CITY OF SEAL BEACH

LOCAL HAZARD MITIGATION PLAN

PUBLIC REVIEW DRAFT

OCTOBER 18, 2018

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ABBREVIATIONS

AB: Assembly Bill

AR: Atmospheric River

CAL FIRE: California Department of Forestry and Fire Prevention

Cal OES: California Governor's Office of Emergency Services

CDH: California Department of Public Health

CEC: California Energy Commission

CFR: Code of Federal Regulations

CGS: California Geological Survey

ENSO: El Niño Southern Oscillation

EF: Enhanced Fujita (scale)

EPA: United States Environmental Protection Agency

FEMA: Federal Emergency Management Agency

FHSZ: Fire Hazard Severity Zone

FRA: Federal Responsibility Area

IPCC: Intergovernmental Panel on Climate Change

LRA: Local Responsibility Area

MMI: Modified Mercalli Intensity (scale)

MMS: Moment Magnitude Scale

MWD: Metropolitan Water District of Southern California

MWDOC: Municipal Water District of Orange County

NOAA: National Oceanic and Atmospheric Administration

NWS: National Weather Service

OCFA: Orange County Fire Authority

OCFCD: Orange County Flood Control District

OCTA: Orange County Transportation Authority

OCWD: Orange County Water District

SB: Senate Bill

SCE: Southern California Edison

SCEDC: Southern California Earthquake Data Center

SoCalGas: Southern California Gas Company

SRA: State Responsibility Area

UCERF3: Third Uniform California Earthquake Rupture Forecast

USGS: United States Geological Survey

WRCC: Western Regional Climate Center

WUI: Wildland-Urban Interface

GLOSSARY

100-year flood: A flood that has a 1 percent chance (one in 100) of occurring in any given year.

500-year flood: A flood that has a 0.2 percent chance (one in 500) of occurring in any given year.

ARkStorm: An emergency planning scenario that modeled a repeat of California's 1861–1862 winter storms, which caused unprecedented flooding throughout the state.

Atmospheric river: A narrow band of very moist air in the atmosphere that can generate intense storms. Up to 50 percent of California's annual rainfall comes from the relatively small number of atmospheric storms.

Climate change: Long-term changes in the average meteorological conditions (temperature, precipitation, wind, etc.) of an area.

Derecho: A type of intense windstorm that blows in a straight line, caused by a strong, large thunderstorm.

Downburst: A type of intense windstorm that descends from a strong thundercloud and then gusts out in all directions.

El Niño Southern Oscillation: A natural cycle of wind and water temperatures in the eastern tropical areas of the Pacific Ocean that affects global weather patterns, including precipitation levels in California. Consists of a warm phase (El Niño), a neutral phase, and a cool phase (La Niña).

Epicenter: The point on the surface of the ground below which an earthquake begins.

Fault line: A boundary between sections of the earth's surface.

Fault rupture: An event in which sections of the earth's surface suddenly move past each other along part or all the length of a fault. The sudden movement generates the shaking that we perceive as an earthquake.

Flash flood: A dangerous type of flood that occurs very quickly, with little warning. Usually a result of sudden, intense precipitation.

Flood plain: The area that may be affected by a flood, usually named by the type of flood that can occur there (e.g. a 100-year flood plain).

Katabatic wind: A hot dry wind, caused when areas of high pressure occur over an area of high elevation, and lower pressure zones form over lower elevations. As the wind descends, it heats up, becomes drier, and can increase in speed.

Liquefaction: A phenomenon in which loose, wet soil is suddenly shaken, causing the soil to behave more like a fluid and lose its stability. Often caused by earthquakes.

Meteotsunami: A rare form of a tsunami, caused by a sudden and large shift in atmospheric pressure.

Microburst: A downburst that affects a small area, although the wind speeds are not necessarily less intense than a full-scale downburst.

Modified Mercalli Intensity scale: A way of measuring the intensity of an earthquake based on the damage it causes at a specific location. As a result, an earthquake will register a different rating on the Modified Mercalli Intensity scale in different places.

Moment Magnitude Scale: A way of measuring the intensity of an earthquake based on the amount of energy released by the fault rupture. A replacement for the Richter Scale.

Ponding: A type of flooding caused when water collects in a low-lying area.

Radiation: The transmission of energy through waves or particles. For the purposes of this plan, refers to ionizing radiation, which can damage or kill the cells of living beings, potentially causing serious health problems or death.

Radioactive: Referring to a material that naturally decays at an atomic level, releasing radiation.

Rupture: See "Fault rupture."

Santa Ana winds: A type of katabatic wind that affects the coastal areas of southern California. They are commonly known for fanning wildfires.

Sea level rise: A global increase in the level of the ocean, driven by melting land ice and increases in water temperature as a result of climate change.

Snowpack: Snowfall that accumulates in cold mountain areas and remains frozen for a long period of time. In California, snowpack in the Sierra Nevada provides a large amount of water to the state during the summer and early autumn months as it melts.

State Water Project: An extensive system of aqueducts and pumps that conveys water from the northern Sierra Nevada to cities and agricultural lands throughout California, including the Los Angeles region.

Subduction zone: A location where two tectonic plates come together, one moving underneath the other. Strong earthquakes in these regions are responsible for most major tsunamis.

Tsunami: A fast-moving wave triggered by the rapid displacement of a large volume of water, often as a result of an earthquake. Tsunamis grow in size as they reach the shore, and can cause major damage along coastal areas.

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CHAPTER 1
INTRODUCTION

PLAN PURPOSE AND AUTHORITY

Hazard events can lead to injuries or death, affect overall health and safety, damage or destroy public and private property, harm ecosystems, and disrupt key services. Although the hazard event itself often gets the most attention, it is only one part of a larger emergency management cycle:

- The Event (aka Disaster)
- Response
- Recovery
- Mitigation
- Preparedness

Emergency planners and responders can take steps during the response, recovery, mitigation, and preparedness phases of the cycle to minimize the harm caused by a disaster. This Local Hazard Mitigation Plan (LHMP, or Plan) focuses on optimizing the mitigation phase of the cycle. Mitigation involves making a community more resilient to disasters so that when hazards do ultimately occur, the community suffers less damage and is able to recover more effectively. It differs from preparedness, which is planning in advance for how best to respond when a disaster occurs or is imminent. For example, a policy to make homes structurally stronger so they suffer less damage during an earthquake is a mitigation action, and fully equipping shelters to accommodate people who lose their homes in an earthquake is a preparedness action. Some activities may qualify as both.

KEY TERMS

Hazard: A natural or human-caused event that has the potential to cause damage.

Seal Beach, like all other communities, could potentially suffer severe harm from hazard events, and although large disasters may cause widespread devastation, even smaller disasters can have substantial effects. Seal Beach cannot make itself completely immune to hazard events, but this Plan can help make the community a safer place to live, work, and visit. This Plan provides a comprehensive assessment of the threats that Seal Beach faces from natural and man-made hazard events and a coordinated strategy to reduce these threats. It identifies resources and information that can help community members, City staff, and local officials understand local threats and make informed decisions. The LHMP can also support increased coordination and collaboration between the City, other public agencies, local employers, service providers, community members, and other key stakeholders.

FEDERAL AUTHORITY

Seal Beach is not required to prepare an LHMP, but state and federal regulations encourage it. The federal Robert T. Stafford Disaster Relief and Emergency Act (Stafford Act), amended by the Disaster Management Act of 2000 (DMA 2000), creates a federal framework for local hazard mitigation planning. It states that jurisdictions that wish to be eligible for federal hazard mitigation grant funding must prepare a hazard mitigation plan that meets a certain set of guidelines and submit this plan to the Federal Emergency Management Agency (FEMA) for review and approval. These guidelines are outlined in the Code of Federal Regulations, Title 44, Part 201, and discussed in greater detail in FEMA's Local Mitigation Plan Review Tool.

KEY TERMS

Mitigation: Actions that increase resiliency and reduce the harmful effects of a hazard.

Resilient: Better able to avoid or lessen the harmful effects of a hazard.

STATE AUTHORITY

California Government Code Sections 8685.9 and 65302.6

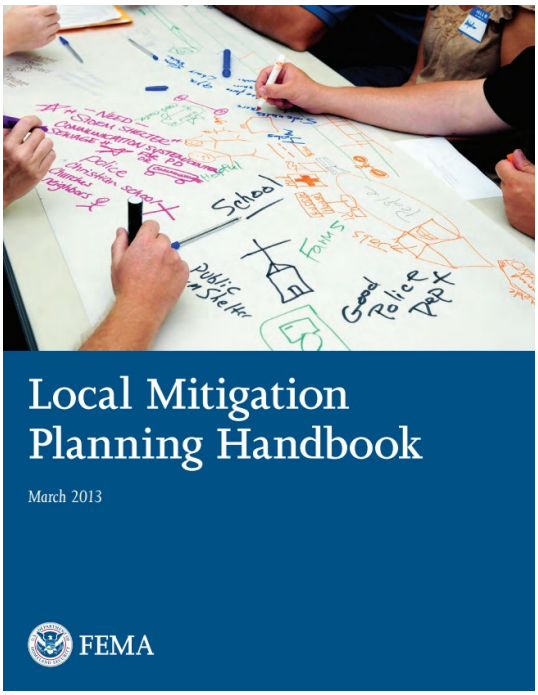
California Government Code Section 8685.9, also known as Assembly Bill (AB) 2140, limits the State of California's share of disaster relief funds paid out to local governments to 75 percent of the funds not paid for by federal disaster relief efforts, unless the jurisdiction has adopted a valid hazard mitigation plan consistent with DMA 2000 and has incorporated the hazard mitigation plan into the jurisdiction's general plan. In these cases, the State may cover more than 75 percent of the remaining disaster relief costs.

All cities and counties in California must prepare a general plan, which must include a safety element that addresses various hazard conditions and other public safety issues. The safety element may be a stand-alone chapter or incorporated into another section as the community wishes. California Government Code Section 65302.6 indicates that a community may adopt an LHMP into its safety element as long as the LHMP meets applicable state requirements. This allows communities to use the LHMP to satisfy state requirements for safety elements. As the general plan is an overarching long-term plan for community growth and development, incorporating the LHMP into it creates a stronger mechanism for implementing the LHMP.

California Government Code Section 65302 (g)(4)

California Government Code Section 65302 (g)(4), also known as Senate Bill (SB) 379, requires that the safety element of a community's general plan address the hazards created or exacerbated by climate change. The safety element must identify how climate change is expected to affect hazard conditions in the community and must include measures to adapt and be more resilient to these anticipated changes. As the LHMP can be incorporated into the safety element, including these items in the LHMP can satisfy the state requirement. SB 379 requires climate change to be addressed in the safety element when the LHMP is updated after January 1, 2017 (for communities that already have an LHMP), or by January 1, 2022 (for communities without an LHMP).

This LHMP is consistent with current standards and regulations, as outlined by Cal OES and FEMA. It uses the best available science, and its mitigation strategies/actions reflect best practices and community values. It meets the requirements of current state and federal guidelines and makes Seal Beach eligible for all appropriate benefits under state and federal law and practices. Note that while FEMA is responsible for reviewing and certifying this LHMP, and Cal OES is responsible for conducting a preliminary review, this Plan does not grant FEMA or Cal OES any increased role in the governance of Seal Beach or authorize either agency to take any specific action in the community.



FEMA's Local Mitigation Planning Handbook, last updated in 2013, is one of the key guidance documents for local communities in preparing hazard mitigation plans.

PLAN ORGANIZATION AND USE

The Seal Beach LHMP is both a reference document and an action plan. It has information and resources to educate readers and decision makers about hazard events and related issues, and a comprehensive strategy that the City and community members can follow to improve resiliency in Seal Beach. It is divided into the following chapters:

- **Chapter 1: Introduction**. This chapter discusses the purpose and authority of the LHMP, its goals, how to use the Plan, and how it was developed.
- **Chapter 2: Community Profile**. This chapter provides an overview of the history of Seal Beach, its demographics, the local economy, and its land uses and infrastructure.
- **Chapter 3**: **Hazard Assessment**. This chapter summarizes the various hazard conditions in Seal Beach, their history, the risk of future occurrence, and any effects of climate change on their frequency and intensity. It also discusses how hazards were selected and prioritized for inclusion in this Plan.
- **Chapter 4**: **Threat Assessment**. This chapter discusses the threat to community members, buildings, and infrastructure posed by individual hazard types. It also summarizes the methods and approach used to prepare the threat assessment.
- **Chapter 5: Hazard Mitigation Strategy**. This chapter contains specific hazard mitigation actions to improve resiliency in Seal Beach and a discussion of how the mitigation actions were developed.
- **Chapter 6**: **Plan Maintenance**: This chapter discusses how the Plan will be implemented and summarizes how Seal Beach can monitor and update the Plan in future years**.**

PLAN GOALS

This Plan was developed to broadly increase resiliency in Seal Beach. There are five key goals for Seal Beach's LHMP:

- Reduce the threat to life, injury, and property damage for Seal Beach residents, employees, and visitors.
- Keep critical services and government functions operational by protecting key infrastructure in Seal Beach.
- Protect natural systems from current and future hazard conditions.
- Coordinate mitigation activities among City departments and with neighboring jurisdictions.
- Strengthen resiliency in Seal Beach through partnerships with community members, local businesses, and community organizations.

PLANNING PROCESS

State and federal guidance for local hazard mitigation plans do not require that jurisdictions follow a standardized planning process. FEMA encourages communities to create their own planning process that reflects local values, goals, and characteristics. FEMA does suggest a general planning framework that includes the following:

This section describes the process used by the City to develop its LHMP.

HAZARD MITIGATION PLANNING COMMITTEE

The City established a Hazard Mitigation Planning Committee. The Committee is made up of representatives from key City departments as well as key stakeholder members that include representatives from local and regional agencies. Additional stakeholder engagement during the process included one-on-one outreach to key groups, companies, and interested residents and businesses. These stakeholders are identified by asterisks (*). The City also informed other emergency managers from surrounding cities.

These members make up the Committee:

- Julia Clasby: Emergency Manager/Emergency Services Coordinator, Police Department (HMPC Leader)
- Jill Ingram: City Manager
- Michael Henderson: Administrative Sergeant, Police Department
- Kasandra Bowden: Police Communications Director, West Cities Police Communications
- Brian Gray: Corporal, Police Department (Emergency Operations Center)
- David Spitz: Associate Engineer, Public Works
- Crystal Landavazo: Interim Community Development Director, Community Development (Planning)
- Steve Fowler: Assistant Planner, Community Development (Building and Safety)
- Tim Kelsey: Recreation Manager, Community Services/Recreation
- Vikki Beatley: Director, Finance
- Patrick Gallegos: Assistant City Manager, City Manager's Office
- Joe Bailey: Chief, Marine Safety
- Steve Myrter: Director, Public Works
- Devon Shay: Business Manager, Hellman Properties
- Nick Bolin: Officer, Marine Safety
- Loree Erpelding: Volunteer Coordinator, City of Cypress Police Department
- Esther Cummings: Volunteer, Seal Beach National Wildlife Refuge*
- Erik Franzen: Emergency Management Officer, United States Navy (Naval Weapons Station – Seal Beach)*
- Gregg Smith: Public Affairs Officer, United States Navy (Naval Weapons Station – Seal Beach)*
- Robert Acosta: Battalion Chief, Orange County Fire Authority*
- James Henery: Battalion Chief, Orange County Fire Authority*
- Jeff Hoey: Battalion Chief, Orange County Fire Authority*
- Dave Spencer: Battalion Chief, Orange County Fire Authority*
- Carl Schultz, MD: Associate Emergency Medical Services Medical Director, Orange County Fire Authority*

Invitations went out to the following agencies, organizations, or groups but they elected not to participate in the Local Hazard Mitigation Plan development process:

- Boeing *
- California Department of Fish and Game*
- California Department of Transportation*
- California Highway Patrol*
- California Joint Powers Authority*
- California Governor's Office of Emergency Services*
- City of Buena Park*
- City of Garden Grove*
- City of Huntington Beach *
- City of La Palma*
- City of Long Beach *
- City of Los Alamitos*
- City of Westminster*
- D-Cor LLC.*
- Golden State Water Company*
- Joint Forces Training Base – Los Alamitos*
- Leisure World / Golden Rain Foundation *
- Los Alamitos Unified School District *
- Los Alamitos Joint Forces Training Base *
- Orange County Emergency Management Division*
- Orange County Healthcare Agency*
- Orange County Intelligence Assessment Center*
- Orange County Sanitation District *
- Orange County Sheriff's Department*
- Orange County Transit Authority*
- Orange County Water District *
- Rossmoor Community Services District *
- Seal Beach Chamber of Commerce*
- Sempre Utilities*
- Southern California Edison *
- Southern California Gas Company *
- Surfside Colony*
- US Army Corps of Engineers*
- US Fish and Wildlife Service*

The Committee held four meetings throughout the plan development process to lay out the methods and approach for the Plan, draft and review content, make revisions, and engage members of the public.

- **Committee Meeting #1 (May 2, 2018)**: The Committee members confirmed the project goals and their purpose and responsibilities of the Committee. They revised the community engagement and outreach strategy, confirmed and prioritized the hazards to be included in the Plan, and identified critical facilities for the threat assessment.
- **Committee Meeting #2 (May 30, 2018)**: Members held a detailed discussion about the results of the hazards assessment and mapping that showed the areas facing an elevated risk. The Committee also reviewed the hazard prioritization results.
- **Committee Meeting #3 (June 27, 2018)**: The Committee reviewed the results of the risk assessment to identify the populations and assets that may face greater harm in the event of a hazard event. The Committee also discussed potential hazard mitigation actions to address vulnerabilities.
- **Committee Meeting #4 (July 25, 2018)**: The Committee reviewed the draft mitigation strategies/actions, made revisions, and assigned priorities.

Invitations to Committee meetings, as well as meeting agendas/materials, were provided via email. **Appendix A** contains copies of invitations, meeting agendas, sign in sheets, and other relevant materials distributed for Committee meetings.

PUBLIC ENGAGEMENT

Under FEMA guidelines, the local hazard mitigation planning process should create opportunities for members of the public to be involved in plan development—at a minimum, during the initial drafting stage and during plan approval. The Committee chose to go beyond minimum standards and conduct more extensive community outreach to help ensure that the LHMP reflects community values, concerns, and priorities. The Committee developed a community engagement and outreach strategy to guide all public engagement activities. **Appendix B** contains a copy of the strategy.

Public Meetings

In-person public meetings were a central component of the City's engagement efforts. These meetings provided an opportunity for members of the public to learn about the LHMP in depth—the plan development process, the hazards of concern, and assist with the development of potential mitigation strategies and actions. At these meetings, members of the public could speak directly to City staff and other stakeholders and provide detailed feedback. The City held four public meetings at different locations throughout the City providing the same content at each meeting. Notices of each meeting were widely distributed in advance in accordance with City notification requirements, the engagement strategy, legal requirements, and best practices.

- **Public Meeting #1 (May 30, 2018)**: This meeting was the kick-off for public engagement and was held at City Hall. Members of the public participated in a visioning activity in which they

identified which local hazards concerned them most. They also mapped out specific areas of the city where they believed potential hazards could emerge in the future.

- **Public Meeting #2 (June 27, 2018)**: This meeting was conducted at a Clubhouse in Leisure World (a retirement community in Seal Beach) and was heavily attended (approximately 40 residents). Members of the public participated in a visioning activity in which they identified which local hazards concerned them most. They also mapped out specific areas of the city where they believed potential hazards could emerge in the future. This meeting was discussed in Seal Beach's local media: https://www.sunnews.org/sbpd-seeks-publics-input-on-hazard-mitigation-plan/.

- **Public Meeting #3 (August 22, 2018)**: This meeting was conducted at Fire Station 48 in Seal Beach, located in the northern portion of the City. Members of the public participated in a visioning activity in which they identified which local hazards concerned them most. They also mapped out specific areas of the city where they believed potential hazards could emerge in the future.

- **Public Meeting # 4 (September 5, 2018):** This meeting was conducted at the Marina Community Center, located in the western portion of the City. Members of the public participated in a visioning activity in which they identified which local hazards concerned them most. They also mapped out specific areas of the city where they believed potential hazards could emerge in the future.

Online Engagement

The City recognized that not all community members are able to attend public meetings and conducted public engagement through social media and online platforms. The Committee set up a project website as a simple, one-stop location for community members to learn about the LHMP. The website included information about what an LHMP is and why the City prepared one. It had links to materials and plan documents as they became available and allowed members of the public to receive notifications about upcoming events. The Committee also used social media accounts, such as Facebook, Twitter, and NextDoor, to send quick notifications or bursts of information about the Plan and the development process.

A central part of the online engagement was an online survey. This survey asked community members about their experience and familiarity with emergency conditions, their level of preparedness for future emergencies, and preferred actions for the City to take to increase resiliency in Seal Beach.

The survey had responses from 189 community members; those responses are summarized here:

- The overwhelming majority (78 percent) of respondents indicate that they have been impacted by flooding and coastline disturbance hazards.
- The top three hazards of concern to Seal Beach residents are, in descending order: (1) earthquakes and liquefaction, (2) flooding and coastline disturbances, and (3) tsunamis.

- Only half of respondents report that they have adequate homeowners' insurance, and the overwhelming majority (83 percent) indicate that they own their residence.
- Among both homeowners and renters, approximately 30 percent report that they have flood insurance.
- The most common emergency kit items that respondents have are battery-powered flashlights (91 percent), can openers (90 percent), cooking and eating utensils (88 percent), canned/nonperishable food (87 percent), and first aid kit/supplies (87 percent). Less than half of respondents, however, indicate having battery-powered radios (26 percent), important photos and documents in a water- and fire-proof containers (31 percent), pet supplies (40 percent), and gasoline (13 percent).
- More than half (56 percent) of respondents say they are unfamiliar with the special needs of their neighbors should they need to assist them in an emergency event.
- About 20 percent of respondents report having participated in Seal Beach's Community Emergency Response Team (CERT), and a further 28 percent indicate they would be interested in learning more about CERT.
- According to respondents, the most effective thing the City of Seal Beach can do to help residents become better prepared for a disaster is to provide effective emergency notifications and communication.
- About half (54 percent) of respondents say that their employer has a disaster recovery plan in place, and approximately 25 percent indicate their employer does not.

