremes, the cost to mitigate may or may not challenge the viability of a project in a similar-minded city to Long Beach, but without the benefit of a coastal, temperate climate.

The federal government is leading the charge for communities to address the crisis of homelessness. In fact, policy from the U.S. Department of Housing and Urban Development

(HUD) calls for "community-wide commitment to the goal of ending homelessness." HUD's Continuum of Care program allocates funding for non-profit providers, states and local governments to assess the needs of the unhoused, evaluate the currently available services and housing options, and encourage use of resources to develop future approaches. Regional planning bodies collaborate in administering the program locally. These planning bodies, also known individually as Continuum of Care (CoC) generally follow geographic areas. Within Los Angeles County, the City of Los Angeles CoC administers on behalf of most of the county except for Glendale, Pasadena and Long Beach who have their own CoCs. It is fortuitous for this project, that Long Beach has its own CoC where researchers may be able to work with a more manageable microcosm of what the greater Los Angeles area and the state of California face.

Due to its diversity and size, this project will be able to compare and contrast LBC with other cities on the West Coast of U.S. of similar population: Fresno, CA (545K); Sacramento, CA (528K); Portland, OR (635K) and Seattle, WA (749K). Demographically, Long Beach is majority-minority, with nearly half a million residents across a wide swath of socio-economic strata. Economically, the city is home to one of the busiest ports in the world and has a sizeable business district in its downtown. Geographically, Long Beach, as its name aptly implies, has beaches fronting its downtown. Additionally, it encompasses rolling hills and flatlands through its suburbs, generally bordered between two significant waterways, the Los Angeles River and San Gabriel River.

1.1 Motivation

Hundreds of thousands of Americans face night after night without shelter in conditions unfit for habitation. The quantity of available shelters beds and permanent housing units is insufficient (Solensten and Willits 2019, 935). Despite the danger, discomfort and scarcity of

resources they face when sheltering outdoors, and even when other housing options or emergency shelter beds are available, a multitude of chronically unhoused adults continue to prefer to shelter outdoors and decline programs seeking to move them into permanent housing options (Stuart 2014, 1917).

Beyond quantity, there are attributes of traditional shelters and housing options that create barriers to entry (e.g., partners, pets, possessions) for a segment of the chronically unhoused adult population (Loftus-Farren 2011, 1076). Most adults desire to exercise self-determination. Many chronically unhoused adults are not willing or able to live within the rigid schedules, hours of operation, rules, regulations, and behavioral expectations that exist in traditional shelter and housing options (Stuart 2014, 1913). Unhoused adults have expressed that these environments are too demanding and intrusive (Jost and Levitt 2010, 246). Additionally, unhoused adults are often seeking a sense of community and belonging that is not a hallmark of the shelter experience. The reality is that shelters may be a place of physical refuge, but they are not a "home".

There is a pressing need for innovative shelter options addressing the needs and preferences of the group in question. Research extending beyond conventional indoor options for sheltering the unhoused is warranted. Such research will allow communities, policy makers and service providers to better understand the needs and preferences of chronically unhoused adults. Thus, opening the door for communities to re-imagine the longer-term possibilities for those already voluntarily sheltering outdoors in the 21st century.

Two major approaches to housing people experiencing homelessness (PEH) have been employed in the last few decades: "Housing Readiness" (HR) and "Housing First" (HF). In the HR approach, PEH must first achieve sobriety to qualify for housing. Conversely, HF seeks first

to place PEH into affordable housing while simultaneously pursuing treatment for mental illness and substance abuse (Osborne 2019, 402). HF originated in Los Angeles in 1988 by an organization, Beyond Shelter, that successfully re-housed homeless families (Waegemakers Schiff and Schiff 2014, 83). Years later, Pathways to Housing out of New York, founded by Sam Tsemberis, further pushed the concept where PEH struggling with mental illness and addiction are integrated into the community in a "scattered-site" manner by means of rent subsidies for privately-owned units (Kohut and Patterson 2022, 62).

HF has significantly impacted the vision and values around approaches to homelessness in the U.S. The foundational belief behind HF is that everyone has a right to a home regardless of circumstances. Transitional spaces (e.g. shelters, encampments) are discouraged in an HF framework in favor of the more permanent and traditional option of affordable housing. Deemed successful, HF has been adopted by municipalities (e.g. Seattle) throughout North America where cities have put forth "ten year plans" to end homelessness (Evans and Masuda 2020, 503).

In spite of efforts and motivation on the part of HF advocates and the communities who adopted the HF framework, homelessness has not been eradicated. Research is showing that a sizeable number of HF clients are returning to their former unhoused lives (Kohut and Patterson 2022, 65). A shortage of affordable housing is at the crux of the problem for advocates of HF and public administrators must determine who amongst the unhoused are the most worthy (Osborne 2019). That, in itself, is contradictory to the ethos of HF where personal circumstances are not expected to drive decision-making. Where the mere state of being unhoused should be the sole qualifier, shortages force service providers to prioritize applicants (Evans and Masuda 2020 513). Consequently, it has encouraged applicants to embellish or outright lie about their struggles in order to gain higher consideration (Kohut and Patterson 2022, 67). The "scattered-site"

method of interspersing PEF throughout municipalities where affordable housing is available, rather than where it is desired, has negatively affected individuals' sense of belonging. Loneliness and social isolation are often cited (Speer 2017, 530).

As with emergency shelters, the HF framework may attempt to house every PEH, but that does not equate to making a home. PEH have diverse needs and preferences that traditional housing options cannot meet with a one size fits all approach. A home ideally offers privacy, autonomy and a place to have personal possessions. A home is the familiar place where friends and family may be welcomed, where a person may cohabitate with their partner and own pets. To have a home in a neighborhood or community provides an opportunity for a sense of belongings and connections outside the immediate living space. Those sheltering outdoors have found ways to create a sense of home and community for themselves, outside the confines of traditional housing options (Sparks 2017, 89).

It is impossible to ignore the risks to public health when persons are sheltering in densely populated, poor conditions, both indoors and outdoors, with little ability to socially distance. With the increased realization since the Covid-19 pandemic, that future pandemics or more localized public health crises could be on the horizon, the need for innovation in housing options is more pressing than ever. Covid-19 demonstrated that dense or congregate housing solutions are high risk zones for the spread of infectious disease. Also, in the vein of public health, individuals and the community at large are at risk when large numbers of persons are living without access to potable water, basic hygiene and restroom facilities. The vast majority of those currently sheltering outdoors have little to no access to these utilities considered necessities of life for the average American. Access to transportation and other resources such as healthcare facilities are also essential to public health.

Any solution that involves identifying a site suitable for shelter outdoors, must consider access to utilities, site safety from various factors including risk for natural disasters such as fire and flood, as well as access to transportation and essential services. Because an outdoor alternative housing site does not readily exist within the city of Long Beach, the use of GIS will be an essential tool in identifying a suitable site. Through the use of site suitability analysis methods such as weighted overlay, the city may be able to find a site that could accommodate chronically unhoused adults.

Advocates for the betterment of the chronically unhoused, particularly those seeking only affordable housing options, may frown upon the suggestion of identifying locations for outdoor shelter options for chronically un-housed adults. It may be viewed as accepting a substandard or inhumane way of living and giving up on the vision of ending homelessness all together. It may also be criticized as being unfavorable to the interests of the community's citizens, economy and reputation. However, this project seeks to take into account the preferences and barriers to entry faced by those already sheltering outdoors and to explore options where conditions are more fit for human habitation, accepting the fact that there are those of the chronically unhoused adult population who prefer sheltering outdoors over accessing shelters or permanent housing. When the voices of those who are sheltering outdoors are elevated and they are given an opportunity to exercise self-determination, it is possible to re-imagine alternatives that would suit their needs and preferences while also supporting the needs and interests of the community at large.

1.2 Study Area

Long Beach, California (LBC), incorporated as a charter city in 1897, is located in the southern part of Los Angeles County, abutting neighboring Orange County to its south. The total area of the city is 77.84 square miles of which 50.72 is land. Topographically, it is mainly flat in

the northern and central areas, with a notable exception of aptly described Signal Hill, an enclaved city that is situated roughly centrally within LBC. Major waterways, Los Angeles River and San Gabriel River, crisscross LBC on its western and eastern borders, respectively. Adjacent to the Los Angeles River is Terminal Island, shared with City of Los Angeles, where the two municipalities have the Los Angeles-Long Beach port, the busiest in the U.S. Downtown LBC is on the shores of the Pacific Ocean abutting the Los Angeles River to its west. High socio-economic status (SES) neighborhoods of Belmont Shores and Naples are located to the east southeast of downtown on the shoreline. Another high SES neighborhood, Bixby Knolls, centered on Atlantic Avenue, is due northwest of Long Beach Airport. Low SES neighborhoods are found in North Long Beach and Eastside (misnomer, as it refers to east bank of Los Angeles River, which is on the western side of LBC). Transportation wise, Long Beach is served by major freeways, Long Beach Freeway (Interstate 710), San Diego Freeway (Interstate 405), San Gabriel River Freeway (Interstate 605) and Artesia Freeway (California State Highway 91). Long Beach Transit is the municipal bus line serving connections to the Metro light rail and other public transport agencies. Metro A line formerly Blue line originates from downtown Los Angeles terminating in Long Beach.

Demographically speaking, Long Beach has 466,742 inhabitants according to the 2020 Census. The city is ethnically diverse with Hispanics or Latinos making a plurality at 43.9% followed by Whites (27.8%), Asians (13%), Blacks or African Americans (12.1%), Two or more races (8.7%), Native Hawaiians and other Pacific Islanders (5%) and American Indians and Alaska Natives (1%).

Point in Time (PIT) count of the unhoused within Long Beach is conducted every year. The city is divided into fifty-two homeless survey areas (HSA) where teams of three to five

volunteers conduct visual counts during the twilight hours of a night in January and sometimes February. Findings for 2022 PIT report 3,447 experiencing homelessness. Of these, 71% are unsheltered. More than half report experiencing homelessness for the first time, while 38% report being chronically homeless. Two out of three unhoused adults are male. One out of ten are veterans. Racial breakdown shows that African Americans are disproportionately more likely to be homeless than the general population of Long Beach: 30.2% rather than 12.1%. Figure 1 shows the City of Long Beach with nine districts representing its city council.

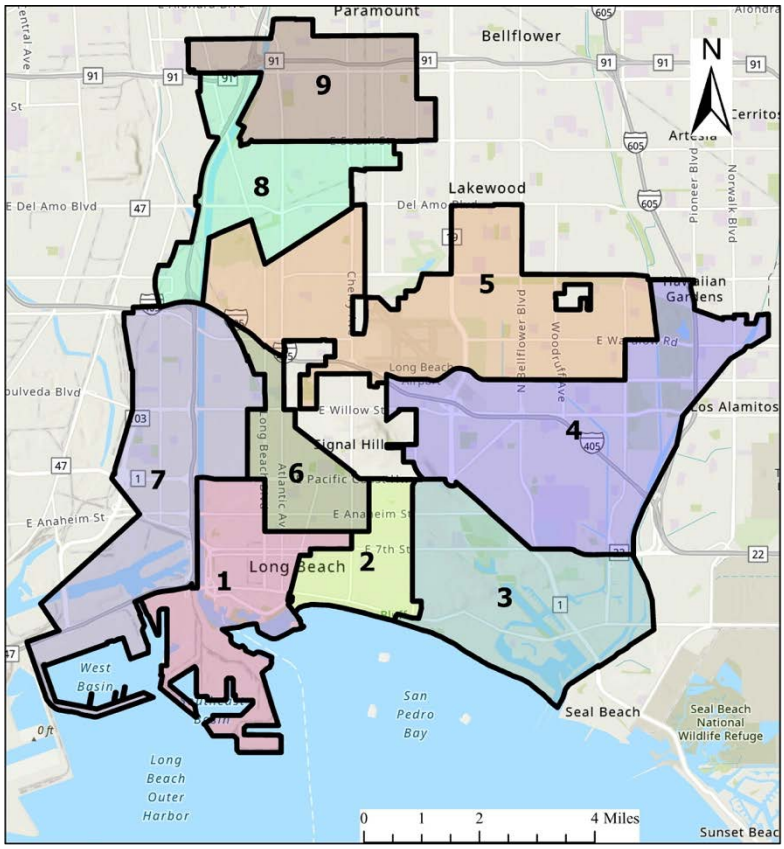

Figure 1: City of Long Beach, CA by Council Districts (2022)

1.3 Research Objectives

This thesis aims to address the needs of the unhoused population by conducting a site suitability analysis to identify potential vacant land parcels suitable for establishing a sanctioned

encampment. A primary objective is to assess the importance of various services, such as shelters, public transportation (metro stations), food assistance locations, and hospitals, to the community. Walking distances from each parcel to the services will be classified and used in a weighted overlay method. The concentration of unhoused individuals in homeless survey areas (HSA) will also be incorporated into the weights for the method. This approach may help yield suitable parcels. Additionally, an alternative model citing empirical studies will use different weights for each of the services to determine if there is any significant difference. Furthermore, legal constraints (buffers around schools and parks) will be taken into account, as they may complicate the identification of suitable parcels and influence public policy decisions regarding the unhoused.

1.4 Structure of Thesis

This thesis consists of five chapters. Chapter 1 provides an introduction to the topic of investigation and motivation for this work along with a description of the study area. Chapter 2 presents a literature review examining the current drivers, challenges, and opportunities of the unhoused and where there are enterprising developments that are worthy of pursuit in the study area. Chapter 3 provides a summary and description of the data sources and methodology employed in this project. A summary of results and research findings follows in Chapter 4. The thesis is concluded in Chapter 5, which includes a discussion of research limitations and potential future avenues for exploration.

Chapter 2 Literature Review

Policy makers, government agencies, private entities, religious groups, academics and advocates are scrambling to develop and assess potential solutions to the growing crisis of homelessness in the U.S. Studies have shown that one must grapple with diverse perspectives and policy constraints that impact the support for and feasibility of alternative living options for unhoused adults. A review of the literature demonstrates there are benefits to alternative outdoor housing options for unhoused adults, including minimal barriers to entry, increased self-determination, stability and sense of community. In identifying and assessing sites suitable for an alternative outdoor housing option in LBC, this project has the potential to increase options for unhoused adults and affect changes in local public policy.

2.1 Existing Outdoor Housing Solutions

Across the US and around the world, un-housed adults are setting up camp in a range of self-selected locations, without permission and without basic necessities to make those locations fit for human habitation. The race to eradicate homelessness has focused almost entirely on indoor shelters and permanent, affordable housing. Few have dared to consider outdoor housing solutions. One reason for this is climate considerations that limit such discussion to locations with predominantly mild weather throughout the year. Another reason is society's impetus to eliminate the problems that come with unhoused adults who are camping in inconvenient and unsafe locations by simply pushing them out of town or bringing them indoors and out of sight.

Many cities, particularly those on the West Coast, have become more tolerant and even cooperative with organized encampments as options to address the sheer number of unhoused adults (Przybylinski 2021, 434). Organized encampments typically refer to a designated place

where multiple unhoused adults may sleep outdoors for one or more nights, with or without tents or other temporary structures. They may provide amenities such as food, restrooms and other services and are likely to have some level of rules and regulations. Some organized encampments are in long-term sites while others may move periodically.

One such organized encampment is Right 2 Dream Too (R2DT) located in Portland, Oregon. R2DT operates as a low-barrier encampment where 70 residents at a time may find a safer place to sleep within a community of like-minded persons, (Przybylinski 2021, 426). Founded in 2011 by and for the unhoused, R2DT was initially set up on a private plot of leased land within the Old Town Portland neighborhood. This was an area where a number of the unhoused in Portland already preferred to camp. Service centers were densely clustered near the site and thus provided convenient proximity to the residents of R2DT.

As one might expect, the presence of a somewhat large, organized encampment in the heart of Portland, brought legal challenges from the City. One legal challenge was whether R2DT was a permissible encampment per city land use laws. The question arose as to what R2DT actually is: a recreational campsite or transitional housing accommodation? The city argued it was a recreational campsite in its citations but R2DT counter-argued that it was a transitional housing accommodation which is permissible under Oregon land use laws, (Przybylinski 2021, 427). A stalemate ensued and the City ultimately offered another site for use by R2DT plus a waiving of fines incurred during the challenge.

While the City may have acquiesced, Portland business groups and a developer continued to be hostile to the existence of the organized encampment. This is not surprising as concerns about the economic impact of visible homeless encampments on local business is commonplace in communities of all sizes. Despite efforts to undermine R2DT, and in spite of a forced change

in location, the organized encampment continues to exist. It is noted that the substitute site provided by the city is still within walking distance of essential services for the unhoused but did not take into account the preferences of the unhoused, as this project aims to do.

Another encampment in Portland, Dignity Village, has a similar story albeit with different tactics. Born as a political movement in December 2000, Dignity Village deliberately occupied a parcel of city-owned land within the core center of Portland underneath the Broadway Bridge. Within days the police swept through and did so multiple times thereafter. Rather than accept repeated displacements by the authorities and scatter as individuals throughout the city, they chose not to disband. Instead, as a means of attracting public attention and shaming the progressive-conscious city, every time a displacement action occurs, they move en masse in a shopping cart parade to another area of the city. After a large parade took place in 2010, Mayor Vera Katz and Housing Commissioner, Erik Sten, chose to negotiate with the community (Farrington, 2023, 10).

However, the city would not accept the sight of Dignity Village nor its site under the Broadway Bridge. It convinced the community to first move to a less visible location under the Fremont Bridge before ultimately seeking to have it relocate to a parcel seven miles north, adjacent to the international airport, a leaf composting facility and a corrections facility. Banished to the urban periphery, beyond the reasonable reach of services in central Portland, adjacent to local unwanted land uses (LULU), many within the community objected to the site. Unfortunately for Dignity Village, it is a LULU itself, and consequently, the city decided accordingly. The encampment, though initially fractured in response to the city's terms, came to accept the site known as Sunderland as their new home. In exchange for collecting data on residents, limiting residency to two years, and cooperating with local service providers, Dignity

Village has been given the city's blessing as a sanctioned encampment. A self-governed community, it now serves houseless individuals in transition to more permanent housing (Farrington, 2023, 11).

Further north, in Seattle, Washington, where the term "Skid Row" originated, multiple organized encampments have been established. The road to acceptance of such encampments as long-term solution to addresses homelessness in Seattle has been a rocky one. One of Seattle's organized encampments, aptly named "Tent City," was scorned for years and even demolished by the City of Seattle before it eventually came into acceptance years later. The city was determined to eradicate the need for tent cities. In 2005, Seattle put forth the Ten-Year Plan to End Homelessness. The objective was to mitigate homelessness, and where prevention was not feasible, to facilitate swift transitions for unhoused persons from indoor shelters to permanent housing options. But, by 2014, news of the tragic death of an unhoused man camping in a precarious location above a freeway was just one incident that highlighted the fact that homelessness was still a significant issue in Seattle and the Ten-Year Plan had not put an end to the problem. The City has since accepted that encampments on public property are here to stay, (Sparks 2017, 86).

Over the years, the original "Tent City" encampment in Seattle has morphed and cloned into additional sites. Each site has some flexibility to operate differently. At a site known as "Tent City 3," the encampment is self-managed, and residents of the site have created a community unto themselves. Each resident nominates another for a task, and each is duty bound to perform it. Violating the community's rules may lead to reprimands, including expulsion. For the safety of the community, security assignments are a regular task. Maintaining order at Tent City 3 is key, as one of the residents notes, it helps to keep the "riff raff out", (Sparks 2017, 98).

Keeping the “riff raff” out suggests that this particular outdoor housing option, may have some barriers to entry. As many organized encampments do, Tent City 3, has various regulations including prohibitions on drugs and weapons, and requires segregation of men and women in tents, (Sparks 2017, 97). Prohibition of drug use and rules that prevent couples from sharing a tent are a non-starter for many would-be campers who might avoid sheltering options that are too strict and limit their freedom to use drugs or share sleeping space with who they choose.

