Integral Consulting Inc.
200 Washington Street
Suite 201
Santa Cruz, CA 95060

telephone: 831.466.9630
facsimile: 831.466.9670
www.integral-corp.com

# MEMORANDUM

| | |
|---|---|
| **To:** | Alyson Hunter, City of Marina |
| **From:** | David Revell, Ph.D., and Matthew Jamieson |
| **Date:** | March 8, 2023 |
| **Subject:** | City of Marina Social Vulnerability Assessment for LCP Update |
| **Project No.:** | C3346 |

The purpose of this memorandum is to assess social vulnerability in the City of Marina (City) and to develop recommendations for the City to integrate social vulnerability and environmental justice concerns into their Local Coastal Program (LCP) update. There have been numerous contributions to the development of guidance frameworks to understand how social vulnerability relates to climate change and coastal hazards on a broad scale (CCC 2022; The Nature Conservancy 2016; BCDC 2012), as well as site-specific assessments of sea level rise and coastal hazards for the City (City of Marina 2019). This assessment focuses on the intersection of coastal hazards and other environmental stressors with measures of social vulnerability, and evaluates these factors to provide the City with the proper context to consider social vulnerability in future sea level rise resiliency planning.

The City's aim for the ongoing LCP amendment process is to build a meaningful outreach process to help inform the scope of the update and identify environmental justice concerns and policy considerations for the LCP. This work was slated to occur following the 2018 City Council Resolution to update existing conditions in the LCP; however, due to the COVID-19 pandemic, this vital step of community outreach and engagement was delayed. The assessment presented in this memorandum is a continuation of this process.

This memorandum includes the following sections:

- **Introduction** describes important terms and the scale of this study
- **Data Sets and Methodology** describes the data sets used in the study
- **Existing Conditions** describes the demographics and neighborhoods of the City

- **Findings** section provides maps and an overview of the vulnerability characteristics of the City
- **Discussion** details some of the major existing community vulnerabilities and how exposure to coastal hazards and climate change can exacerbate these vulnerabilities
- **Conclusion and Next Steps** details what has been learned and where to go next.

# INTRODUCTION

The City's LCP was first certified by the California Coastal Commission (CCC) in 1982 and was last amended in 2009. Since 2009, statewide understanding has grown regarding the potential impacts of sea level rise with an acute focus on consideration of social vulnerability and equitable coastal access.

The mission of the CCC was established with the 1976 California Coastal Act, which guides how land along the coast is developed and is grounded in the principle of equity. The Coastal Act emphasizes the importance of the public being able to access the coast and how the coast is essential to the economic and social well-being of the people of California.

## Definition of Terms

Social vulnerability and environmental justice are burgeoning fields of study and many of the terms used in this memorandum may feel unfamiliar. The section below provides definitions and descriptions of commonly used terms.

**Sensitivity** is the degree to which a community is affected by exposure to climate risks and hazards. It is often related to a particular community's livelihood, location, and built environment, as well as environmental health and demographic factors. For instance, livelihoods that are dependent on coastal tourism may be inherently more sensitive to impacts from coastal hazards.

**Adaptive capacity** refers to the ability of an individual, household, or community to develop resilience and adjust to climate risks and hazards. Adaptive capacity can be affected by financial recourses, human/social capital, competency and reliability of institutions, education and knowledge, equity in access and distribution of resources, and the range of potential adaptation options that may be available.

**Community indicators** are the characteristics of a population that are often reflected in metrics such as low-income populations, linguistic isolation, housing burden, and demographic factors. Community indicators represent traits or characteristics that can affect a particular community's adaptive capacity and level of sensitivity to environmental stressors such as coastal hazards.

**Exposure or burden** is often used to describe whether or to what degree a community will experience a stress or hazard. This includes exposure to environmental stressors or adverse environmental conditions, such as pollutants, climate change, or coastal hazards. Burden is often used to describe the degree of exposure, while exposure is often used to describe vulnerable areas, such as a geographical area that will be exposed to sea level rise and coastal hazards.

**Social vulnerability** describes communities that are at heightened climate risks and have less capacity and fewer resources to prepare for, respond to, and recover from negative impacts. Social vulnerability exists at the intersection between exposure/burden, sensitivity, and adaptive capacity.

**Environmental justice** recognizes that minority or low-income communities experience greater exposure to environmental hazards and that there is a legacy of practices in land-use planning that has resulted in barriers to access and inequity (CCC 2022). State law defines environmental justice to mean "the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies" (Gov. Code, § 65040.12, subd. [e]).

## Description of the Various Scales of this Study

This study will discuss potential impacts on three distinct geographic scales within the City in order to focus this analysis on specific vulnerable communities, environmental stressors, and coastal hazards. These geographies are defined below as within the identified coastal hazard zone, the coastal zone, and the City as a whole (Figure 1).

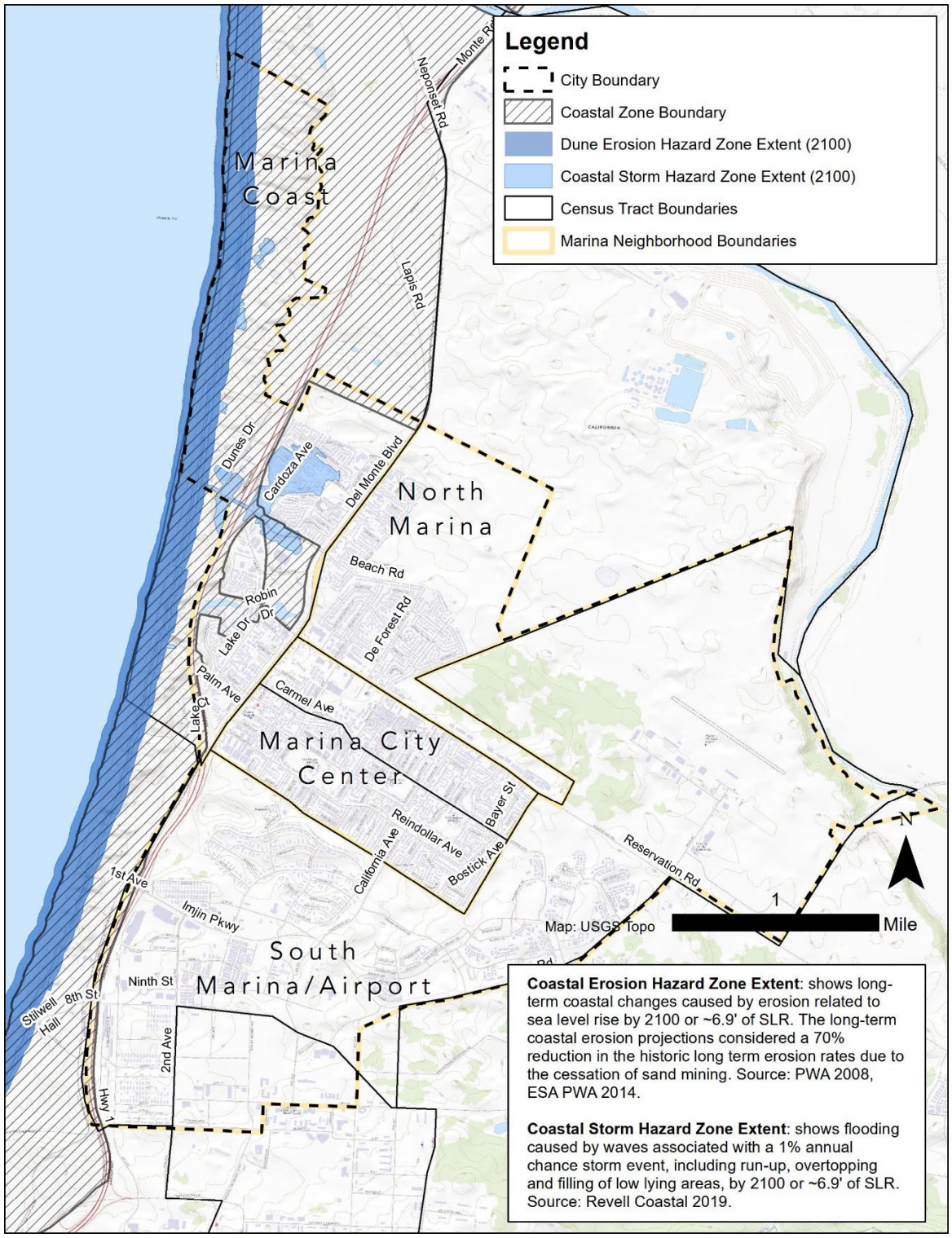


Figure 1. Administrative Boundaries and Coastal Hazard Zones within the City of Marina