Appendix B contains copies of all materials used for public outreach, including the full results of the community survey.

PUBLIC REVIEW DRAFT

On October 23, 2018, Seal Beach released a draft copy of the LHMP for public review and comment. The document was posted electronically on the City's website (http://www.sealbeachca.gov/Departments/Police/Public-Safety/Local-Hazard-Mitigation-Plan), and hard copies were made available at the City Clerk's Office at 211 Eighth Street, Seal Beach, CA 90740. The City distributed notifications about the public review draft through social media accounts and other online sources. Comments can be provided via email at hazardmitigation@sealbeachca.gov or in writing mailed to Seal Beach Emergency Services Coordinator at 211 Eighth Street, Seal Beach, CA 90740.

PLAN REVISION AND ADOPTION

Following public comment, the Committee revised the Plan and submitted it to Cal OES and FEMA. The Committee then made additional revisions to incorporate comments from state and federal agencies, as appropriate, and submitted the final draft to City decision makers. The Seal Beach City Council adopted the final LHMP on [Insert Adoption Date], 2019. **Appendix C** contains a copy of the adoption resolution.

PLAN RESOURCES

The Committee used a number of different plans, studies, technical reports, datasets, and other resources to prepare the hazard assessment, mapping, threat assessment, and other components of this Plan. **Table 1-1** lists some of the key resources the Committee used to prepare this Plan.

TABLE 1-1: KEY RESOURCES FOR PLAN DEVELOPMENT

Section	Key Resources	Example Uses
Multiple sections	• Cal-Adapt • California Geological Survey • California Governor's Office of Emergency Services • California State Hazard Mitigation Plan • City of Seal Beach General Plan • FEMA Local Hazard Mitigation Plan Guidance • Los Angeles Times • National Oceanic and Atmospheric Administration • National Weather Service • Orange County Register • United States Geological Survey • US Census Bureau 2011-2015 American Community Survey	• Science and background information on different hazard conditions. • Records of past disaster events in and around Seal Beach. • Current and anticipated climate conditions in and around Seal Beach. • Projections of future seismic conditions and events.
Community Profile	• City of Seal Beach financial and economic reports • California Energy Commission • Seal Beach Urban Water Management Plan	• Demographic information for Seal Beach and Orange County. • History of the region. • Economic trends in Seal Beach. • Commute patterns in Seal Beach. • Local land uses patterns. • Background information on utilities serving Seal Beach.
Hazard Assessment (Coastal Inundation)	• Intergovernmental Panel on Climate Change • California Department of Conservation	• History and future projections of sea level rise. • Data on potential tsunami inundation.
Hazard Assessment (Extreme Weather)	• California Department of Water Resources • US Drought Monitor • Western Regional Climate Center	• Science and background information of extreme weather events. • Historical record of extreme weather events in and around Seal Beach.
Hazard Assessment (Flood)	• FEMA Map Service Center • Orange County Flood Control District	• Records of past flood events in and around Seal Beach. • Locations of flood-prone areas in Seal Beach.
Hazard Assessment (Hazardous Materials Release Hazards)	• California Department of Toxic Substances Control • CalEnviroScreen 3.0	• Locations of hazardous materials sites in Seal Beach • Data on at-risk populations in Seal Beach
Hazard Assessment (Seismic Hazards)	• Southern California Earthquake Data Center	• Locations of fault zones. • Records of past earthquakes.
Hazard Assessment (Fire)	• California Department of Forestry and Fire Prevention	• Records of past fire events. • Location of fire hazard zones in and around Seal Beach.

Note: Sections that are not individually called out in this table relied primarily on sources identified in multiple sections.

CHAPTER 2
COMMUNITY PROFILE

This chapter of the LHMP is a summary of Seal Beach, with information about the community's physical setting, history, economy and demographics, current and future land uses, and key infrastructure. The community profile establishes the baseline conditions that inform the development of the hazard mitigation actions in **Chapter 5.**

SETTING AND LOCATION

Seal Beach is in northern Orange County at the southernmost junction of Los Angeles and Orange counties. It is approximately 23 miles southeast of downtown Los Angeles. The cities of Westminster, Garden Grove, and Huntington Beach lie along Seal Beach's eastern border. The cities of Cypress and Los Alamitos are to the north. The City of Long Beach, in adjacent Los Angeles County, borders Seal Beach on the west. The Pacific Ocean borders Seal Beach to the southwest.

The city consists for the most part of lowland plains, with sandy beaches backed in places by low bluffs and mesas. Seal Beach surrounds the Seal Beach National Wildlife Refuge, a protected wetland on land operated by the United States (US) Naval Weapons Station at Seal Beach and typical of the habitat that was once common along the California coast. The San Gabriel River runs along Seal Beach's western border and empties near the city's beach, and a number of artificial flood control channels run through the community. The sections of Seal Beach that the City controls are mostly developed. Most of the open space in the city is controlled by the US Naval Weapons Station. Residential land uses, mostly single-family houses, are the most common land use in Seal Beach. The city also has smaller amounts of multifamily, commercial, industrial, and public/open space land.

HISTORY

The most recent Native American peoples to live in the lands that make up present-day Seal Beach and the surrounding area are the Tongva. Their earliest recorded presence dates back 2,000 years (City of Orange 2018). The first known European presence in the area was the arrival of Spanish explorer Gaspar de Portolá in 1769.

The first permanent European presence in Orange County was the 1776 establishment of Mission San Juan Capistrano to the south. After Mexico (including California) became independent from Spain in 1821, the missions were secularized, and large portions of land were granted to prominent figures. The area of modern-day Seal Beach became part of the Rancho Los Alamitos grant given to Spanish soldier Manuel Nieto (Orange County Archives n.d.).

After the cession of California by Mexico to the United States, an area east of modern-day Seal Beach became home to a group of German immigrants who established "Anaheim." These immigrants erected a port called Anaheim Landing near where the Naval Weapons Station is today. This grew and developed into what is today the downtown area of Seal Beach. In the early 1900s, the settlement eventually shifted from being a shipping center to a resort town and cemented this transition by changing its name to Bay City 1903. Connections to Los Angeles via the burgeoning Pacific Electric rail system allowed visitors easy access to Bay City. The city subsequently adopted the name Seal Beach when it became an officially incorporated city in 1915 (City of Seal Beach 2003a).

Seal Beach Amusement Park in 1920. Image from the Los Angeles Public Library.

Anaheim Landing during the 1930s. Pacific Electric tracks crossing the inlet. Image from the Orange County Archives.

The advent of the Second World War prompted the next cycle of the city's growth. It was during this time that the Naval Weapons Station was built and the aerospace industry took root in the city. The Leisure World community was also established during the late 1950s. Today, the city is still a tourist destination and boasts a population of more than 24,000 residents (City of Seal Beach 2003a). In its history, the community has endured hazards such as major storms, fires that damaged the city's pier, and a deadly shooter event in 2011 (Gerber 2017).

DEMOGRAPHICS

The US Census Bureau's American Community Survey estimates Seal Beach's population at 24,510 residents as of 2015. It is one of the smallest of Orange County's 34 cities by population; only Laguna Woods, La Palma, Los Alamitos, and Villa Park have fewer people (US Census Bureau 2015a).

Compared to Orange County as a whole, Seal Beach residents are older but have a lower median household income and a higher level of home ownership. **Table 2-1** shows the basic demographics for Seal Beach and Orange County.

TABLE 2-1: BASIC DEMOGRAPHICS, SEAL BEACH AND ORANGE COUNTY (2015)

	Seal Beach	Orange County
Total population	24,510	3,132,211
Percent of residents that are children (less than 10 years)	3.6%	12.47%
Percent of residents that are senior citizens (65+ years)	37.5%	12.76%
Median age	57.7	37.1
Total households	14,036	1,009,353
Median household income	$55,270	$76,509
Percentage of rental households	24.9%	42.32%

Source: US Community Census 2015a, 2015b, 2015c.

A greater proportion of Seal Beach residents identify as white compared to Orange County residents. Approximately 19 percent of Seal Beach residents identify as nonwhite compared to approximately 37 percent of Orange County residents. **Table 2-2** shows the racial and ethnic composition in Seal Beach and Orange County.

TABLE 2-2: RACIAL AND ETHNIC COMPOSITION, SEAL BEACH AND ORANGE COUNTY (2015)

	Seal Beach		Orange County	
Race or Ethnicity	Population	Percentage	Population	Percentage
White	19,872	80.9%	1,970,000	63.22%
Black or African-American	267	1.1%	51,816	1.66%
American Indian and Alaska Native	41	0.2%	12,476	0.40%
Asian	2,379	9.7%	590,342	18.94%
Native Hawaiian and Other Pacific Islander	10	0.0%	9,529	0.31%
Other race	918	3.7%	368,220	11.82%
Two or more races	1,064	4.3%	113,686	3.65%
Hispanic or Latino (of any race) *	3,235	13.2%	1,064,499	34.16%
Total	**24,551**	**100%**	**3,116,096**	**100%**

Source: US Census Bureau 2015d, 2015e.

* The US Census Bureau does not currently count persons who identify as Hispanic or Latino as a separate racial or ethnic category. Persons who identify as Hispanic or Latino are also included in the other racial or ethnic categories.

Seal Beach residents have a higher level of educational attainment than the average Orange County resident. Approximately 55 percent of adults 25 years of age or older in Seal Beach have obtained a

college degree, compared to 46 percent of Orange County adults. Similarly, approximately 4 percent of Seal Beach adults have not finished high school, compared to 16 percent of Orange County adults. **Table 2-3** shows educational attainment for adults in Seal Beach and Orange County.

TABLE 2-3: EDUCATIONAL ATTAINMENT OF RESIDENTS 25+ YEARS OF AGE, SEAL BEACH AND ORANGE COUNTY (2015)

Educational Attainment	Seal Beach		Orange County	
	Population	Percentage	Population	Percentage
Less than 9th grade	392	1.9%	182,478	8.78%
9th grade to 12th grade (no diploma)	652	3.2%	144,383	6.95%
High school graduate or equivalent	3,049	15.0%	367,556	17.69%
Some college (no degree)	5,116	25.1%	436,584	21.01%
Associate's degree	1,781	8.7%	162,649	7.83%
Bachelor's degree	5,723	28.1%	506,749	24.39%
Graduate or professional degree	3,668	18.0%	277,384	13.35%
Total	**20,381**	**100%**	**2,077,783**	**100%**

Source: US Census Bureau 2015f.

Spanish is the most commonly spoken language in Seal Beach after English, followed by Korean, Chinese, and Vietnamese. Among residents at least five years of age, approximately 84 percent of Seal Beach residents speak English at home, compared to approximately 69 percent of Orange County residents. Among speakers of the more common languages in Seal Beach other than English, only some are English proficient as well, with almost 8 in 10 Korean speakers and half of Chinese speakers not being proficient in English. **Table 2-4** shows the language proficiency among residents five years of age and older in Seal Beach and Orange County.

TABLE 2-4: LANGUAGE PROFICIENCY OF RESIDENTS 5+ YEARS OF AGE, SEAL BEACH AND ORANGE COUNTY (2015)

Language Spoken at Home	Seal Beach		Orange County	
	Number of Speakers	Percent Not Proficient in English	Number of Speakers	Percent Not Proficient in English
English	19,857	-	1,587,426	-
Spanish	1,234	29.2%	770,012	44.52%
Korean	603	80.6%	76,934	58.1%
Chinese	383	50.1%	71,112	48.9%
Vietnamese	271	46.1%	172,876	58.4%
All other languages	1,364	32.4%	246,609	30%
Total	**23,712**	-	**2,294,969**	-

Source: US Census Bureau 2015g.

ECONOMY AND COMMUTE PATTERNS

Seal Beach may be commonly thought of as a tourist destination, but the primary pillars of the City's economy are the aerospace and manufacturing industries. According to the US Census, nearly three out of ten jobs (approximately 29 percent) in the community are in manufacturing. Other major economic sectors are accommodation and food services (providing approximately 14 percent of jobs), retail trade (approximately 13 percent of jobs), and various healthcare and social assistance services (approximately 9 percent of jobs) (US Census 2018). Most of Seal Beach's largest employers are in aerospace, healthcare, and manufacturing. Some of the top employers in Seal Beach include:

- Boeing Co.: An aerospace firm with an estimated 2,505 employees.
- US Healthcare Services: A healthcare firm with an estimated 500 employees.
- Accurate Metal Fabricators: A manufacturing firm with an estimated 300 employees. (City of Seal Beach 2015a)

In addition, tourism is still an important part of Seal Beach's identity; this is reflected in the more than two million annual visitors to the City (City of Seal Beach 2015).

Most residents of Seal Beach commute to their work places—approximately 95 percent of employed residents travel outside of the community for work. Residents who commute mostly travel to Long Beach, Huntington Beach, Anaheim, and other Orange County communities. Similarly, approximately 95 percent of people who work in Seal Beach come from other communities, predominantly from Long Beach, Huntington Beach, and Anaheim, but also from Los Angeles and other communities in Orange County (US Census 2017).

The highest concentration of jobs in Seal Beach is in the area close to the US Naval Weapons Station and Leisure World campuses near the intersection of Seal Beach Boulevard and Westminster Boulevard. Other job centers include the area around the intersection of I-405 and Seal Beach Boulevard and the Downtown area of Seal Beach (US Census 2017).

LAND USES

The portions of Seal Beach's land that the City controls are mostly developed. The most prolific zoning designation in Seal Beach is "military," with nearly 70 percent of Seal Beach's land falling under this designation as a result of it being inside of the US Naval Weapons Station. The city's undeveloped areas are designated for open space or recreational uses, such as the Los Cerritos Wetlands and the Seal Beach National Wildlife Refuge that cover nearly 1,000 acres of the City's undeveloped land. After the military zoning designation, residential land uses, predominantly medium-density residential, make up most of the city's developed area. Commercial, industrial, and institutional land uses contribute smaller fractions (Seal Beach 2003b). **Figure 2-1** depicts the general plan land uses for the city.

DEVELOPMENT TRENDS

Due to the lack of developable open land, development activities in the city typically involve minor modifications to existing commercial and residential buildings, infill development on parking lots, and rehabilitation of existing buildings.

INFRASTRUCTURE ASSESSMENT

Infrastructure is of crucial importance during hazardous events. Any damage sustained by City infrastructure could compound existing hazards or cause new ones to emerge. As an example, flooding caused by infrastructure failure could lead to increased erosion or spread hazardous materials.

ELECTRICITY

Seal Beach receives its electricity from Southern California Edison (SCE), which is one of California's three major investor-owned electrical utility companies and the largest electrical supplier in the state (CEC 2016).[1] SCE sources electricity from power plants throughout California and neighboring states and delivers it through a network of large-scale power lines and substations (CEC 2015a).

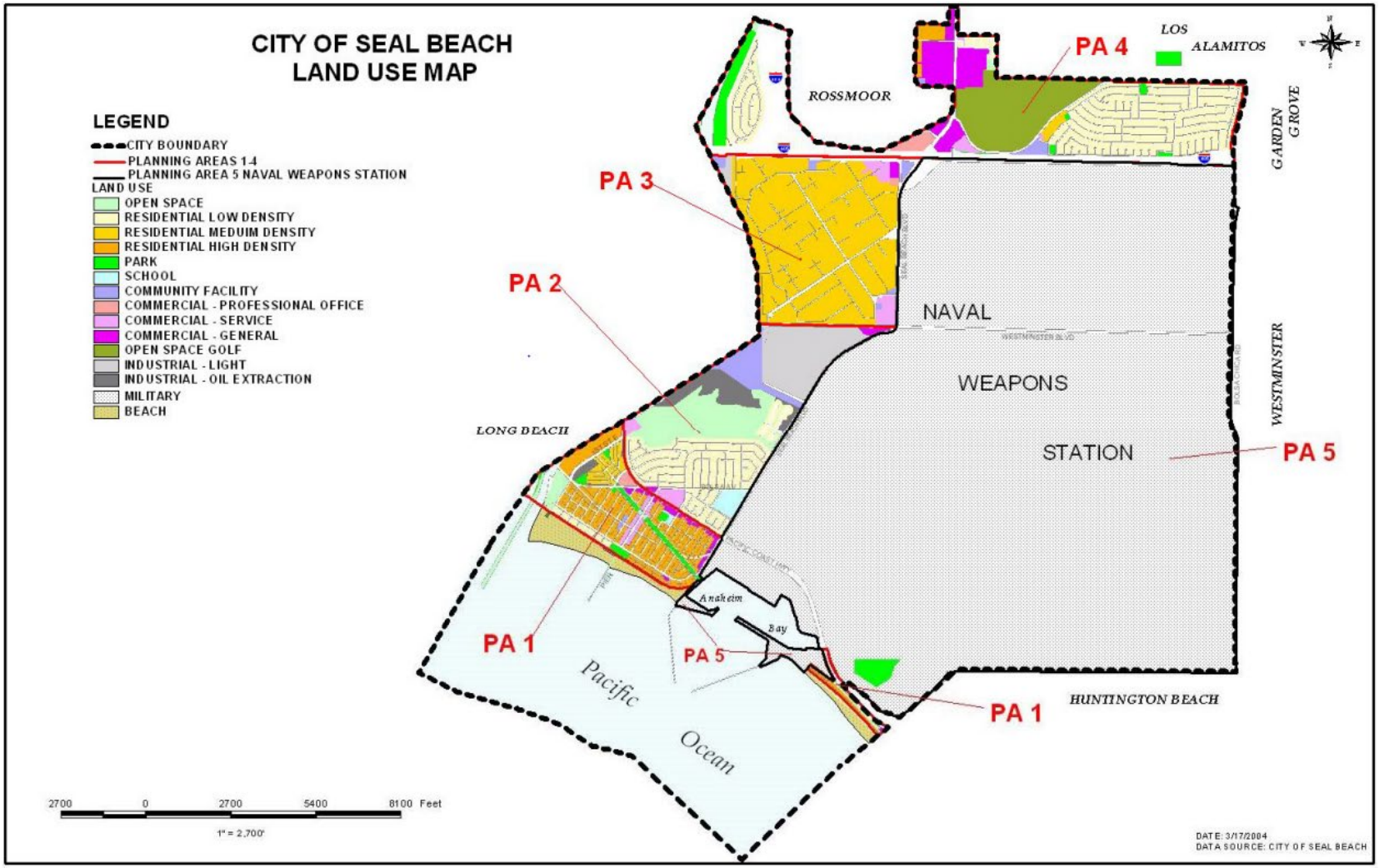
Electrical substations are vital facilities to ensure that electrical service is safe and reliable. Image from Paul Chernikhowsky.

Seal Beach does not have any registered commercial power plants within its boundaries though some buildings have solar panels. There is one electrical substation in Seal Beach, the Norseal Substation. A second facility, the Alamitos Substation, is near Seal Beach but just outside the city on Los Angeles County land and operated by the Los Angeles Department of Water and Power (CEC 2017a).

The primary transmission line in Seal Beach runs along Westminster Boulevard with connections to other substations outside of the city. These external connections provide Seal Beach with some redundancies against power outages in the event that individual power lines are damaged, although damage to a substation or more widespread damage to power lines could result in a greater loss of power (CEC 2015b, 2017a).

[1] As of 2015, as measured by the amount of electricity supplied.

Figure 2-1: General Plan Land Use Map



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NATURAL GAS

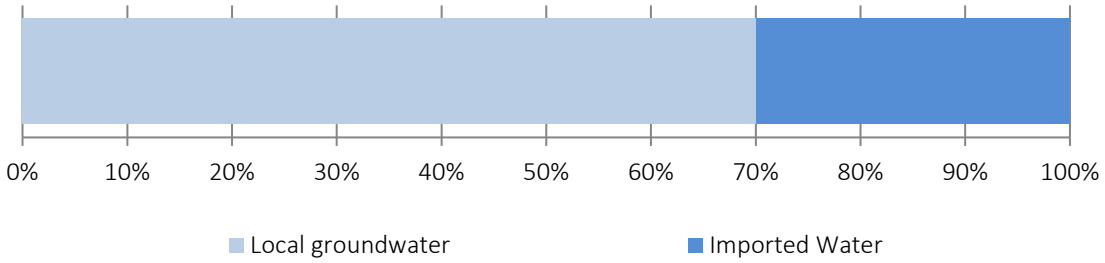
The Southern California Gas Company (SoCalGas) provides natural gas service to Seal Beach. A major gas distribution line runs underneath Seal Beach Boulevard and SR-22 (the Garden Grove Freeway). No other major pipelines are present (SoCalGas 2018; CEC 2017b). Various facilities in Huntington Beach, Long Beach, and other surrounding communities help to keep the natural gas flowing safely and reliably (CEC 2017b).

Should the transmission line in Seal Beach or any affiliated facilities sustain damage, natural gas service in Seal Beach could be restricted. Since natural gas is highly flammable, a potential rupture in a gas pipeline or an incident that sends sparks flying around open plumes of natural gas could cause a fire or even an explosion.

WATER AND WASTEWATER

The City of Seal Beach receives its water from two main sources—local groundwater and imported water. **Figure 2** shows the proportions of water supply coming from either source.

Figure 2-2: Water Sources in Seal Beach



Source: Seal Beach 2015b

The City of Seal Beach purchases the majority of its water supply directly from water wholesale companies. The Orange County Water District (OCWD) sells Seal Beach local well water. The Municipal Water District of Orange County (MWDOC), which is a member of the Metropolitan Water District of Southern California (MWD), sells the city imported water from the State Water Project and the Colorado River Aqueduct. MWD obtains imported water and provides it to regional water retailers, like MWDOC, to distribute the water among the communities in their jurisdiction (City of Seal Beach 2015b; MWDOC 2015; OCWD 2015).