However, Tent City 3 residents have reported that rules are not strictly enforced. Reputation as a “good camper” allows greater leeway with infractions, whereas those considered disruptive or “lazy” may suffer expulsion, (Sparks 2017, 98). It is suggested that this flexibility in exercising discretion provides consideration and perhaps shows humanity that otherwise would be absent in more regimented operations. For example, a new camper had the misfortune of having her husband fail to show up for his assigned security duty, an infraction that calls for expulsion. However, the EC on duty stated that he was not going to write it up, turning a blind eye and stating that this never happened, (Sparks 2017, 99).

Seattle’s approach to organized encampments involves oversight by the city’s Human Services Department and local non-profit service entities whose regulations that limit their autonomy. While Tent City 3 implements some form of self-management, it is also under sponsorship of an agency named SHARE/WHEEL that has been registered with the city. The city’s human services department authorizes SHARE/WHEEL to oversee encampments allowing their existence for a year at a time. Curiously, though, Tent City 3 is not stationary for that yearlong period. Rather, the encampment must move to a new location every ninety days.

In contrast to the express aim of this project to assess the suitability of a site, Seattle’s insistence that the encampments keep moving demonstrates a lack of intention to consider the

suitability of the encampment site in terms of location preference of the unhoused, stability, or proximity of services. Perhaps this requirement is intended to keep the visibility of the organized encampment to a minimum. It could also be intended to inhibit an encampment from becoming a long-term norm for the unhoused. It appears Seattle may not have fully accepted that encampments as anything other than a stop-gap emergency housing solution for the unhoused that must be tolerated until a better solution is realized.

Another alternative to meeting the needs of the un-housed is the "campground" approach found in New Zealand. Kearns et al. argue that a campground is a viable solution addressing, in part, the severe housing affordability crisis that is engulfing metropolitan Auckland, New Zealand, (Kearns et al. 2019, 299). Superficially reminiscent of trailer parks in North America, the campgrounds identified in the article cater to the following guests: tourists, long-term residents, and a combination of both (i.e., mixed). A significant benefit to campgrounds is that the chronically unhoused may enjoy a sense of community along with the enhanced dignity and increased quality of life provided by access to utilities, sanitation and amenities like those often found in recreational campgrounds in North America. The authors also showcase the concept of the campground including a *service hub*. These are "clusters of low-cost housing and social support services" such as, literacy programs, support groups and care centers that address health and mental health needs.

Surveys of the campground's guests show the attitudes and feelings about living in a campground have been positive for the long-term residents who are able to avail themselves of a variety of services brought in by charitable groups and public agencies. However, surveys of the campground's guests and managers demonstrate that there are differences of opinion amongst the guests staying as tourists and those who are long-term residents. For example, long-term

residents have taken to identifying communal swimming pools as “theirs” and tourists, according to a resident, tend to view the long-term residents negatively and think “[they] are unemployed or in gangs.” One approach to maintaining the peace has been separation of the two populations in order to minimize mistrust and fear, (Kearns et al. 2019, 306).

The challenges of housing insecurity are still ever present in the New Zealand campgrounds. Changes in ownership, regulations and rising property values have residents in these campgrounds feeling anxious. One resident expressed, “The hardest thing is the uncertainty; will it close? We want to know… not wondering, being in limbo. We don’t know if we will be booted out, that’s what sucks.” (Kearns et al. 2019, 307). This resident’s fear is real as some campgrounds are closing. One result of such closures is casting campground residents to locations further away from the metropolitan center which is undesirable for many campers. Yet, the campground concept remains despite the uncertainty (Kearns et al. 2019, 308).

The campground solution described by Kearns is one that has merit for implementation in North America. Campgrounds have the potential to provide a long-term housing solution for chronically unhoused persons that might prefer to live outdoors. Campers may benefit from a reduced social stigma as they that are viewed as “guests” at the campground and reside in a sites that may share space with temporary/tourist guests. Campgrounds on larger parcels of land or outside the city center may allow for increased access to privacy and to the benefits of access to nature.

There are lessons to be learned from each of these existing outdoor housing solutions discussed in the literature: organized encampments and campgrounds. Auckland, New Zealand’s campgrounds are generally the most relatable solution for this project’s proposed Long Beach site because they are designed as a service hub to the residents with access to utilities and some

amenities. In both Portland and Seattle's organized encampments, resident campers have primarily desired to be located within the city's urban center. The proposed research will consider both public and private lands as possible sites for an outdoor sheltering solution. Placement on private property may challenge security of the land for indefinite use. The examples of organized encampments in Portland are primarily self-managed, while Seattle is partnering with non-profit organizations to manage their organized encampments to a greater degree. Finding a balance between the two approaches will be one area of consideration of the best approach to implementation of an organizational structure for the proposed Long Beach site that provides the greatest sense of autonomy and community while also providing security and stability.

2.2 Divergent Perspectives and Policy Constraints

Local governments grapple with a range of perspectives while addressing homelessness within their jurisdictions. Numerous factors contribute to this diversity of viewpoints. Evidence indicates that certain policy changes have been influenced by innovative approaches aimed at meeting the needs and preferences of the unhoused. Homelessness is a longstanding issue, prompting the implementation of various policies—both old and new—with the primary goal of reducing homelessness and its visibility.

Historically, Sacramento, California has intermittently experienced sizeable encampments. During the Gold Rush era, Forty-niners set up tents, followed by the emergence of Hooverville shanties during the Great Depression. More recently, during the Great Recession of 2008-2009, a modern iteration known as the Wasteland appeared (Parker 2020, 340). The presence of unhoused individuals in Sacramento has persisted over time. As long as they

remained inconspicuous, there was little need for intervention. However, when homelessness becomes highly visible, the city has responded with punitive measures toward encampments, such as enacting anti-camping laws. Sacramento city government's actions demonstrate it believes it is better to scatter the unhoused rather than allow them to gather and become a highly visible presence, which could embarrass the city and necessitate remedial action.

For example, the rise of the Wasteland came about when the police directed campers living near a service center, Union Gospel Mission, to move to an expansive brownfield, formerly a dump between train tracks, on the other side of a plant processing almonds, (Parker 2020, 329). It seemed to be out of the way and out of sight from the rest of Sacramento. The encampment became a community where residents self-regulated their behavior, managed waste disposal, and availed themselves of potable, drinking water. Its seemingly successful management attracted increasing interest from homeless services and even that of a local graduate program seeking to test a prototype eco-toilet, (Parker 2020, 339). Due to national media focusing on the impact of the Great Recession, news outlets descended upon the Wasteland encampment. They erroneously concluded that the residents were victims of the housing market collapse, rather than the chronically unhoused population that had been shuffled around Sacramento by authorities for years, (Parker 2020, 330). The city could no longer sustain its previous stance of benign neglect, as the embarrassing public scrutiny of the site demanded a change. Consequently, the city moved to disband the encampment.

A few hundred miles south of Sacramento, the city of Fresno, California has adopted the tent city approach. Tent cities in Fresno are not the type self-managed by unhoused campers. In this way, it differs from the approach sought for the proposed site in Long Beach, and those in

cities such as Portland and Seattle. Instead, Fresno's approach has been derided as providing "tent wards," reminiscent of incarceration (Speer 2017, 160). Initially, it appears that the approach by Fresno to re-zone a property as a campground is concurrent with what is sought for Long Beach. However, Fresno's approach differs in many aspects including the lack of running water and sanitation, restrictions on the keeping of pets, persons being subject to random searches, residents being forced to vacate in the morning, and restrictions on couples (Speer 2017, 163). These restrictions are reminiscent of what is found in shelter programs and known to be barriers for the un-housed to participate voluntarily.

The proposed site for Long Beach aims to provide a refuge for chronically unhoused individuals, allowing them to reside in a sanctioned encampment. Like the housing first concept, which prioritizes shelter over sobriety, this approach aims to accommodate individuals who may have been rejected from other facilities, such as shelters, due to stigmatized behaviors or vices. Where it may differ is that housing first seeks permanent housing and social activists for that approach generally frown upon the suggested encampments proposed, deeming them to be inadequate and improper. In other words from a progressive perspective, housing first emphasizes the aforementioned permanent housing, the low barriers to entry on behavior, and providing long-term support. Conversely, it incorporates methods that are neoliberal oriented: clearing of streets, fiscal necessity, and addresses not all forms of homelessness, but rather the chronically un-housed, (Baker and Evans 2016, 31).

A dichotomy becomes evident, where there's an insistence that humans should reside within traditional four walls and a roof, despite resistance from the affected population (i.e. chronically unhoused) and the daunting challenge of meeting all housing needs with available

resources. Homeless advocates such as Parker (2020) frown upon the presence of the un-housed living on brownfields, lots formerly used by industry that need environmental remediation and are zoned for industrial purposes. This could pose a challenge for such an implementation in LBC as brownfields may be a worthy consideration for a development to be used by chronically un-housed adults. Parker (2020) cites the establishment of sanctioned tent cities as "managed marginality" (Parker 2020, 341). He sees them as allowing the city to hide their un-housed in out of the way areas, while simultaneously providing the un-housed a safe place to shelter. With limited resources available, it may take tradeoffs such as these to provide the latter.

2.3 Needs of Unsheltered Persons

Where resources are limited, namely money and space, pragmatic considerations must be pursued. Consequently, the need for informal housing emerges. "Tent Cities: An Interim Solution to Homelessness and Affordable Housing Shortages in the United States" by Zoe Loftus-Farren eloquently posits that such an informal housing, while not ideal, is suitable where no other reasonable option exists. Therein, she identifies common themes found in successful informal housing: community and autonomy, self-governance, advocacy and assistance, and stability and security.

Both a sense of community and autonomy attracts certain unhoused adults to outdoor housing solutions. Community is where shared experiences and shared needs can consolidate and congregate. Being a part of a group brings forth value to oneself and to the community. For some unhoused adults, this sense of community is more likely found in an encampment environment than in a shelter setting. A resident in a tent city in Rhode Island describes the community as his 'family' and expresses contentment being part of the group (Loftus-Farren 2011, 1050). Further expressing the familial bond is that this kind of informal housing allows for romantic

relationships which are expressly forbidden in the shelters. Shelters not only limit who one may physically be with during the night, but they limit where you can be and what you can do throughout the day. This impacts an unhoused person's sense of personal freedom and autonomy.

Self-governance is an appealing component to the success of informal housing solutions. Unlike them traditional shelters, which provide no direct opportunity for residents to impact the way operations are conducted, self-governed informal housing communities give voice to the desires of their inhabitants. The community is best served at the direction of its inhabitants. Where a shelter may also be a place to receive a handout, that kind of approach is anathema to those who strongly prefer not to depend on public assistance, (Loftus-Farren 2011, 1051). Generally self-governed encampments operate with the values of mutual respect, participation in its operation, and developing a set of reasonable rules with the goal to maintain safety and harmony within the community. This has the potential to minimize the sense that one is exceedingly dependent or controlled. It also gives those participating in self-governance a sense that they have a stake in the success of the community and in their own destiny.

Informal housing solutions that provide for various types of advocacy and assistance contribute to positive outcomes for unhoused adults. Advocacy can come in the form of providing a voice for the concerns and needs of an individual with regard to social service agencies that provide benefits such as food stamps, unemployment, Medicaid or Social Security, immigration services, Housing and Urban Development, DMV and court systems, or NGO's that provide substance abuse treatment, and victims of crime services or other legal aid services.

Finally, there is the need for stability and security among the unhoused. Both formal and informal housing solutions contribute to a sense of anxiety about the future. One factor that contributes to a sense of stability and security is having a secure location to keep personal belongings that are important to the unhoused individual. Shelters often do not allow overnight guests to bring personal belongings inside and unsanctioned encampments are often cleaned up by city authorities, causing personal belongings and even important documents to be destroyed or disposed. Personal safety of unhoused individuals is another significant source of security concerns. Deaths of unhoused adults and crimes against unhoused adults are breaking records in cities across the U.S. An encampment with mutual security measures offers a degree of solace to unhoused adults, assuring them that their possessions will be intact upon their return and that they can rest safely. Additionally, formal and informal housing solutions that require a person to check out daily or move to a new location every few months, contribute to an ongoing cycle of chronic homelessness. Reduced stress and concern about such issues may enable an unhoused adult to prioritize self-improvement efforts.

2.4 Spatial Negotiation and Participatory Planning

Within the microcosm of an encampment, harmony, enhanced self-determination and autonomy may be achieved. Encampments that provide security, stability, a sense of community and a stake in ownership are more likely to meet the needs of their inhabitants and allow them to thrive. However, just outside the boundaries of an encampment, there is an impact on the citizens adjacent areas. These citizens may have real or imagined concerns about how the very visual presence or actions of the encampment's inhabitants will impact anything from the community's safety, sanitation, and health to its economy, property values, reputation and view. Their needs differ from the encampments' inhabitants, as do their values.

Within a municipality such as Long Beach, the distinct needs and values of these two groups prompt a spatial negotiation. This process of navigating and managing physical space, particularly in situations where multiple parties have interests or needs that intersect in that space, is crucial for the planning of a site like an encampment for unhoused adults. Spatial negotiation often involves finding compromises, reaching agreements, or resolving conflicts related to the use, access, or allocation of physical spaces. Equitable spatial distribution is a crucial aspect of spatial negotiation, encompassing the fair and just allocation of resources, opportunities, and services across various geographical areas within a region or community. Its emphasis lies in guaranteeing that every individual, irrespective of their geographic location, enjoys equal access to fundamental services, amenities, and opportunities.

As is the case with both affordable housing sites and organized encampments, both result in externalities or consequences that are spatially concentrated in the immediate surrounding area and beyond. While not identical to the organized encampment concept described herein, affordable housing sites are an occupancy type that has been referred to as a locally unwanted land use (LULU), (Hankinson 2018). Other examples of LULUs are energy production sites, drug addiction treatment centers, and water treatment facilities. Generally speaking, there is a societal need for such uses. Yet, the not in my backyard (NIMBY) phenomenon occurs as residents in a surrounding area tend to oppose a particular land use project as undesirable, unfair or inappropriate. The voices of citizens should be heard and taken into consideration as land use projects that are intended for long-term use, also present long-term externalities.

NIMBYism can be seen in the way citizens use their voices and their votes to influence spatial matters, such as where unhoused persons receive services and find options for shelter. Specifically, locations of homeless shelters in Long Beach illustrate NIMBYism in play. Figure

2 below, depicts a citywide map of Long Beach, which is divided into nine city council districts, each identified with its respective district number. Within each district, there are census tracts of varying sizes, shaded in a gradient from red to green. These colors indicate levels of home ownership, with red representing the lowest and green indicating the highest. Additionally, scattered across the map are blue shelter icons, representing approximately a dozen homeless shelters. These shelters are dispersed throughout the city, including areas outside the official city limits of Long Beach.

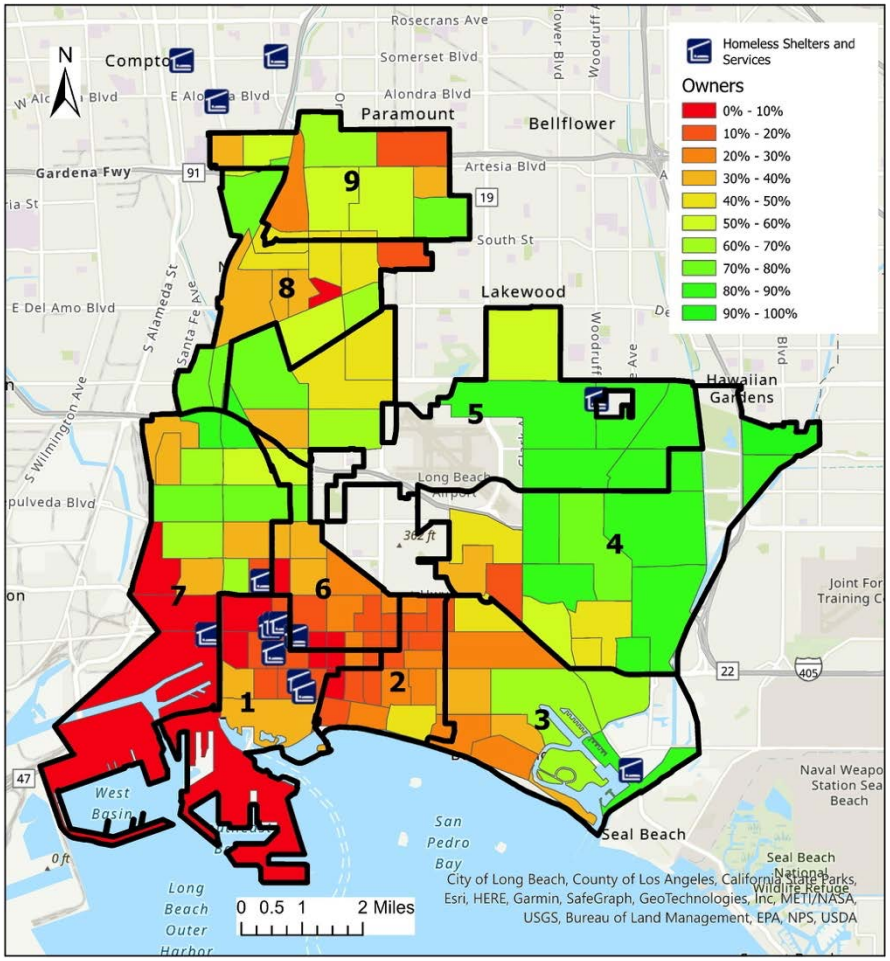

Figure 2: City of Long Beach, CA homeowner rates, shelters, and council districts

A noticeable pattern emerges in Figure 2: areas with lower rates of home ownership, particularly downtown Long Beach, tend to have a higher concentration of homeless shelters.

Conversely, in eastern Long Beach, especially the northeast region where home ownership rates are highest, 90-100%, there are no homeless shelters within the city limits. The one exception that appears on the map, is a single shelter located in an enclave of unincorporated Los Angeles County, outside the jurisdiction of Long Beach voters. Similarly, in the northwest of Long Beach, there are no shelters within the city limits, but three are situated just beyond its borders.

Historically speaking, communities much like the City of Long Beach have concentrated LULUs within areas without much political agency or clout as zoning and land use have been primarily under the aegis of the local municipalities. Hence, their presence may remedy or reinforce existing spatial representation (Hankinson 2023). In an effort to mitigate such discrimination, socially conscious legislation (e.g., California Voting Rights Act of 2001) entreats municipalities to dispense with at large (spatially diffuse) voting in favor of district (spatially concentrated) voting. The desired outcome is to enable minorities, who might constitute a majority within a district, to elect their own representatives to a city where they typically would not have that opportunity. The outcome sought has been realized where minority representation has markedly increased. However, an unintended consequence of what is arguably well-intentioned is that LULUs such as affordable housing are encountering greater resistance (Hankinson 2023).

Council members elected within districts are beholden to interests spatially concentrated therein, rather than from afar, and thus are recalcitrant in accommodating immediately proximate LULUs that may jeopardize their electoral success. In other words, NIMBY is apt in its description where a voter may be indifferent or even favor a use such as encampments for the unhoused within the city, yet downright vocal and oppositional if it were to be within their immediate neighborhood. This sentiment holds undeniable truth when the voter is a homeowner.

Suburban homeowners and growth-oriented elites wield significant influence (Hankinson, 2018). Likewise, urban residents who have invested in their homes traditionally hold both property equity and a stake in the city's decision-making processes.

As decision-making is dominated by individuals with ownership stakes, the unhoused are consequently excluded from influencing matters that could impact them. Powerless, they reside on the outskirts of society, existing in a vulnerable position on the margins. Their voices are diminished or dismissed as inconsequential. One path toward elevating and including the voices, opinions and values of the unhoused is participatory planning, known as an approach to decision-making and governance that involves actively engaging a broad range of stakeholders, including community members, local residents, interest groups, and other relevant parties, in the planning and decision-making processes that affect their lives and communities.