**The City of Marina** is the broadest level of analysis (shown as a black-hatched line in Figure 1), and data are displayed for this area to provide context for the City and to assist with future planning efforts. The inland portion of the City encompasses 9.8 $mi^2$ and is composed of 8.9 $mi^2$ of land and 0.9 $mi^2$ of surface water. The adjacent jurisdictions include Sand City to the south, the County of Monterey to the north and east, and the Monterey Bay National Marine Sanctuary to the west. Along the City's coastline are Marina State Beach at the south and the former CEMEX Lapis Sand Mining Facility at the north. Fort Ord State Park, while not directly within the City, provides coastal access at 8th Street. Unique among central coast communities, both the southern and northern areas of the City are planned to see major development in the future. In addition, the City benefits from having minimal development along the coast and no coastal armoring in the coastal zone.

**Coastal zone** is the regulatory boundary in which the CCC establishes policies and regulations (shown as thin black cross-hatching in Figure 1). The jurisdiction includes 3.2 miles of Pacific shoreline and comprises approximately 1.6 $mi^2$. This includes all land west of Highway 1 and a small low-lying area east of Highway 1 located around Locke-Paddon Park and a seasonal pond near Robin Drive. There are only a handful of private residences in this zone, and the City's LCP amendment effort is the primary guide for planning and development. The most recent LCP in the City was amended in 2009, and remains in a redlined condition. The impetus for this funding is to update the coastal hazards-related LCP policies and implementation language as part of an amended LCP.

**Coastal hazard zone** encompasses the farthest extent of storm wave flooding and coastal erosion under both the high erosion and 100-year storm wave flooding scenarios with 6.9 ft of sea level rise projected out to 2100. This area encompasses 0.43 $mi^2$ by 2100. Within the coastal storm wave flood hazard zone by 2100 (light blue area in Figure 1), there is a small residential population centered around Cardoza Avenue. It should be noted that following the cessation of mining and a corresponding projected reduction in dune erosion, the extent of coastal erosion and storm wave flooding by 2100 may be less than indicated. Within the dune erosion hazard zone (darker blue area in Figure 1), there is no permanent population; however, the area does service many people from the community. This area along Dunes Drive and Reservation Road west of Highway 1 is a regional employment center and a major local economic driver. The area has three hotels, an RV park, and two government offices. The Marina State Beach parking lot offers coastal access and is a destination for coastal recreation and wildlife viewing (Figure 2).

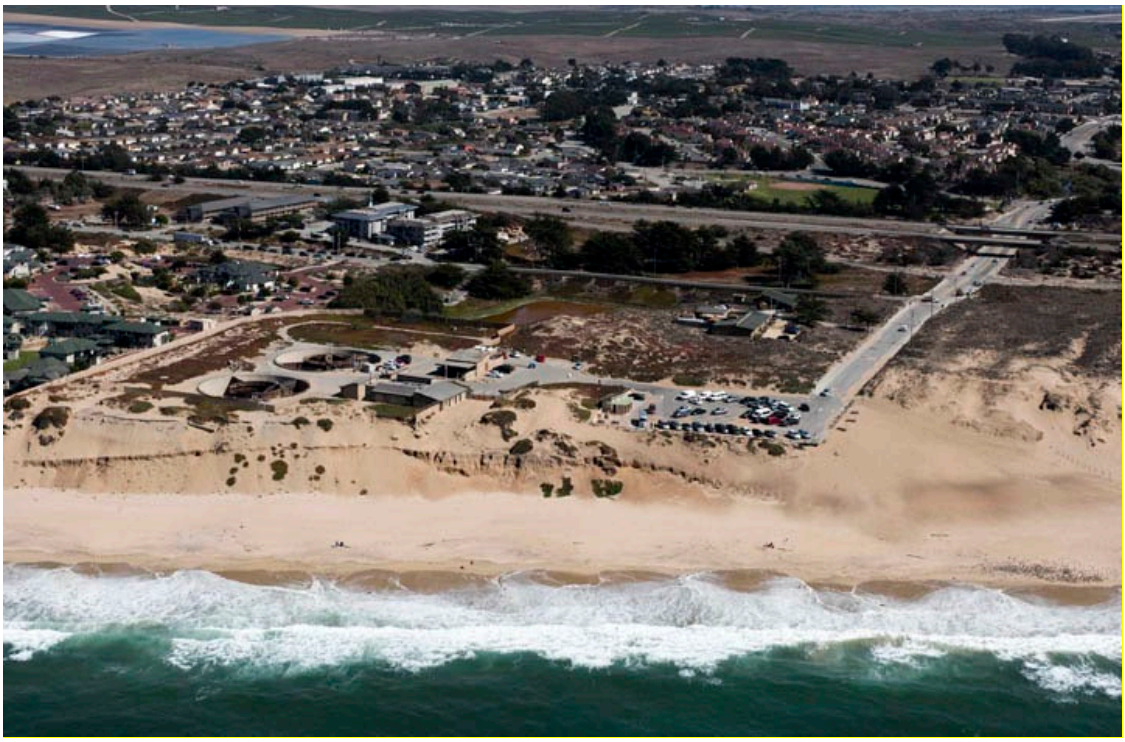

Figure 2. The Marina State Beach Shoreline at the End of Reservation Road
Source: Coastal Records Project (2018)

As a coastal community, the entire population is tied to the coast not just physically but through numerous social, recreational, and economic relationships. The impacts from coastal hazards can have lasting impacts beyond just interruptions to coastal access and damage to homes and businesses. This can also include contamination risk, interruptions to emergency services, and social and economic implications from management and adaptation choices. Existing issues on the coast, including the relatively high cost of living, economic and housing inequality, and issues with community segregation, also interact with the effects of climate change. Historically, underserved and socially vulnerable communities may have difficulty managing disasters on their own due to limited technical and financial resources, may depend on others for basic needs or transportation, or already face discrimination or stigma that can affect future recovery efforts.

With proper planning, the City has an opportunity to lead by example in recognizing potential impacts and community needs within the coastal zone, engaging with vulnerable communities, and working to reverse any past injustices that may create undue strain upon these communities. One of the City's stated priorities for the LCP update is to maintain public access and limit the use of coastal armoring so that beaches and dunes are maintained into the future for all people. Like most community engagement and climate change planning efforts,

this is a process that takes time and involves building trust and collaboration. The City can work to proactively plan for an equitable future, and implement land use planning policies that reduce conflicts to public access, benefits access to recreation and education in the coastal zone, support disadvantaged communities, and reduce exposure to environmental stressors or adverse environmental conditions caused by climate change. How these adverse conditions are evaluated for social vulnerability is further discussed below in the Discussions Section.