Only a miniscule portion of Seal Beach's water is purchased from a private water utility. The Shops at Rossmoor, a shopping mall at the northern end of Seal Beach adjacent to the unincorporated community of Rossmoor, receives its water from the Golden State Water Company (GSWC) (City of Seal Beach 2015b). Outside of this area, the rest of the community receives its water directly from the City.

Water from MWD or groundwater pumped from elsewhere in Orange County may be affected by damage to water treatment plants and delivery infrastructure in the county. The districts are also

vulnerable to water infrastructure damage in the Los Angeles Basin or the major aqueducts that supply the region, which may affect MWD supplies.

Wastewater service in the community is supplied by the Orange County Sanitation District (OCSD). The City operates the sewer lines and pump stations that collect wastewater from buildings and facilities in Seal Beach and convey it to a regional network for treatment. The nearest wastewater treatment facility is the OCSD Plant in Fountain Valley. Damage to the City-owned sewer system or to OCSD facilities may reduce treatment capacity or cause a leak, which in turn may pose a hazard to human and environmental health (OCSD 2018).

TRANSPORTATION

The three major roadways in Seal Beach are the Pacific Coast Highway (State Route 1), Westminster Boulevard, and Seal Beach Boulevard. Pacific Coast Highway runs the length of Seal Beach near the coast, with two lanes in both directions, and connects to Long Beach to the northwest and Huntington Beach to the southeast. Westminster Boulevard bisects the city on an east-west axis from the western border with Long Beach to the eastern border with Westminster, with two lanes in either direction. Seal Beach Boulevard bisects the city from Pacific Coast Highway all the way to its northern border with the Los Alamitos, with three lanes in both directions.

Major regional freeways include Interstate 405 and State Route 22, which run through the city.

California's famed State Route 1 is a primary route through Seal Beach. Image from Tony Hisgett.

In the event of an emergency, most community members would likely evacuate in either direction along Pacific Coast Highway as well as Seal Beach and Westminster boulevards. If any of these routes become inaccessible, the other roadways and local streets could easily become congested due to their limited capacity. Use of these evacuation routes will be based on the incident and the areas of the City impacted.

The Orange County Transportation Authority and Long Beach Transit run bus lines that connect Seal Beach with cities in Los Angeles and Orange Counties. The nearest train station is the 1st Street Station in Downtown Long Beach, served by the Los Angeles County Metropolitan Transportation Authority's light-rail transit system. The Buena Park train station, approximately 11 miles northeast of Seal Beach, provides access to the regional Metrolink commuter rail system. The nearest airport with commercial service is Long Beach Municipal Airport in Long Beach.

CHAPTER 3
HAZARD ASSESSMENT

This chapter discusses the types of hazards that might reasonably happen in Seal Beach. It describes these hazards and how they are measured, where in Seal Beach they may occur, a history of these hazards in and around Seal Beach, and the future risk they pose. The discussion of future risks includes any changes to the frequency, intensity, and/or location of these hazards as a result of climate change. This chapter also discusses how the Hazard Mitigation Planning Committee selected and prioritized the hazards in this Plan.

KEY TERM

Risk: The chance of a hazard happening—especially one of a particular size or intensity.

HAZARD IDENTIFICATION

FEMA guidance identifies a number of hazards that communities should evaluate for inclusion in a hazard mitigation plan. Communities may also consider additional hazards for their plans. The Committee reviewed an extensive list of hazard events and excluded the ones that do not pose a threat to Seal Beach. **Table 3-1** lists the hazards considered by the Committee and explains why each hazard was or was not included. The table also shows if a hazard is recommended for consideration by FEMA and if it is included in the 2013 "California Multi-Hazard Mitigation Plan."

TABLE 3-1: HAZARD EVALUATION FOR SEAL BEACH LHMP

Hazard	Recommended for Consideration	Included in LHMP?	Reason for Inclusion or Exclusion
Agricultural pests	California plan	No	No major agricultural activity or resources in Seal Beach.
Air pollution	California plan	No	Air pollution is a state and regional issue that is addressed through plans and regulations administered by the South Coast Air Quality Management District and/or California Air Resources Board.
Aircraft incident	California plan	No	Aviation crashes and other such hazards are already addressed by Seal Beach's Emergency Operations Plan.
Avalanche	FEMA guidance California plan	No	Avalanches do not happen in Seal Beach.
Civil Disturbance or Riot	California plan	No	Civil unrest events are already addressed by Seal Beach's Emergency Operations Plan.
Climate change	California plan Orange County HMP	Yes (as a function of other hazard discussions)	Climate change contributes to the frequency, intensity, and/or location of other hazards. It is not a stand-alone hazard. It will be discussed as a factor for future hazards rather than as an event.
Coastal flooding and storms	FEMA guidance California plan	Yes	Coastal flooding as a result of storms is a common occurrence in Seal Beach and thus it is included in this plan.
Cyber Threats	California plan	No	Hazards originating from cyber security threats are

TABLE 3-1: HAZARD EVALUATION FOR SEAL BEACH LHMP

Hazard	Recommended for Consideration	Included in LHMP?	Reason for Inclusion or Exclusion
			already addressed by Seal Beach's Emergency Operations Plan.
Dam failure	FEMA guidance California plan Orange County HMP	Yes	Seal Beach is at serious risk from flooding if any levees or dams break along the nearby San Gabriel River.
Drought	FEMA guidance California plan Orange County HMP	Yes	Droughts are a recurring and potentially severe hazard in Seal Beach. This hazard has been incorporated with the extreme weather discussion.
Earthquake	FEMA guidance California plan	Yes	Seal Beach is in a seismically active area and has been impacted by earthquakes.
Energy shortage	California plan	No	Seal Beach is not responsible for supplying energy to the community.
Epidemic in Vector-Borne Disease	California plan Orange County HMP	No	Hazards caused by epidemics, pandemics, and vector-borne diseases are adequately addressed through the City's Emergency Operations Plan.
Erosion	FEMA guidance California plan	Yes	Erosion occurs regularly in Seal Beach and occasionally threatens property and human health. This discussion is part of the coastal hazards topic.
Expansive soil	FEMA guidance	No	There are no expansive soil issues identified in Seal Beach.
Extreme cold	FEMA guidance California plan	No	Temperatures in Seal Beach rarely become cold enough to pose a threat to health or safety.
Extreme heat	FEMA guidance California plan	Yes	The Committee determined that extreme heat is a hazard of concern to Seal Beach.
Flood	FEMA guidance California plan Orange County HMP	Yes	Floods occur on almost annual basis in Seal Beach and pose a threat to people and property.
Fracking	California plan	No	While petroleum production occurs in and around Seal Beach, fracking is not widely enough used within the City to pose a hazard to be included.
Hail	FEMA guidance	No	Hail that is severe enough to pose a threat to people and property is too rare in Seal Beach to be included.
Hazardous materials release	California plan	Yes	The Committee determined that hazardous material releases are a hazard of concern.
Hurricane	FEMA guidance	No	Hurricanes are too rare in Seal Beach to be included.
Infrastructure failure	California plan	No	The Committee determined that any sizeable risks posed by infrastructure failures are adequately addressed by dam or levee failures.
Landslide	FEMA guidance California plan Orange County HMP	No	Landslides do not occur in Seal Beach.
Levee failure	FEMA guidance California plan	Yes	Levee failure along the course of the San Gabriel River poses a threat to Seal Beach.
Lightning	FEMA guidance	No	Although lightning occurs occasionally in Seal Beach, it is not sufficiently threatening to people and property to be included in this Plan.
Metal theft	California plan	No	This issue was not identified by the Committee as a concern in Seal Beach.

TABLE 3-1: HAZARD EVALUATION FOR SEAL BEACH LHMP

Hazard	Recommended for Consideration	Included in LHMP?	Reason for Inclusion or Exclusion
Methane-containing soils	FEMA guidance Regional hazard plans	No	Issues associated with methane-containing soils were not identified in Seal Beach by the Committee.
Nuclear hazard	California plan	No	Hazards pertaining to nuclear or radiological emissions are already addressed by Seal Beach's Emergency Operations Plan.
Sea level rise	FEMA guidance California plan	Yes	Seal Beach has low-lying coastal areas that are susceptible to sea level rise. This topic is included under the coastal hazards discussion.
Severe wind	FEMA guidance	Yes	Severe winds occasionally blow in Seal Beach and pose a threat to people and property.
Severe weather and storms	FEMA guidance	Yes	Seal Beach is at risk in the winter months from severe weather and storms that threaten public safety and property.
Storm surge	FEMA guidance	No	The Committee determined that storm surge is covered by other hazards.
Subsidence	FEMA guidance	No	There is no record of subsidence (independent of those associated with landslides) or subsidence potential that could pose a threat to people and property.
Terrorism	California plan	No	Hazards relating to terrorism are already addressed in Seal Beach's Emergency Operations Plan.
Thunderstorm	FEMA guidance California plan	No	Although Seal Beach occasionally experiences thunderstorms, the Committee determined that thunderstorms are addressed by other hazards.
Tornado or Water Spout	FEMA guidance	Yes	While tornadoes are rare in Seal Beach, the potential for tornadoes to turn into water spouts poses a threat to public safety and property.
Transportation crashes	California plan	No	The Committee determined that the hazard mitigation plan is not the appropriate location to address transportation crashes.
Tree Mortality	California plan Orange County HMP	Yes	Seal Beach has some wooded natural areas that could pose a risk to public safety if they were to die. It is not a stand-alone hazard. It will be discussed as a factor of future hazards rather than as an event.
Tsunami	FEMA guidance California plan Orange County HMP	Yes	Seal Beach has low-lying coastal areas in a seismically active area, and so is at risk of tsunamis.
Urban Fires	California Plan Orange County HMP	Yes	Seal Beach has a history of fires emerging in the urban environment which have posed a risk to public safety and health.
Volcano	FEMA guidance California plan	No	There are no volcanoes near enough to Seal Beach to reasonably pose a threat.
Wildfires	California plan Orange County Plan	Yes	Wildfires in Seal Beach are likely due to large amounts of open and natural spaces in the City, including the wetlands and Gum Grove Park.

The Hazard Mitigation Planning Committee combined multiple selected hazards into a single category, renamed some hazard types, and discussed some hazards with multiple subcategories in order to streamline the list and make it more accurately reflect the conditions in Seal Beach.

- Fire Hazards: combines urban and wildland fires.
- Flood Hazards: includes dam and levee failures.
- Seismic Hazards: includes fault ruptures, seismic shaking, and liquefaction.
- Severe Weather: includes severe wind, extreme heat, storm surge, tornadoes, and water spouts.

After hazard evaluation and the organizational changes made by the Committee, this Plan discusses 11 hazard types:

- Coastal Flooding and Storms
- Drought
- Fire
- Flood
- Hazardous Materials Release
- Erosion
- Sea Level Rise
- Seismic
- Severe Weather
- Tree Mortality
- Tsunami

HAZARD SCORING AND PRIORITIZATION

The Committee followed FEMA guidance for hazard mitigation plans and prioritized each of the 11 hazards. In the initial step, it assigned a score of 1 to 4 in four criteria for each of the 11 hazards. The four criteria are:

- **Probability:** The likelihood that the hazard will occur in Seal Beach in the future.
- **Location:** The size of the area that the hazard would affect.
- **Maximum probable extent:** The severity of the direct damage of the hazard to Seal Beach.
- **Secondary impacts:** The severity of indirect damage of the hazard to Seal Beach.

The Committee assigned a weighting value to each criterion, giving a higher weight to the criteria deemed more important, and multiplied the score for each criterion by the weighting factor to determine the overall score for each criterion. The weighting values were recommended by FEMA:

- Probability: 2.0
- Location: 0.8
- Maximum probable extent: 0.7
- Secondary impacts: 0.5

Table 3-2 shows the rubric used to assign a score for each criterion.

TABLE 3-2: CRITERION SCORING

Probability		**Maximum Probable Extent (Primary Impact)**	
The estimated likelihood of occurrence based on historical data.		*The anticipated damage to a typical structure in the community.*	
Probability	**Score**	**Impact**	**Score**
Unlikely—less than a 1 percent chance in a given year.	1	Weak—little to no damage	1
Occasional—a 1 to 10 percent chance in a given year.	2	Moderate—some damage, loss of service for days	2
Likely—a 10 to 90 percent chance in a given year.	3	Severe—devastating damage, loss of service for months	3
Highly likely—more than a 90 percent chance in a given year.	4	Extreme—catastrophic damage, uninhabitable conditions	4
Location		**Secondary Impact**	
The projected area of the community affected by the hazard.		*The estimated secondary impacts to the community at large.*	
Affected Area	**Score**	**Impact**	**Score**
Negligible—affects less than 10 percent of the planning area.	1	Negligible—no loss of function, downtime, and/or evacuations	1
Limited—affects 10 to 25 percent of the planning area.	2	Limited—minimal loss of functions, downtime, and/or evacuations	2
Significant—affects 25 to 75 percent of the planning area.	3	Moderate—some loss of functions, downtime, and/or evacuations	3
Extensive—affects more than 75 percent of the planning area.	4	High—major loss of functions, downtime, and/or evacuations	4

After calculating the overall score for each criterion for each hazard, the scores for location, maximum probable extent, and secondary impact were summed to determine the total impact score for each hazard. FEMA guidance recommends multiplying the total impact score by the overall probability score to determine the final score for each hazard. A final score between 0 and 12 is considered a low-threat hazard, 12.1 to 42 is a medium-threat hazard, and a score above 42 is considered a high-threat hazard. This final score determines the prioritization of the hazards.

Table 3-3 shows the individual criterion scores, the final score, and the threat level for each hazard based on the above prioritization process.

TABLE 3-3: HAZARD SCORES AND THREAT LEVEL

Hazard Group	Hazard	Probability (2.0)	Impact (2.0)			Final Score	Threat Level
			Location (0.8)	Primary Impact (0.7)	Secondary Impact (0.5)		
Coastal Inundation	Coastal Flooding and Storms	4 (Highly Likely)	2 (Limited)	4 (Extreme)	2 (Limited)	43.20	High
Extreme Weather	Drought	4 (Highly Likely)	4 (Extensive)	2 (Moderate)	2 (Limited)	44.80	High
Extreme Weather	Flood (Dam/Levee Failure)	4 (Highly Likely)	4 (Extensive)	2 (Moderate)	2 (Limited)	44.80	High
Seismic	Seismic Hazards	4 (Highly Likely)	4 (Extensive)	4 (Extreme)	4 (High)	64.00	High
Hazardous Materials Release	Hazardous Materials Release	2 (Occasional)	3 (Significant)	3 (Severe)	3 (Moderate)	24.00	Medium
Coastal Inundation	Erosion	4 (Highly Likely)	2 (Limited)	2 (Moderate)	2 (Limited)	32.00	Medium
Extreme Weather	Severe Weather: Wind, Heat, Tornado	4 (Highly Likely)	4 (Extensive)	3 (Severe)	3 (Moderate)	54.40	High
Coastal Inundation	Sea Level Rise	4 (Highly Likely)	2 (Limited)	2 (Moderate)	2 (Limited)	32.00	Medium
Coastal Inundation	Tsunami	3 (Likely)	2 (Limited)	3 (Severe)	3 (Moderate)	31.00	Medium
Fire	Fire	3 (Likely)	2 (Limited)	2 (Moderate)	2 (Limited)	24.00	Medium
Extreme Weather	Tree Mortality	2 (Occasional)	2 (Limited)	2 (Moderate)	2 (Limited)	16.00	Medium

HAZARD PROFILES

COASTAL INUNDATION

For the purposes of this plan, the Coastal Inundation hazard group includes the following hazards: Coastal Flooding and Storms, Erosion, Sea Level Rise, and Tsunami. Some hazards—e.g., Coastal Flooding and Storms, Erosion—may have similar causes as the hazards in the Extreme Weather group, but their extents are unique to coastal areas and do not affect the whole city.

Description

Coastal Flooding and Storms: The majority of the storm systems that pass over Seal Beach arrive in the winter, especially from December to March (WRCC 2018). The strength of storms can be unpredictable, given how much they vary, though some are very powerful. Storms often include strong winds and heavy rainfall; sometimes they include lightning or hail; and they can also bring tornadoes, though only rarely.

Seal Beach's flooded beachfront after rains in winter 2017. Image from Sam Gangwer.

A meteorological phenomenon called an "atmospheric river" is the driving power behind the storms that lead to coastal flooding. An atmospheric river is a path of moist air traveling from one global region to another. Storms originating from atmospheric rivers are rare, but they are responsible for nearly half of all precipitation in California (NOAA 2015). The El Niño Southern Oscillation (ENSO, also known as El Niño) is the other main source of coastal flooding and storms in Seal Beach. El Niño is a natural cycle of winds and fluctuating ocean temperatures in southeastern tropical areas of the Pacific Ocean that influences weather patterns across the globe. El Niño consists of three phases: a warm phase (called El Niño), a neutral phase, and a cool phase (called La Niña). The warm phase tends to increase precipitation, particularly in southern California, which leads to coastal flooding in beach communities like Seal Beach (UC Berkeley 2018).

These storms may lead to a number of detrimental environmental effects for the community. Heavy rain can lead to flooding, which can damage buildings and cause injuries or even drownings. Flooding can also lead to other hazards, such as erosion. Strong winds caused by intense storms may cause property damage or injury, and lightning can cause power outages or ignite fires.

Erosion: Coastal erosion is the gradual or sudden removal of sand and beaches by wind, rain, high surf, tides, and other events. Buildings and facilities situated on beaches with poor drainage can lead to runoff or ponding which may exacerbate erosion. Erosion can also harm these structures by excavating the ground or sand under them. Over time, erosion makes beaches narrower, which reduces their capacity for recreational use and restricts coastal access.

Sea Level Rise: Sea level rise is the raising of the elevation of the surface of the ocean caused by Earth's changing climate. The increase in global temperatures is causing ice, like glaciers, to melt. The freed meltwater enters water systems and ultimately finds its way to the oceans. Warmer temperatures also cause the water in oceans to expand in volume, which leads to even further sea level rise. Sea level rise is a global issue, but affects places differently because of variations in geography.

Sea level rise is not itself a threat in the present or near future, but it makes other coastal hazards more dramatic—such as coastal flooding, tsunamis, high surf, or high tides. Sea level rise reduces the overall size of beaches and lessens their effectiveness as buffers between the ocean and coastal development. It extends the reach of coastal flooding even farther inland than would otherwise be possible. Sea level rise also increases the rate of beach erosion. In the future, sea level rise could even lead to the permanent or semi-permanent flooding of low-lying coastal areas.

Tsunami: Tsunamis are a type of oceanic wave usually generated by underwater seismic activity. Earthquakes are the most common cause of tsunamis, but landslides, volcanic activity, or (in extremely rare scenarios) meteor strikes may also trigger tsunamis.[2] In unusual circumstances, large and sudden changes in atmospheric pressure can trigger a rare type of tsunami—a meteotsunami (Monserrat et al. 2006). Such occurrences displace large volumes of water, which creates the tsunami. In the open ocean, a tsunami wave travels 500 to 600 miles per hour (mph) but is only a few feet high and generally undetected by passing ships (NOAA 2009). Once the wave nears the shore, however, the shallow depth of the ocean floor pushes against the motion of the wave, causing it to decelerate and increase in height—sometimes as tall as 100 feet (National Geographic 2014). When it finally makes landfall, a tsunami violently disperses inland, leading to immense damage and risk of injury and death. Most tsunamis consist of multiple waves of varying height, and the initial wave may not always be the tallest or most damaging.

One reason tsunamis are so dangerous is because they often begin far away from the land that they impact. Extremely powerful tsunamis can maintain their energy to impact and cause damage hundreds or thousands of miles away. The tsunami generated by the Indian Ocean earthquake in 2004, for example, caused damage in California, 8,000 miles from its point of origin (NOAA 2014).

Location and Extent

Coastal Flooding and Storms: Any part of Seal Beach's coast is subject to flooding and storms. No part is safe from the effects of the intense rainfall or wind. The storms that cause coastal flooding are not measured on any particular scale.

Erosion: Though all of Seal Beach's coastline is at risk of erosion, the southeastern neighborhood of "Surfside" has suffered considerably from erosion since the beginning of the 20th century. Public works projects—e.g., the concrete channelization of the San Gabriel River, the construction of the jetties, the installation of the Naval Weapons Station—have reduced the amount of sediment reaching Surfside's beach. This reduced rate of sand replenishment has increased the rate of erosion (CDBW 2002).

Sea Level Rise: All of Seal Beach's coastal areas are at risk of sea level rise. Buildings and facilities in the downtown area and in the Surfside community may also be exposed to sea level rise in the future. **Figure 3-1** depicts the areas of the City that would be inundated by 24 inches of sea level rise, expected by 2050. **Figure 3-2** depicts the areas of the City that would be inundated by 60 inches of sea level rise, expected by 2100.

Tsunami: All beaches in Seal Beach could be inundated by a tsunami. In the coastal areas near downtown and the pier, the water from a tsunami could reach as far inland as Pacific Coast Highway. A tsunami could also travel up the San Gabriel River as far as the interchange between I-605, I-405, and SR-22 or travel through Anaheim Bay into the Bolsa Chica Channel as far as Rancho Road (California Department of Conservation 2009a, 2009b). **Figure 3-3** depicts the tsunami inundation hazard areas for the City.

[2] Tsunamis are sometimes incorrectly called tidal waves, but a tidal wave is a different type of event. Tsunamis are not caused by tides.

Past Events

Coastal Flooding and Storms: Coastal flooding caused by storms most recently impacted Seal Beach during the winter of 2016–2017. Multiple strong storms overwhelmed the City's pumps in Old Town, and the strong storms uprooted trees and caused power outages (Vega 2017). A series of intense winter storms in December 2010 eroded the City's beach. A major storm in the autumn of 2004 caused flooding three feet deep at homes near Anaheim Landing (Mena 2004). A storm in 1939 caused high winds and powerful waves that destroyed the Seal Beach pier (Grad 2016) A powerful El Niño in 1983 wiped out the Seal Beach pier again and another storm in 1988 caused $5.6 million of damage to coastline of Orange County (Strong 1993).