In an effort to learn more the daily activities of the unhoused, Greg Townley et al. (2016) sought to understand the activity spaces of unhoused youth in Portland, Oregon. Rather than conduct the research from their own perspective alone, they solicited homeless youth to participate in sharing their own spatial knowledge through participatory mapping. By having maps drawn by the youth, researchers gained valuable insights into the resources and activities that held significance. Assumptions were challenged. One such instance was the researchers' surprise that the youth did not include in their maps a large health clinic located in downtown Portland, known to be accessed by the unhoused population at large. Perspectives from the subjects offered unique insights that researchers had not considered (Townley et al, 2016).

The findings also highlighted that participants felt empowered and gained a sense of competence and authority through their involvement in the mapping process. Engaging participants in mapping their activity spaces could potentially lead to a broader integration of

their activities beyond the typical realms of homeless life, such as shelters, service centers and food banks. This could facilitate the realization that their activities may include school, employment, or hobbies, thereby offering a pathway towards transitioning into a stable, mainstream lifestyle (Townley et al., 2016). Such insights are essential if public policy endeavors to achieve the goal of reintegrating the unhoused into mainstream life.

Participatory planning serves as a vital mechanism not only for enabling individuals to actively participate in processes from which they might otherwise be excluded, while also fostering comprehensive engagement across all stakeholders and interests involved in addressing complex issues such as homelessness. By involving diverse perspectives and interests in the planning process, particularly when devising alternative housing options, a broad spectrum of thoughts and emotions inevitably emerges. This inclusive approach ensures that various housing alternatives are thoroughly considered and that resulting outcomes contribute to advancing spatial equity within the entire community.

Chapter 3 Data and Methodology

The key goals of this project are to identify parcels of land within the City of Long Beach that may be set aside for the chronically un-housed to take up residence in what may described as a sanctioned encampment. In the previous chapter, research identifies how other locales (e.g., Portland, Seattle) attempt to provide similar accommodations. While the aforementioned cities' approach might seem ad-hoc in confirming current encampments, this study attempts to identify parcels of land to support both present and future needs. This chapter discusses the data and methods used in this thesis project.

3.1 Data Sources and Data Preparation

This section introduces the data used for this study and how it will be used for the site suitability method: weighted overlay. Table 1 below, lists the datasets and their sources to be used in this thesis. The datasets were downloaded directly from the sources noted. Where appropriate and necessary, datasets used are the most recent available.

Table 1. Data Sources

Dataset	Type	Purpose	Date Published	Source
City Boundary	Polygon Shapefile	Clip, Mask	May 20, 2021	City of Long Beach DataLB
Countywide Parks and Open Space	Polygon Shapefile	Buffer, Erase	August 3, 2023	Los Angeles County GIS Portal
Food Assistance	Point Shapefile	Weighted Overlay	Nov 5, 2020	Los Angeles County GIS Portal

Health Clinics	Point Shapefile	Weighted Overlay	Nov 9, 2020	Los Angeles County GIS Portal
Homeless Shelters and Services	Point Shapefile	Weighted Overlay	Nov 5, 2020	Los Angeles County GIS Portal
Homeless Survey Areas	Polygon Shapefile	Weighted Overlay	January 2022	City of Long Beach Multi Service Center
Hospitals and Medical Centers	Point Shapefile	Weighted Overlay	Nov 9, 2020	Los Angeles County GIS Portal
Metro Stations	Point Shapefile	Weighted Overlay	Nov 5, 2020	Los Angeles County GIS Portal
Parcels	Polygon Shapefile	Weighted Overlay	Aug 19, 2021	Los Angeles County Assessor
Schools	Polygon Shapefile	Buffer, Erase	June 19, 2023	Los Angeles County GIS Portal

3.1.1 Homeless Survey Areas (HSA)

An annual count of homeless known as a point in time (PIT) is conducted within Los Angeles County with notable exceptions: Glendale, Long Beach and Pasadena. These three municipalities have their own Continuum of Care districts and thus conduct their own count apart from the rest of the county. City of Long Beach Human Services through its Multi Service Center administers a count every year in January but occasionally it occurs in February. Sent out in the twilight hours, teams of three to five trained volunteers conduct an in-person count in one of fifty-two HSAs.

The importance of this data is to identify where current homeless populations congregate. As it is assumed that individuals who are unhoused seek the most suitable environments, their proximity to existing services such as healthcare, shelters, and food assistance may be able to help identify vacant parcels that match similar distances to such services. Table 2 below shows a January 2022 point in time (PIT) visual count of unhoused persons conducted by fifty-two teams of volunteers assigned by Long Beach's Multi Service Center to their respective HSAs.

Table 2. January 2022 PIT Visual Count within Homeless Survey Areas (HSA)

HSA	Visual Count	HSA	Visual Count	HSA	Visual Count	HSA	Visual Count	HSA	Visual Count
TEAM 1	79	TEAM 12	21	TEAM 20	8	TEAM 30	42	TEAM 40	7
TEAM 2	24	TEAM 13	5	TEAM 21	23	TEAM 31	6	TEAM 41	35
TEAM 3	7	TEAM 14A	7	TEAM 22	1	TEAM 32	16	TEAM 42	3
TEAM 4	11	TEAM 14B	19	TEAM 23	4	TEAM 33	5	TEAM 43	10
TEAM 5	16	TEAM 15A	4	TEAM 24	2	TEAM 34	8	TEAM 44	2
TEAM 6	52	TEAM 15B	26	TEAM 25	3	TEAM 35	1	TEAM 45	5
TEAM 7	4	TEAM 16	3	TEAM 26	26	TEAM 36	14	TEAM 46	4
TEAM 8	2	TEAM 17	6	TEAM 27	1	TEAM 37	2	TEAM 47	10
TEAM 9	15	TEAM 18	13	TEAM 28	2	TEAM 38	19	TEAM 48	13
TEAM 10	17	TEAM 19A	26	TEAM 29	33	TEAM 39	4	LAC	10
TEAM 11	42	TEAM 19B	11						

3.1.2 Parcels

As the thesis seeks to identify suitable parcels for the unhoused, this dataset is central to analysis. This project obtained parcel data from the County of Los Angeles Assessor's Office from the year 2021. Among the over five million parcels within Los Angeles County, 107,920 have been identified as within the City of Long Beach. The parcel dataset includes use, zoning, land value and other descriptions of each parcel.

A key field in the dataset is the use code that encompasses zoning and its many subcategories. The use code is a four-character code where the first digit is more general and the latter is more specific. Conveniently, the common marker for vacant land is the letter "V" in the last digit. By using this descriptor, the data may be filtered to only show vacant parcels regardless of zoning.

Zoning, however, is a consideration to not completely overlook. As noted in Chapter 2, other stakeholders in the community, particularly single family homeowners, are wary of zoning changes that may negatively impact them. Thus, final analysis will provide information of the zones of the suitable parcels identified. Zones are commercial, government, industrial and residential. Below is Figure 3 showing the 1,779 vacant parcels of land within the City of Long Beach.

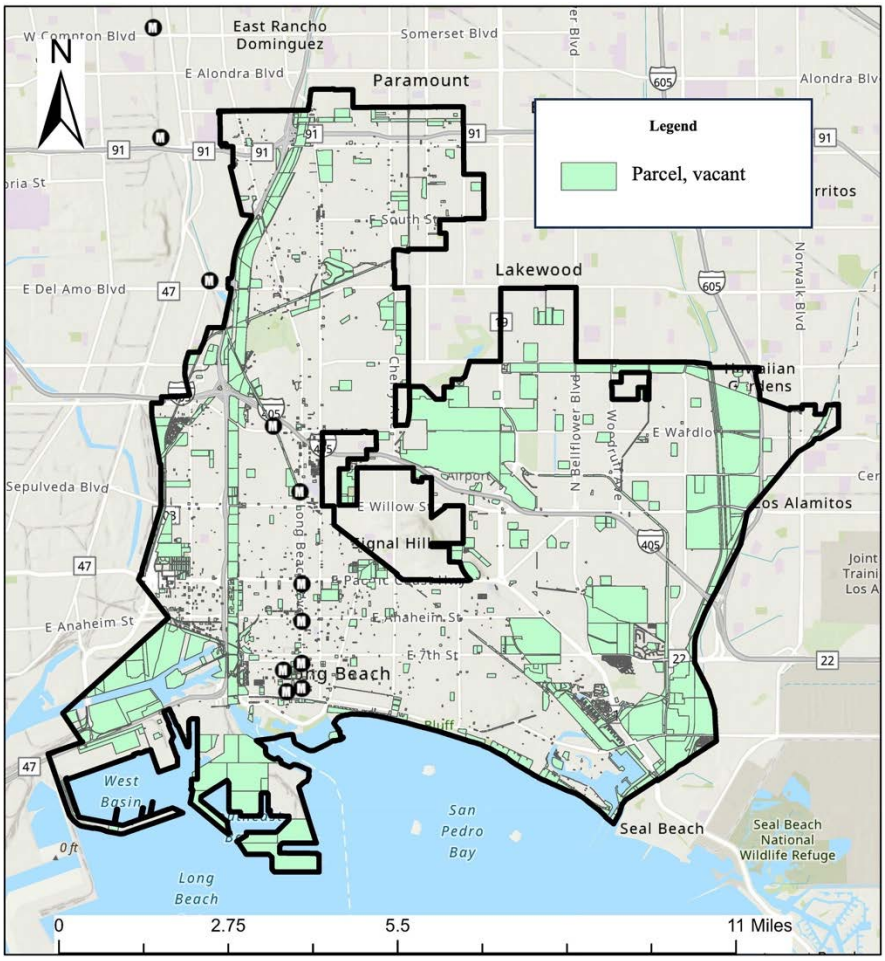

Figure 3. Vacant parcels in Long Beach

3.1.3 Food Assistance

The availability and proximity of food is to be considered for site suitability as discussed in Chapter 2. This project acquired locations of food assistance centers from the County of Los Angeles GIS Portal. Unlike the Parcels dataset where only entries within Long Beach are allowed, service datasets such as food assistance are not to be clipped in same manner. As the project deems services within a mile to be reasonable, locations on the outside periphery of Long Beach within that walking distance will impact findings. See Figure 4 for locations of food assistance centers in the greater Long Beach area.

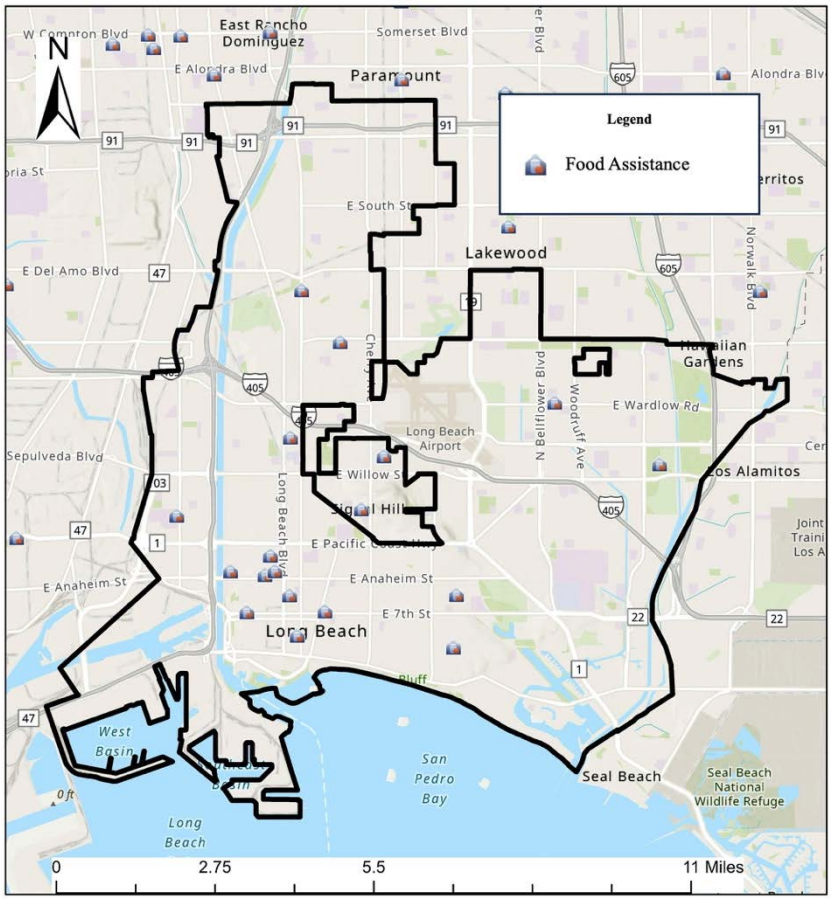

Figure 4. Food assistance centers in Long Beach Area

3.1.4 Metro Stations

Transportation, particularly public transit such as the Metro light rail system, is to be considered, particularly in terms of how parcels are within walking distance. As this mode of transportation addresses trips that can be greater than walking distance, its proximity to parcels will be significant in determining overall suitability. A points shapefile, Metro Station, originating from the Los Angeles County GIS Portal will be used accordingly. Figure 5 below shows the stations of the Metro A line, formerly the Blue line.

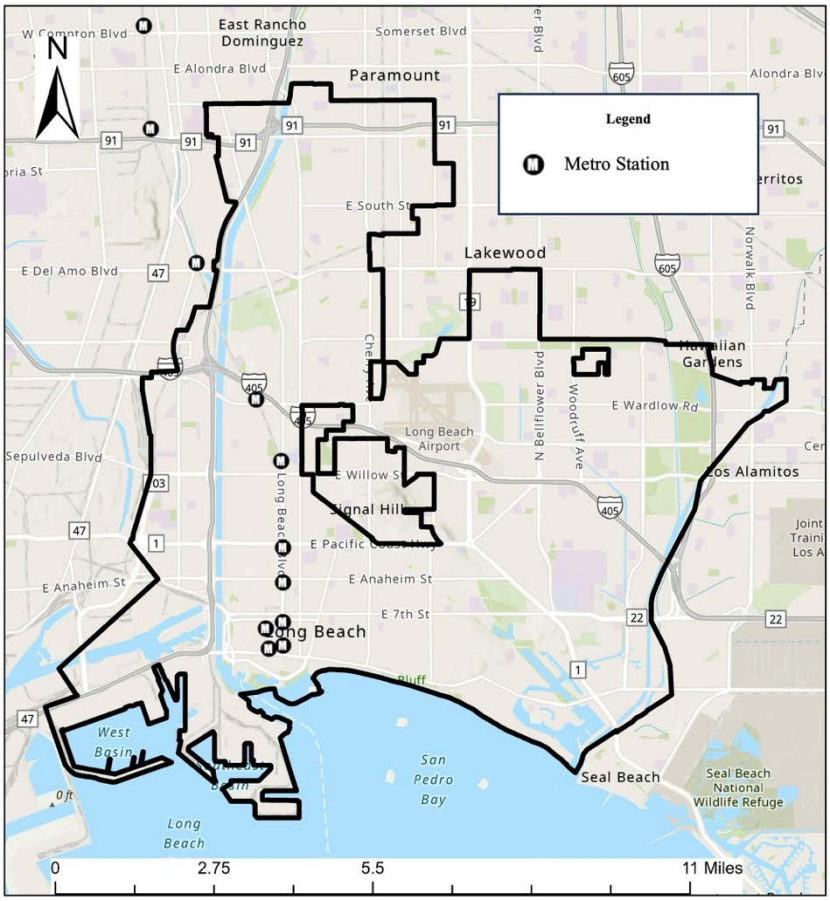

Figure 5. Metro Stations in Long Beach Area

3.1.5 Shelters and Services

While this study aims to identify a complementing alternative for the primary purpose of a shelter (i.e. a place of refuge), it acknowledges that shelters are part of the geographic context of the unhoused. These locations serve as existing points of interaction where the unhoused can access services (e.g., clothing, emergency food) and are within the reach of social advocates. Like the other datasets mentioned earlier, this one also pertains to proximity. Data as points are furnished by the County of Los Angeles GIS Portal. Much like the Food Assistance dataset, which encompasses locations beyond Long Beach, the same principle applies to Shelters and Services. Their suitability as options is not confined to city limits but rather to being within

walking distance of a potential parcel within Long Beach. See Figure 6 for locations of shelters and services in the greater Long Beach area.

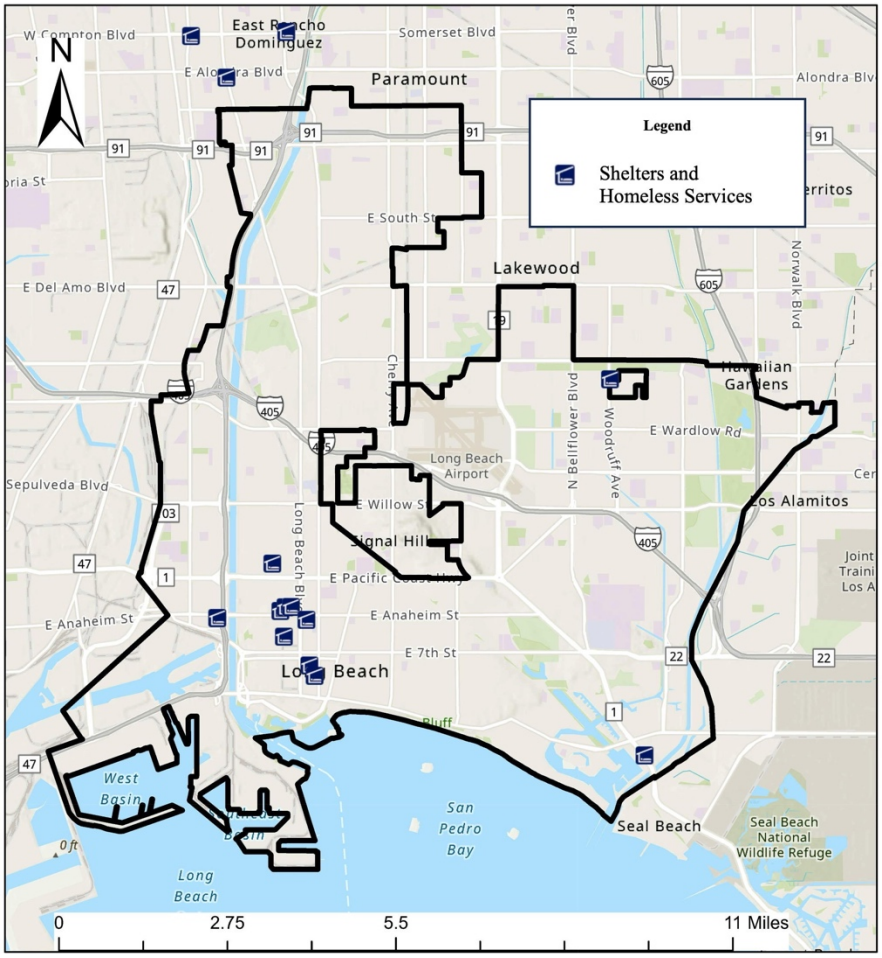

Figure 6. Shelters and Services

3.1.6 Hospitals

Hospitals are to be considered. The proximity for the unhoused as clientele coupled with the reachability of the professionals therein are important factors. The presence of emergency room facilities is also of paramount need for the unhoused whose lifestyle is inherently more dangerous. Three hospitals are located within the city limits and an additional three are on the city's periphery to the north and northwest. The dataset, Hospitals and Medical Centers, is

provided by Los Angeles County GIS Portal. See Figure 7 where hospitals and health clinics under the grouping of healthcare facilities are found in greater Long Beach.