## DATA SETS AND METHODOLOGY

This section provides a description of the community indicators used in this study and covers the scale of the data sets, the year the data were collected, and who collected the data. While there are countless factors that can be used to determine a population's social vulnerability, this analysis was restricted to published federal and state data that could be found at the Census Block Group (CBG) and Census Tract (CT) level (see descriptions below for more information). While these data sets are a good starting point for understanding community vulnerabilities, they may not fully capture all of the nuanced or dynamic community characteristics that can produce vulnerability or resiliency. For instance, the scale of a CBG may obscure certain at-risk populations, or a vulnerability ranking may not properly weigh the level of vulnerability to certain higher-risk populations such as undocumented people, who may not respond to the U.S. Census or other community surveys. Once the data were sourced and compiled, each identified key variable was mapped, and overall findings are detailed in the Discussion Section. The data sets that have been relied on for this study are outlined below.

**United States Census** is conducted every 10 years and includes a wide range of demographic information related to age, sex, ethnicity and race, income, and more at numerous geographic scales. For this study, we are using the 2020 U.S. Census to report demographic data at the CBG level. The City has been mapped into 14 separate CBGs, and each CBG encompasses approximately 600 and 3,000 people. Other data, such as the CalEnviroScreen data set described below, are available at the CT level. There are 6 CTs in the City, and each encapsulates 2-3 CBGs.

**CalEnviroScreen** is a mapping tool that is based on data available from state and federal government sources that helps identify California communities that are most affected by many sources of pollution, and where people are often especially vulnerable to pollution's effects. CalEnviroScreen uses environmental, health, and socioeconomic information to produce scores for every CT in the state. An area with a high score experiences a much higher pollution burden than areas with low scores (CalEnviroScreen 4.0 2023). For this study, we are reporting data as percentiles and percentages. Percentiles are a ranking from 0 to 100 and are equal to the CT's ranking among all California CTs with 0 being the lowest and 100 being the highest. Percentages are reflection of the percentage of all households or individuals in a given area.

**U.S. Environmental Protection Agency (EPA) Smart Location Database** is a large body of research on land uses and urban forms and their effect on transportation outcomes. Indicators include the density of development, diversity of land use, street network design, and accessibility to destinations as well as various demographic and employment statistics (USEPA 2023). The data was published at the CBG level. For this study, we are using the Smart Location Database to report walkability scores.

Note that there are a wide range of data sets and decision support tools that can be used to examine social vulnerability and impacts from climate change. The **CDC/ATSDR Social Vulnerability Index** is one tool that includes an index of demographic factors at the CT level to understand social vulnerabilities. These data are generally more appropriate for a higher-level screening, and more information can be found at www.atsdr.cdc.gov. The Federal Emergency Management Agency provides a tool called **HAZUS** that allows users to examine potential economic losses and social impacts from hazards. The HAZUS tool can be found at https://www.fema.gov/flood-maps/products-tools/hazus. Finally, the University of California, Berkeley has published a tool called **CalAdapt** that allows for data access and visualization of climate change-related stressors. This is available at https://cal-adapt.org/.

While all social vulnerability tools and metrics can be valuable for a broader scale of analysis, all data and results should be considered with caution and ground-truthed wherever possible through consultation and engagement with local communities and community-based organizations.

## EXISTING CONDITIONS

The City is located adjacent to Monterey Bay in Central California in Monterey County (County). The City was incorporated in 1975 and had seen steady growth in connection with the Fort Ord military installation. After the base was selected for decommissioning in 1991 and formally closed in 1994, the population of the City marked a 27.5 percent decline between 1990 and 2000 (City of Marina 2010). However, through the redevelopment of the former base and other development efforts, the City's population at the 2020 Census approached 23,000, which is ~87 percent of the population recorded in 1990 (U.S. Census 2020).

The City's predominant land use is residential, reflective of the City's previous role as a bedroom community to the former Fort Ord military base, which is now home to the California State University, Monterey Bay and other institutions. Retail corridors and commercial development are located around Reservation Road, Del Monte Boulevard, and Imjin Parkway.

There is also significant visitor-serving development off Dunes Drive with three hotels and an RV park (City of Marina 2019).

The City has the County's highest diversity index with the highest percentages of Asian residents and over 2 times the amount of Black/African American residents compared to other cities in the County (City of Marina 2019). Marina also has more low-income residents than other cities in Southern Monterey Bay with one-third of the community identified as low income, and just over 10 percent of residents live under the poverty line (US Census 2020).

## Superfund Site Status

Following the closure of the Fort Ord military base, EPA placed the former base on the Superfund program's National Priorities List. The site contained leaking underground storage tanks, a 150-acre landfill, small amounts of waste generated by the base, and other potential contaminants. Following a series of cleanup activities, on November 20, 2020, EPA announced its proposal to remove 11,934 acres of the 27,827-acre Fort Ord Superfund site from the National Priorities List. EPA and the State of California continue to oversee the U.S. Army's cleanup at the rest of the site. Both the groundwater and soil cleanup for the 11,934 acres are still in the Superfund program (USEPA 2023).

## Development Plans

Planned developments include Marina Station in the north and the continuation of ongoing development in the south of the City, known as University Villages and Dunes at Monterey Bay. The City could also see continued business and institutional research development at the Marina Municipal Airport Business and Industrial Park/UC MBEST Center in the eastern portion of the city.

## Fort Ord State Beach Redevelopment

Funded with California State Parks bond money, the planned Fort Ord State Beach improvement will include the only coastal State Parks campground for more than 60 miles between Santa Cruz County and Big Sur. This project represents an ongoing effort to expand low-cost overnight accommodation on the coast, and it will increase recreational opportunities and access to community members in the City (State Parks 2023).

## CEMEX Lapis Property

The CEMEX Lapis property is located along the City's northern coastal extent. As part of a consensus agreement between CEMEX, the City, and the State of CA, the sand mine is being

retired and decommissioned. While the property is required to be sold to a public or non-profit entity, the future of the CEMEX Lapis property is currently being discussed. As the sand mining operations are retired, there is a possibility for public beach access. Although this parcel falls within City limits, the existing access roads are not, and the future status of the private roads on this parcel are uncertain.

## Marina Demographics at a Glance

| | |
|---|---|
| Total population | 22,359 |
| Total housing units | 8,022 |
| Percentage who identifies as white alone and not Hispanic or Latino | 38.4% |
| Median age | 34.4 |
| Percentage of the population over 65 years | 13.8% |
| Median household income | $73,115 |
| Percentage living in poverty | 11.5% |
| Percentage of the population with a bachelor's degree or higher | 29.9% |
| Percentage of the population without health care coverage | 6.6% |

Source: Decennial Census (2020)

Note:

Demographic figures may vary by source, year, scale, and how the data was calculated.

## Neighborhoods

To assist in understanding, this study will map and discuss demographic and vulnerability findings using neighborhood areas rather than quoting CT or CBG codes. In consultation with the City's staff, each of these neighborhoods follows CT delineations and has been identified to encompass distinct geographic areas (see Figure 1, thick tan colored boundaries on the map). For reference, the total population in each CT is indicated in Figure 3, and the total population in each neighborhood, as well as the size of each neighborhood area, is listed below.

**Marina Coast** (1.7 $mi^2$, 3,663 people) includes the areas west of Del Monte Boulevard encompassing Marina State Beach and the former CEMEX lands along the coast including portions of the future development at Marina Station. This neighborhood includes one CT and two CBGs.