Erosion: Coastal erosion has been a problem for residents of Surfside and Anaheim Bay since the mid-20th century, when beach nourishment programs were first put in place. Typically, replenishment volumes range between 60,000 to 100,000 cubic volumes of sand (CDBW 2002). However, there have also been some significant erosion events in the past. For example, strong storms and rainfall during the winter of 2016–2017 caused significant erosion at Seal Beach (Connelly 2016).

Sea Level Rise: Water level gauges have continuously monitored sea level rise in southern California since the 1920s. The Port of Los Angeles has experienced a sea level rise of approximately 1 millimeter per year, or slightly less than 4 inches in 100 years (NOAA 2017). Although no specific hazard event in Southern California has ever been definitively caused by sea level rise, it is suspected that it has exacerbated coastal flood events.

The washed out Seal Beach pier following the storms of the 1983 El Niño. Image from Michael Dobkins.

Figure 3-1: 2-Foot Sea Level Rise Hazard Zones

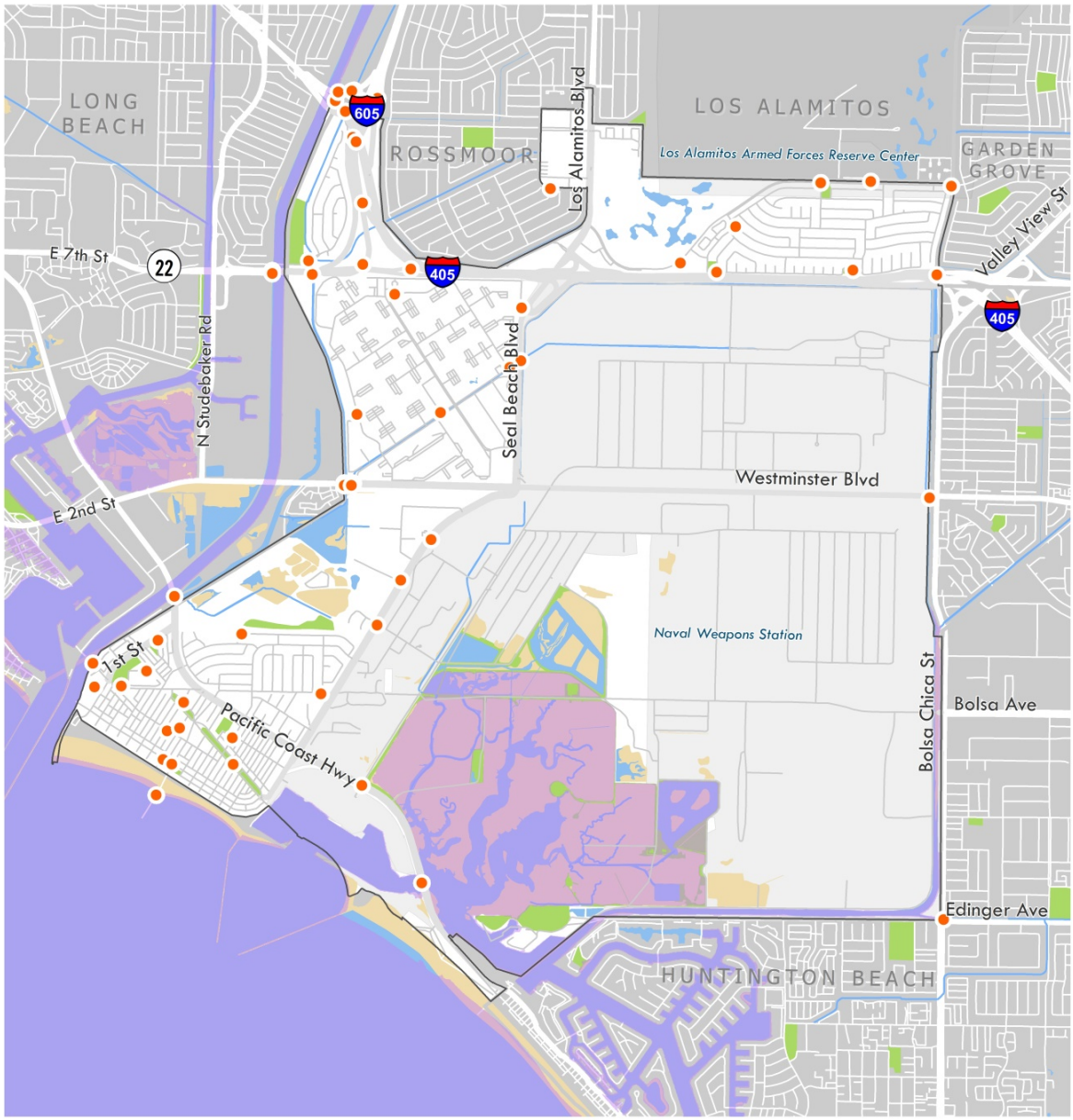
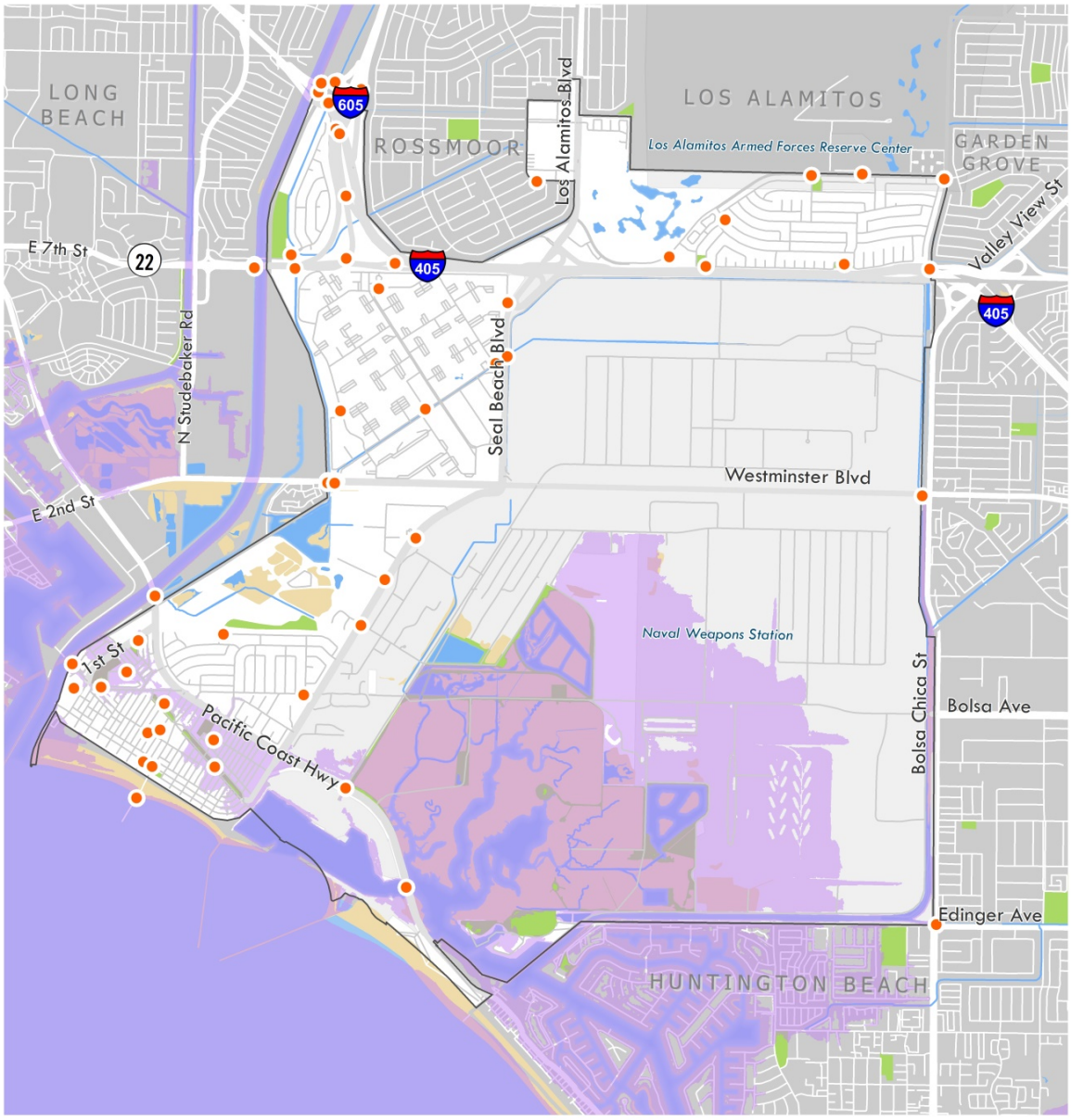


Figure 3-2: 5-Foot Sea Level Rise Hazard Zones



Predicted 2100 Sea Level Rise (5 feet)

- Critical Facility
- Sea Level Rise (5 Feet)

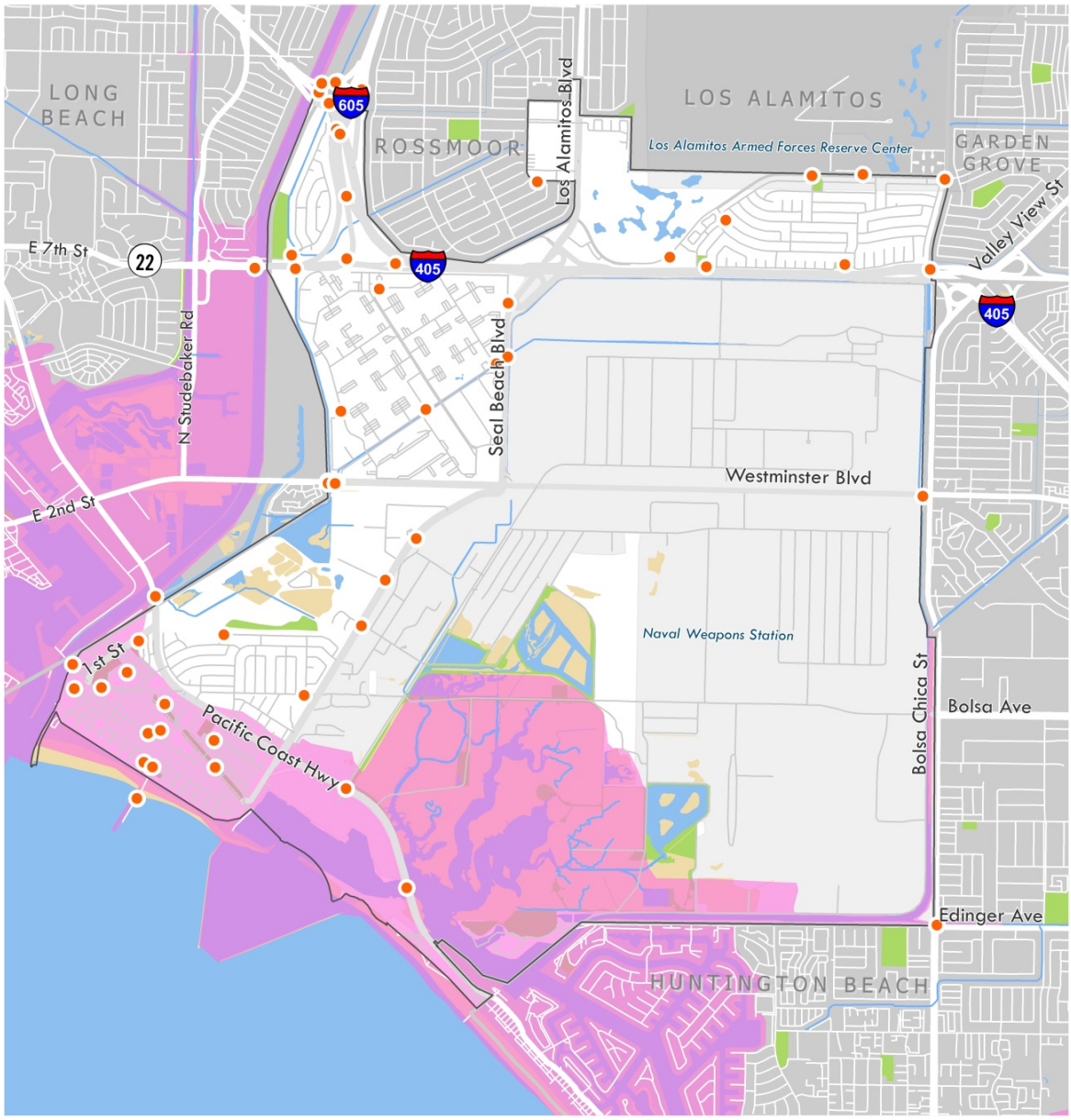
0 0.125 0.25 0.5 Mi

Data Source: California Geological Survey, U.S. FWS, Caltrans, Conservation Biology Institute, LAFCO, NOAA

Map created by Placeworks. Date: 8/13/2018.

City of Seal Beach
Local Hazard Mitigation Plan

Figure 3-3: Tsunami Hazard Zones



Tsunami: Tsunami events have affected Seal Beach in the past. In these cases, the tsunami event's point of origin was located thousands of miles away but the waves were powerful enough to make landfall in Seal Beach. In most recorded cases, little to no damage was incurred. Examples of tsunami events include the 2015 Chile earthquake, 2011 Tōhoku earthquake in Japan, the 2004 Indian Ocean earthquake, the 1964 earthquake in Alaska, and the 1960 earthquake in Chile. Some recent tsunami events have resulted in beach closures in Seal Beach as a precaution (Schwebke 2015). While the City has not suffered direct damage, past tsunamis have resulted in damage elsewhere in California.

The Northern California community of Crescent City suffered damage from the tsunami triggered by the 2011 Tōhoku earthquake close to 4,500 miles away. Image from the California Department of Fish and Wildlife.

Risk of Future Events

Coastal Flooding and Storms: All expectations are that coastal flooding and the storms associated with them will continue to affect Seal Beach. While storm strength and event details vary based on global weather patterns, the atmospheric rivers and ENSO that empower storms are expected to continue long into the future.

Erosion: All indications are that coastal erosion will continue to be a problem in Seal Beach. Without human intervention, nearly 67 percent of all existing Southern California beaches and coastline are predicted to completely erode by 2100 (USGS 2016). Future erosion is contingent upon a number of factors, including sea level rise, the frequency and intensity of storms, and the drainage practices of beachside development.

Sea Level Rise: As warmer global temperatures continue to melt the world's ice, the rate at which the surface of the ocean rises is expected to accelerate.

Sea levels could increase up to one foot above historic levels by 2030, two feet by 2050, and five feet by 2100. Most of Seal Beach is projected to be unaffected until the sea level rises five feet or more. At this level, many areas of the City could be permanently or semi-permanently under water, including the Naval Weapons Station, National Wildlife Refuge, Leisure World, and residential areas around Old Town Seal Beach (Climate Central 2017). These dates represent best estimates, but sea level rise could reach and surpass these elevations even sooner if unforeseen circumstances cause the climate to warm faster than originally expected.

Tsunami: It is impossible to predict when and where tsunamis will be triggered. In the case of meteotsunamis, the weather events that lead to them could potentially be predicted, but they are very rare, and there is no accurate means of forecasting meteotsunamis at this time (Vilibić et al. 2016).

The most damaging tsunamis are usually set off by earthquakes at an off-shore fault called a subduction zone. Earthquakes at these faults cause the ocean floor to move up or down along the fault boundary, causing a large vertical displacement of water that can become a major tsunami. Most of California lacks these subduction zones, so the chance of a major tsunami being triggered by a local event is remote, but not impossible. It is far more likely that any future tsunamis impacting Seal Beach will be triggered by distant subduction zones. Local offshore faults are not known to cause the large vertical displacements of a subduction zone, although they could cause more moderate tsunamis (USGS 2013; Oskin 2014a).

Climate Change Considerations

Coastal Flooding and Storms: Climate change will likely enhance the power of atmospheric rivers, bringing more intense storms to Seal Beach and more incidents of flooding. Some recent studies suggest that the average atmospheric-river-transported storm could become 10 to 20 percent more powerful by 2100, though the number of such storms in Southern California is not projected to change (Oskin 2014b). With regard to the ENSO cycle, it remains unclear as to how exactly climate change could impact storms generated by El Niño. A 2014 study suggests that extreme warm cycles could eventually occur at 10-year intervals rather than the current 20-year cycle, which would likely lead to more storms and incidents of coastal flooding in Seal Beach. However, some research suggests that the ENSO cycle could become less potent, and others speculate that the ENSO cycle will not be affected in any substantial way (Cho 2016). Therefore, it is impossible to say with certainty how the ENSO cycle will behave in the future with regard to the storms and coastal flooding it causes in Seal Beach.

Erosion: Climate change will intensify erosion in Seal Beach. All the main causes of erosion, such as wind, storms, flooding, and precipitation, will be empowered by climate change (Oskin 2014b).

Sea Level Rise: Climate change is the primary driver of contemporary sea level rise. Without climate change, it is highly unlikely that sea level rise would pose a threat to coastal areas like Seal Beach in the near or even long-term future. Sea level rise induced by climate change will lead to and intensify other hazards, including erosion, coastal flooding, and tsunamis.

Beaches in Seal Beach and across Southern California will be reduced in size as climate change accelerates. Image from Flickr

Tsunami: Since most tsunamis are caused by seismic events, climate change will not likely increase the likelihood of a tsunami. On the other hand, meteotsunamis could become more frequent as climate change impacts local weather patterns. Because these kinds of tsunamis are already so rare, however, it is difficult to know exactly how climate change and the conditions that create meteotsunamis will interact. Apart from this, climate change will likely intensify the impact of tsunamis since higher sea levels will allow tsunamis to reach and inundate farther inland.

Tree Mortality

The death of trees is not a direct cause of coastal inundation events, but trees and other vegetation can diminish the severity of certain coastal inundation hazards. Trees help shore up and strengthen the surrounding land, making it less susceptible to erosion. Even in coastal environments, with silt or sand, trees and vegetation still reduce erosion (FAO 2006). Coasts and beaches with less erosion are likely to be less impacted by coastal flooding events (Del Mar 2017).

Tree mortality can be impacted by coastal inundation hazards. Coastal flooding and storms will harm trees in Seal Beach if they are in any of the designated 100-year floodplains. However, 100-year storms are so rare that trees are not likely to be affected by this hazard. Coastal erosion is not likely to affect any trees since there are few trees planted on the beaches where erosion occurs. Sea level rise will most certainly impact tree health in coastal areas. Any trees planted in areas projected to be under water by a certain year will perish without human intervention. Tsunamis can inundate coastal areas in Seal Beach, affecting any specimens within the tsunami inundation zone. In this situation, trees may also endanger public safety if they are uprooted and propelled toward inhabited areas of Seal Beach.

EXTREME WEATHER

For the purposes of this plan, the Extreme Weather hazard group includes drought, flood (dam/levee), and severe weather (wind, heat, tornadoes/water spouts). The severe weather hazard is also related to hazards in the Coastal Inundation group, but it is included in this section because severe weather affects all of Seal Beach, not just the coastal areas. The floods in this section are also distinct from the coastal flooding described above since they are caused by the failure of infrastructure, such as flood control channels, storm drains, or pumps, rather than by natural causes alone.

Description

Drought: Droughts are periods when substantially less water is available than normal as a result of significantly less precipitation. Agricultural and natural areas are particularly susceptible to drought, but urban spaces can also be affected. Landscapes in homes, parks, and businesses can be adversely affected if plants do not receive enough water. In the case of exceptional droughts, human health can be endangered when there is not enough water to meet basic needs.

Droughts in other parts of the state could reduce the amount of water Seal Beach is able to import. Image from Chris "Maven" Austin.

Also, droughts cause soils to dry out, which reduces their permeability and may indirectly cause flooding because more water runs off. Drier soils have a higher likelihood of erosion or becoming part of a landslide. Droughts also dry out plants and vegetation, which increases their likelihood of being attacked by a disease or pests.

Flood: Floods occur when the amount of water on a normally dry section of land exceeds the ground's absorption rate. Flooding results from rainfall—either an extremely intense storm event or a protracted

series of storms. The intense influx of water can cause rivers, lakes, and other bodies of water to become engorged and overflow their embankments and can overburden storm drains, pumps, and other flood control infrastructure. Low-lying areas are susceptible to "ponding," when improper drainage causes water to collect and sit.

Some types of flooding are unique to coastal areas. Intense storms often create large waves or strong winds that drive ocean water onto beaches and into low-lying coastal lands. This kind of flooding is discussed in more detail in the Coastal Inundation hazards group.

Severe Weather: Severe weather includes wind, extreme heat, and tornadoes or water spouts. Winds occur due to pressure differences in the atmosphere. Air from higher pressure areas moves into lower pressure areas to create equilibrium. The wind's speed depends on the magnitude of the pressure difference. Generally, these pressure differences are not very large, so winds move slowly, but they can take on great speed and force when the difference in air pressure is great.

The minimum threshold for destructive wind speed is 47 mph or higher, though slightly slower wind speeds can also cause some damage. Winds can cause property damage such as shorn roof shingles, siding, or toppled fences. Stronger winds can blow over vehicles, trees, or utility lines. Extremely powerful winds can fling large pieces of debris, which are especially dangerous to people outside.

A tornado is an extreme wind event that consists of a column of wind rotating at high speeds. They are infamous for the paths of devastation they carve across landscapes, but they are not common in California. A more common wind hazard is a "katabatic wind," which carries high-density air downslope due to gravity. The hot, dry, Santa Ana winds are a local example of a katabatic wind. Downbursts, microbursts, and derechos are wind events that are associated with thunderstorms and can travel almost as fast as tornado winds.

Extreme heat events are when temperatures are much higher than normal. There is no universally agreed-upon definition for an extreme heat event since climatic norms vary by area. In California, an extreme heat day usually refers to a day in which the maximum temperature exceeds 98 percent of all other recorded temperature maximums (Cal EPA and CDPH 2013). In Seal Beach, the extreme heat threshold is approximately 96 F°. A heat wave is a series of extreme heat days one after the other.