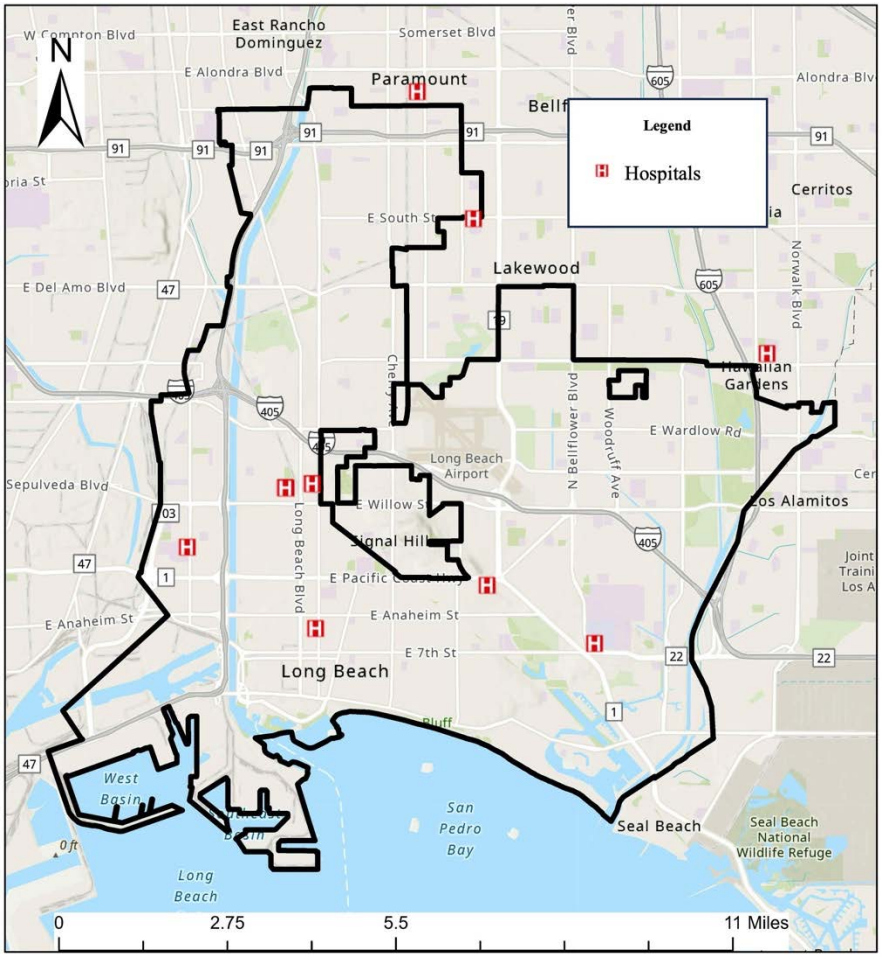

Figure 7. Hospitals

3.1.7 Health Clinics

Additional healthcare facilities namely health clinics are to be considered in this study. Again, the services need not be within Long Beach to be viable options for the unhoused. They may be found in adjacent cities of Lakewood, Hawaiian Gardens and Los Angeles (i.e. Wilmington neighborhood). Services encompass a gamut of medical needs from general to reproductive. Dataset, Health Clinics, originates from Los Angeles County GIS Portal. See Figure 8 for locations of health clinics marked in yellow and those that cater to the unhoused marked in red in the greater Long Beach area.

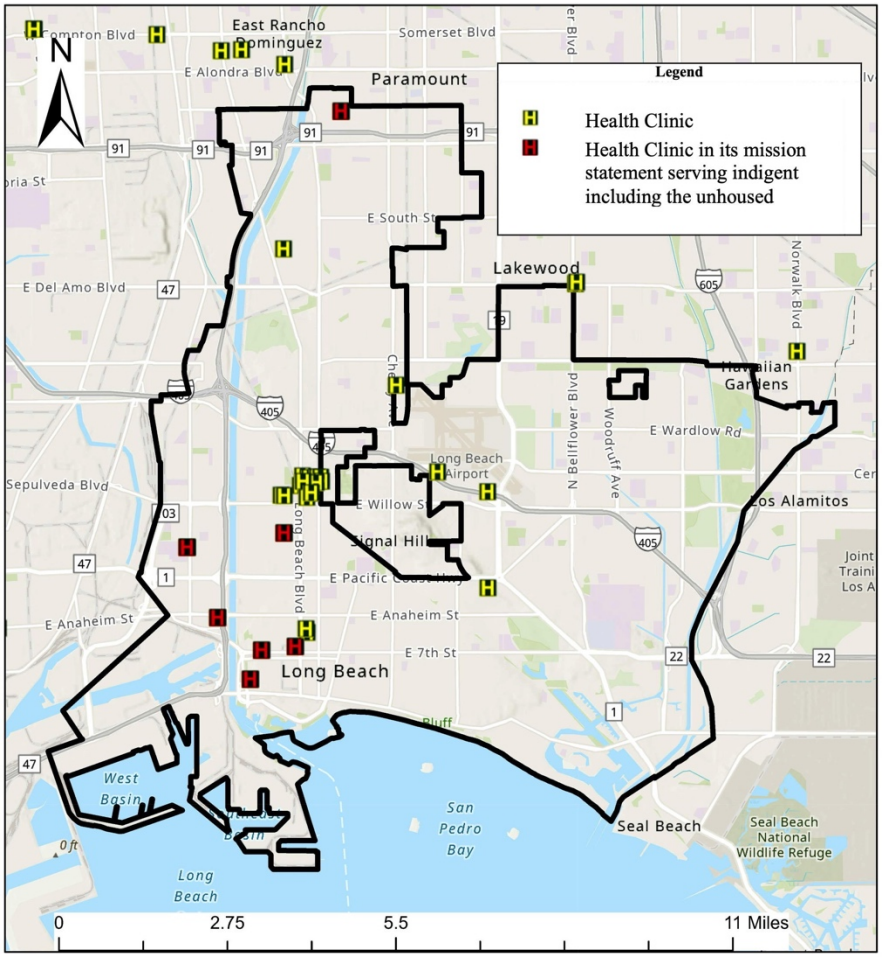

Figure 8. Health Clinics

3.1.8 Schools

Schools within the City of Long Beach are included in this study for the application of excluding parcels due to potential legal constraints. The dataset consists of parcels as polygons and originates from the Los Angeles County GIS Portal. The dataset is broad in its reach where administration, adult education and college join expected entries from elementary, middle and high school. Further refinements and filters are employed to address the legal considerations.

Legal considerations are namely restricting the presence of registered sex offenders within two thousand feet of a school where minors are present. Thus, the dataset, Schools, will be refined to exclude parcels that are identified as college/universities, adult education and

administration. It is understood that minors are enrolled as students at local colleges as early entrants and also may be concurrently enrolled while also attending high school. As the numbers of these students in these situations are deemed to be small for the purposes of this study, the colleges will be regarded as sites where children under 18 are not present. See Table 3 identifying 143 school parcels parsed out by type and whether or not minors are present.

Table 3. School Parcels within Long Beach

Type of School Parcel	Count	Children under 18
Administration	4	no
Elementary	85	yes
Middle School	15	yes
High School	23	yes
Junior and Senior High School	5	yes
K-12	2	yes
College/University	6	no, primarily
Adult Education	3	no

3.1.9 Parks

Included in this thesis is a dataset, Countywide Parks and Open Spaces, for the purpose much like Schools to address potential legal challenges. The dataset also consists of parcels as polygons and originates from the Los Angeles County GIS Portal. As the title of the dataset suggests, it is broad in its reach where open spaces join parks as a group. Expected entries for playgrounds, beaches and fields accompany nuanced ones such skate parks, swimming pools, and dog parks. To address legal considerations further filters and refinements are employed.

Much like the aforementioned Schools dataset, the legal considerations in play also apply for the dataset involving parks. As they are varied in use and the demographics they attract, filtering is needed for entries that are primarily of interest to children.

As the parks are open to all including children, theoretically, all parks will have children present. However, for purposes of this study, parks that have playgrounds will be filtered. Additional recreational sites and facilities such as skate parks and swimming pools are also included as they attract children under 18. Unlike the Schools dataset where parcels are predominantly distinct in their use (e.g., elementary, college/university), parks with swimming pools, splash pads and skate setups are located with playgrounds. Thus, the only determining factor is whether a park has a playground or not. Within the City of Long Beach there are seventy-one parks with playgrounds.

3.2 Site Suitability Analysis

This section describes the methods used for site suitability analysis. Initially, it discusses the filtering process and how not all parcels will be considered. Then, it describes how data on the number of unhoused individuals within each homeless survey area (HSA) is linked spatially to parcels within those areas. This data is used to create a raster, which is then employed in the weighted overlay method to assess site suitability. Following this, additional rasters are generated based on the proximity of services (such as distance to food assistance) to the parcels within the HSAs. These additional rasters are overlaid onto the previously created HSA parcel raster. Next, values in each raster are reclassified to ensure consistency for the weighted overlay method. All rasters are then integrated into the weighted overlay process, with each raster assigned different weights based on empirical studies. This process results in a final raster that depicts parcels with varying levels of suitability for the project, which can then be reviewed and

considered for further action. Finally, a sensitivity analysis is conducted to assess how legal constraints may affect the suitability of sites initially identified as most suitable.

3.2.1 Filtering Parcels

Parcel data is sourced from the County of Los Angeles Assessor where it is updated monthly. This dataset is known as LACounty_Parcels. As the study area is within the City of Long Beach a vast majority of the 2.4 million parcels identified in the county will not be applicable. Hence before any further filtering on other factors such as zoning and vacant land, parcels must be located within city limits. As the target audience is the city council, their impact is greatest within the city they govern.

As the LACounty_Parcels dataset is larger than necessary, the City Boundary dataset will be used to clip it. The polygon within the latter dataset is used to extract parcels from LACounty_Parcels that fall within its boundaries. A daughter dataset is created: LongBeach_Parcels. Of the 2.4 million parcels in the county, approximately 106,000 have been identified within Long Beach. Figure 9 is a diagram explaining the workflow.

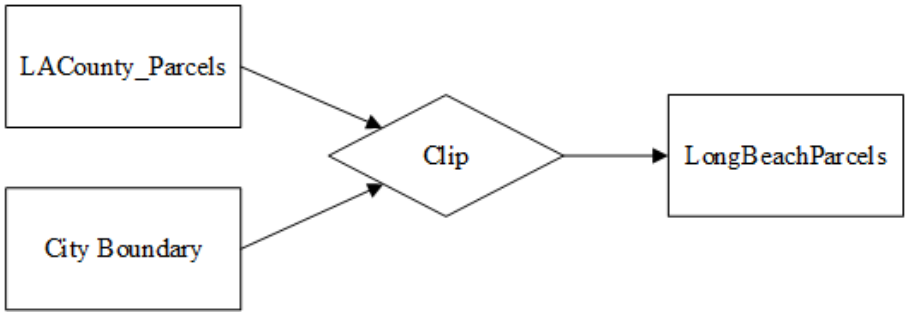

Figure 9. Workflow for the LongBeachParcels layer

Further refinements are sought as this thesis seeks vacant parcels rather than those that have standing structures. It is an important consideration as the need for vacant land to accommodate encampments is key.

Discussion about placement of encampments within residential, commercial and industrial zones undoubtedly will encounter resistance (i.e. NIMBYism). As there is identifiable resistance from stakeholders as cited in Chapter 2, choosing one zone over another may not be feasible. Rather, identifying vacant parcels regardless of zoning is sufficient. For the purposes of this thesis, sites will be sought within the aforementioned three zones and also government.

3.2.2 Spatially Join HSA Visual Count to Parcels

Due to privacy concerns, pinpoint location of the 729 unhoused individuals identified during the PIT is not available for this study to pursue. Rather, the Long Beach Multi Service provides in a coarser spatial resolution the visual count of unhoused within the fifty-two designated HSAs.

To help illustrate, Figure 10 below presents the PIT amongst the fifty-two HSAs. Each HSA polygon is color-coded into five classes to represent visual counts, with Long Beach's downtown exhibiting higher numbers in deeper, darker shades on a buff to dark ochre continuum. Corresponding services are likewise depicted as self-evident points, reflecting their respective locations throughout the city, notably downtown.

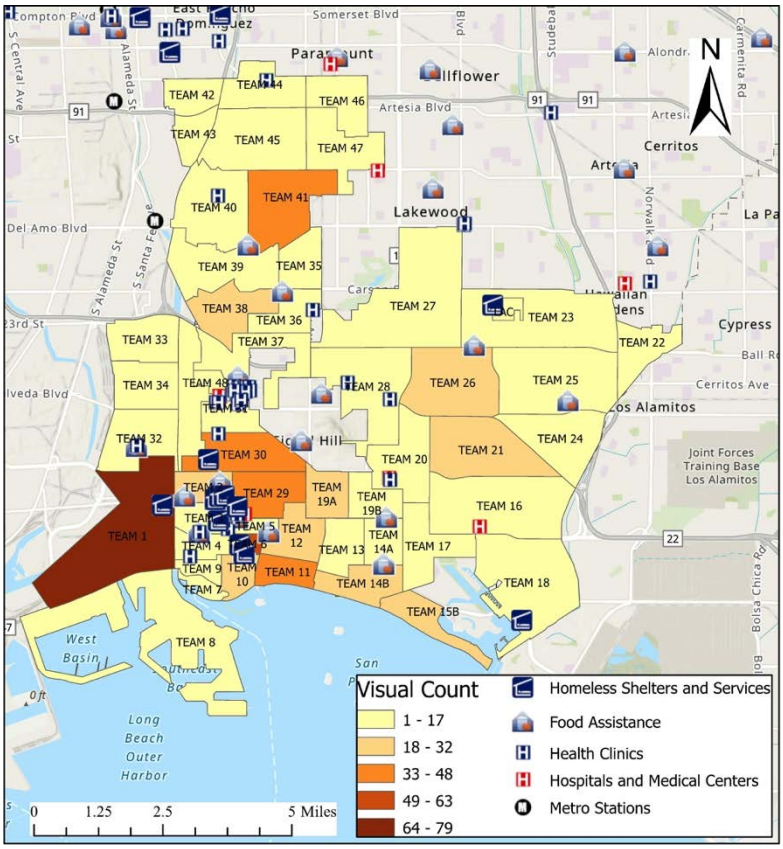

Figure 10: February 2022 PIT count, services

To ensure optimal service for the unhoused, it's crucial to consider where they currently gather. Therefore, parcels situated within HSAs with higher population densities may initially be seen as most suitable, without considering additional factors.

To incorporate this consideration into the site suitability analysis, each parcel within every HSA will be spatially joined, allowing the visual count (i.e., the number of unhoused individuals) to become one of its attributes.

3.2.3 : Proximity to Services

With parcels filtered to a manageable number and the visual counts within HSAs spatially joined to them, the distances from the parcels to the nearest member of said services will be recorded.

3.2.3.1 Proximity to Food Assistance

Food assistance centers are located within and on the perimeter of Long Beach. Identifying a parcel of land that is as close as possible to such a center would be considered advantageous for the success of an encampment as pursued in this thesis. Within ArcGIS, the Near function provides the distance from a candidate parcel to the closest food assistance center. Figure 11 is a diagram explaining the workflow.

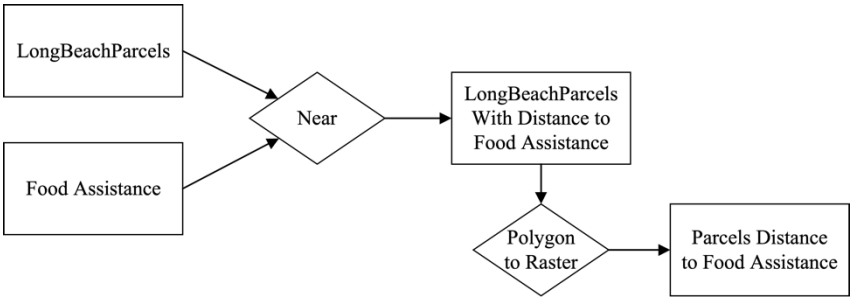

Figure 11. Workflow for the Parcels Distance to Food Assistance layer

3.2.3.2 Proximity to Health Clinics

Health clinics are situated both within and around Long Beach. Finding a parcel of land in close proximity to these clinics would be beneficial for the success of the encampment being studied in this thesis as they provide free to low-cost medical care for the indigent. Further dataset refinements are required, as certain health clinics in Long Beach are tailored to the unhoused population, evident from their mission statements on respective websites. As a result, health clinics not serving the unhoused are removed from the dataset. The near function in ArcGIS calculates the distance from a potential parcel to the nearest health clinic. Figure 12 illustrates the workflow.

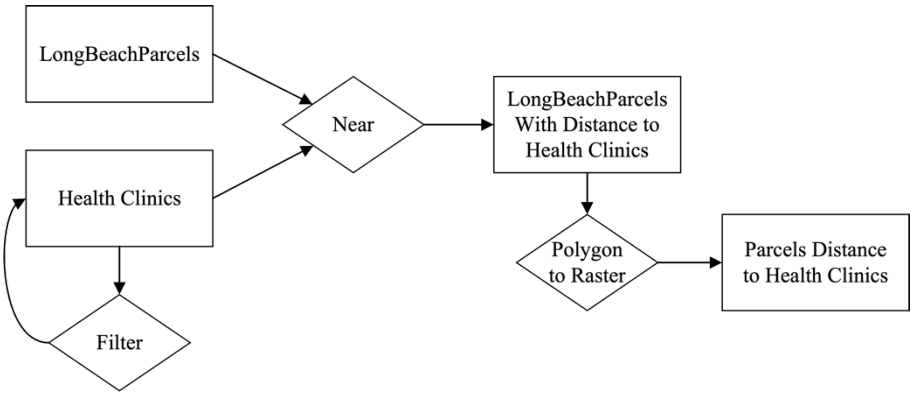

Figure 12: Workflow for the Parcels Distance to Health Clinics layer

3.2.3.3 Proximity to Hospitals

Hospitals are located within and on the perimeter of Long Beach. Identifying a parcel of land that is as close as possible would be considered advantageous for the success of an encampment as pursued in this thesis as they are the primary locations for emergency care. Within ArcGIS, the near function provides the distance from a candidate parcel to the closest hospital. Figure 13 is a diagram explaining the workflow.

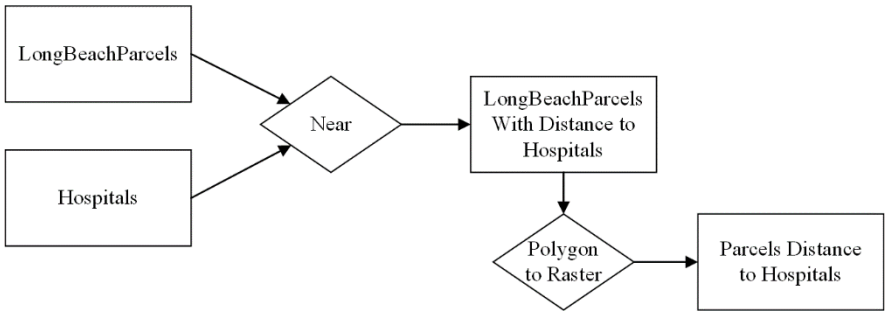

Figure 13. Workflow for the Parcels Distance to Hospitals layer

3.2.3.4 Proximity to Metro Stations

There are eight metro stations situated within the City of Long Beach along the A line, previously known as the Blue line. In this thesis, it is deemed beneficial for the success of an encampment to identify a parcel of land in close proximity to one of these stations. Within

ArcGIS, the Near function calculates the distance from a potential parcel to the nearest station. Diagram in Figure 14 illustrates this workflow.