**Central Marina** (1 $mi^2$, 9,527 people) includes the main commercial areas bounded by Reservation Road in the north, Del Monte Boulevard in the west, Patton Parkway in the south, and Bayer Drive and Salinas Avenue in the east. This is the densest and most established area of the City. This neighborhood includes two CTs and five CBGs.

**South Marina / Airport** (4.9 $mi^2$, 5,599 people) includes all of the southern and eastern portions of the City including the redevelopment areas of old Fort Ord and areas of the University of California, Santa Cruz Fort Ord Natural Reserve and the Marina Municipal Airport. This

neighborhood includes two CT and 5 CBGs. Note that some CBGs in this neighborhood, including areas of the former military base and the airport, have no residents.

**North Marina** (1.1 $mi^2$, 4,319 people), includes all areas north of Reservation Road and east of Del Monte Boulevard including site of the future development at Marina Station. This neighborhood includes one CT and two CBGs.

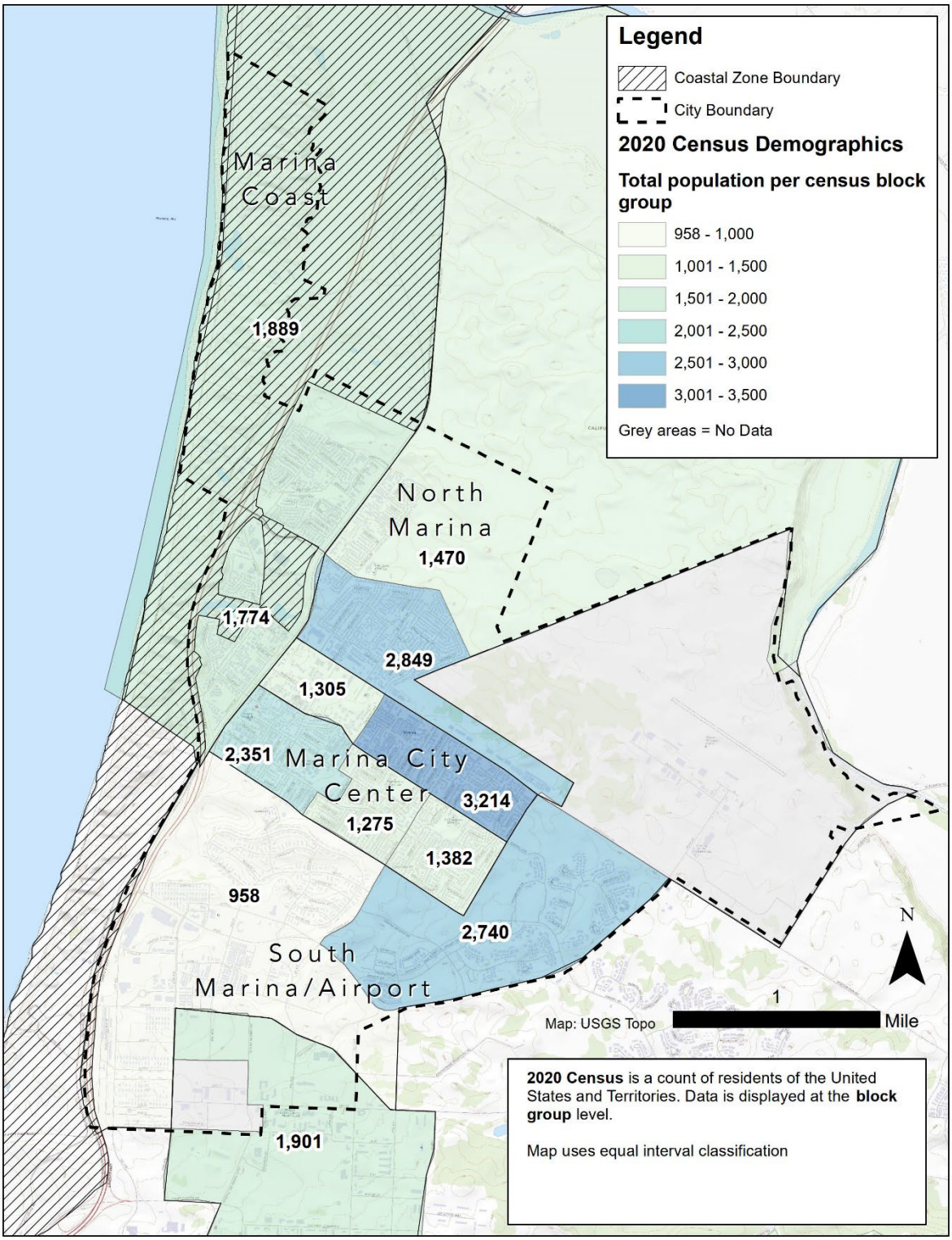


Figure 3. Marina Total Population from the 2020 U.S. Census

# FINDINGS

This section organizes social vulnerability using various categories, including demographic characteristics, coastal access, walkability, environmental stressors, and housing burden. For each category, selected data are mapped for the City as a whole, and the coastal zone boundary is shown to provide a reference to areas that are relevant to the LCP update. Note that not all vulnerability characteristics found in the discussion are mapped in this study, and more information can be found at the interactive web viewers linked below.

## Interactive Web Viewers

For demographic characteristics, visit U.S. Census's QuickFacts.

For environmental stressors and housing burden, visit CalEnviroScreen.

For walkability, visit EPA's Smart Location Calculator.

## Demographic Characteristics

The highest density of residents can be found in Marina City Center closest to Reservation Road and Del Monte Boulevard. The CBGs around these corridors have higher concentrations of residents with English as a second language (15.7, 30.1, and 13.5 percent) and people who identify as non-white (78, 75.5, and 43.3 percent) (see Figure 5). South Marina / Airport stands out for its demographic characteristics, having elevated percentages of people living in poverty (see Figure 4) and who are unemployed. Note that both of these statistics may be biased by California State University, Monterey Bay, which may not be located in the City, but the southern CT likely has a larger number of students who reside in this neighborhood and who may live on limited income. Northern and eastern areas of the City including Marina Coast, North Marina, and the eastern portions of Marina City Center (east of Crescent Avenue) stand out as the highest-income areas. These are areas composed of single-family home developments. Eastern portions of South Marina / Airport stand out as having the highest percentage of households with zero automobiles.