It is important to note that heat events are not solely the result of high temperatures because humidity can make temperatures feel dramatically hotter than they are. This perceived temperature is called the "heat index." For example, a 90°F temperature at 90 percent humidity feels like 113°F (NWS 2018). **Figure 3-4** identifies NOAA's National Weather Service Heat Index. Extreme heat is dangerous to humans and other animals. Fatigue can set in with a heat index as low as 80°F, and long exposure can lead to heat exhaustion. Extreme heat can lead to heatstroke when internal body temperatures exceed 105°F. Without intervention, people experiencing heatstroke risk organ failure and even death. Vulnerable populations, such as the elderly, are susceptible to extreme heat, as is anyone who spends long periods outdoors.

Location and Extent

Drought: Most droughts in California are regional events, so when they do occur, large sections of the state can be affected. In a drought, all parts of Seal Beach will be affected, though some parts may feel the impacts less given geographic differences. Some of Seal Beach's water supply comes from regional sources. When a drought impacts any of these areas, the City can experience a "long-distance" drought. However, most of Seal Beach's water comes from local sources, and the likelihood that the City will be impacted by such an event is low.

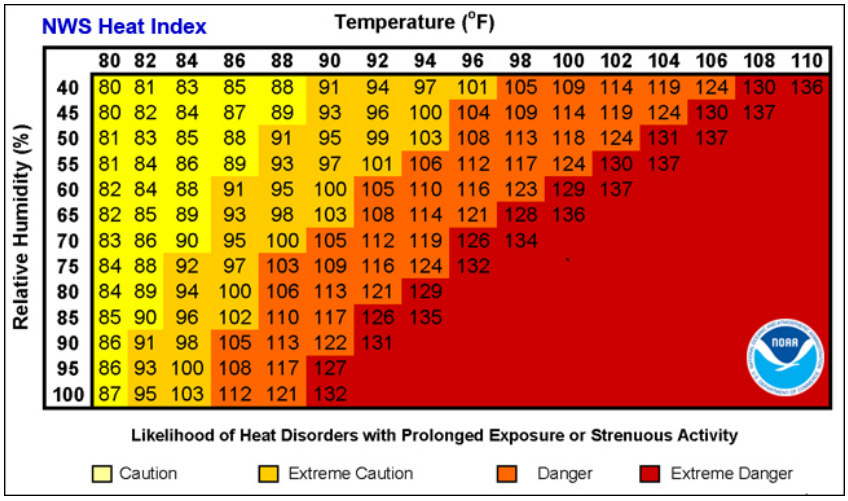


Figure 3-4: NOAA Heat Index

There are numerous scales for measuring drought conditions, although one of the most common is the US Drought Monitor Classification Scheme. This rating system is a synthesis of multiple scales into a descriptive index, as shown in **Table 3-4**.

TABLE 3-4: US DROUGHT MONITOR CLASSIFICATION SCHEME

Category	Description	Possible Impacts
D0*	Abnormally dry	Slower growth of crops and pastures.
D1	Moderate drought	Some damage to crops and pastures. Water bodies and wells are low. Some water shortages may occur or may be imminent. Voluntary water use restrictions can be requested.
D2	Severe drought	Likely crop and pasture losses. Water shortages are common, and water restrictions can be imposed.
D3	Extreme drought	Major crop and pasture losses. Widespread water shortages and restrictions.
D4	Exceptional drought	Exceptional and widespread crop and pasture losses. Emergency water shortages develop.

Source: US Drought Monitor 2017a.

* D0 areas are those under "drought watch" but not technically in a drought. They are potentially heading into drought conditions or recovering from drought but not yet back to normal.

Flood: Flooding is measured by the likelihood of its occurrence and severity. A 100-year flood is an extreme flood that has a 1 percent change of occurring (or 1 in 100) in any given year. A 500-year flood has a 0.2 percent change of occurring (1 in 500) in any given year. Since 100-year flood events are more common, they are used as the benchmark for major flood events and are called "base floods." A 100-year flood does not mean that such an event occurs only once a century. It is possible—though unlikely—to have multiple 100-year floods consecutively.

Floodplains are areas that are frequently subject to flooding. A 100-year floodplain means the area has a chance of being inundated by a 100-year flood. A 500-year floodplain has a chance of being inundated by a 500-year flood. FEMA is the federal body in charge of managing floodplains and uses its own designation system. Generally, a 100-year floodplain is a "special flood hazard area"; a 500-year floodplain (not including overlaps with 100-year floodplains) is a "moderate flood hazard area"; and any area not in a 100- or 500-year floodplain is a "minimum flood hazard area." FEMA uses a more detailed categorization to describe floodplains with fine-grain differences. **Table 3-5** shows these detailed floodplain categories.

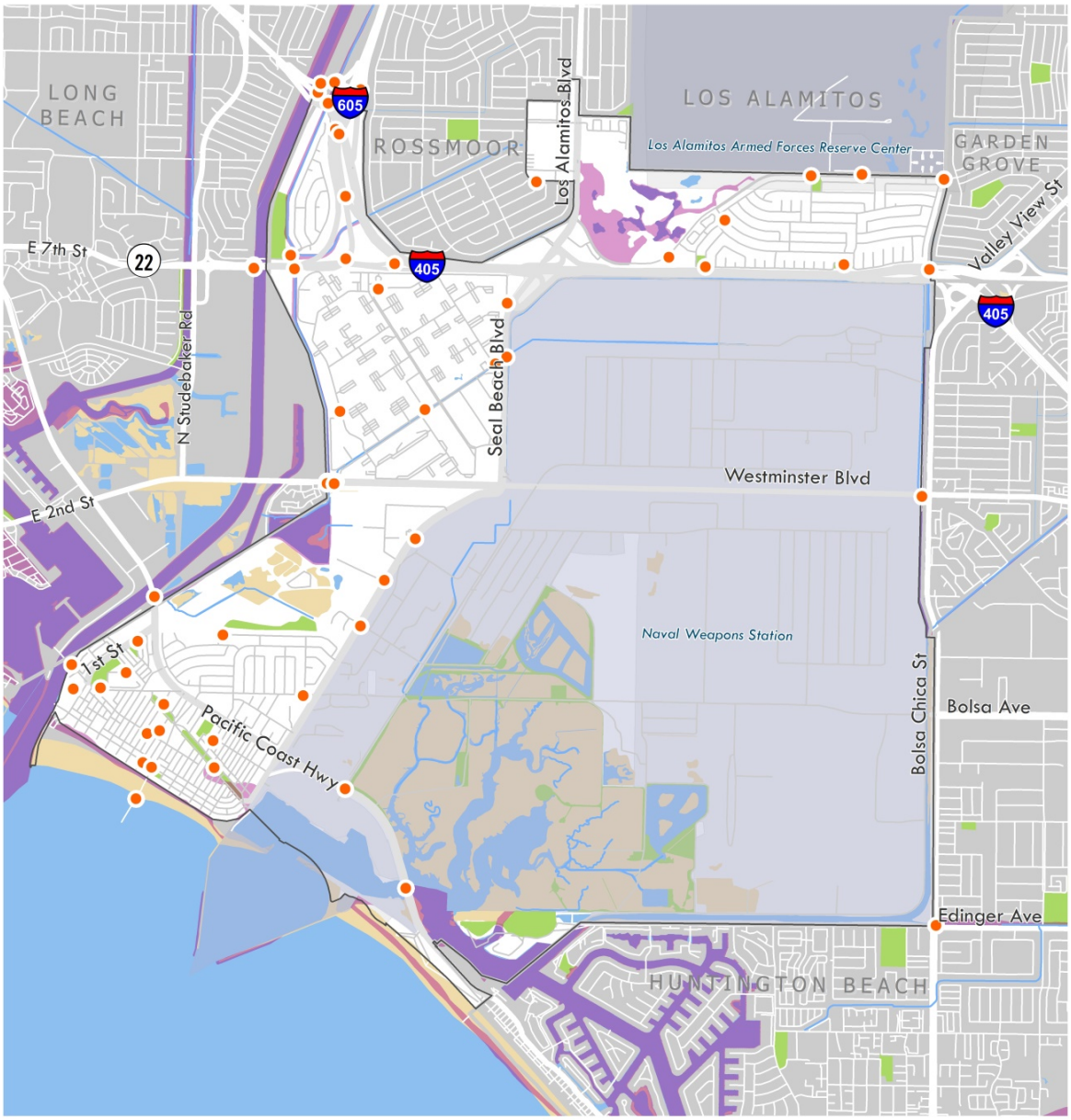
TABLE 3-5: FEMA FLOOD PLAIN CATEGORIES

Category	Description
A	Within a 100-year flood plain, but the water height of the 100-year flood is not known.
A1-30 or AE	Within a 100-year flood plain and the water height of the 100-year flood is known.
AO	Within a 100-year flood plain, and the water height of the 100-year flood is between one and three feet but not specifically known.
A99	Within a 100-year flood plain, protected by flood protection infrastructure such as dams or levees.
AH	Within a 100-year flood plain, and the water height of the 100-year flood is between one and three feet and is specifically known.
AR	Within a 100-year flood plain, protected by flood protection infrastructure that is not currently effective, but is being rebuilt to provide protection.
V	Within a 100-year flood plain for coastal floods, but the water height of the flood is not known.
V1-30 or VE	Within a 100-year flood plain for coastal floods and the water height of the flood is known.
VO	Within a 100-year flood plain for shallow coastal floods with a height between one and three feet.
B	Within a 500-year flood plain, or within a 100-year flood plain with a water height less than one foot (on older maps)
C	Outside of the 500-year flood plain (on older maps)
X	Outside of the 500-year flood plain (on newer maps)
X500	Within a 500-year flood plain, or within a 100-year flood plain with a water height less than one foot (on newer maps)
D	Within an area with a potential and undetermined flood hazard.
M	Within an area at risk of mudslides from a 100-year flood event.
N	Within an area at risk of mudslides from a 500-year flood event.
P	Within an area at risk of mudslides from a potential and undetermined flood event.
E	Within an area at risk of erosion from a 100-year flood event.

Source: CFR 2016.

The majority of Seal Beach is considered by FEMA to be within a Zone "X", or in an area with reduced flood risk due to its elevation or levee protection. There are five main areas of the city that FEMA mapped as being at risk of flooding during a 100-year event. These include a residential area next to Anaheim Landing, the beachfront near Old Town, the Los Alamitos Retarding Basin, sections of the Old Ranch Country Club, and potentially the Naval Weapons Station. **Figure 3-5** shows the map of areas in Seal Beach that are at risk of inundation during a 100- or 500-year flood hazard event.

Figure 3-5: FEMA Flood Hazard Map



Severe Weather: Severe winds can occur anywhere in Seal Beach. Winds are commonly measured with the Beaufort Scale, developed in 1805. It is based on wind speed and observed effects and uses a scale from 0 to 12. Wind speeds that reach a 9 (severe gale) or above are generally considered intense and a potential hazard. **Table 3-6** shows the Beaufort Scale.

TABLE 3-6: BEAUFORT SCALE

Force	Speed (mph)	Description
0	0 to 1	Calm: Smoke rises vertically and the sea is flat
1	1 to 3	Light air: The direction of wind is shown by smoke drift, but not wind vanes.
2	4 to 7	Light breeze: Wind is felt on the face, leaves rustle, and wind vanes are moved. Small wavelets appear on the ocean, but do not break.
3	8 to 12	Gentle breeze: Leaves and small twigs are in motion, and light flags are extended. Large wavelets appear on the ocean and crests begin to break.
4	13 to 18	Moderate breeze: Dust and loose paper become airborne, and small branches are moved. Small waves appear on the ocean.
5	19 to 24	Fresh breeze: Small trees begin to sway and moderate waves form.
6	25 to 31	Strong breeze: Large branches are in motion, and using an umbrella becomes difficult. Large waves begin to form.
7	32 to 38	Near gale: Whole trees are in motion, and walking against the wind can be hard. Foam from breaking waves is blown in streaks.
8	39 to 46	Gale: Walking is difficult and twigs break off trees.
9	47 to 54	Severe gale: Slight structural damage. Crests of waves begin to topple.
10	55 to 63	Storm: Trees are uprooted and considerable damage to structures. Very high waves form in long, overhanging crests.
11	63 to 72	Violent storm: Widespread damage. Exceptionally high waves form, and the ocean is completely covered in foam.
12	73 and above	Hurricane: Devastating damage. On the ocean, the air is filled with foam and spray.

Source: NWS 2017.

The Beaufort Scale is generally insufficient for measuring extremely strong winds. Such events are rare in Seal Beach because they are usually associated with events such as hurricanes and tornadoes, which are rare in the community. Hurricane-force winds are commonly measured with the Saffir-Simpson Hurricane Wind Scale, which can also be used for strong winds independent of hurricane events. **Table 3-7** shows this system of wind measurement.

TABLE 3-7: SAFFIR-SIMPSON HURRICANE WIND SCALE

Category	Speed (mph)	Description
1	74 to 95	Very dangerous winds produce some damage, including to home roof and sidings. Large branches of trees snap and shallow-rooted trees may be toppled.
2	96 to 110	Extremely dangerous winds produce extensive damage, including major damage to home roofs and sidings. Many shallow-rooted trees are uprooted. Power lines are mostly or completely knocked down.
3	111 to 129	Devastating damage. Well-built framed homes can suffer major damage. Many trees are snapped or uprooted.
4	130 to 156	Catastrophic damage. Homes suffer the loss of most of the roof and/or some exterior walls. Most trees are snapped or uprooted.
5	157 and above	A high percentage of homes are destroyed.

Source: NOAA 2017c.

Tornadoes are measured using a separate scale, called the Enhanced Fujita (EF) scale. Rather than measuring the actual wind speed, the EF scale uses estimates of wind speeds as determined by observed damage. **Table 3-8** shows the EF scale.

TABLE 3-8: ENHANCED FUJITA SCALE

Rating	Speed (mph)	Description
EF0	65 to 85	Light damage: There is some damage to chimneys, branches are broken off trees, and shallow-rooted trees fall. Signboards damaged.
EF1	86 to 110	Moderate damage: Surfaces are peeled off roofs, and moving vehicles are blown off roads. Mobile homes are pushed off foundations or overturned.
EF2	111 to 135	Considerable damage: Mobile homes are demolished, and roofs are torn off framed houses. Large trees are snapped or uprooted, and light objects become missiles. Cars are lifted off the ground.
EF3	136 to 165	Severe damage: Roofs and some walls are torn off well-constructed houses. Trains are overturned, and most trees in forests are uprooted. Heavy cars are lifted and thrown.
EF4	166 to 200	Devastating damage: Well-constructed houses are leveled, and structures with weak foundations are blown away. Cars are thrown, and large objects become missiles.
EF5	201 and above	Incredible damage: Strong frame houses are leveled and blown away. Vehicle-sized objects are thrown over 300 feet. Bark is stripped off trees, and incredible phenomena occur.

Source: NOAA 2006a, 2006b.

Extreme heat events can occur with equal severity anywhere in Seal Beach. No one part of the city is more or less at risk of extreme heat.

Past Events

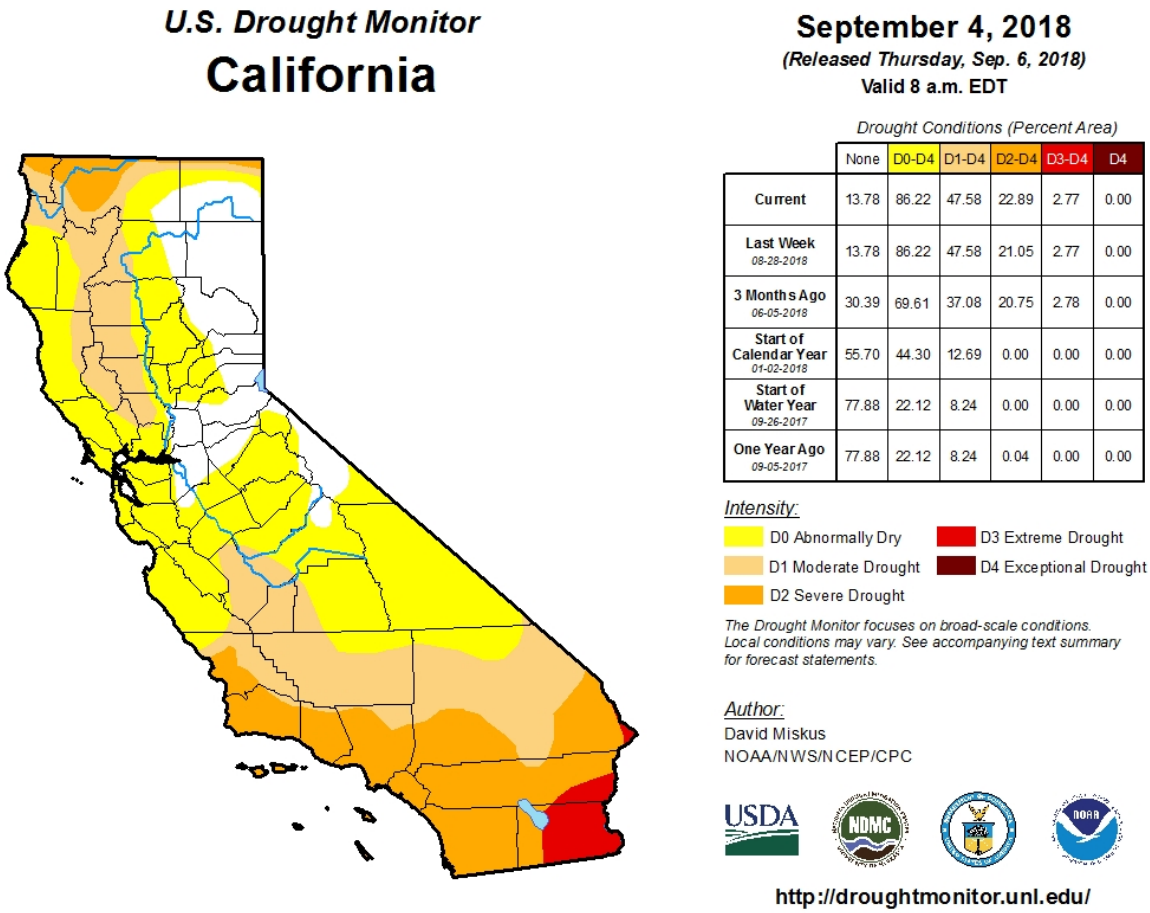
Drought: California's history is replete with periods of drought. The first major drought of note was the "Great Drought" of 1863–1864, which caused serious economic harm to California's then-burgeoning ranching industry when drought killed a large number of cattle. Droughts from 1928 to 1935, known as

the “Dustbowl Droughts,” caused massive damage to the state’s agricultural sector, which propelled California’s leadership into pursuing more secure water supplies, setting the groundwork for the State Water Project. Other major droughts of note were in 1947 to 1950, 1959 to 1960, 1976 to 1977, 1987 to 1992, and 2007 to 2009 (Kotin and Marion 2014; DWR 2015).

California’s most severe drought in the past 1,200 years was between 2012 to 2017 (Griffin and Achukaitis 2014). During the height of this drought event, nearly the entire state was experiencing D2 (severe drought) conditions, and more than half of California was under D4 (exceptional drought) conditions (US Drought Monitor 2014). During this drought, Seal Beach experienced D4 conditions from July 2014 until December of 2016. The drought drew a statewide response in which water use was severely restricted. Some of these restrictions have remained in effect even after the drought ended with the heavy rainfall in the winter of 2016–2017.

As of September 2018, approximately 86 percent of California is experiencing some type of drought condition with approximately 48 percent in a state of D1 (moderate drought) conditions or worse, though no part of the state is experiencing D4 (exceptional drought) conditions. Only the areas around the Sacramento Delta, the northern Sierra Nevada Mountains, Lake Tahoe, and northeastern California lack any sort of drought advisories. All of Orange County, including Seal Beach, is currently experiencing D2 (severe drought) conditions. **Figure 3-6** shows statewide drought conditions as of July 31, 2018.

Figure 3-6: Statewide Drought Conditions, July 31, 2018



Flood*:* Floods are a frequent event in California and in the history of Seal Beach.

- In mid-April, 1988, all of Southern California, including Seal Beach, was impacted with heavy rainfall that caused flooding of streets in San Diego, Orange, and Los Angeles counties.
- In early January, 1995, Seal Beach, along with other cities in Southern California, was inundated with flash flooding.
- In early January, 2001, Southern California coastal areas were affected by heavy rainfall. Depending on the area, between two to four inches of rain fell within two days. This caused flash flooding in Orange County cities, including Seal Beach.
- In December 13, 2012, heavy rains fell across Southern California. Between one to two inches of rain fell during one day causing flooding on Pacific Coast Highway through Seal Beach as well as damage to some garages. (NOAA 2010)

Severe Weather:

- In December of 1997, all of Southern California was inundated with heavy rains, which caused flooding on several local road networks. Orange County cities to the north of Seal Beach were inundated with a foot-deep layer of hail.
- On February 24, 1998, all of Southern California, including Seal Beach, was affected by a powerful El Niño storm with rains which overwhelmed reservoir capacity and caused flooding in some areas. Powerful gusts blowing more than 40 mph blew over trees and disabled electrical utility lines. All four counties of Los Angeles, Orange, San Bernardino, and San Diego were declared national emergency zones by President Clinton.
- On December 6, 1998, a series of powerful electrical storms rolled through Orange County, including Seal Beach. The storm blew trees onto property and power lines. Nearly 80 residences were damaged, several vehicles were crushed, and more than 18,000 residents were left without electricity.
- Between 1995 and 2005, there was an average of three extreme heat days per year in Seal Beach. While no local data is available, Seal Beach has a climate similar to neighboring Long Beach, which has an annual average maximum temperature of 74 degrees. Thus, extreme heat days are rare in the region.
- In 2010, a tornado and several water spouts bombarded coastal Orange County cities, including Seal Beach. No fatalities were reported but property damage was incurred to docks and private vessels. Wind speeds reached up to 93 mph in adjacent Huntington Beach. (NOAA 2010, 2018)
- In February 2017, heavy rains impacted Seal Beach that caused flooding along beachfront residences, overwhelming the capacity of City-owned pumps.