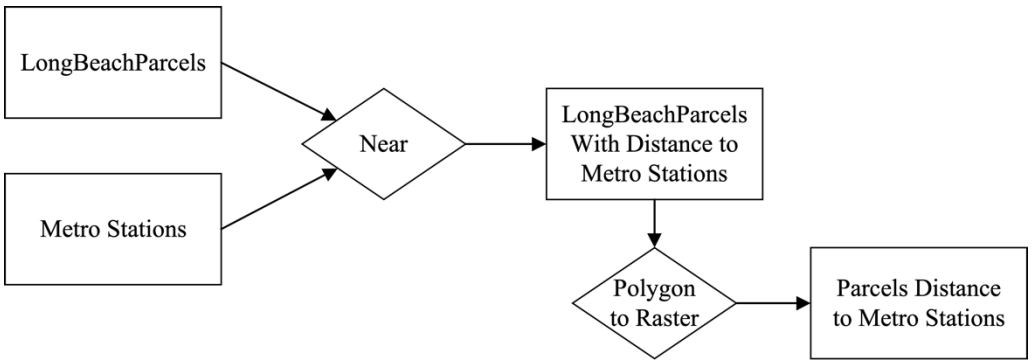

Figure 14. Workflow for the Parcels Distance to Metro Stations layer

3.2.3.5 Proximity to Shelters and Services

Shelters and services are situated both within and around the perimeter of Long Beach. In the pursuit of this thesis, finding a parcel of land in close proximity to these centers would be deemed advantageous for the success of an encampment. The Near function within ArcGIS calculates the distance from a potential parcel to the nearest shelter and service center. Figure 15 presents a diagram illustrating this workflow.

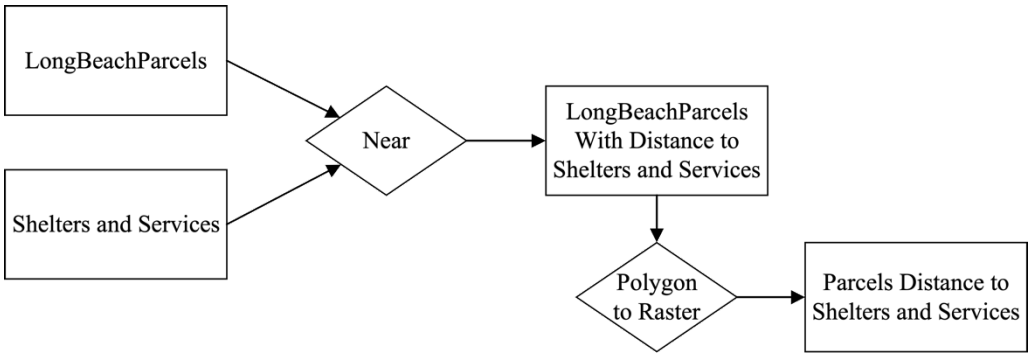

Figure 15. Workflow for the Parcels Distance to Shelters and Services layer

3.2.4 Re-classification

To execute the weighted overlay method, the values for each dataset are reclassified. In this study, all variables are organized into five classes.

For determining the classes based on the visual count, the Jenks natural breaks classification method is used. Its aim is to minimize deviation within each class's mean while maximizing deviation from the means of other classes (Chen et al, 2013, 47).

However, for the services involved, the Jenks method is not suitable because not all distances are equally important. Walking distance is the primary factor, and thus anything longer than that may be classified with the smallest value. Determining though what walking distance is for classification purposes is not definitive as the value is not a universal constant. It is subjective where one able-bodied individual may be able to traverse a mile in twenty minutes but others in similar physical condition may wish not to expend five minutes to go no more than a quarter of that distance.

A particular study states that a quarter of a mile is regarded as walking distance for research in the U.S. However, the study's survey of respondents shows that more than half of walking trips exceed that value, with nearly twenty percent exceeding a mile. Of all the respondents, a near unanimous did not have walking trips exceed two miles (Yang and Diez-Roux, 2012, 14). Based on those findings, this project concludes that a median value of one mile is well-justified for walking distance.

The classification of distances into classes is not evenly spaced but follows a somewhat geometric progression. Distances of less than a quarter mile are assigned a value of 5. Subsequent values generally increase at a greater rate, where a value of 2 is assigned to distances ranging from 1.25 to 2 miles. Finally, any distances over 2 miles are classified as 1.

Once the walking distance parameters are set, the five proximity to service variables (food assistance centers, health clinics, homeless shelters and services, hospitals, and metro stations) may complement the primary measure of population density, as determined by the visual count within the homeless survey areas (HSA). This count pinpoints the current locations of unhoused individuals and, by gauging the differing population densities across the fifty-two HSA, offers insight into which parcels would be most suitable. See Table 4.

Table 4: Classification of Parcel Values for Variables

	Homeless Survey Areas (HSA) Visual Count	Walking Distance from Services (food assistance, health clinics, homeless shelters and services, hospitals, metro stations)
Parcel Value	5 = (64 – 79)	5 = (0 – .25 mi)
	4 = (49 – 63)	4 = (.25 – .75 mi)
	3 = (33 – 48)	3 = (.75 – 1.25 mi)
	2 = (18 – 32)	2 = (1.25 – 2 mi)
	1 = (0 – 17)	1 = (> 2 mi)

While establishing a scale of 1 to 5 for the input rasters, it is acknowledged that the output raster may not yield optimal results if confined to such a small range, particularly considering the large number of parcels under consideration. Therefore, to allow for greater nuance and differentiation in distinct values from the raster, the output raster will be scaled from 1 to 100, providing a broader range of outcomes for the assessment of suitable sites.

3.2.5 Weighted Overlay Method

After reclassifying the rasters, the weighted overlay method can be applied. Since the total weight percentages must equal 100 and the weights must be integers, the six variable weights may not be equal. For example, dividing 100 by 6 yields 16.667, which is not an integer. Given that five of the six variables pertain to parcel distance to services, an initial equal value of

16 is assigned to each of these five variables, totaling 80. The remaining 20 is then allocated to the sixth variable, which measures density among HSA. This adjustment ensures that all weights are integers while reflecting the relative importance of each variable.

In this study, the HSA data indicates a preference for services among the unhoused, as evidenced by higher visual counts near services clustered in downtown Long Beach. Therefore, the initial values must be adjusted to account for these preferences. However, the challenge lies in the heterogeneity of these services and the difficulty in determining which specific services attract the unhoused the most.

To address this challenge, empirical data from similar circumstances involving unhoused populations can be helpful in determining the weights for each service. For example, a study conducted in Boston with formerly unhoused adults ranked transportation and grocery stores as the highest priority services, followed by hospitals and community health centers (CHC), with parks and libraries ranked lower (Chan et al, 2014, 147). Another study in Fort Worth, Texas, which used GPS tracking and interviews with unhoused participants, returned similar results, with finding food being the leading reason for travel (North et al, 2017, 669).

With these studies offering empirical justifications for varying preferences towards services, adjustments must be made reasonably. Studies cited above have identified transportation and grocery stores as the most highly preferred services. Given that metro stations and food assistance centers are the closest equivalents, their weights in this model are increased from sixteen to twenty. By elevating these variable weights, others inevitably need to be decreased to maintain a total of one hundred percent for the method to be viable. Since the studies also indicate a moderate interest in analogs to health clinics (community health centers) and hospitals, adjustments for these are minimal, rounded to fifteen each. The remaining value of

ten is allocated to the last variable, homeless shelters and services. See Table 5 below. This reduction is justified considering the thesis's objective is to identify a suitable site for an outdoor sanctioned encampment, thus making the primary purpose of a shelter moot. Its need is minimal and thus its weight is reduced. However, it's important to acknowledge that the dataset for shelters also encompasses homeless services that are of interest to the unhoused and thus the handicap imposed on this variable is not greater. Finally, although the studies provide assurance that the adjustments are justified, they remain conservative because larger increases or decreases could amplify errors, potentially leading to inaccurate conclusions.

Table 5. Weights for Model

Variable	Initial Weight	Adjusted Weight	Reason for adjustment
Food Assistance	16	20	Chan and North studies show greatest interest
Health Clinics	16	15	Chan study shows moderate interest in CHC, a direct analog to health clinics
Homeless Shelters and Services	16	10	Encampment makes need for shelter moot
Hospitals	16	15	Chan study shows moderate interest
Metro Stations	16	20	Chan and North studies show great interest
Visual Count	20	20	Initial value remains constant

While establishing a scale of 1 to 5 for the input rasters, it is acknowledged that this limited range might not yield optimal results given the large number of parcels under consideration. To allow for greater nuance and differentiation, the output raster will be scaled from 1 to 100. This broader range provides more detailed outcomes for assessing suitable sites.

Since the weighted overlay method only allows integer values, rescaling is necessary to preserve granularity. For example, a parcel with a potential score of 3.1 would be treated the same as one with a score of 3.9, both truncated to an integer of 3. On a scale of 1 to 5, many results would fall within a narrow range, causing important differences to be lost. By adjusting the scale to 1 to 100, fractional scores are converted into whole numbers, ensuring that finer distinctions are maintained in the analysis.

3.2.6 Sensitivity Analysis to account for legal constraints

Results derived from the site suitability analysis may be deemed complete if not for legal considerations. Despite court rulings that have curtailed enforcement of them, state laws namely Jessica's Law (2006) and Megan's Law (1996) have restrictions on where registered sex offenders may reside. They may not reside within 2,000 feet of a school or playground where children are known to be present. As the population of the unhoused is not without offenders or the potential to be, a site may be best found that is beyond those buffers.

Consequently, the results of site selection models may be further refined through the exclusion of parcels lying within 2000 feet of a school or park. As earlier noted in Chapter 3, datasets for schools and parks are refined to entries that reflect the presence of children. For each dataset, Schools and Parks, a buffer polygon of 2000 ft is created around each feature. See Figures 16 and 17 for workflows for Schools and Parks, respectively.

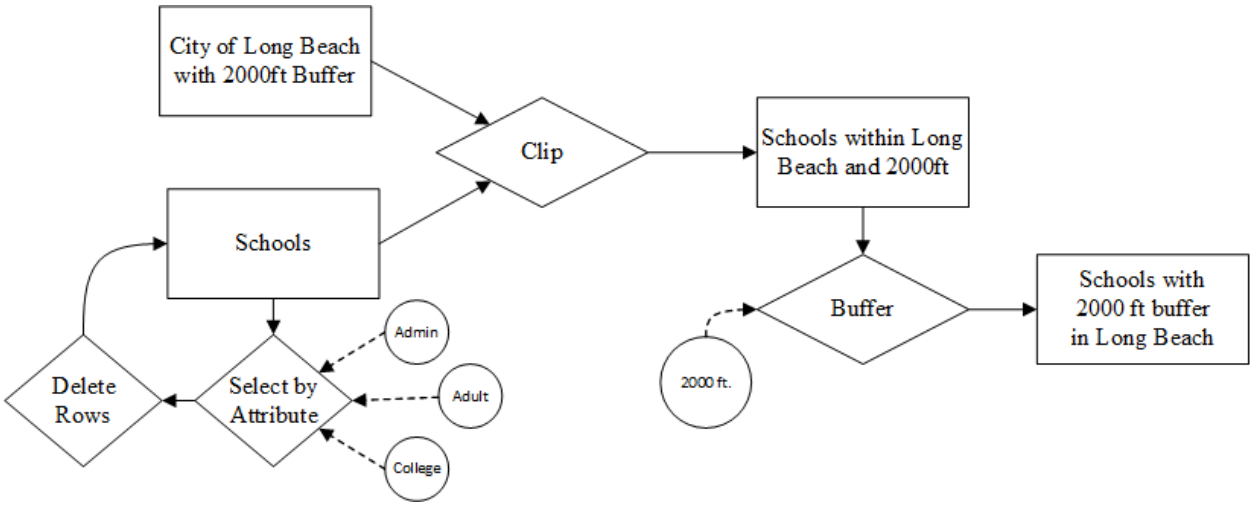

Figure 16: Workflow for Schools with 2000 ft buffer in Long Beach

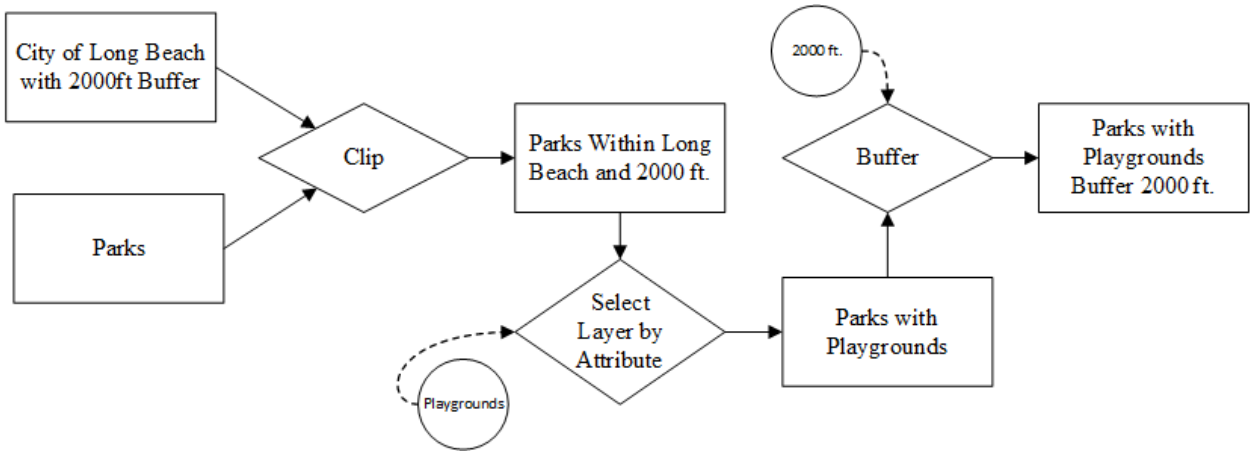

Figure 17: Workflow for Parks with Playgrounds Buffer 2000 ft.

The results of every site selection model are then processed through the Erase tool where parcels that are found within the buffers for parks and schools are erased from the final results. See Figure 18 illustrating the 2000 ft buffer zones around park and school parcels in Long Beach.

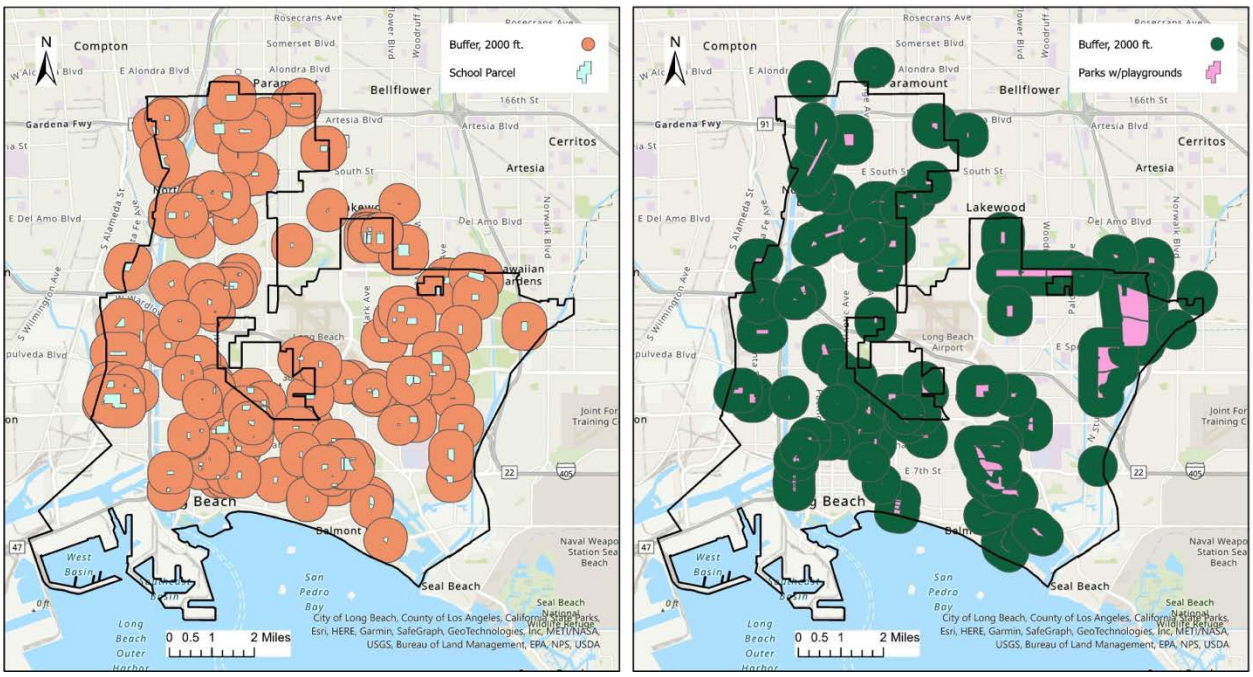

Figure 18: 2000 ft buffer around parks and schools

Chapter 4 Results

This chapter presents findings identifying the most suitable sites for the City of Long Beach to allocate as sanctioned encampments for the unhoused. Initially, a vast number of parcels are winnowed down to a more manageable selection. Subsequently, the preferences of the unhoused, inferred from their reported location and proximity to services, are analyzed. The filtered parcels and preference data are then processed using site suitability method, weighted overlay. Finally, a sensitivity analysis is conducted on the results to ascertain if the recommendations adhere to legal constraints, such as proximity to parks and schools. Parcels that meet these restrictions are additionally presented as alternatives in such cases.

4.1 Filtering of Parcels

The Los Angeles County Office of the Assessor in 2021 recorded nearly five million parcels. Narrowing down this count to the study area of the City of Long Beach results in 107,920 parcels. As discussed in Chapter 3, parcels are then refined by identifying zones with a "V" designation (e.g., 100V), indicating vacant land. The number of 2021 parcels identified as vacant were to 1,779. Further refinement, which excludes waterways, reduces the count of potential sites to 327. Figure 19 displays parcels meeting these criteria, marked in purple.

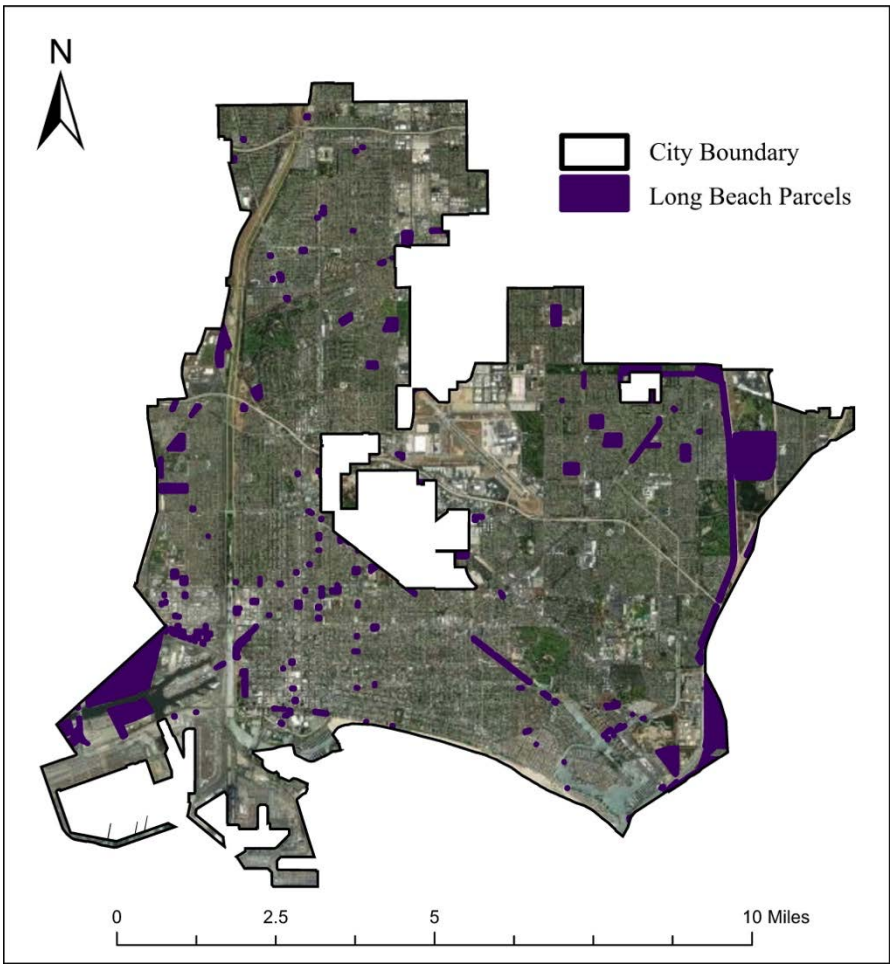

Figure 19. 2021 Parcels Meeting Analysis Criteria of Vacant, no Waterways; N=327

4.2 Site Suitability Results

Results of the weighted overlay show that 327 parcels located in close proximity to services report a higher cumulative score. No parcel achieved a perfect score of 100 where each and every service variable is within a quarter mile and is located in an HSA that has the highest density of unhoused. Where there is a diverse selection of services in a dense area such as the downtown district in Long Beach, parcels are deemed more favorable. Figure 20 illustrates broadly citywide and in greater detail the suitability from Low Suitability (Red) to High Suitability (Green). Where services are scant in East Long Beach, parcels return low scores in

the teens. Conversely, a plethora of services in downtown Long Beach have nearby parcels easily reaching highs of seventies or more in their scores.