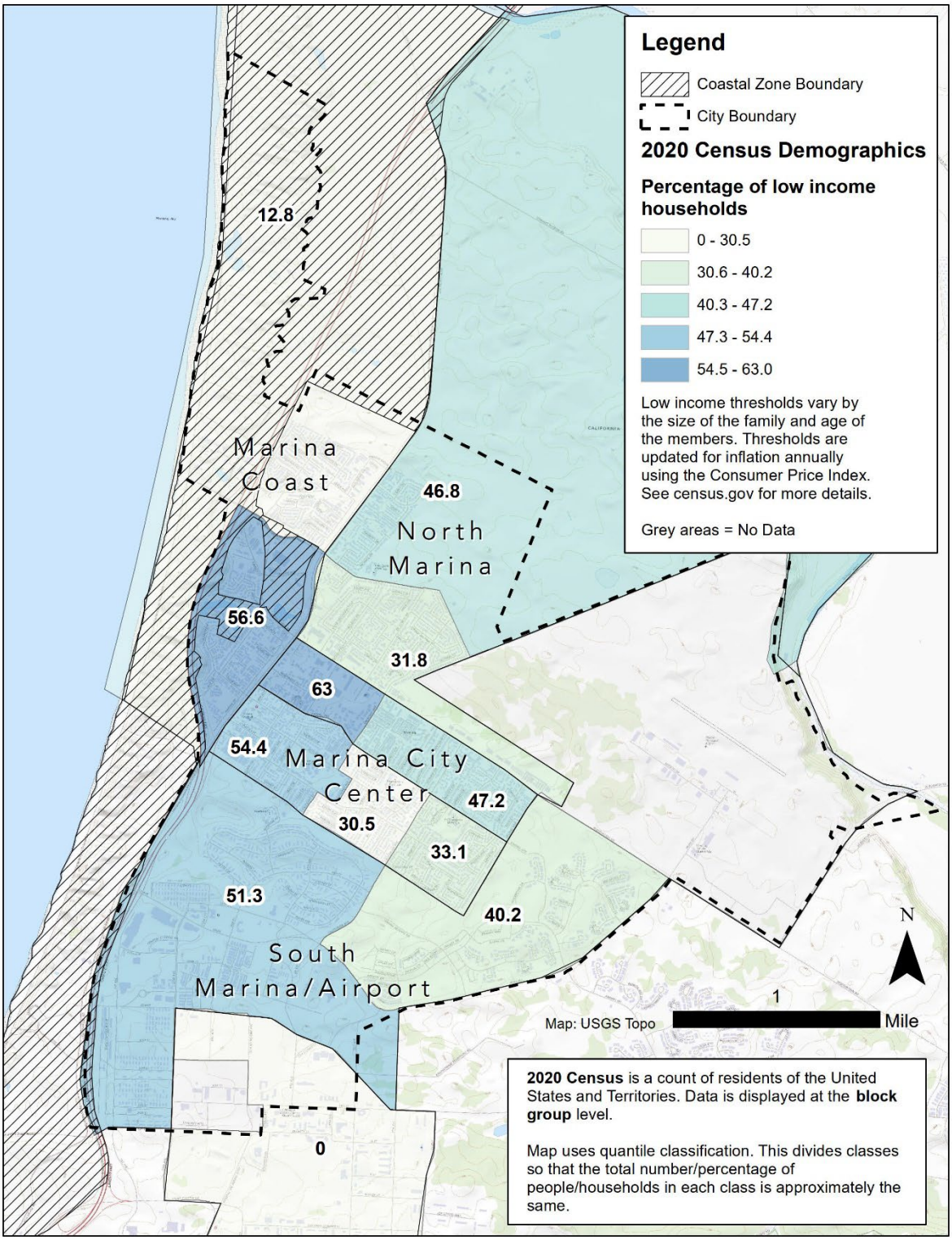


Figure 4. Marina Low-Income Households from the 2020 U.S. Census

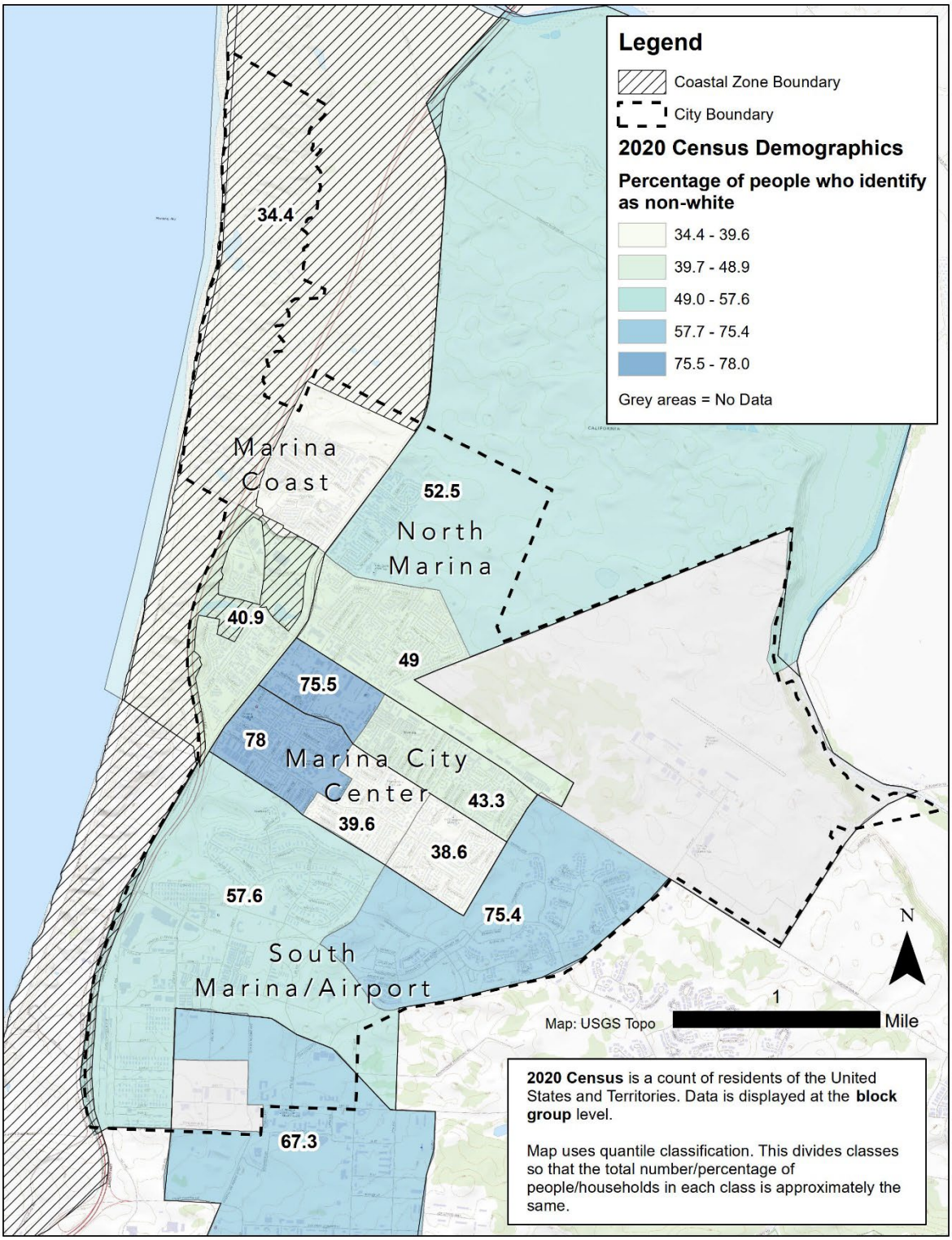


Figure 5. Marina Non-White Population from the 2020 U.S. Census

## Coastal Access

There are eight distinct coastal access locations in or around the City. Each of these locations marks a trailhead with direct access to the coast. Of the approximately 5,900 buildings in Marina, 121 (~2 percent) are within a quarter-mile walk to one of these locations, and 600 (~10 percent) are within a half-mile walk (see Figure 6 for walk radius areas). While uncertainty remains about the future of the CEMEX site following its closure, it was intended under the Settlement Agreement to provide coastal access in some form.

The most accessible location for those driving to the coast is afforded by the Marina State Beach Parking Lot off Reservation Road with just over 50 parking spaces and Fort Ord State Park Parking Lot (just outside of the City limits) with ~80 spaces. Unfortunately, both of these locations are somewhat remote for those walking or riding from neighborhood areas in the City. The most accessible location for locals to walk to is Lake Court with ~360 buildings within a half-mile walk. This area has limited parking, and access to the coast is made difficult by a steep ascent and descent over the dunes. Additionally, the coastal access location at Sanctuary Beach Resort provides access to a large number of people; however, it does not easily serve non-hotel customers.