(Cota-Robles 2017; NOAA 2010, 2018; WRCC 2008)

Risk of Future Events

Drought: Given Southern California's semiarid climate and history of water shortages, droughts will almost certainly continue to impact Seal Beach, though it is impossible to predict exactly how long or how severe they will be. Since the majority of Seal Beach's water supply comes from local sources, however, "long-distance" droughts will be unlikely to dramatically affect the City. If droughts affect local water sources, such as the groundwater that Seal Beach relies upon, the City could be in more serious danger of having its water supply reduced. Should Seal Beach acquire access to more sources of recycled water, the City's resilience to future drought events will be further increased. In any case, short-term droughts will not likely have any significant impact, but longer-term droughts, such as the recent drought from 2012 to 2017, will most assuredly affect the City.

Flood: The portions of Seal Beach that are on FEMA's 100-year floodplain map are almost certain to flood sometime in the future. In the case of unprecedented rainfall, human error resulting in the failure of flood control infrastructure, or a combination of the two, other areas could be subject to flooding as

well. It is impossible to eliminate human error in the operation and maintenance of the pumps, retention basins, channels, or dams that hold back floodwaters—even if the City and its regional partners refine their training and operational procedures to reduce room for error or automate certain tasks. It is more feasible to forecast the weather events that bring major rainfall to Seal Beach. Neither is it possible to predict with exactitude the length or severity of major rainfall events, but City staff can know when they are likely to occur and which areas of the City should be prepared.

The City's flood control channels and drainage systems will help reduce the risk of flooding but there will likely be scenarios when existing infrastructure will be overwhelmed by certain exceptional events. Most of the storm drains in Seal Beach are built to handle a 25-year flood and could be overwhelmed in more severe events, leading to ponding. The San Gabriel River is designed to handle water discharge resulting from a 100-year storm event, with a capacity of 55,000 cubic feet per second, but more extreme storms or debris washed into the flood channel may overwhelm the river. The Seal Beach Pump Station at Seal Beach Boulevard and Electric Way is currently designed to handle water discharge of 381 cfs, which is just below the estimated minimum capacity required to hold the flow of a 25-year storm (403 cfs) (Seal Beach 2003). The City has identified the need to improve its flood management capacity, but until funding is secured, Seal Beach remains at great risk of being overwhelmed by flooding from extreme storms (Seal Beach 2003).

Severe Weather: High wind events will almost certainly continue in Seal Beach. Storms and Santa Ana winds will be the most common type of wind events in the City, and tornadoes and/or water spouts will occur, though on a rare basis. Extreme heat events will continue but only rarely as well.

Climate Change Considerations

Drought: Droughts are anticipated to become more frequent, long, and severe as climate change accelerates. This translates to drier landscapes and, by extension, higher potential for fire. More intense droughts will also lead to heightened risks of flooding and erosion, since dry ground does not absorb water very well. A reduction in surface water supplies often leads to increased groundwater pumping. This could lead to hazards not known in Seal Beach at this time, such as subsidence.

Flood: The atmospheric rivers that transport flood-causing storms to Seal Beach will be empowered by climate change—they are expected to become 10 to 20 percent more intense by 2100 (Oskin 2014b). Potentially, this could lead to an increase in the number and severity of flooding events in the city since more storms will likely have sufficient intensity to cause flooding, and all atmospheric-river storms are expected to be more intense.

The intensification of drought due to climate change will also likely lead to more intense flood events. Dry ground does not absorb water very well, which may increase ponding and runoff.

Severe Weather: Extreme heat events will almost certainly become more intense under climate change, which is the primary driver behind increases in temperatures worldwide. As the average temperature increases, the maximum threshold for extreme heat events in Seal Beach will also increase. Specifically, the average number of extreme heat days (97.3°F or above) was 4.2 in the second half of the 20th century. Between 2070 and 2099, the average number of extreme heat days in Seal Beach is expected to increase to 10 or even 19 in some extreme models (Cal-Adapt). The higher temperatures associated with climate change are likely to make wind events, like the Santa Ana winds, more hot and dry (Fountain 2017). Tornadoes and/or waterspouts may be more common due to an expected increase in the number of severe storms that generate these events, although they are expected to remain rare.

Climate change will cause the number of extreme heat days in Seal Beach to increase. Image from A.M. Solar.

Tree Mortality

Severe weather can adversely impact tree health. In droughts, trees may not get enough water, which can compromise their health or kill them. Extreme heat events can also harm trees, and drought can exacerbate their impacts. Flooding can also lead to tree death. Wind events can sever large branches or uproot smaller specimens or saplings. More powerful wind events can overturn large, mature trees as well.

All of these events can generate secondary impacts. For example, trees that are dried out or sickly as a result of drought or extreme heat can fall victim to pests. Trees that are uprooted or felled or whose branches are severed during wind, tornado, or flood events can create obstacles for first responders or for people trying to escape or obstruct critical evacuation routes, creating bottlenecks. During wind or tornado events, flying branches or other debris from trees can injure or even kill people caught outside without shelter.

FIRE

A fire hazard results when wildland or buildings within Seal Beach catch fire and threaten property or public safety. Fire hazards have been divided into two categories: Urban and Wildfire.

Description

Urban fires: Urban fires are fires that burn in developed areas of the city, affecting or destroying private homes, commercial properties, parks, or public facilities. Wildfires have the potential to turn into urban fires if their trajectory takes them close enough to developed urban areas.

Urban fires may start from a range of causes—such as downed power lines, a broken gas main, arson, poor disposal or management of toxic substances, or a lack of maintenance to wooden structures or facilities.

Wildfires: Fires that emerge in wildland, land that is undeveloped and features natural landscapes, are known as wildfires. Wildfires in remote areas pose very little risk to humans or property. Wildfires in the wildland-urban interface—that is, where developed areas are next to or within natural lands—are the most dangerous to human life. As urban sprawl continues into wildland areas and ever-increasing numbers of people move into the interface, wildfires become even more dangerous.

Wildfires have a number of sources, including arson, accidents, and lightning. Each wildfire event is unique but is generally influenced by the amount of available fuel, weather conditions, and geographic context. A wildfire's size is not necessarily an indication of how damaging it can be. For example, the 1991 Tunnel Fire in Oakland burned only 1,600 acres but was the second-most destructive fire in California history, destroying nearly 3,000 structures and killing 25 people (CAL FIRE 2016, 2017).

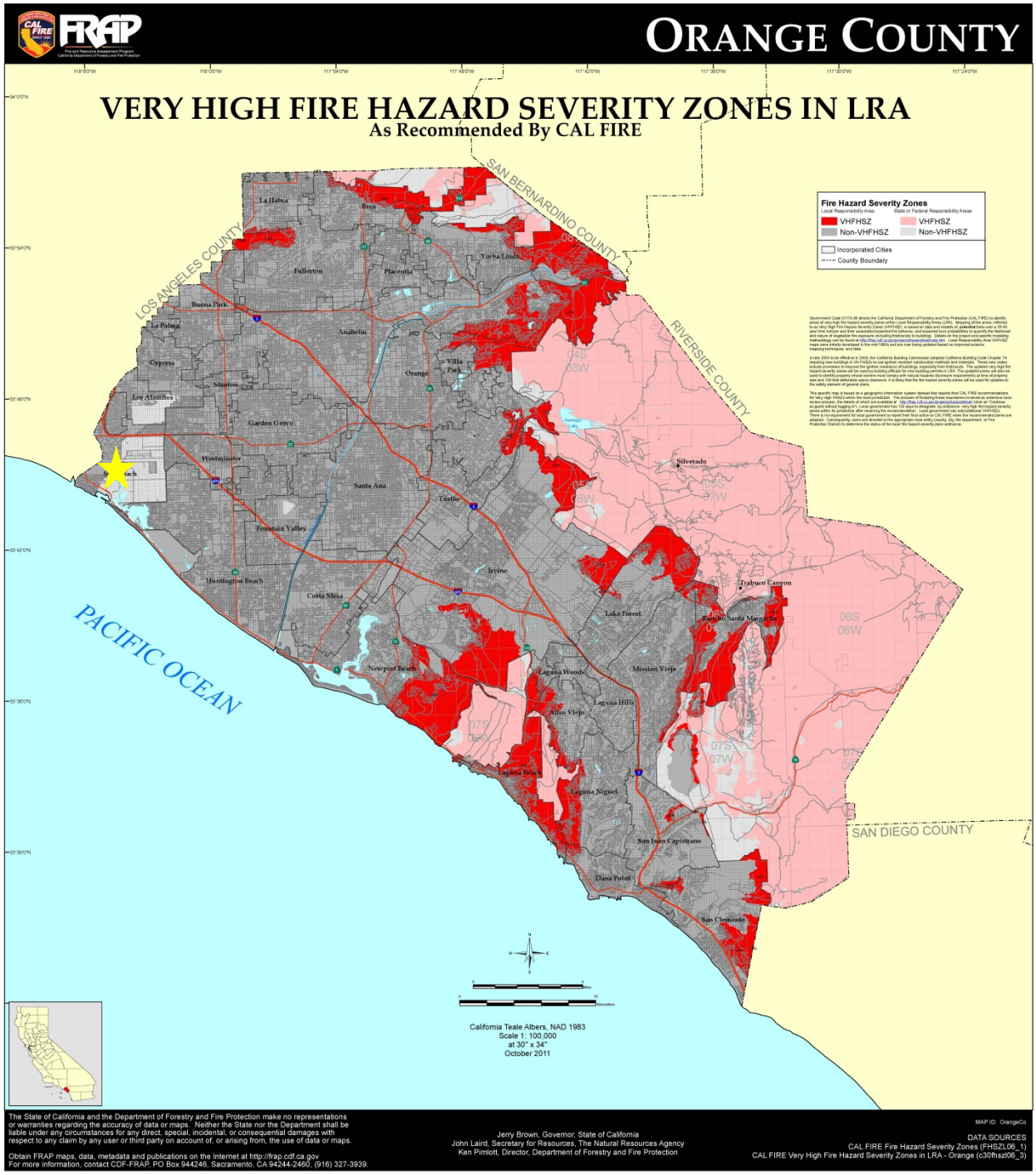
Location and Extent

Urban fires: The portions of Seal Beach's land that it controls are mostly developed. Any part of this developed land is subject to catching fire due to the risk of arson or malicious intent. Areas in the City that are located around infrastructure, such as power lines or gas transmission lines, may be subject to fire risk if that infrastructure is blown over or broken during a weather or seismic hazard. Additionally, areas of Seal Beach that feature predominantly wood-frame construction or any buildings with flammable materials may be more likely to catch fire. Gas stations, which are distributed throughout the city, may also be a source of urban fires.

Wildfires: Wildfire risk in California is evaluated on a three-tier scale based on fire hazard severity potential: very high, high, and moderate. The California Department of Forestry and Fire Protection (CAL FIRE) maps all areas in the state that could fall under any tier of this scale and divides these areas into zones. This Plan is concerned with the location of Very High Fire Hazard Severity Zones (VHFHSZs). Wildfire management is delegated to various levels of government depending on which agency has jurisdiction. Federal lands are classified as Federal Responsibility Areas (FRAs), state lands are classified as State Responsibility Areas (SRAs), and local governments are in charge of Local Responsibility Areas (LRAs).

While sections of Seal Beach may from time to time be susceptible to wildfire hazards, the City has no land that is currently classified as a VHFHSZ. Roughly half of Seal Beach is an LRA, and the other half falls under the jurisdiction of the federal government (CAL FIRE 2011). **Figure 3-7** depicts the VHFHSZs mapped throughout Orange County, with a star depicting the location of the City.

Figure 3-7: Very High Fire Hazard Severity Zones



Past Events

The Pier in Seal Beach has repeatedly caught fire. Image from Veronica Rocha and Joe Mozingo.

Urban fires: Seal Beach has experienced a number of small urban fires that were limited in their scope of damage. In January 2018, a second-alarm fire burned an under-construction home in Seal Beach. The fire caused a limited amount of damage to surrounding homes and to some vehicles parked at the house's rear. The cause of the fire was determined to be arson (CBS Los Angeles 2018). Leisure World has experienced fires multiple times in the last two decades. In 2017, a carport in the neighborhood caught fire. Although no homes burned and no fatalities or injuries occurred, the fire destroyed eight vehicles and caused an estimated $220,000 worth of damage (Fausto 2017). In May 2016, a man and his dog perished in an arson fire, with an additional $500,000 in property resulting from the blaze (Schwebke 2016). In 2014, five Leisure World homes were destroyed, and an estimated $1 million worth of property and structures were damaged (Casiano 2015). In 2004, a Leisure World home caught fire, causing nearly $120,000 worth of property damage (Dobruck 2014).

The Seal Beach Pier has also caught fire on numerous occasions. In 2016, the shell space of a shuttered Ruby's restaurant was destroyed due to an electrical fire. The pier was unaffected but the pier's edge where the restaurant was located was permanently closed to the public afterwards (Mozingo 2016). The pier also burned in 1994 and 1992. The 1994 fire was in the pier's midsection, cutting off access to the shore and trapping more than one hundred visitors on the other side, though there were no fatalities. Both fires were also caused by electrical problems (Reyes 1994).

Wildfires: Seal Beach does not have a history of wildfires. As the City has become increasingly developed over time, the amount of land where wildfires could emerge has shrunk. Nevertheless, some parts of Seal Beach's natural areas or areas in its surroundings have experienced wildfire. In 2016, a brush fire in a freeway embankment was reportedly ignited by a stray emergency flare near the College Park East area. The fire caused no property damage or personal harm and was quickly extinguished (Los Alamitos Patch 2017). In 2014, the Los Alamitos Wetlands in neighboring Long Beach caught fire, burning nearly five acres of habitat space and causing evacuations of adjacent businesses and hotels. No property damage or personal injuries were reported (Yee 2014). Although the incident occurred in Long Beach, the fire was close enough to potentially send embers across the San Gabriel River into the Seal Beach side of the wetlands, spreading the fire into the City.

Risk of Future Events

Urban fires: The presence of a high number of wood-frame structures in Seal Beach means that there is a likelihood that urban fires will keep erupting in the City. There is always a chance of arson or improper handling of flammable materials that could spark a blaze through a segment of the community. The Seal Beach pier seems to be at an unending risk of future fire unless either the electrical systems are

continually monitored and maintained or the pier is reconstructed with non-flammable materials, such as steel, masonry, or concrete.

A series of natural gas transmission lines passes through Seal Beach. Seismic activity or an accidental breach could cause any of them and the surrounding land to ignite in flames.

Wildfires: Given how little undeveloped land remains in Seal Beach that the City directly controls, it is unlikely that the City will be affected by a wildfire of any significance. The National Wildlife Refuge, located on the Naval Weapons Station, is mostly undeveloped and has extensive vegetation that could potentially catch fire. There are also several smaller pockets of undeveloped areas that could pose a threat. A small, undeveloped wooded section to the immediate west of the Hellman Ranch community, called Gum Grove Park, has a series of eucalyptus trees that could catch fire. The Los Cerritos Wetlands, located north of the intersection of Pacific Coast Highway and First Street, also has some natural areas that could be at risk of wildfire. The risk of wildfire in these areas is low, however.

Climate Change Considerations

Urban fires: Given the unique circumstances under which urban fires begin, the connection between climate change and urban fires is not well established. There may be some indirect links, however, that can exacerbate urban fires. As was observed during the California wildfires in the autumn of 2017, a series of simultaneous, mass wildfires may preoccupy local, regional, and state firefighting resources, preventing small-scale urban fires from being adequately addressed.

Wildfires: Climate change is expected to increase the risk of wildfire. Hotter temperatures and more severe droughts as a result of climate change are likely to increase the amount of potential wildfire fuel.

Tree Mortality

Fire hazards and tree mortality are expected to contribute to one another. For example, dying or dead trees are more likely to catch fire and thus accelerate the spread and associated risks of both urban and wildland fires. Conversely, fire hazards can lead to the mass burning and subsequent die-off of vegetation, including trees.

HAZARDOUS MATERIALS RELEASE

For the purposes of this plan, this section discusses all nonnuclear and nonradiological hazardous materials release events. Events relating to the release of radiological material are addressed in the City's Emergency Operations Plan and thus it is not deemed necessary to discuss them here.

Description

Hazardous materials release refers to a hazard event whereby an amount of hazardous or toxic substances are released by accident. Such instances may include events where substances on contaminated sites percolate into the water table of adjacent properties, a tanker spills its contents on rights-of-way, events when toxic materials are mishandled and released into the local atmosphere, and other events.

Some population groups, due to their location, may be at heightened risk for these hazards. For example, residents or property owners close to highways or gas stations may be at heightened risk of being victims of a hazardous materials release. Situations like this may pose an environmental justice problem if these residents or property owners come from disadvantaged backgrounds. Environmental justice refers to the equal treatment of all socioeconomic groups under environmental laws, regulations, and land use decisions. When certain groups are inordinately impacted by these laws in a certain area, action is required to remedy the injustice.

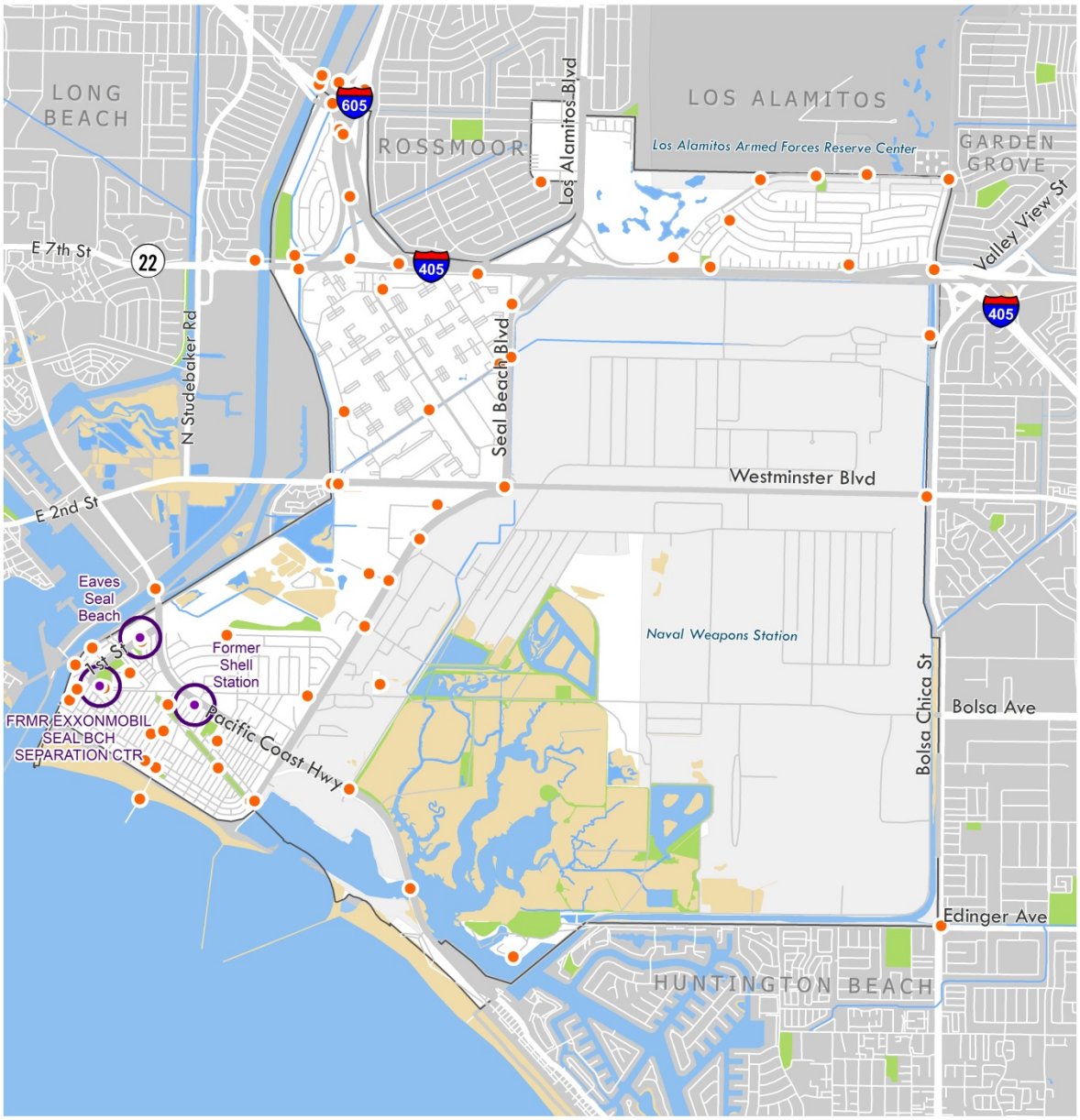
Location and Extent

According to the California Department of Toxic Substances Control (DTSC)'s EnviroStor database, Seal Beach has identified three sites or properties with hazardous materials located in the area of Old Seal Beach:

- Former Shell Station: DTSC is actively leading cleanup and ongoing site investigation.
- Eaves Seal Beach: Remediation of on-site hazardous materials has been started but it has not been executed to a point that would allow unrestricted land uses on this site.
- Former Exxon Mobil Seal Beach Separation Center: Cleanup transferred to local agency through SB 1248.

There are a few other hazardous materials sites that DTSC has identified in Seal Beach, but they have been remediated to a point that they are no longer considered a major threat. **Figure 3-8** shows sites and areas in Seal Beach that are contaminated or store hazardous materials. In addition to these locations, Naval Weapons Station – Seal Beach also contains hazardous materials sites that require remediation, however these sites are not depicted on the accompanying figure since they are located on an active military installation. Remediation activities are currently underway to address these sites by the Federal government.