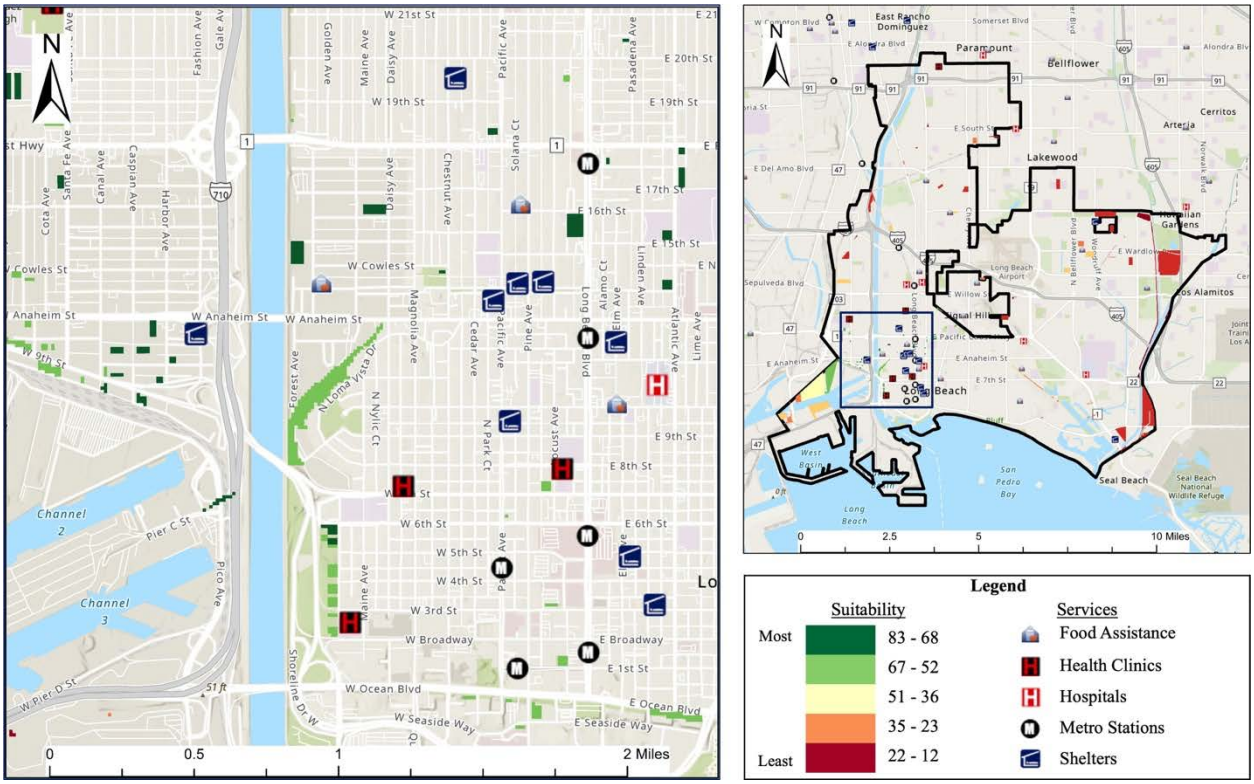

Figure 20. Weighted Overlay Results

The results for the parcels are separated into five classes using the Jenks natural breaks method. Since the results as seen in Figure 21 exhibit a bimodal distribution, with peaks at high and low values and fewer in the middle, a standard deviation classification would not be appropriate. Standard deviation classification assumes a normal distribution with a single central peak, which does not accurately represent the bimodal nature of the data. Using Jenks natural breaks allows for a more accurate representation of the data's inherent structure, ensuring that the classification reflects the true distribution of parcel suitability.

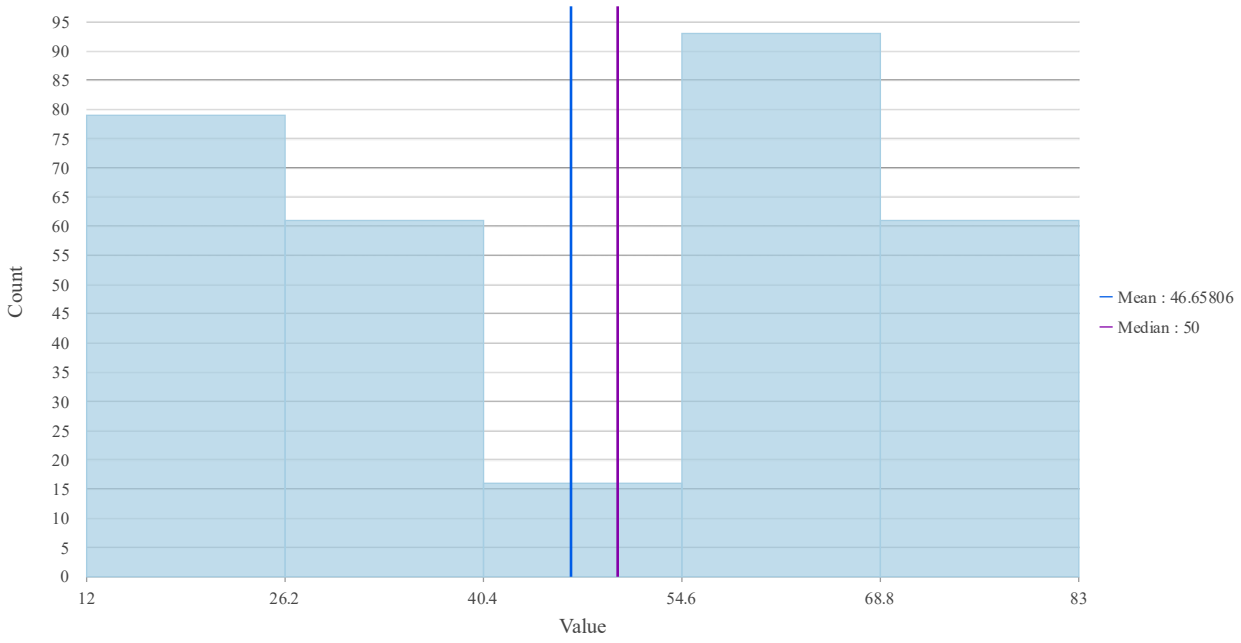

Figure 21. Distribution of Weighted Overlay Values

Maximum value returned from the analysis reported a score of 83 whereas the minimum score reported was 12. The mean score reported was 46.66 and the median score was 50.

The study aims to identify the most suitable sites for accommodating the unhoused based on the six variables of interest. From the analysis, 68 parcels from the most suitable class, shown in Dark Green in Figure 20 above, were selected for further review. Table 6 summarizes the number of parcels in each Suitability Class and reports the range of results. Next, Table 7 summarizes critical information on each of the 68 parcels identified in the Most Suitable class.

Table 6. Results of Parcel Suitability by Class

Suitability Class	Range	N
Most Suitable	83 - 68	68
Somewhat Suitable	67 - 52	86
Neutral	51 - 36	25
Somewhat Unsuitable	35 - 23	70
Least Unsuitable	22 - 12	78

Table 7. Most Suitable Class of Parcels

AIN	Address	Area	Weighted Overlay Score	HSA Visual Count	Food Assist Distance	Health Clinic Distance	Homeless Shelters Distance	Hospital Distance	Metro Station Distance
7269040909	1421 Chestnut Ave	0.08	83	4	5	4	5	4	4
7209022900	1827 Pacific Ave	0.37	79	4	5	4	5	3	4
7436005905	1426 W. 12th St	0.66	78	5	4	5	5	3	3
7436003902	1430 W. Anaheim St	0.48	78	5	4	5	5	3	3
7436007915	1470 W. 9th St	0.13	78	5	4	5	5	3	3
7436005907	1400 W. 10th St	0.29	78	5	4	5	5	3	3
7436004918	1355 W 11th St	0.22	78	5	4	5	5	3	3
7436005915	1557 W 9th St	0.28	78	5	4	5	5	3	3
7436004909	1152 Harbor Ave	0.11	78	5	4	5	5	3	3
7436007914	1470 W. 9th St	0.26	78	5	4	5	5	3	3
7269017902	1545 Long Beach Blvd	1.95	78	4	5	4	5	4	5
7271014003	1645 Daisy Ave	1.09	76	4	5	4	4	3	4
7269032906	1535 Atlantic Ave	0.56	75	4	4	4	4	4	4
7278016911	541 Golden Ave	0.11	75	3	5	5	4	3	4
7278016909	550 San Francisco Ave	0.11	75	3	5	5	4	3	4
7278016915	555 Golden Ave	0.11	75	3	5	5	4	3	4
7278016901	525 Golden Ave	0.11	75	3	5	5	4	3	4
7278016912	547 Golden Ave	0.11	75	3	5	5	4	3	4
7278016902	515 Golden Ave	0.12	75	3	5	5	4	3	4
7436005918	1530 W 12th St	0.55	73	5	4	5	5	3	2
7269030904	549 E 14th St	0.16	73	4	4	4	5	4	5
7269030905	1411 Atlantic Ave	0.24	73	4	4	4	5	4	5
7436008902	700 Pico Ave	0.61	72	5	4	4	4	3	3
7436007916	1564 W 9th St	0.26	72	5	4	4	4	3	3
7271011902	1501 San Francisco Ave	1.8	72	4	5	4	4	3	3
7210013900	925 E PCH Hwy	0.12	71	4	4	3	4	4	4
7209011900	2023 Pasadena Ave	0.14	71	4	4	4	4	3	4
7268006908	1725 Atlantic Ave	0.73	71	4	4	3	4	4	4
7268006913	1790 Atlantic Ave	0.03	71	4	4	3	4	4	4
7267006904	1199 E. 11th St	0.1	71	4	4	3	4	4	4
7268003913	998 E PCH Hwy	0.25	71	4	4	3	4	4	4
7268006916	1777 Atlantic Ave	0.04	71	4	4	3	4	4	4
7268006914	1777 Atlantic Ave	0.07	71	4	4	3	4	4	4
7268006915	1777 Atlantic Ave	0.07	71	4	4	3	4	4	4

AIN	Address	Area	Weighted Overlay Score	HSA Visual Count	Food Assist Distance	Health Clinic Distance	Homeless Shelters Distance	Hospital Distance	Metro Station Distance
7402023903	1900 Cota Ave	2.47	71	3	5	5	3	5	2
7268003912	848 E PCH Hwy	1.81	71	4	4	3	4	4	4
7432006915	1555 Santa Fe Ave	0.47	70	5	4	4	4	4	2
7269020900	333 E Esther St	0.16	70	4	4	4	4	4	5
7278023905	321 Golden Ave	0.14	70	3	4	5	4	3	4
7278023907		0.09	70	3	4	5	4	3	4
7278024905	415 Golden Ave	0.03	70	3	4	5	4	3	4
7278018913		0.09	70	3	4	5	4	3	4
7278023902		0.07	70	3	4	5	4	3	4
7278024903	801 W 4th St	0.03	70	3	4	5	4	3	4
7278024909	817 W 4th St	0.23	70	3	4	5	4	3	4
7278016905		0.09	70	3	4	5	4	3	4
7278023900	815 W 3rd St	0.11	70	3	4	5	4	3	4
7278023908		0.06	70	3	4	5	4	3	4
7278023909		0.09	70	3	4	5	4	3	4
7278023910		0.06	70	3	4	5	4	3	4
7278016903	522 San Francisco Ave	0.27	70	3	4	5	4	3	4
7278016906		0.12	70	3	4	5	4	3	4
7278024906	423 Golden Ave	0.07	70	3	4	5	4	3	4
7278024904	413 Golden Ave	0.04	70	3	4	5	4	3	4
7278024908	813 W 4th St	0.23	70	3	4	5	4	3	4
7278023911	333 Golden Ave	0.08	70	3	4	5	4	3	4
7278023903		0.09	70	3	4	5	4	3	4
7278024907		0.03	70	3	4	5	4	3	4
7278018903	247 Golden Ave	0.08	70	3	4	5	4	3	4
7273024900		0.06	69	3	4	5	4	4	5
7278018902		0.05	69	3	4	5	3	3	4
7278018901	201 Golden Ave	0.08	68	3	4	5	3	3	4
7278018907	821 W Broadway	0.07	68	3	4	5	3	3	4
7278018909	817 W Broadway	0.02	68	3	4	5	3	3	4
7278018911	217 Golden Ave	0.06	68	3	4	5	3	3	4
7278018908	819 W Broadway	0.02	68	3	4	5	3	3	4
7278018910	221 Golden Ave	0.05	68	3	4	5	3	3	4
7278018912	213 Golden Ave	0.05	68	3	4	5	3	3	4

Table 7 provides detailed information about each parcel, organized by column. The columns include:

- AIN (Assessor's Identification Number): A unique identifier for the parcel, similar to a primary key used in database tables.
- Address: The location of the parcel. Some parcels do not have a listed address in records.
- Area (acreage): The size of the parcel measured in acres, a common unit in the U.S.
- Weighted Overlay: Scores rescaled 1 to 100 to maintain distinctiveness.
- HSA (Homeless Survey Area) Visual Count
- Food Assistance Distance
- Health Clinic Distance
- Homeless Shelters Distance
- Hospital Distance
- Metro Station Distance

Parcels are sorted from highest to lowest using their weighted overlay scores.

4.2.1 Identifying top five most suitable sites

The weighted overlay method has identified 68 parcels as most suitable for further review. These parcels have received high scores due to their excellent proximity to services needed by the unhoused population. The project aims to narrow these down to the top five sites. Each site, which may consist of a single parcel or a cluster of spatially close parcels, is evaluated based on its score, its total size (which must exceed a quarter of an acre), and the accuracy of its vacant status as verified by satellite imagery.

4.2.2 Disqualifying features for otherwise highly ranked parcels

The highest-rated parcel, AIN 7269040909, located at 1421 Chestnut Avenue, received a score of 83, making it the most suitable site for an encampment according to the weighted overlay model. This parcel is less than a quarter mile from food assistance and homeless services, earning a perfect score of 5 for each of these variables. The remaining variables scored a 4, as they are within three-quarters of a mile.

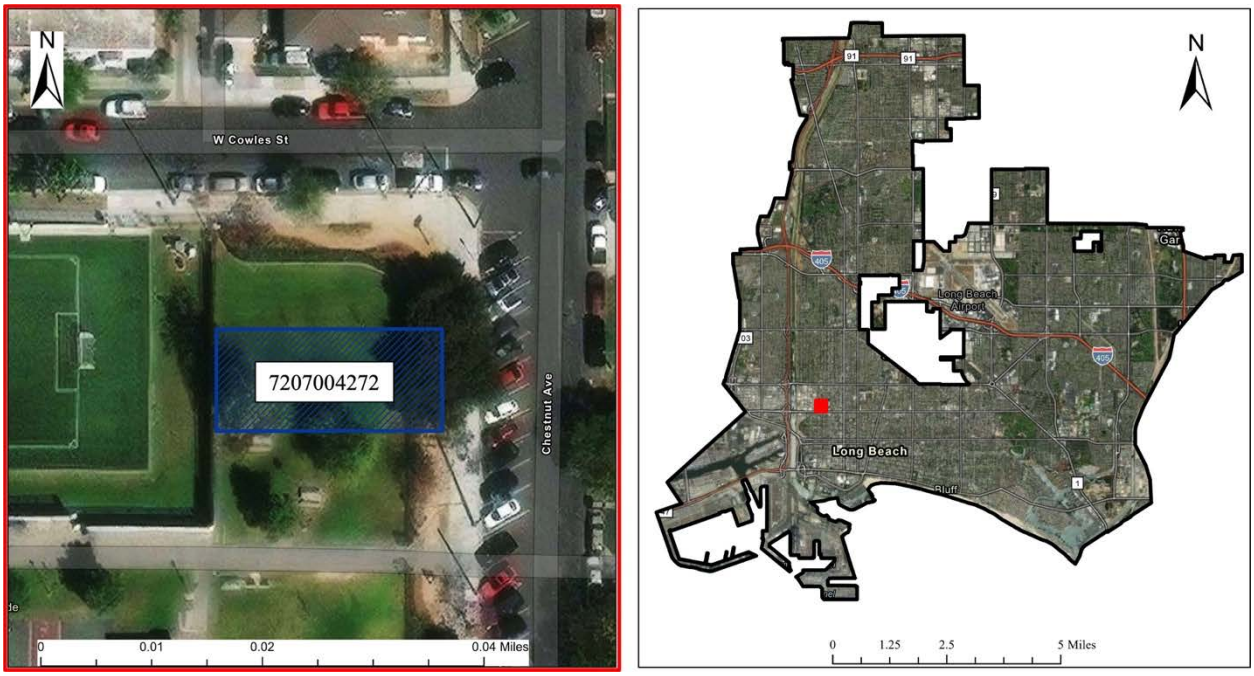

Figure 22. AIN 7207004272, Seaside Park

However, further details, as shown in Figure 22, reveal that this parcel is not ideal for an encampment. For instance, parcel AIN 7207004272 is only 0.08 acres, which is too small. If adjacent parcels with a use code ending in 'V' for vacant had been identified, the size issue might be mitigated. However, the adjacent parcels are not identified as vacant, suggesting that this parcel may have been incorrectly marked as such. Even if the size and vacant use code issues are resolved, this parcel would still be excluded in the sensitivity analysis due to its location within a park or within two thousand feet of one, which is an immediate disqualifier.

When the size criterion is met, other challenges arise. For instance, parcel AIN 7269017902 at 1545 Long Beach Blvd. spans nearly two acres. It also has a very high weighted overlay score of 78. The parcel appears to be most ideal. Unfortunately, as shown in Figure 23, the imagery reveals that this parcel is fully developed rather than vacant. If that weren't already disqualifying, the fact that the site is a school, would disqualify it in the sensitivity analysis.