## Walkability

As a whole, the City ranks lower on walkability scores than other medium-sized cities in the region and the pattern of development is described as car-dependent by walkscore.com. According to walkscore.com, the City ranks 46 out of 100 (average) for walk score and 56 out of 100 for bike score (somewhat bikeable). According to the EPA walkability ratings, the CBGs located in the western portions of Marina City Center score the highest. This is reflective of the higher street densities, variety of land uses, and higher overall connectivity ratings. Some of the least walkable areas within the City can be found in the Marina Coast neighborhood (see Figure 7). This is a result of a lower-density pattern of development with lower overall connectivity ratings and a highway bisecting the neighborhood.

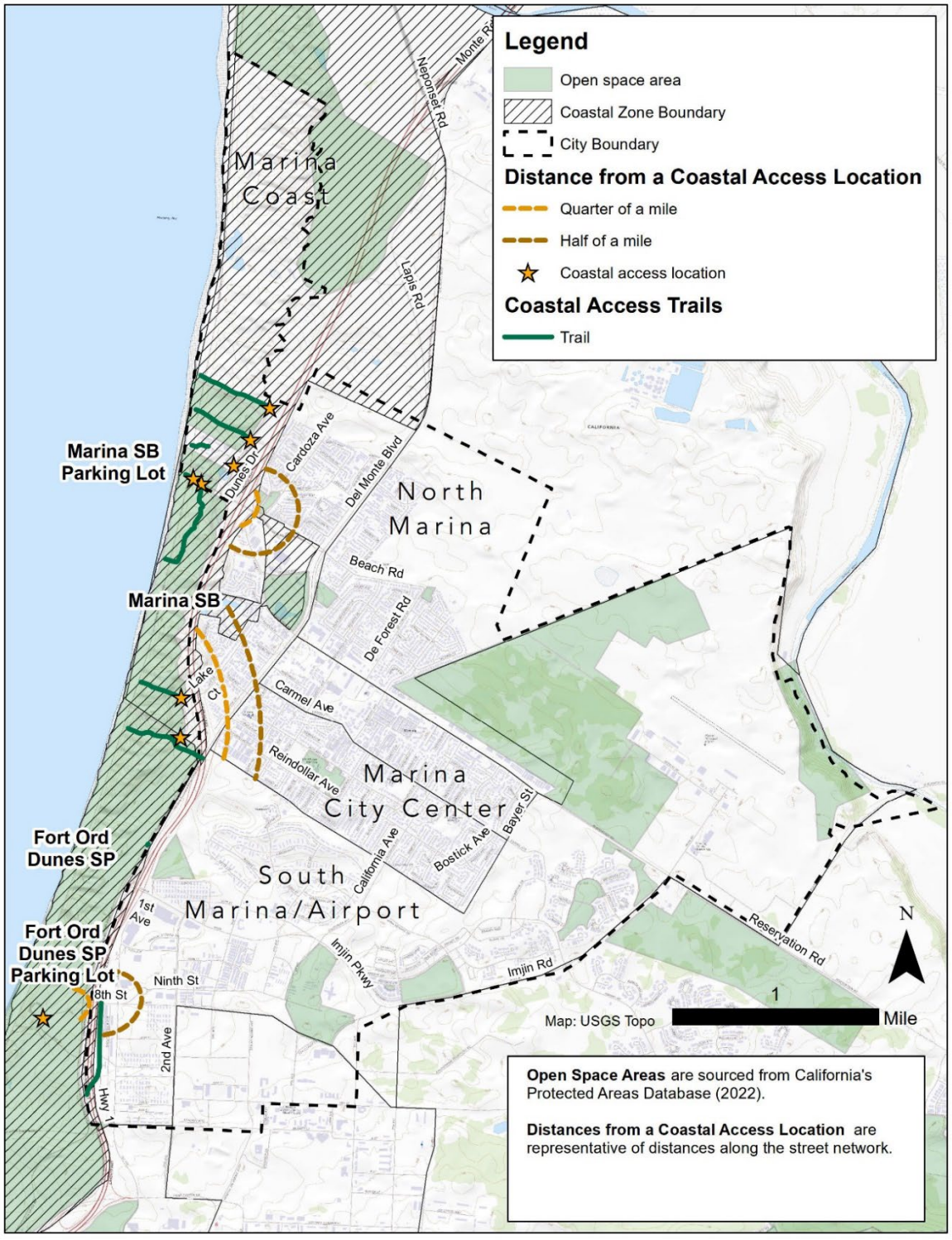


Figure 6. Marina Coastal Access Trails and Locations along with Approximate Distances Form These Coastal Access Locations

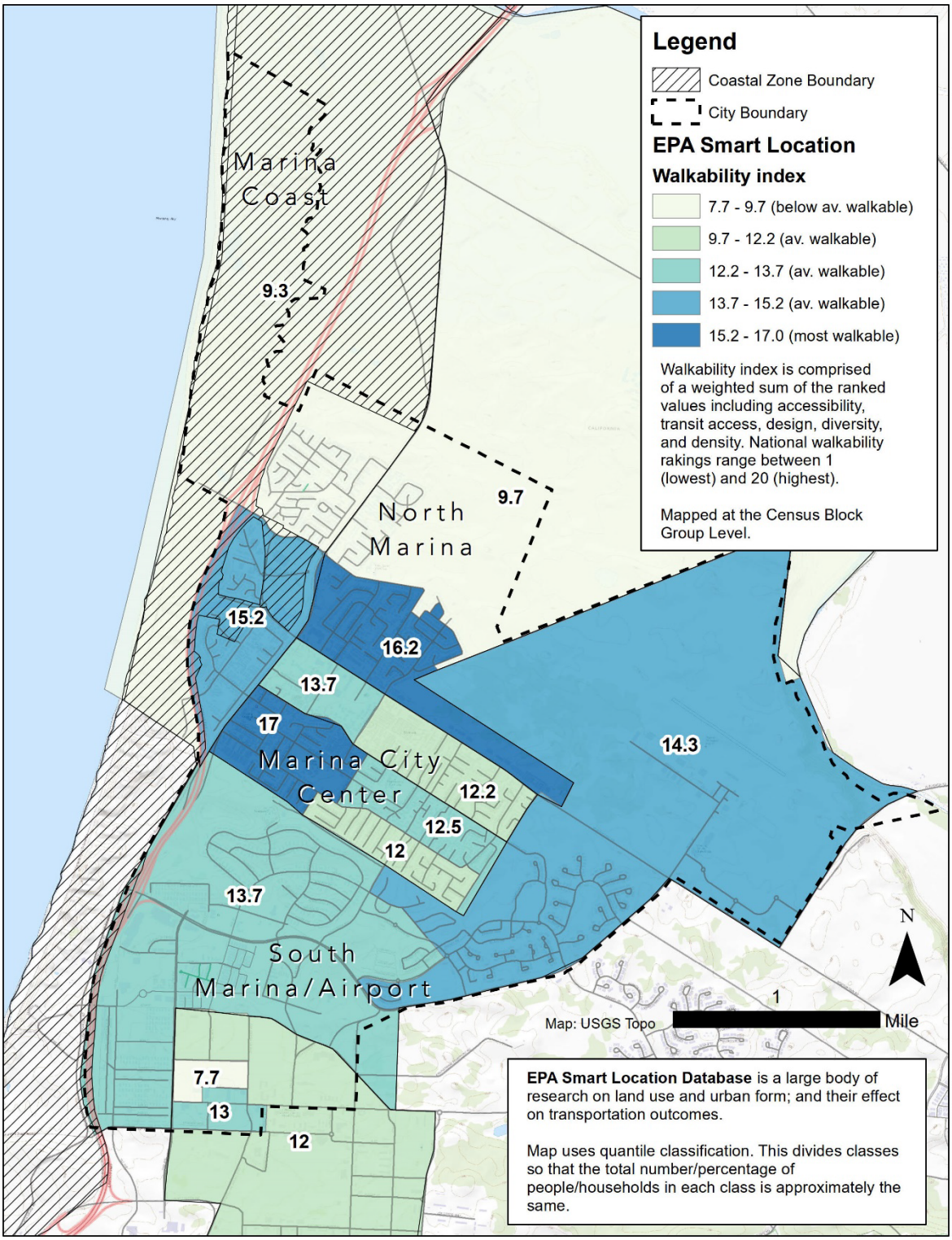


Figure 7. Walkability Scores from EPA Smart Location Database

## Environmental Stressors

According to CalEnviroScreen, the City faces more burden from environmental stressors than other cities on the Monterey Bay Peninsula. Much of this added burden can be attributed to the legacy of the old Fort Ord site. It should be noted while the legacy of past and ongoing cleanup efforts will be reflected in the environmental stressor statistics, they may not be reflected in the actual hazard exposure experienced by the community.