Figure 3-8: Hazardous Materials Sites Map



The Naval Weapons Station is of particular concern with regard to hazardous materials release in Seal Beach. There are approximately five groundwater cleanup sites either on or next to the Naval Weapons Station. The State has evaluated the base as having more groundwater cleanup sites than 72 percent of all other census tracts in California (OEHHA 2018a). There are also nine water-impairment sites in the facility, meaning that it is more polluted than 81 percent of the rest of the state (OEHHA 2018). The Naval Weapons Stations also ranks as having higher air toxicity and higher pesticide use than 94 percent of California (OEHHA 2018c, 2018d).

The Naval Weapons Station is a potential source of hazardous material releases. Image from Ken Lund.

Furthermore, residents of the Leisure World community are identified by the California State Office of Environmental Health and Hazard Assessment as being particularly vulnerable to hazardous materials release. Due the community's proximity to a regional freeway interchange and the Naval Weapons Stations as well as the advanced age of the residents, it is likely that hazardous materials events would have a greater impact on the residents compared to elsewhere in the city. Leisure World is already ranked by the State of California as one of the worst communities in the state in terms of its air quality. The community is also located near five cleanup sites and was ranked in 2016 as having 83 percent more cleanup sites in its vicinity than other census tracts in California (OEHHA 2018b).

The infrastructure that runs through Seal Beach creates additional risks of hazardous material releases. Gas transmission lines run through the City, and an event such as a construction accident has the potential to release any amount of gas into the community and greater region at large.

In severe situations, Seal Beach may also be at risk from hazardous materials release events in the region. Seal Beach is located within the air basin of the South Coast Air Quality Management District (SCAQMD) (SCAQMD 1999). With the right prevailing wind conditions, airborne toxic material could spread to and impact various parts of SCAQMD's air basin, including sections or all of Seal Beach. Additionally, Seal Beach is at the mouths of the San Gabriel River and the Bolsa Chica Channel. Any hazardous materials that are released upstream have the potential to affect any of the downstream cities and communities, including Seal Beach. Residents of the Surfside community may be at particular risk of such events since hazardous materials released into the Bolsa Chica Channel may have long-term impacts on Anaheim Bay if proper countermeasures are not swiftly implemented.

Past Events

Much of the hazardous materials release in Seal Beach has occurred at the Naval Weapons Station. From the 1950s to 1973, various lubricants and solvents were disposed of at the base's landfill, referred to as Site 7. Record keeping beginning in 1954 also shows that wastes and byproducts from oil production were disposed of at "Oil Island," referred to as Site 22. A skeet-shooting range, referred to as Site 74,

was in use from the 1960s to 1990s and contains wastes including lead- and antimony-based materials (US Navy 2007). In 1992, it was reported that the Naval Weapons Station had more than 27 drums and an open-air container of napalm waste, in violation of national environmental law. The Environmental Protection Agency of California subsequently fined the military base for this and 17 other violations for nearly $200,000 (Dizon 1992).

Risk of Future Events

Given how highly unpredictable hazardous materials release events are, there is always a potential risk for hazardous materials release in Seal Beach. There are a number of busy roadways bisecting or passing near the city. These include I-405, I-605, SR-1, and SR-22 as well as major arterials such as Seal Beach and Westminster Boulevards. Any one of these could carry vehicles transporting hazardous materials at any time. A collision involving a vehicle carrying hazardous materials could endanger the Seal Beach community.

The Naval Weapons Station has activity that continues to release hazardous materials into the environment and has inactive hazardous materials sites that have yet to be remediated. At this time of writing, this includes the base's landfills, the old skeet range, and the Saturn Rocket testing site. There is the potential risk that the facility could be harboring hazardous military ordnance that could put the Seal Beach community in danger. The military base also features federally owned railroads. These could transport hazardous materials or military ordnance that would endanger the base personnel and greater community in the event of a rail accident. This was the case in a 1973 railyard incident near Sacramento, when a train carrying a 250-pound bomb had an accident that caused the weapon to detonate. The ensuing explosion destroyed the railyard (City of Seal Beach 2017).

Apart from the Naval Weapons Station, there are number of unremediated, inactive hazardous materials sites around the city—many of these are former gas stations. Future seismic activity could potentially cause the on-site contaminants to spread to other properties.

Climate Change Considerations

The connection between climate change and hazardous materials release events is tenuous. Increases in average global temperature and changes in weather patterns are not expected to trigger the release of hazardous materials or toxic substances. The effects of climate change, however, may disperse the impacts of such events to areas that may not have otherwise been affected. For example, higher and more powerful winds may spread airborne hazardous materials to areas outside the immediate vicinity of the release event. More frequent and severe rainstorms may heighten the likelihood that released hazardous materials intrude into the regional watershed.

Tree Mortality

The release of hazardous materials can directly impact the health of trees and other plant life, even leading to their death. A regional hazardous materials event, for example, may infiltrate the groundwater table, leading to the death of tree specimens in Seal Beach that depend upon the regional water supply. The death of trees is not known to trigger the release of hazardous materials. It may,

however, play an indicator role as to whether or not hazardous materials are contaminating the air or water that trees rely upon.

SEISMIC HAZARDS

A seismic hazard is any event that originates from tectonic activity. This hazard group includes fault ruptures, liquefaction, and seismic shaking. Tsunamis, which are usually generated by seismic activity, has been grouped into the Coastal Inundation hazard group since it is a hazard that would likely only impact the coastal section of Seal Beach.

Description

All seismic hazards originate from earthquakes that occur as a result of the movement of the tectonic plates beneath the Earth's surface. Tectonic plates are large pieces of Earth upon which the crust rests. Though it may not be readily apparent to humans, the tectonic plates are constantly moving past each other, usually at a rate of a few inches per year. As one plate moves against or past another, they catch onto each other from time to time, becoming stuck. Since the plates are still in motion, the energy driving the plates' movement is still present and accumulates the longer the plates remain caught. Eventually, the energy reaches a critical mass when the resistance is so great that the plates violently unlock from one another, like a springboard being released. This sudden movement dissipates the accumulated energy into the rest of the Earth, including the crust upon which humans live. When this energy arrives at the surface it can cause seismic shaking, fault ruptures, and liquefaction. These individual hazards are described below:

Fault Rupture: Fault rupture is the rapid ground movement along a boundary between two different sections of the earth's surface, known as a fault. The fault rupture sometimes creates a physical displacement of land at the surface which can be dangerous for people in the vicinity. This is not true in every case, however, as some fault ruptures do not disturb the land—these faults are known "blind thrust" faults. Most of the significant fault rupturing in California has occurred along the boundary between the North American Plate and the Pacific Plate, which is known as the San Andreas Fault. The constant friction between these two plates has caused fracturing and rupturing amongst the plates themselves, creating smaller, more local fault lines. These faults are capable of causing seismic activity on their own.

Faults can rupture in a number of different ways based upon how the plates along the fault boundary interact with each other. They can cause vertical displacement (a dip-slip fault), horizontal displacement (a strike-slip fault), or both vertical and horizontal displacement concurrently (oblique-slip fault).

Liquefaction: Liquefaction is the result of seismic energy being released into water-saturated soil or into loosely-packed geologic material such as sand or silt. Since these materials are not firmly bound together, they seem to behave like a liquid when the seismic energy interacts with them. When this occurs, the ground situated on these areas loses its integrity, which can damage any structures or harm people in these zones of liquefaction. Additionally, utility lines or water pipes that span these areas are at risk of being broken.

Seismic shaking: Seismic shaking is the shaking of the ground when seismic energy from an earthquake reaches the surface of the Earth. Not all seismic shaking is necessarily dangerous. Many seismic events occur multiple times a day during any given week but are virtually undetectable because the energy they release is relatively small. On the other hand, seismic shaking caused by large earthquakes can be extremely destructive. Seismic shaking can damage or completely destroy buildings, structures, and pieces of infrastructure located within the epicenter or surroundings of an earthquake. Subterranean pipes, conduits, and telecommunication lines can be damaged or severed during seismic shaking events. Hazardous materials stored underground or transported through pipelines can also be released during seismic shaking, endangering the populations in the area because of toxic exposure.

KEY TERMS

Spectral Acceleration: The maximum acceleration experienced by a building or other structure during an earthquake.

Period: The time it takes to complete one cycle of a seismic wave, measured in seconds or fractions of a second.

Location and Extent

Fault Rupture: Any areas within the vicinity of a fault boundary will be impacted during a significant seismic event. Therefore, only faults running through or directly near the periphery of Seal Beach will cause any sort of impact.

There are two fault lines that pass through Seal Beach: the Reservoir Hill fault line and the Seal Beach fault line (CGS 2010). Both of those faults are part of the regional Newport-Inglewood fault, which originates in the area around Santa Monica and runs down to Newport Beach, at which point it continues southward offshore. The most recent significant rupture of this fault (the 1933 Long Beach earthquake) did not cause any surface rupture (SCEDC 2013a). **Figure 3-9** shows regional fault lines and their location relative to Seal Beach.

Liquefaction: The majority of Seal Beach is at risk of liquefaction. These areas consist of the coastline (the beach in front of Eisenhower Park and the Surfside community), the Los Alamitos Wetlands, the National Wildlife Refuge and Naval Weapons Station, the vicinity of the Los Alamitos Retarding Basin, College Park East, Leisure World, the Old Ranch Country Club, and the adjacent residential community. Areas bordering Seal Beach, such as unincorporated Rossmoor, Long Beach, Los Alamitos, Garden Grove, and Huntington Beach are also included in this liquefaction zone (CGS 2017). There is no standardized scale for measuring liquefaction events**.**

Figure 3-10 depicts the areas of the City susceptible to liquefaction.

Seismic shaking: Any seismic shaking from local or regional faults will most likely be felt in Seal Beach. In areas with looser soil, the shaking may seem more intense. Seismic shaking is generally measured using the Modified Mercalli Intensity (MMI) scale, which evaluates the shaking based on the amount of damage in the area. The MMI scale uses Roman numerals on a 12-point scale. **Table 3-9** shows the MMI scale.

TABLE 3-9: MODIFIED MERCALLI INTENSITY SCALE

Intensity	Description	Description
I	Instrumental	Felt only by a very few people, under especially favorable conditions.
II	Feeble	Felt only by a few people at rest, especially on the upper floors of buildings.
III	Slight	Noticeable by people indoors, especially on upper floors, but not always recognized as an earthquake.
IV	Moderate	Felt by many indoors, and by some outdoors. Sleeping people may be awakened. Dishes, windows, and doors are disturbed.
V	Slightly strong	Felt by nearly everyone, and many sleeping people are awakened. Some dishes and windows broken, and unstable objects overturned.
VI	Strong	Felt by everyone. Some heavy furniture is moved, and there is slight damage.
VII	Very strong	Negligible damage in well-built buildings, slight to moderate damage in ordinary buildings, and considerable damage in poorly-built buildings.
VIII	Destructive	Slight damage in well-built buildings, considerable damage and partial collapse in ordinary buildings, and great damage in poorly-built buildings.
IX	Ruinous	Considerable damage in specially designed structures. Great damage and partial collapse in substantial buildings, and buildings are shifted off foundations.
X	Disastrous	Most foundations and buildings with masonry or frames are destroyed, along with some well-built wood structures. Rail lines are bent.
XI	Very disastrous	Most or all masonry structures are destroyed, along with bridges. Rail lines are greatly bent.
XII	Catastrophic	Damage is total. The lines of sight are distorted, and objects are thrown into the air.

Source: USGS 2017a.

Another indirect measure of seismic shaking measures the energy released by the fault rupture—the moment magnitude scale (MMS, denoted as Mw or simply M). The MMS begins at 1.0 and increases as the energy of the earthquake grows. The MMS is a logarithmic scale, meaning that the difference between numbers on the scale multiplies as they get bigger. For example, an earthquake with 5.0 Mw is approximately 1.4 times greater than 4.9 Mw, 32 times greater 4.0 Mw, and 1,000 times greater than 3.0 Mw. The MMS has replaced the Richter scale since the MMS is generally more accurate at measuring large-scale seismic events.

Figure 3-11 shows the shaking potential for the City of Seal Beach, as well as the locations of various critical facilities within the City. The data depicted illustrates the intensity of shaking in relation to earth's gravity (g). When there is an earthquake, the forces caused by the shaking can be measured as a percentage of gravity, or percent g.

Figure 3-9: Fault Rupture Potential (Newport-Inglewood Fault)

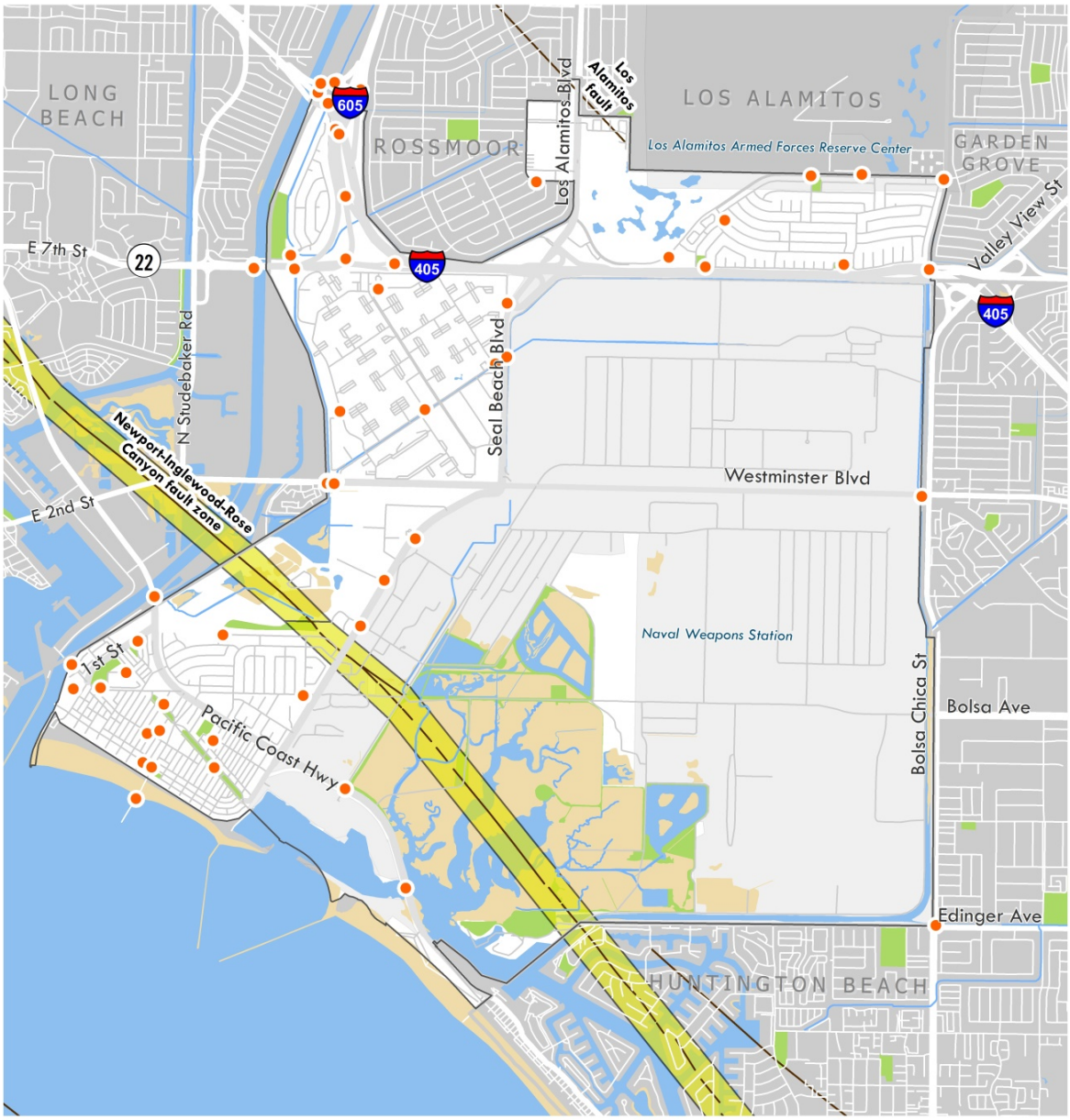
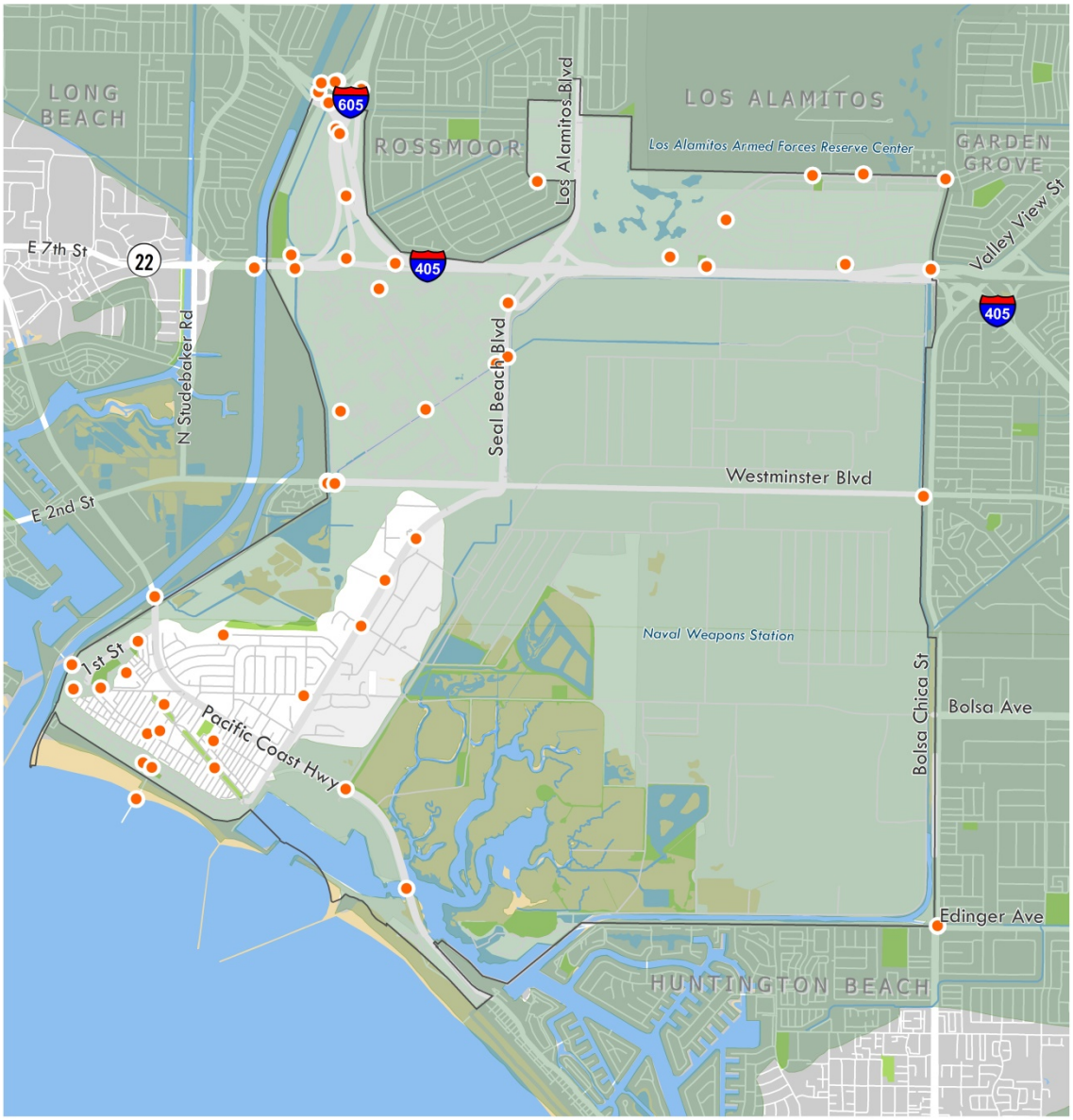


Figure 3-10: Liquefaction Areas in Seal Beach



Liquefaction Zone

- Critical Facility
- Liquefaction Zone

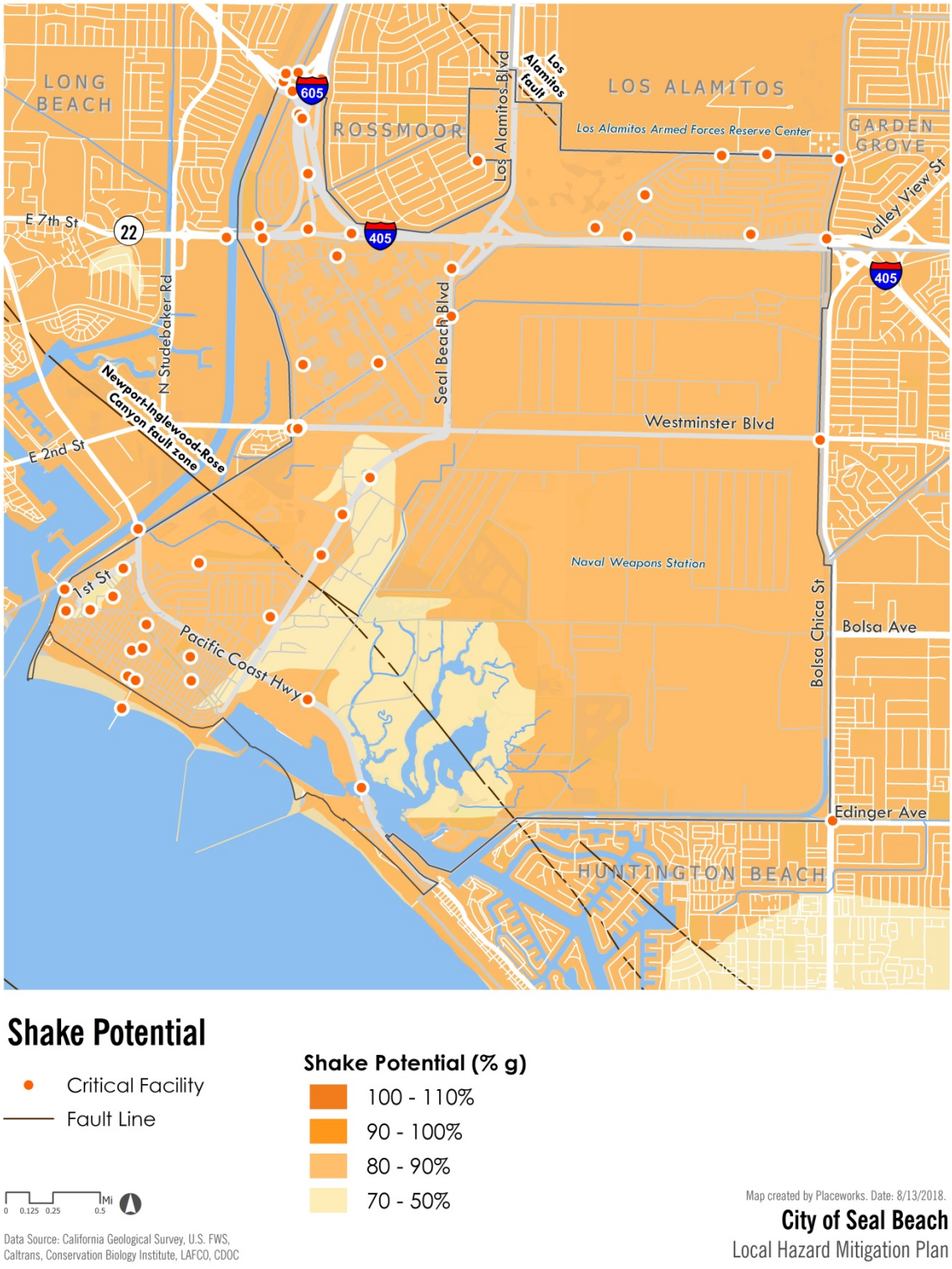
0 0.125 0.25 0.5 Mi

Data Source: California Geological Survey, U.S. FWS, Caltrans, Conservation Biology Institute, LAFCO

Map created by Placeworks. Date: 8/13/2018.