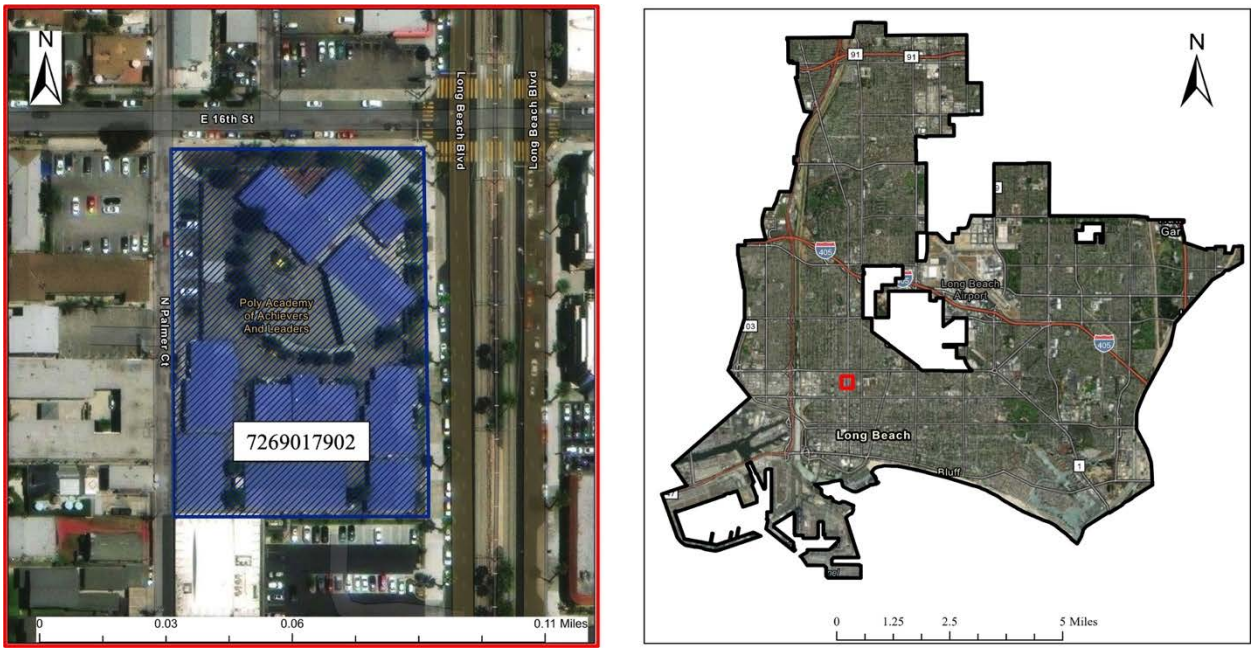

Figure 23. AIN 726901902, 1545 Long Beach Blvd.

4.2.3 AIN 7209022900, 1827 Pacific Avenue

AIN 7209022900, located at 1827 Pacific Avenue and shown in Figure 24, spans a little over a third of an acre and has the second-highest weighted overlay score of 79. It excels in proximity to food assistance and homeless services, each scoring a perfect 5. Additionally, it is within half a mile of both a health clinic and a metro station. Its proximity to a hospital, scoring a 3, indicates it is about a mile away from such services. Satellite imagery confirms that the parcel is fully contiguous with no structures or developments present.

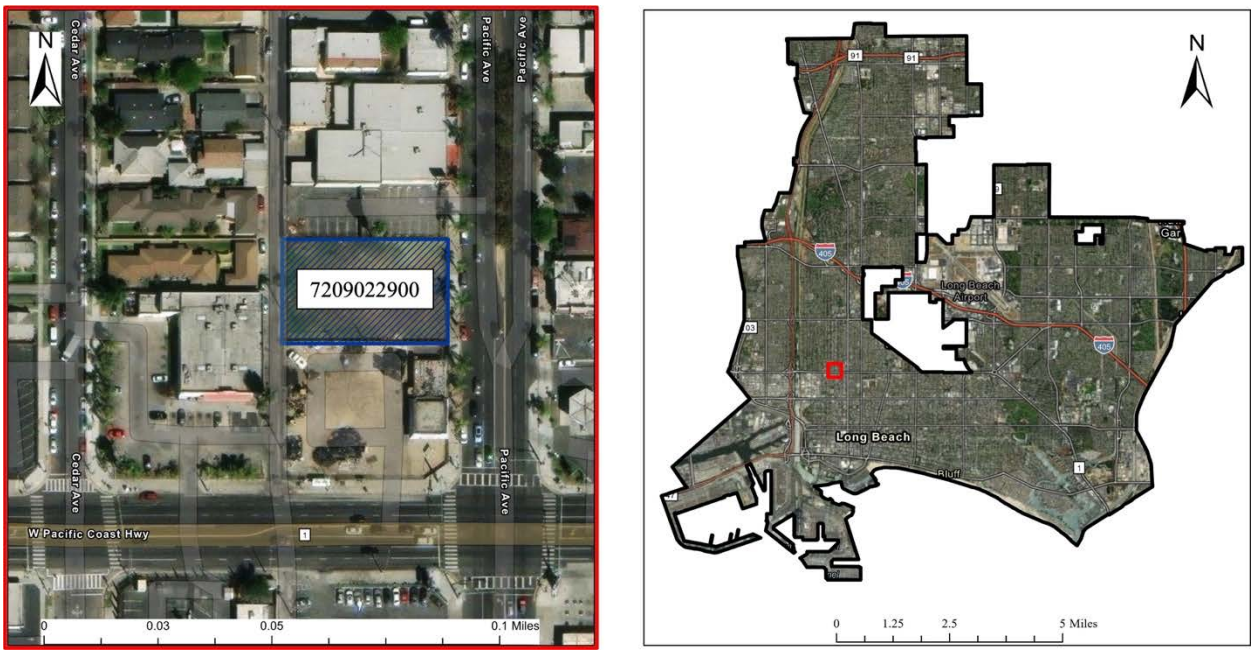

Figure 24. AIN 726901902, 1545 Long Beach Blvd.

The parcel is situated in a mixed-use neighborhood, with high-density residential housing towards the rear and commercial retail along Pacific Avenue and nearby Pacific Coast Highway. Given that the parcel is less than a quarter of a mile from existing homeless services, acceptable tolerance for an encampment potentially exists. However, this is not guaranteed, and therefore, additional sites need to be considered as viable alternatives.

4.2.4 AIN 7436005905, 1426 W. 12th St., cluster of three parcels

The third highest score of 78 for AIN 7436005905 at 1426 W. 12th St. is promising. It amounts to more than half an acre and is adjacent to other top-ranking parcels, 7436003902 and 7436005918, as shown in Figure 25. Two of these parcels, 7436005905 and 7436003902, score an impressive 78, with mostly fours and fives, except for a three for metro station proximity. The third parcel (7436005918) scores a two for the same variable, but it is only about 60 yards from the other two, which earned a three. Distance is no more than a mile and a quarter to the nearest metro station, which is within reasonable walking distance.

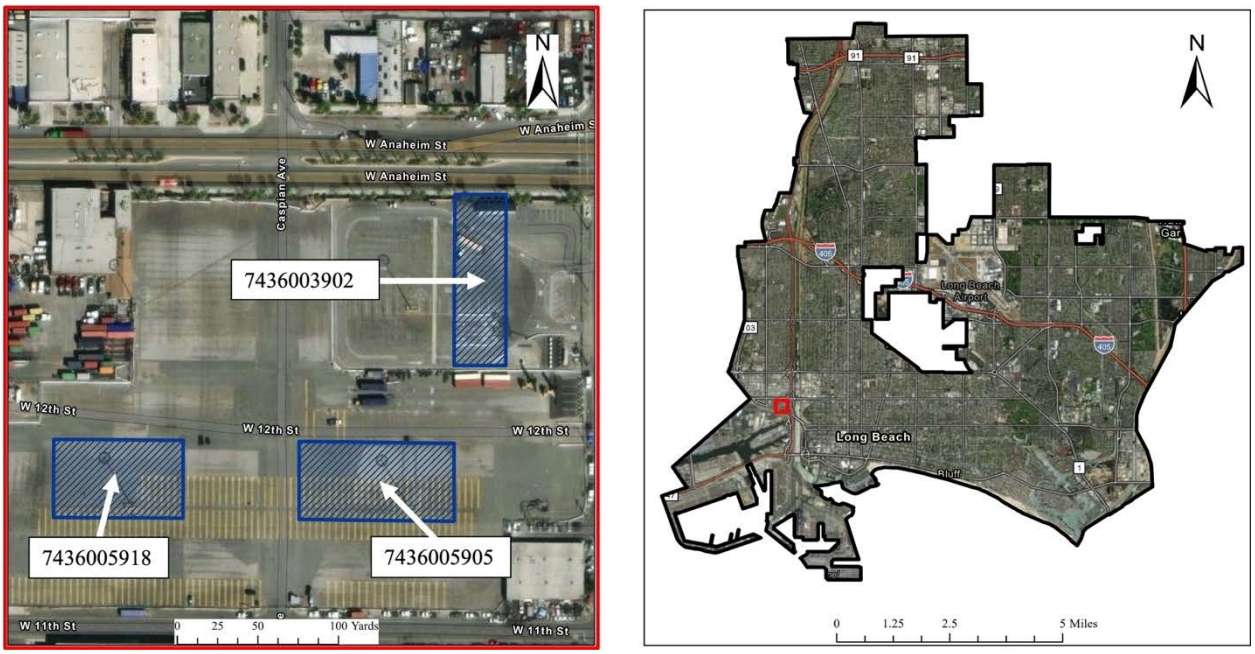

Figure 25. AIN 7436005905, 7436003902, 7436005918

Located a short distance from the Port of Long Beach, these three parcels in aggregate come in a generous 1.7 acres. Of the three parcels, two are zoned for industrial use and the remaining one for government use. The latter designation may be incorrect, though, as the imagery suggests its use is identical to the other two.

Other encouraging details about the parcels are also present. They are well-lit, as evidenced by the imagery showing light posts over the parking lot. Being already paved, they are more suitable than other vacant dirt lots for setting up tents for the encampment. Perhaps most importantly, the Long Beach Multi Service Center (LBMSC), the department overseeing the city's homeless services, is headquartered just one-tenth of a mile away and has an onsite health clinic. This proximity may help provide direct oversight and political support for a site that might be considered a LULU.

Considering that the site would be viewed as a LULU (locally unwanted land use) in other areas of the city, its close proximity to another LULU in the industrial area, the Long Beach Multi Service Center itself, could potentially alleviate objections. The LBMSC already

exists and thus has set a precedent for establishing such a presence. Nevertheless, locating the encampment away from Long Beach's core districts may inadvertently reinforce the perception that the unhoused population is unwelcome and marginalized, both literally and figuratively.

4.2.5 AIN 7436004918, 7436004909, 1355 W. 11th St.

In the same area as the Long Beach Multi-Service Center (LBMSC) lies a cluster of two parcels situated at 1355 W. 11th St., identified as AIN 7436004918 and 7436004909 as seen in Figure 25. Together, these parcels cover a third of an acre, one block south of the LBMSC. Although their combined size is smaller than the 1426 W. 12th St. site, which spans half an acre, these two parcels are contiguous, unlike the three spatially close but separate parcels of the other site. Additionally, the two parcels have a weighted overlay score of 78, similar to the previous site. Their proximity to the health clinic and homeless services at the LBMSC earns them a score of 5 for each service.

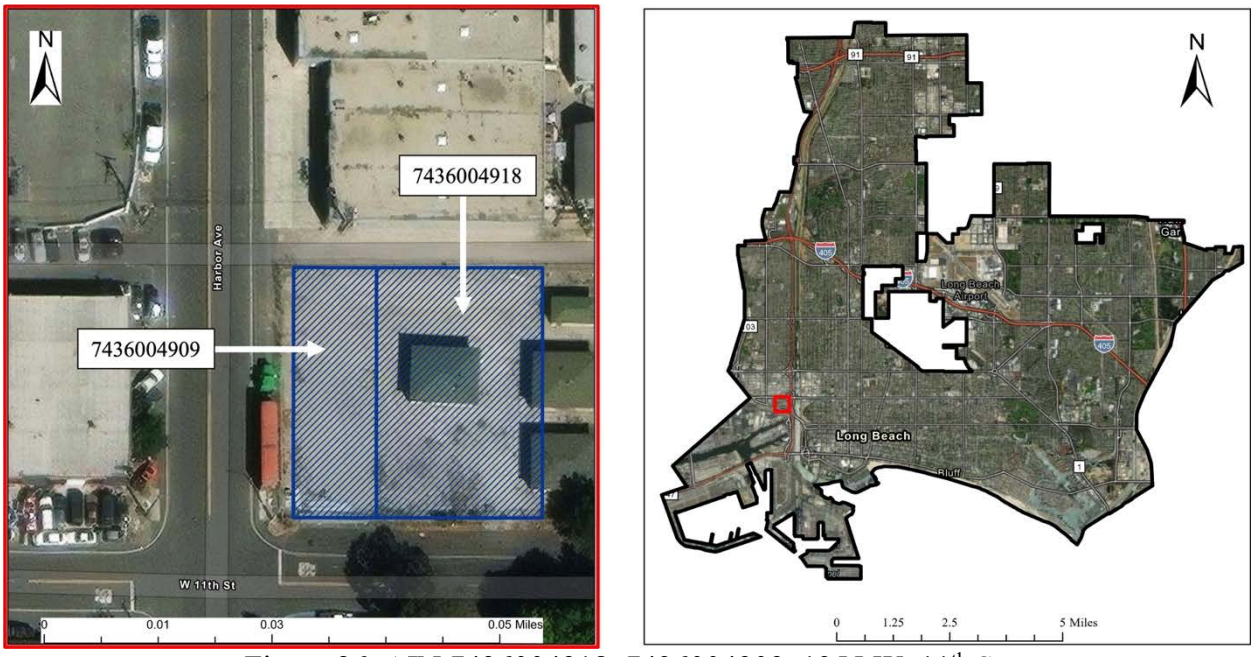

Figure 26. AIN 7436004918, 7436004909, 1355 W. 11th St.

Imagery reveals that this site is not completely vacant, as there are dwellings present. Initially, this might suggest the site is inappropriate due to existing development and an erroneous vacant categorization. However, further examination shows that these dwellings resemble cottages. Figure 27, featuring Google Street View imagery dated February 2023, indicates that these cottages are equipped with air conditioner units, suggesting they have been used for habitation. Currently, they do not appear to be actively occupied and haven't been for several years, as evidenced by past Google Street View captures. These structures could potentially be repurposed as tiny homes, adding value to the site.

Figure 27. Google Street View imagery, February 2023, 1355 W. 11th St.

Despite the promising amenities, the site's location in the Port of Long Beach area, where industrial activity is prevalent, raises concerns. Although the LBMSC is already established in this area, there is a risk that continuing to use this site may perpetuate the marginalization of the unhoused population.

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4.2.6 AIN 7436007916, 1564 W. 9th St.

Abutting railroad tracks in the Port of Long Beach, AIN 7436007916, as shown in Figure 28, is completely vacant. There is no development on its quarter-acre of land. Although it has a weighted overlay score of 72, which is lower than the previously mentioned sites, it is still among the 68 parcels identified as most suitable. None of the essential services are within a quarter of a mile. However, most are within half a mile, except for the metro station and hospital, which are about a mile away.

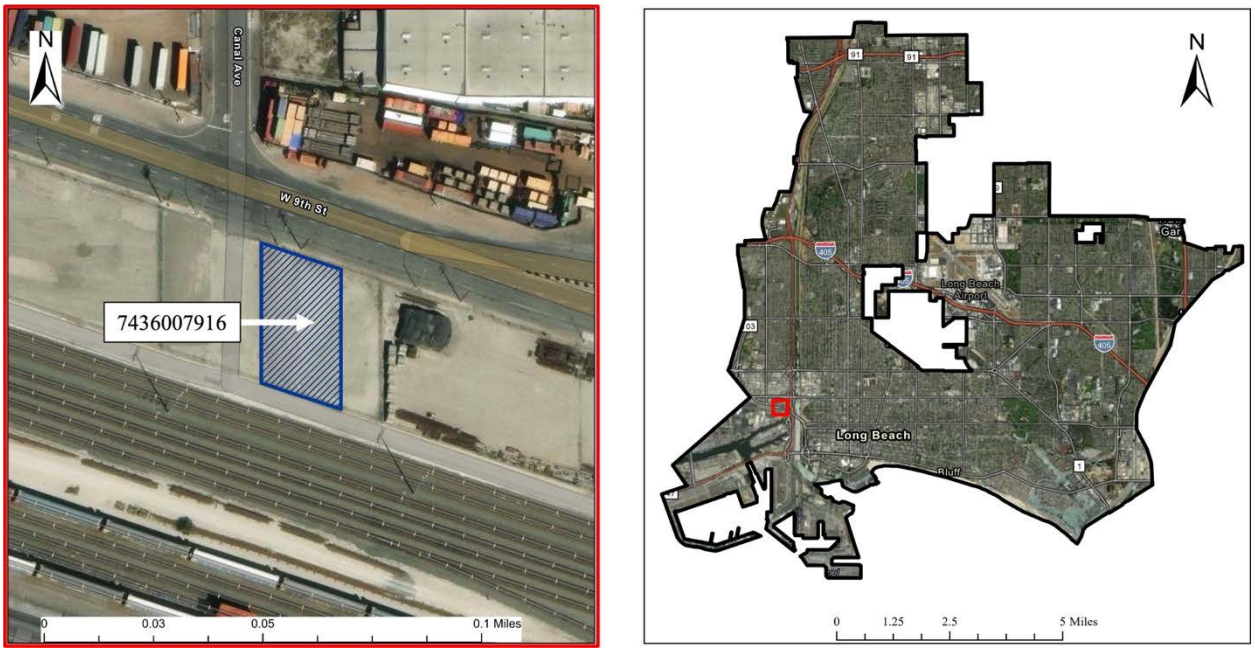

Figure 28. AIN 7436007916, 1564 W. 9th St.

Despite its high score, the location raises concerns about warehousing and hiding the unhoused population, as it is well within the port area with constant views of railyards and shipping containers. If other sites face opposition due to NIMBYism, this site might serve as a last resort.

4.2.7 AIN 7271011902, 1501 San Francisco Avenue river-facing parcel

Where parcels with higher rankings have failed due to not factually being vacant or not meeting a minimum size, AIN 7271011902, located at 1501 San Francisco Avenue, qualifies easily. The parcel is quite sizeable at nearly two acres. Imagery shows it to be undeveloped vacant land with a minor flagpole salient providing entry from the street. It also abuts the Los Angeles River, as seen in Figure 29.

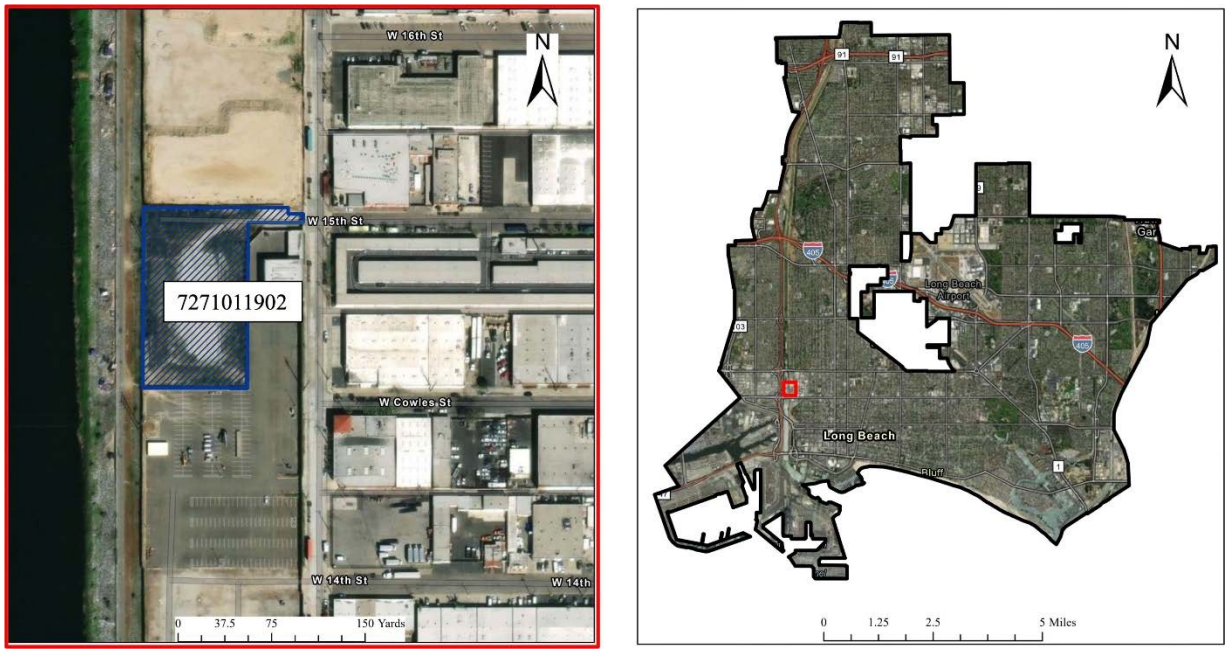

Figure 29. AIN 7271011902, 1501 San Francisco Avenue

Although this parcel does not rank in the top ten of the most suitable parcels, it is still within the select category of most suitable with a score of 72. Furthermore, as an individual site, it ranks among the top five qualified. Additionally, walking distance to services is well within reason where most services are within half a mile.