For pollution burden stressors, South Marina / Airport stands out in having a higher number of environmental cleanups, lead, drinking water, groundwater threats, and hazardous waste sites. Much of this is likely due to the inclusion of the old Fort Ord and may not be reflective of current conditions within the residential portions of the neighborhood. North Marina stands out as having elevated exposure to pesticides, being over 4 times higher in exposure values than the next closest-ranking neighborhood in the City. However, given that most of the farms just north of the City are organic, statistics may be outdated or pulling in pesticide use data for areas north of the Salinas River. The inclusion of the Monterey Regional Waste Facility and Monterey One Water Treatment Plant in the North Marina CT, despite being located more than a mile from neighborhood areas, does increase the counts (and thus burden) for exposure to solid and hazardous waste facilities.

CalEnviroScreen provides a rolled-up ranking for pollution burden, and North Marina and South Marina / Airport stand out as having the highest percentiles, 13–19 percentage points higher than the next ranking in the City (see Figure 8). For overall CalEnviroScreen scores, where demographic characteristics and pollution burden are considered in tandem (represented as pollution burden times the population characteristics score), South Marina / Airport stands as the highest ranking, due to both the more vulnerable demographic characteristics (e.g., having an elevated housing burden, percentage living in poverty, unemployment) as well as having a high pollution burden. North Marina also stands out and is affected by higher reported pesticide numbers and the inclusion of the landfill and water treatment plant.

Finally, Central Marina and Marina Coast neighborhood's overall CalEnviroScreen scores generally fall much more within the middle of the pack for California. However, both stand out as having higher burden from diesel particulate matter exposure, and Marina Coast has a higher traffic impact burden. In both cases, this is the result of the close proximity to Highway 1 and other major arterial roads.

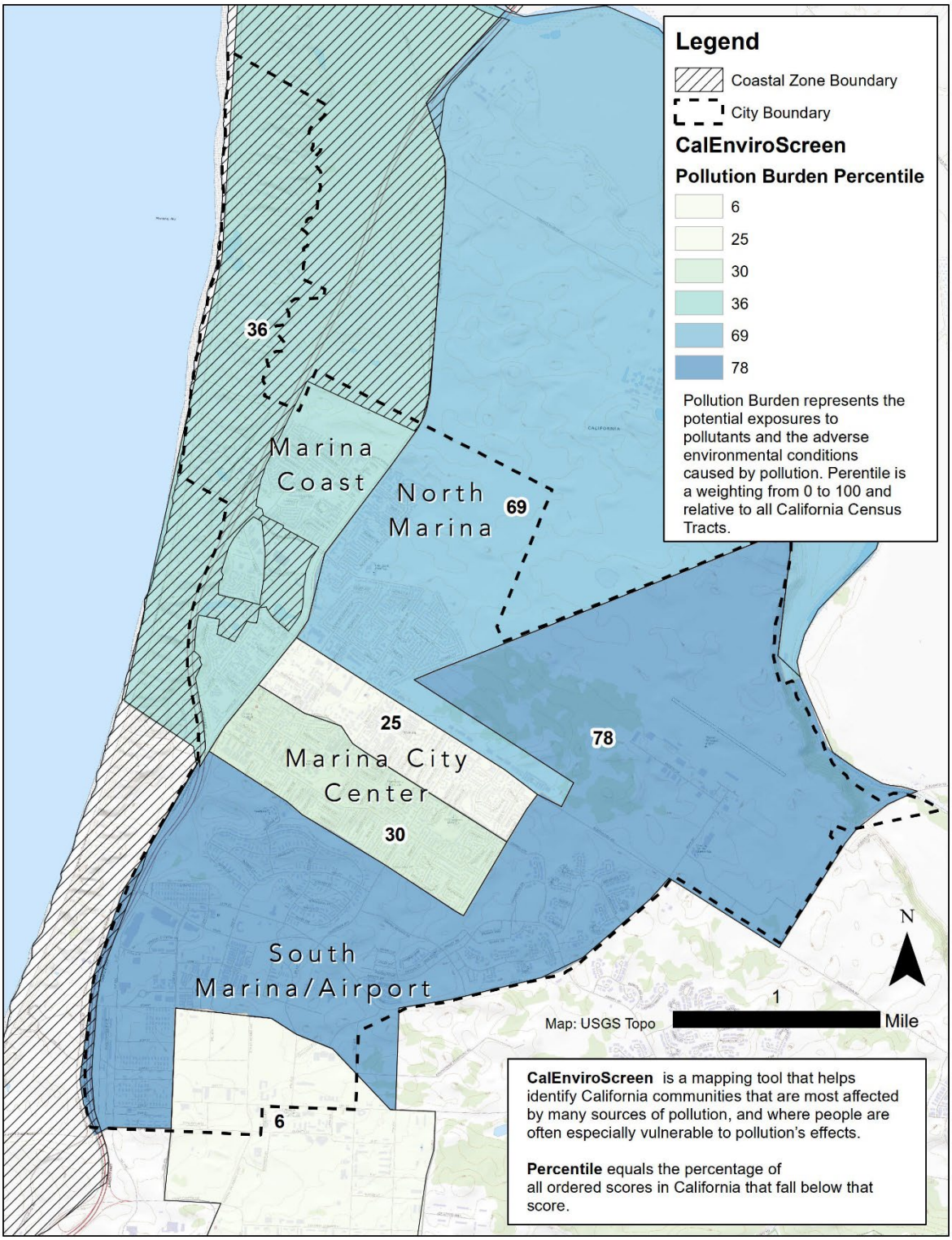


Figure 8. Pollution Burden from CalEnviroScreen 4.0

## Housing Burden and Cost of Living

The high cost of living is a challenge to many communities on the California Central Coast and disparities between the cost of housing and median income leave 36 percent of County residents unable to meet the real cost of living (County of Monterey 2016). The housing burden is high across all areas of the City with the exception of Marina Coast, where high incomes offset the cost of housing (see Figure 9). The high cost of housing within the Marina Coast neighborhood limits who can live in this area and thus who can more readily access the coast.