Looking closely at the imagery of AIN 7271011902 in Figure 29 once more shows a curious detail: the east bank of the Los Angeles River, immediately adjacent to the parcel, is dotted with ad hoc encampments of the unhoused. This visual finding is prima facie evidence

complementing the findings that this potential site for a sanctioned encampment would be looked upon favorably by the unhoused without much effort.

The location sits on the side of Long Beach's downtown, rather than the facing Port of Long Beach, thus mitigating to a degree the suggestion that the site is on the margins. Additionally, its discreet entrance, set back from another parcel, helps avoid unnecessary attention, positive or negative. The scenic view of the Los Angeles River softens its industrial surroundings, and its adjacency to the Los Angeles River Bikeway provides convenient access for potential residents to come and go by bicycle.

While 1501 San Francisco Avenue appears ideal due to its significant size, undeveloped, and proximity to the unhoused already camping nearby, its closeness to a park or school might pose a challenge that could be difficult to overcome.

4.3 Sensitivity Analysis

A total of 327 parcels within Long Beach underwent analysis using weighted overlay to determine their suitability for a sanctioned encampment. From this pool, 68 of those parcels emerged as the most suitable following a five-classification breakdown using the Jenks natural breaks method. Further refinement was undertaken to adhere to legal considerations, resulting in the disqualification of parcels located within 2,000 feet of parks and schools. This criterion significantly reduced the number of viable parcels to ten, as detailed in Table 8. These remaining parcels primarily comprise three main sites (1426 W. 12th St., 1355 W. 11th St., 1564 W. 9th St.), along with some parcels that, although categorized as vacant, contain disqualifying structures.

Table 8. Most Suitable Parcels Qualified, Sensitivity Analysis

AIN	Address	Area	Weighted Overlay Score	Site
7436005905	1426 W. 12th St	0.66	78	1426 W. 12th St
7436003902	1430 W. Anaheim St	0.48	78	1426 W. 12th St
7436007915	1470 W. 9th St	0.13	78	structure
7436005907	1400 W. 10th St	0.29	78	structure
7436004918	1355 W. 11th St	0.22	78	1355 W. 11th St
7436005915	1557 W. 9th St	0.28	78	structure
7436004909	1152 Harbor Ave	0.11	78	1355 W. 11th St
7436007914	1470 W. 9th St	0.26	78	structure
7436005918	1530 W. 12th St	0.55	73	1426 W. 12th St
7436007916	1564 W. 9th St	0.26	72	1564 W. 9th St

Among the disqualified sites are AIN 7209022900 at 1827 Pacific Avenue, the second best-ranked site, and AIN 7271011902 at 1501 San Francisco Avenue. Despite both sites having undeveloped lots in the core of Long Beach, their proximity to parks disqualifies them. Specifically, the 1.7-acre vacant lot at 1501 San Francisco Avenue, which abuts the waterfront, could not meet the required buffer distance from Seaside Park as illustrated in Figure 30.

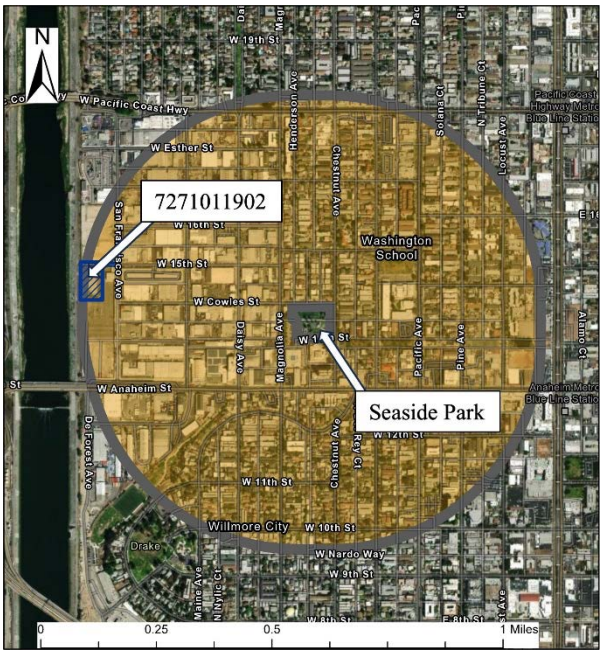

Figure 30. 2,000 ft buffer around Seaside Park

Parcels situated in predominantly industrial areas, particularly around the Port of Long Beach and its immediate environs, emerge as viable options beyond the buffers of parks and schools. The three sites depicted in Figure 31 are located in one of the few areas of Long Beach not constrained by proximity to parks or schools..

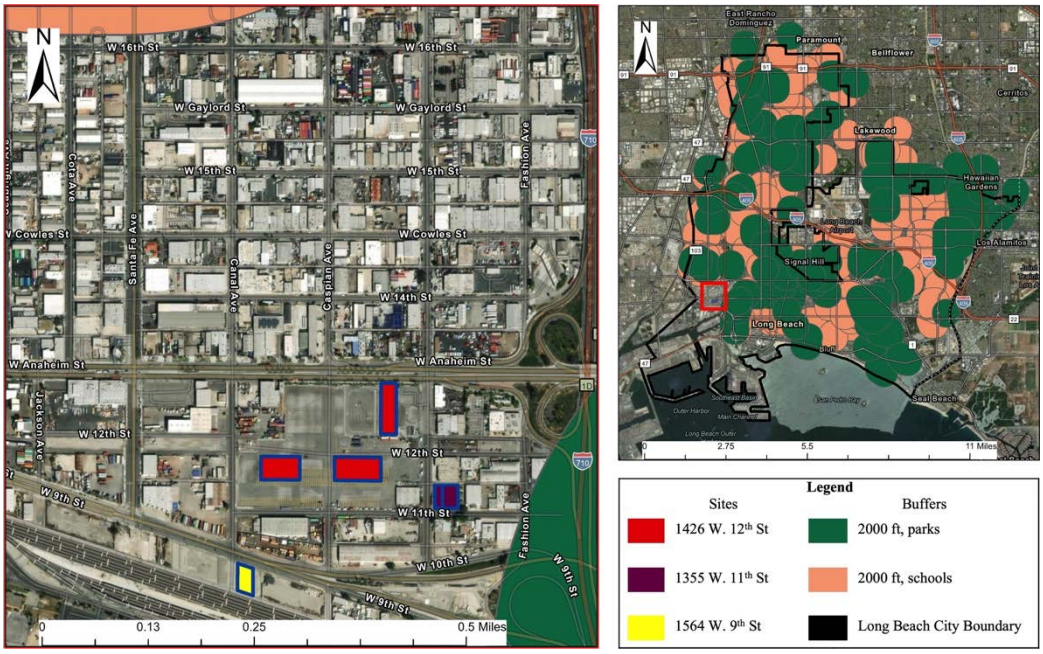

Figure 31. AIN 7436005905, 7436003902, 7436005918 outside 2000 ft. buffers

This may explain why the conveniently located Long Beach Multi Service Center is outside these restricted areas. However, while these sites qualify under these legal constraints, they arguably perpetuate the marginalization of the unhoused to the city's periphery, where park and school zones become de facto exclusion zones. Given this concern, considering an additional site beyond the class of most suitable parcels is warranted.

4.3.1 AIN 7207004271, 7207004272, 2990 Atlantic Avenue

Reviewing parcels for size and confirming they are without structures, AIN 7207004271 and the adjacent parcel 7207004272 are suitable. They are located at 2990 Atlantic Avenue, on the city limits with the independent enclave of Signal Hill. Additionally, as shown in Figure 32, the parcels are just outside the buffer for schools. The buffer for parks is closer and in fact grazes the southwest corner of parcel 7207004271.

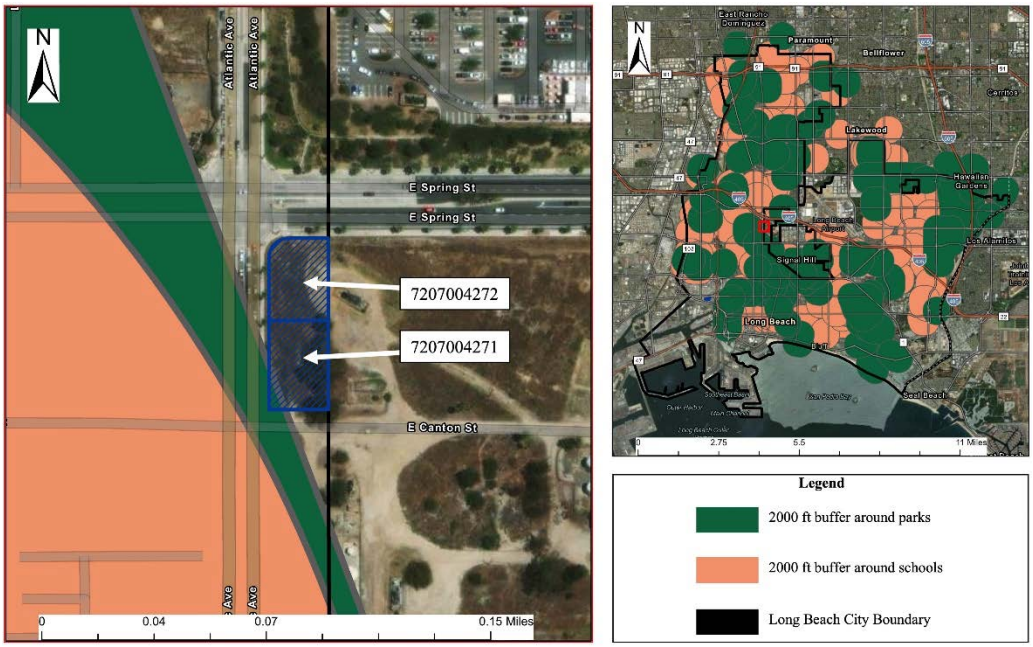

Figure 32. AIN 72017004271, 7207004272, 2990 Atlantic Avenue

Both parcels received scores of 65, placing them within the highest level of the Somewhat Suitable classification range of 67 - 52. Although these scores may suggest inferiority, the underlying factors indicate appropriate suitability. Each parcel is within a quarter mile of food assistance and a hospital, specifically near the Salvation Army and Long Beach MemorialCare Medical Center, respectively. Additionally, the Willow Street Metro Station is less than half a mile away, providing transportation to services that might not be within walking distance.

Homeless services are nearly two miles away, but this may become less significant if an encampment is established. One factor contributing to the lower overall score is that the parcels are not located in a high-density area for the unhoused, with a score of 2 for the Homeless Survey Area (HSA) Visual Count. However, this may be less critical, as establishing an encampment in a location with necessary nearby services might outweigh the need to be in an area with a high density of unhoused individuals.

Chapter 5 Conclusions and Discussion

The purpose of this study was to identify a parcel of land within the City of Long Beach most suitable for the use of chronically unhoused individuals to reside in sanctioned encampments. In further identifying such a parcel, the study ranks parcels using a site suitability method known as weighted overlay to determine their proximity to services used by the unhoused. The study also aims to select a site that considers the population's preferences. The weighted overlay method employs a differing weights supported by empirical studies, incorporating a density metric. This chapter will explore the study's findings and their potential to guide the city in addressing the issue. The results are first discussed, followed by the methodology and study details, and finally, suggestions for future work to improve the process and outcomes are presented.

5.1 Conclusions

As stated in Chapter 1, the rate of homelessness, particularly for the chronically unsheltered, has continued to rise to unprecedented levels. On a single night in 2020 in the U.S., nearly four in ten unhoused persons were in unsheltered locations such as on the street, in abandoned buildings, or in other places not suitable for human habitation. Municipalities throughout the country, especially on the West Coast (e.g., Seattle, Portland, Sacramento, Fresno, Los Angeles), have been attempting various methods and ideas: shelters, housing first, and tent encampments.

The approach presented in this study argues to accept that encampments for the chronically unhoused are not a complete solution but can be part of a multi-pronged strategy to address homelessness. This study seeks to determine the viability of parcels for establishing

sanctioned encampments by using site suitability method, weighted overlay, to assess proximity to essential services (e.g., food assistance). Unlike most efforts that have often been indifferent to the needs and preferences of the affected populace, this study aims to give greater consideration to parcels that are closer to where the unhoused are currently congregating.

The initial filtering of parcels yielded mostly straightforward results, identifying those within the Long Beach city limits and marked as vacant in their use code. However, further refinements were necessary to address illogical situations. For instance, bodies of water like the Los Angeles River have parcels recorded as 400V, Government vacant land, which are clearly unsuitable for potential sites. These parcels were immediately disqualified. Parcels below a reasonable size, such as a quarter of an acre, were not automatically excluded. This is because clusters of adjacent parcels might collectively exceed that size and qualify as potential sites. Filtering too early could inadvertently remove suitable locations among these clusters. After filtering to a more manageable number, 327, the parcels were processed through site suitability method: weighted overlay. Following this, a manual review of the sites was conducted.

The suitability analysis used weighted overlay with weights adjusted based on empirical data reflecting the preferences of unhoused individuals in similar studies. Raw values are re-classified from 1 to 5, where higher numbers indicated closer walking distances from the parcel to the service.

Since the weighted overlay method is restricted to integers, fractional numbers in the analysis would be lost. To mitigate this, the output values were rescaled from 1 to 5 to 1 to 100. This rescaling preserved distinctions between values such as 3.1 and 3.9, which would otherwise both be seen as 3, but are more accurately represented as 62 and 78 on the rescaled scale.

The study returned the top-ranked parcel, AIN 7269040909, with a score of 83. Despite its proximity to services within a quarter mile, manual review revealed that it poorly qualifies as an encampment site. It is too small at .08 acres and lacks adjacent vacant parcels for clustering. Imagery indicates that it is not a vacant lot but rather a developed section of a city park. Likely, a misclassification of the parcel's use code as vacant led to its erroneous inclusion for consideration.

Misclassification is common among the entries, despite monthly updates by the Los Angeles County Assessor. Records are not uniformly corrected, making it challenging to pursue valid vacant alternatives to the top-ranked but disqualifying parcel at Seaside Park. Many entries scored well but were ultimately deemed unsuitable due to contradicting imagery.

5.1.1 Preferred Sites

Imagery at 1827 Pacific Avenue was true to its categorization as vacant. Scoring the second highest at 79, the parcel AIN 7209022900, is vacant. It boasts perfect scores of 5 for proximity to food assistance and homeless services, and is also within half a mile of a health clinic and metro station. Located in a mixed-use neighborhood with high-density residential housing and commercial retail, it lies less than a quarter of a mile from existing homeless services, suggesting potential tolerance for an encampment. The site is well within the core of Long Beach thus minimizing concerns for marginalization that may arise in placement on the periphery of the city.

Despite concerns about further marginalization due to their proximity to the port, sites in the industrial area of Long Beach do comply fully with legal constraints. Among these, 1355 W. 11th St. stands out as particularly promising. Its proximity to the Long Beach Multi-Service Center (LBMSC) matches that of the site at 1426 W. 12th St., but with the added advantage of

having two contiguous parcels. Additionally, the presence of cottages that could be occupied by the unhoused is a unique benefit not found at other sites. This detail is significant. Given that 1426 W. 12th St. and 1355 W. 11th St. both have equal scores of 78, ancillary features like the cottages could make 1355 W. 11th St. the preferred choice.

5.2 Future Work and Considerations

Numerous parcels documented by the Los Angeles County Assessor have been filtered and processed in this study. First, parcels outside the city limits of Long Beach were eliminated, and then, more importantly, those marked as vacant were identified. The presence of many parcels listed as vacant but not actually being vacant is troubling. Future work involving the dataset from the County Assessor will need to account for this error rate. Relying solely on the County Assessor for accurate descriptions will not suffice. Any future work will benefit from incorporating datasets from private sources that are motivated to provide excellent data for profit and maintaining their reputation. Sources catering to the real estate sector, particularly developers, come to mind.

Where data may be not accurate for the parcels, data for the human factor is too coarse. In an effort ostensibly to protect privacy of individuals, Long Beach's Multi Service Center declines to share geographic coordinates, points, or addresses of where interviews take place during a Point in Time (PIT) exercise. Instead, data is aggregated into counts of individuals interviewed within each PIT team's assigned Homeless Service Area (HSA). Consequently, a loss of spatial resolution occurs. Details of individuals' backgrounds, such as race, mental health, and length without ideal shelter, are blurred into a general consensus for the HSA where they reside.

Using point data instead of polygon data in this study would have been more versatile to manipulate and use. Counts of individuals easily exceed double digits in each of the fifty-two PIT areas, yielding a potential record count exceeding thirteen hundred. With these numbers, other methods of analysis, such as geographic weighted regression, may be pursued.

Understanding your target market, in this case the chronically unhoused, involves more than just gathering biographical information. Details about a population's race, gender, and health have been documented alongside the Point in Time (PIT) count each year. However, there is a lack of data on what unhoused individuals desire in a place to call home. The Long Beach Multi Service Center could benefit everyone by conducting thorough surveys of the unhoused during the PIT session. If these surveys are already being conducted, the data should be made available to the public in a reasonable manner, preferably detailing specific points rather than generalized areas where the unhoused congregate.

A fundamental detail of the encampment envisioned is that it is a place for the chronically unhoused to find refuge where other remedies such as affordable housing and shelters cannot. The latter impose constraints on what is permissible such as abstaining from drugs and alcohol, prohibiting pets, imposing limits on personal property and restricting relationships with significant others. However, allowances can only go so far. Should the encampment adopt a laizzez-faire approach, it may jeopardize its integrity and purpose. If taken to its logical extreme, members of the chronically unhoused who are registered sex offenders may be welcomed but their very presence would endanger the encampment’s existence due to legal reasons.

Laws such as Megan’s Law (1996) and Jessica’s Law (2006) have many restrictions for registered sex offenders such as prohibition from living within 2,000 feet of any school or park

located within the state. Furthermore, a jurisdiction such as the City of Long Beach is required to notify the public about offenders, particularly high risk. Thus, implementation of an encampment as envisioned in this study will need to consider whether it will restrict itself to locations unencumbered or adopt rules, such as single gender, no narcotics, no alcohol, akin to those found in existing solutions, namely shelters.

A conceivable, unintended consequence of legislation aimed at registering sex offenders and their whereabouts is that willful ignorance may be more insidiously desirable than full awareness. If the City of Long Beach pursues and sanctions an encampment for the chronically unhoused, it becomes necessary to determine if occupants are residents after thirty days. If so, laws such as those regarding sex offenders are more applicable where notification requirements are in play. Municipalities may not wish to have the legal responsibility or liability that accompanies. Where the onus is primarily on the individual with such a requirement, the liability shifts to a municipality who is responsible for public safety. Hence, if a municipality is aware and fails to inform, it is culpable particularly if a tragedy unfolds.

The driving motivation for this study is to identify a parcel of land where chronically unhoused may take up residence thus perhaps reducing the presence of illegal encampments throughout the city. If the city is to take up such a solution it will tacitly acknowledge the desires of the populace it wishes to aid and comfort. A challenge though for the city is that an encampment envisioned, arguably, is a LULU and NIMBYism will likely emerge. Where currently the unhoused are diffused or situated in areas where public opposition has not coalesced, establishing a pointedly, visible site for unhoused may have politicians elected hesitant to pursue it. Nevertheless, the solution may be inevitable as the cries for the unhoused to "not be in my backyard" may be already too late. The unhoused are in everyone's backyard if not

already in the front yard on the sidewalks. A solution such as one proposed in this study is warranted.

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