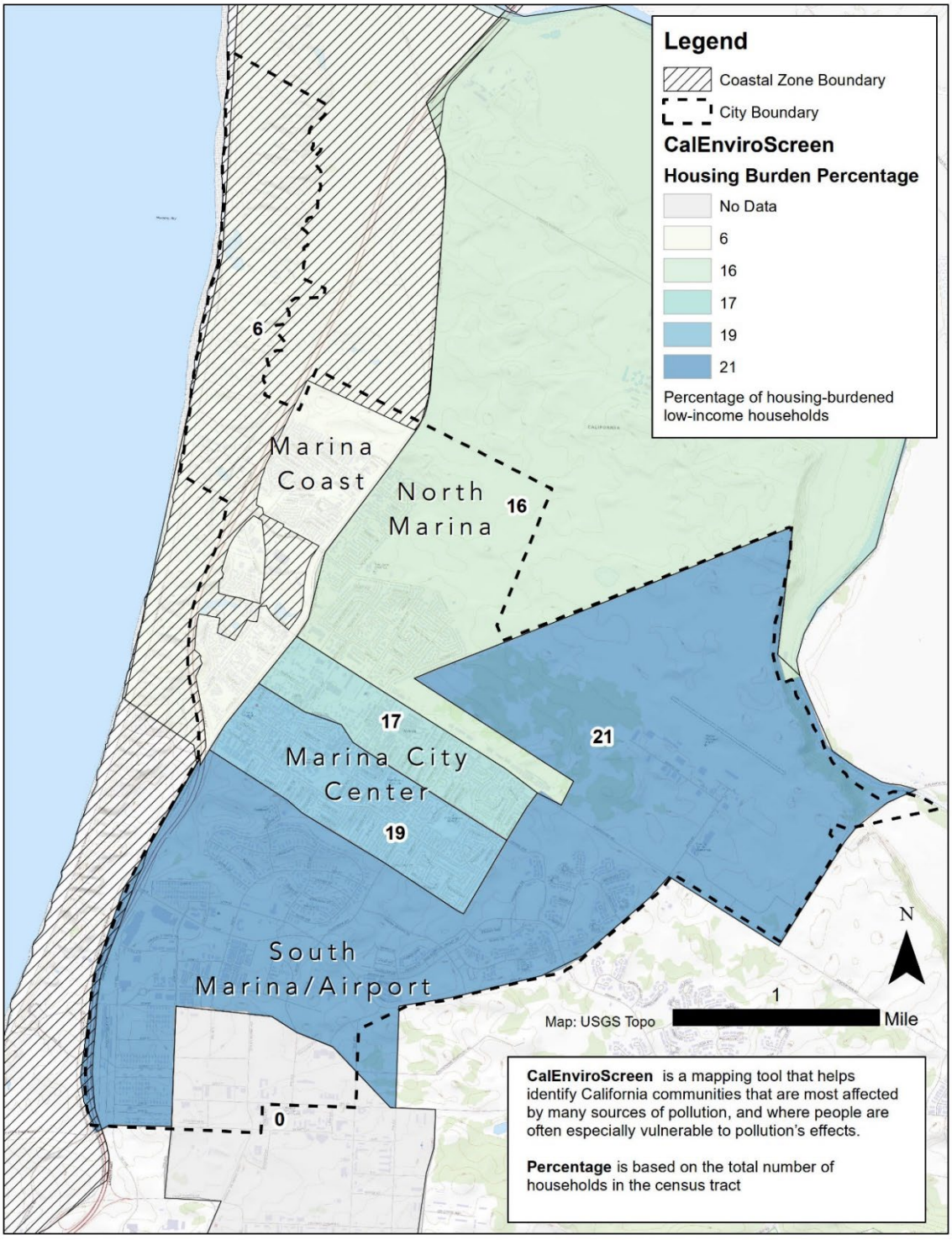


Figure 9. Percentage of Housing-Burdened Low-Income Households Represented as a Percentage of All Households in the Census Tract from CalEnviroScreen 4.0

## DISCUSSION

The City can be seen as archetypal of many Central California communities with fewer disadvantaged communities in coastal areas compared to the rest of the City. Despite this, the coastal zone serves all residents, and the inequity in who can live near the coast only highlights the importance of upholding and increasing public access for all residents of the City. California has a long history of discriminatory and unequal coastal access, and this stresses the need to conduct meaningful community engagement with historically underserved communities and those that live further inland with limited access to the coast.

The City's undeveloped shoreline is one of the prized characteristics of the City; however, coastal access in the City is difficult without a vehicle. One of the major impediments to biking and walking is that the coastal access locations are remote, and access to Marina State Beach involves traversing multiple highway on and off ramps. In addition, public transit to the beach does not exist. As the City looks to plan future coastal access projects, consideration should be made for access to all communities.

The residential neighborhoods in the City are not projected to see significant exposure to coastal hazards. However, coastal erosion with sea level rise is projected to impact the visitor-serving areas and park areas along Dunes Drive and the end of Reservation Road. The area is frequented by many visitors and employees from other areas, and serves a broad diversity of people. In addition, as climate changes increase the duration and severity of extreme heat waves and high inland temperatures, the importance of maintaining equitable access to coastal areas will only increase. Any future coastal access projects should consider equitable and inclusive adaptation strategies and provide benefits for all.

Finally, as the City undertakes coastal planning in the future, the City should continue outreach and communications in other major languages that are spoken in the City such as Spanish and Korean. Limited English households may not have access to city communications, and this may limit their ability to prepare for or react to future planning.

## CONCLUSION AND NEXT STEPS

The City of Marina's coastal accesses and natural shoreline provide an invaluable and unquantified service to disadvantaged populations both in the community and around the Monterey Bay region. Daily, elderly and disabled individuals line the ocean front parking spots. On sunny weekends, large families of non-English speakers picnic and recreate along the beach.

Previous adaptation work in the region considered the economic impacts of climate adaptation strategies for Southern Monterey Bay determined that traditional approaches to coastal management such as coastal armoring, when considered from a holistic socio-economic perspective, are less economically viable and more environmentally and economically damaging than their alternatives. What we think of as non-traditional approaches, such as managed retreat, have actually been implemented for centuries on coasts around the world and better account for long-term impacts and ancillary consequences (The Nature Conservancy 2016).

The City is proving to be an example for the state with residents and City officials choosing to protect the City's beaches and eschewing coastal armoring and "hold the line" approaches to coastal management. Many coastal landowners interviewed during the LCP process have embraced the general idea of managed retreat. As managed retreat is planned, it will be important to create a participatory process to engage with all communities to identify opportunities for renewal, reorganization, and adaptation in the coastal zone.

The next steps for this social vulnerability assessment are for the findings to be used when considering updating coastal hazard policies within the LCP, as well as during future more comprehensive LCP updates. Community stated preferences to expand access opportunities, reduce the industrial uses of the coastal zone and maintain viewsheds of the coast, dunes, and ocean should be woven around continuing low-cost access for all populations.

## REFERENCES

California Coastal Commission. 2022. Resources for Addressing Environmental Justice through Local Coastal Programs, Draft Document.

CalEnviroScreen 4.0. 2023. Website: https://oehha.ca.gov/calenviroscreen

California State Parks. 2023. Ft. Ord Dunes Campground Project. Website: https://www.parks.ca.gov/?page_id=28340.

City of Marina. 2010. City of Marina General Plan, Adopted October 31, 2000. Updated with amendments through August 4, 2010.

City of Marina. 2019. City of Marina Existing Conditions and Sea Level Rise Adaptation Report. November 2019.

Monterey County. 2016. Monterey County Community Resilience Plan.

San Francisco Bay Conservation and Development Commission (BCDC). 2012. Addressing Social Vulnerability and Equity in Climate Change Adaptation Planning. June 2012

The Nature Conservancy. 2016. Economic Impacts of Climate Adaptation Strategies for Southern Monterey Bay.

U.S. Census. 2020. Website: https://www.census.gov/quickfacts/marinacitycalifornia

USEPA. 2023. Superfund Site: Fort Ord, Marina, CA. Website: https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0902783

Walkscore.com. 2023. Living in Marina. Website: https://www.walkscore.com/CA/Marina