City of Seal Beach
Local Hazard Mitigation Plan

Figure 3-11: Seismic Shaking Potential (Newport-Inglewood Fault)



Past Events

Fault Rupture: The largest recent fault rupture event near Seal Beach was the 1994 Northridge earthquake, a 6.7 Mw event approximately 41 miles from downtown Seal Beach. It was the most destructive earthquake in the United States in nearly 100 years, damaged more than 4,000 buildings, and destroyed multiple freeways across the Greater Los Angeles Area (Risk Management Solutions 2004).

Liquefaction: While Seal Beach does not have a history of liquefaction, other nearby communities have experienced liquefaction events within the last century. During the 1933 Long Beach earthquake, for instance, the Bolsa Chica area and sections of Long Beach are recorded as experiencing liquefaction, with damage to pavement and cracks forming in the ground. "Mud volcanoes" are recorded as having formed near the northern end of Seal Beach during the same event (California Department of Conservation 1998).

Seismic shaking: Significant earthquakes have been felt in Seal Beach in the past, including the 1994 Northridge earthquake and the 1987 Whittier Narrows earthquake.

Although other earthquakes have caused extensive regional damage, none of them caused substantive damage in Seal Beach in recorded history. **Table 3-10** shows major earthquakes (at least 6.0 Mw) within 100 miles of downtown Seal Beach.

TABLE 3-10: SIGNIFICANT EARTHQUAKES WITHIN 150 MILES OF SEAL BEACH

Event Name	Distance (Miles)*	Magnitude
1812 Wrightwood earthquake	51 (approximately)	7.5
1910 Elsinore earthquake	38	6.0
1918 San Jacinto earthquake	70	6.8
1923 North San Jacinto Fault earthquake	52	6.3
1933 Long Beach earthquake	10	6.4
1937 Terwilliger Valley earthquake	108	6.0
1948 Desert Hot Springs earthquake	100	6.0
1954 San Jacinto Fault earthquake	115	6.4
1968 Borrego Mountain earthquake	121	6.5
1971 San Fernando earthquake	49	6.5
1992 Joshua Tree earthquake	104	6.1
1992 Landers earthquake	101	7.3
1992 Big Bear earthquake	80	6.4
1994 Northridge earthquake	41	6.7

Source: SCEDC 2011.

* Distance between epicenter and downtown Seal Beach

Risk of Future Events

Fault Rupture: Any place that lies within a fault zone is potentially at risk of a fault rupture at any time, including Seal Beach. While many fault lines have been plotted and mapped, it is safe to assume that there are undiscovered fault lines that can trigger a seismic event. This was the case with the Northridge earthquake, which occurred on a blind fault (SCEDC 2013b). Many of the discovered faults have been

active within the last century and it can therefore be assumed that they will continue to be active in the near future.

Liquefaction: Given that the majority of Seal Beach lies in a designated liquefaction zone, the City is always at risk of experiencing a liquefaction event. This is especially true given that liquefaction events have occurred in the immediate vicinity of Seal Beach in the past in association with strong earthquakes. Recent evidence suggests that an earthquake of a magnitude 7.5 or greater along the Newport-Inglewood fault could dramatically impact the National Wildlife Refuge and Naval Weapons Station, resulting in liquefaction and subsidence of up to three feet of the land on which they sit (Coker 2017; Leeper et al. 2017). It should be noted, however, that seismic events of this scale are rare in Seal Beach and the surrounding area.

Seismic shaking: Since Seal Beach lies in a seismically active area and given that Seal Beach has experienced seismic shaking in the recent past, it is likely that the City will continue to experience seismic shaking both in the near and distant future. The Third Uniform California Earthquake Rupture Forecast (UCERF3) was released in 2015 and shows the overall likelihood of major earthquake occurrences on various faults between 2015 and 2044. **Table 3-11** shows the results of UCERF3 for key fault lines near Seal Beach.

TABLE 3-11: EARTHQUAKE PROBABILITIES FOR KEY FAULTS NEAR SEAL BEACH (2015-2044)

Fault	Distance (Miles)*	Probability			
		6.7+ M_w	7.0+ M_w	7.5+ M_w	8.0+ M_w
Newport-Inglewood	<1	0.91%	0.84%	0.43%	Negligible
Palos Verdes	8	3.08%	2.84%	0.09%	Negligible
San Joaquin Hills	11	0.40%	0.38%	0.24%	Negligible
Whittier	23	1.45%	1.26%	0.66%	<0.01%
Elysian Park	24	1.26%	0.78%	0.07%	Negligible
Sierra Madre	32	1.10%	1.06%	0.72%	0.03%
Elsinore	35	3.66%	1.82%	0.90%	<0.01%
San Jacinto	59	5.32%	5.31%	5.20%	2.74%
San Andreas†	73	19.29%	13.20%	10.92%	3.04%

Source: USGS 2015.

Note: UCERF3 results consist of two individual models (3.1 and 3.2), each of which provides rupture probabilities for each segment of the fault. This table shows the maximum probability for a section of the fault in either model.

* Distance between downtown Seal Beach and the nearest point of the fault. All distances are approximate.

† Southern California segments only.

In addition to the UCERF3 predictions, the US Geological Survey forecasts the severity of seismic shaking in different locations for various plausible earthquake scenarios. **Table 3-12** shows the anticipated shaking in Seal Beach from some of these scenarios.

TABLE 3-12: SELECTED SHAKING SCENARIOS FOR SEAL BEACH

Fault	Magnitude	Distance to Epicenter (Miles)*	MMI in Seal Beach
Newport-Inglewood	7.0	35	VII (Very strong)
	7.2	7	VIII (Destructive)–(IX (Ruinous)
	7.2	6	VIII (Destructive)–(IX (Ruinous)
Palos Verdes	7.4	9	VIII (Destructive)
Elsinore	6.9	38	VI (Strong)–VII (Very Strong)
	7.3	29	VII (Strong)–VIII (Destructive)
	7.8	67	VII (Very strong)–VIII (Destructive)
Sierra Madre	7.2	35	VI (Strong)–VII (Very Strong)
San Joaquin Hills	7.0	19	VII (Very Strong)–VIII (Destructive)
San Andreas	6.9	53	V (Slightly Strong)–VI (Strong)

Source: USGS 2017c.

* Distance between downtown Seal Beach and the epicenter (the point on the surface above where the fault rupture began).

The US Geological Survey scenarios show that the Newport-Inglewood fault could cause the strongest seismic shaking in Seal Beach, followed by the Palos Verdes, Elsinore, San Joaquin Hills faults. Other faults, like the Sierra Madre and San Andreas faults, could cause sizeable shaking but due to their distance from Seal Beach, their impacts on the city would not be as extreme or devastating as closer faults.

Climate Change Considerations

Fault Rupture: There is no demonstrable connection between climate change and fault line activity that could cause adverse effects for Seal Beach or other communities.

Liquefaction: Changes in precipitation patterns could affect groundwater levels, which could in turn affect the susceptibility of soils in Seal Beach to liquefaction. At this time, however, there is no evidence to suggest that climate change affects liquefaction events in a substantial way.

Seismic shaking: There is no evidence of any link between climate change and seismic activity that could affect conditions in Seal Beach,[3] so climate change is not expected to cause any changes to the frequency or severity of earthquake events.

Tree Mortality

Seismic events, like fault ruptures, liquefaction, or seismic shaking, have no direct link to tree mortality. The death of a tree or group of trees does not trigger seismic events. Seismic events, however, may cause the death of a few trees due to shaking that may uproot or fell some specimens. Secondary effects of seismic events, such as downed power lines or broken gas lines, may harm or kill trees if fires are ignited as a result. Broken water lines may also lead to tree mortality if irrigation is not restored for a long period of time.

[3] Melting land ice as a result of climate change decreases the weight on the land and increases the weight on ocean floors, and there is some evidence that this redistribution of weight may affect stresses on faults, changing earthquake patterns. However, this connection is disputed, and there is currently no evidence that such a connection would cause a significant change in seismic activity in the region of Seal Beach (Hampel et al. 2010; McGuire 2010).

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CHAPTER 4
THREAT AND VULNERABILITY ASSESSMENT

The threat assessment process looks at the harm that each hazard event discussed in Chapter 3 may cause in three different areas: the physical threat to key facilities, the threat to vulnerable populations, and the threat to any other community assets (noncritical facilities, key services, etc.).

CRITICAL FACILITIES

Critical facilities consist of properties and structures that play important roles in government operations and the services they provide to the community. Examples of critical facilities include local government offices and yards, water wells, water pumps, public safety buildings like police and fire stations, schools, and any other properties a city has deemed essential for its operations. Critical facilities sometimes also serve dual roles if a city designates them as points of public assembly during an emergency. Critical facilities are often owned by the city but many are also owned and operated privately, such as some utilities and telecommunication infrastructure.

The Hazard Mitigation Planning Committee identified 76 critical facilities in Seal Beach that fall into 7 different categories based on their function. **Table 4-1** shows the number of critical facilities and facilities of concern in each category, the total estimated value of the facilities in each category, and examples of the facilities in each. **Appendix D** has a complete list of the critical facilities and the facilities of concern.

The potential loss value is the total insured value of the critical facilities that fall within the hazard zone. It is intended to provide the ballpark estimate of the cost of replacement if the property is completely or severely damaged. Actual costs of repair could be smaller or larger than the provided estimate. The data was provided by the city's CJPIA Property Schedule and therefore, information for facilities not owned by the city are not shown (e.g. bridges, private buildings). In some instances, replacement cost information was not made available. Where this occurs (N/A) has been used within the table.

TABLE 4-1: CRITICAL FACILITIES AND FACILITIES OF CONCERN

Category	Number	Facilities	Potential Loss
Community Services	5	Senior Center, Library	$4,740,542
Government Facility	6	City Hall, Police Stations, Fire Stations	$22,572,445
Other	8	Leisure World Clubhouses, Naval Weapons Station	N/A
Parks and Recreation	14	Parks, Seal Beach Pier	$6,217,713
Sewage	9	Pump Stations	$3,076,105
Transportation	29	Local Bridges, State Bridges	N/A
Water	5	Wells, Reservoirs	$6,590,877

Source: City of Seal Beach CJPIA Property Schedule, November 27, 2017

The threat assessment cross-references the hazard zone areas in Seal Beach with the locations of any critical facilities. Critical facilities within hazard zones have an elevated risk of being damaged or completely destroyed during a hazard event. If such damage occurs, repair or reconstruction is necessary to return any damaged facilities to their operational capacity. It is still possible for facilities oustside zones of elevated risk to be affected by such events, though the risk is lower.

The physical assessment was based on the latest available spatial data for each hazard. All critical facilities that spatially intersected with each hazard layer are threatened. This assessment is intended to guide the City as to where it should focus emergency preparedness and mitigation efforts. Slight inaccuracies are possible in the datasets; therefore, there could be more or fewer critical facilities threatened by each hazard.

The hazard maps in Chapter 3 depict areas of maximum inundation or impact. The precise impact, extent, and magnitude would depend on the nature of the hazard event. Not all locations depicted in the hazard zone would necessarily be impacted by the hazard event at the same time (Wood et al. n.d.). Furthermore, although the maps do not depict a gradient of risk, some areas will be more at risk from a hazard event than others. For example, blocks that are closer to the coast would be more affected by a tsunami than blocks farther away but still within the hazard zone.

VULNERABLE POPULATIONS

A hazard event can have very different impacts on groups and individuals based on their age, socioeconomic status, physical and mental condition, other demographic factors, or living conditions that affect their resilience to natural hazards. For example, a hurricane or other extreme weather event can have a greater impact on older adults or those who suffer from chronic illnesses. It could hinder their ability to take their medications or access the services or technologies they depend on. Households with the following characteristics may be more vulnerable to hazards:

- Households with at least one person with a disability: This includes households in which a person living with a disability lives alone or with others. Persons with disabilities may have reduced mobility or have challenges taking care of themselves. They may also have a limited ability to protect their homes or property or mitigate damages.

- Households living below the poverty level: Households with an income below the poverty level are less likely to have the financial resources to prepare or cope with the impacts of hazard events. If a hazard event significantly disrupts the local economy, households living in poverty could face more challenges recovering from an event than the rest of the population.

- Households with at least one person over 65: Persons over the age of 65 may have reduced mobility or suffer from medical conditions that affect their mental capabilities and ability to respond to or recover from a hazard event. A hazard event could also exacerbate existing health complications or injuries in the aftermath of an event. Senior citizens living alone are especially at risk because they may not have a network to reach out to for help before, during, or after a hazard event.

Table 4-2 shows how many people in Seal Beach meet one of the metrics for threatened populations.

TABLE 4-2: SEAL BEACH THREATENED-POPULATION METRICS

Vulnerable Population Metric	Seal Beach
Seal Beach Total Households	12,413
Percentage of households with one or more individuals living with a disability	31%
Percentage of households with income below poverty line	9.5%
Percentage of households with at least one senior citizens (age 65+)	55%
Percentage of households that consist of a senior citizen (age 65+) living alone	30.5%

Source: Esri 2018, ACS 2012-2016

There are other vulnerable populations not captured in the above dataset because of lack of accurate data or counts. These groups include people living in homelessness, individuals without access to vehicles or communication lifelines, and undocumented immigrants.

Hazard events could lead to secondary impacts on a community. They could result in long-term disruptions to important services, infrastructure networks, natural ecosystems, or local economic activities.

HAZARD THREAT ASSESSMENT

EROSION

Although erosion hazard zones have not been mapped on a local scale in Seal Beach, the greatest risk of erosion is along the coast as a result of longshore drift, a process in which tides and storm waves carry sand away from the beach. One effect of engineered structures, such as dams and storm channels, is to reduce the natural flow of sediment to beaches, thus narrowing their width. All structures on the beach are threatened by coastal erosion, including Eisenhower Park, the Marine Safety Building/Lifeguard Headquarters, and all structures on the Seal Beach Pier, including the police substation.

TSUNAMI HAZARDS

Key Facilities

There are 26 critical facilities within Seal Beach's tsunami hazard zone, including City Hall, the Lifeguard Headquarters, Fire Station 44, and several pump and lift stations (see **Table 4-3**). Due to the number of municipal departments in this area, it is important that the City identify alternative locations so that government departments can continue operations during a hazard event. In addition, a tsunami could inundate the Highway 1 bridge that crosses the San Gabriel River and leads into Long Beach, as well as Seal Beach Boulevard south of Pacific Coast Highway. These are major roads that lead out of the coastal neighborhood of the city. Damage to these roads from a tsunami could hinder the evacuation of people from the inundation zone.

TABLE 4-3: TSUNAMI ZONE FACILITIES

Category	Tsunami	Potential Loss
Community Services	2	$1,690,090
Government Facility	5	$10,849,099
Miscellaneous	0	0
Parks and Recreation	6	$512,965
Sewage	6	$1,203,700
Transportation	7	N/A
Water	0	0

Source: City of Seal Beach CJPIA Property Schedule, November 27, 2017

Vulnerable Populations

In 1946, a system of buoys was installed along the Pacific Coast in response to a deadly tsunami in Hawaii and Northern California. This tsunami detection and warning system can alert residents that a tsunami is approaching within 30 minutes or more, depending on the distance. However, people who are linguistically isolated or lack access to lifelines may not receive notification of potential or impending tsunamis. Elderly or disabled persons or those without access to vehicles may be unable to evacuate if a tsunami does occur.

Residents in the tsunami hazard zone are not uniquely socially vulnerable compared to other community members. **Table 4-4** shows that the tsunami inundation zone does not have a significant number of households living under the poverty limit, persons living with a disability, or persons who are senior citizens.

TABLE 4-4: TSUNAMI HAZARD ZONE THREATENED POPULATION METRICS

Threatened Population Metric	Tsunami Hazard Zone	City of Seal Beach
Population	6,112	24,367
Households	3,012	12,413
Percentage of households with one or more individuals living with a disability	16%	31%
Area median income	$81,189	$53,818
Percentage of households under the poverty limit	9.2%	9.5%
Percentage of households with at least one senior citizen	15.3%	55.0%
Percentage of households that consist of a senior citizen living alone	8.9%	30.5%

Source: Esri 2018, ACS 2012-2016.

Other Threats

Approximately 25 percent of the City's total households live within the tsunami inundation area. In addition, many businesses are in the downtown area south of Pacific Coast Highway. The impact of a tsunami to the local economy would be devastating. Due to the high number of residents living in the tsunami zone, training, education, and signs informing residents or visitors of tsunami risks in the

downtown area of Seal Beach are important. Due to the proximity to the coast, residents and visitors must be aware of the threat or be able to identify the signs of an approaching tsunami and know when to evacuate, in case official warnings arrive too late (Wood et al. n.d.).

The downtown area also attracts a large visitor population. Visitors with limited mobility, with limited English, or without access to mobile alert systems may not be able to prepare for or swiftly evacuate a tsunami zone.

SEA LEVEL RISE

Key Facilities

At the higher end of projected future conditions, sea levels are expected to rise approximately two feet along the California coast by 2050 (NRC 2012). There are only two critical facilities that would be affected by this change in sea level. However, by 2100, sea level is expected to rise to a maximum of five feet. In this case, residential neighborhoods, businesses, and a significant portion of the Naval Weapons Station would be permanently inundated (see **Table 4-5**). The downtown area would become an island. This outcome would have serious consequences for the local economy of Seal Beach.

TABLE 4-5: SEA LEVEL RISE FACILITIES

Category	Sea Level Rise 2 ft. (2050)	Potential Loss	Sea Level Rise 5 ft. (2100)	Potential Loss
Community Services	0	0	2	$1,690,090
Government Facility	0	0	N/A	N/A
Miscellaneous	0	0	N/A	N/A
Parks and Recreation	1	$5,893,599	5	$5,893,599
Sewage	0	0	4	$1,175,768
Transportation	1	N/A	2	0
Water	0	0	N/A	N/A

Source: City of Seal Beach CJPIA Property Schedule, November 27, 2017

Vulnerable Populations

A rise in sea level by 2050 would not have a significant effect on Seal Beach's population, because the inundation area does not primarily include residential and commercial areas. By 2100, sea level rise will affect 2,506 people and 1,120 households. This population does not exhibit greater social vulnerability than the population of the city as a whole (see **Table 4-6**).

TABLE 4-6: SEA LEVEL RISE HAZARD ZONE THREATENED POPULATION METRICS

Threatened Population Metric	Sea Level Rise 2 ft. (2050)	Sea Level Rise 5 ft. (2100)	City of Seal Beach
Population	0	2,506	24,367
Households	0	1,120	12,413
Percentage of households with one or more individuals living with a disability	0	17%	31%
Area median income	0	$95,612	$53,818
Percentage of households under the poverty limit	0	7%	9.5%
Percentage of people who are senior citizens	0	13%	37.5%
Percentage of households consists of a senior citizen living alone	0	8.2%	30.5%

Source: Esri 2018, ACS 2012-2016

Other Threats

Sea level rise is a "permanent" hazard because once an area is affected by that hazard it is very difficult to restore it to a pre-hazard state. Sea level rise in the long term would have a significant impact on the city's economy, due the presence of a large portion of the city's residents and businesses within the hazard zone.

EXTREME WEATHER

Physical Threat

Extreme weather could affect all parts of Seal Beach so critical facilities throughout the City are at risk. The two most common extreme weather events that could affect Seal Beach are high winds and extreme heat.

High Winds and Storms

Intense winds likely pose the greatest threat to physical structures, particularly from trees or branches that fall on buildings and cause substantial damage. Older structures that have deferred maintenance or have not been retrofitted to withstand high winds may suffer greater damage than newer/updated structures. Utility lines and wooden utility poles face an elevated threat from wind, as do buildings without reinforced roofs. High winds can also hurl debris on rights-of-way, which could block evacuation routes or restrict movement of emergency response vehicles.

Heat Waves and Droughts

Droughts typically do not cause physical damage, but the decrease in water use and subsequent wastewater generation can reduce the flushing out of debris in wastewater pipes, which can decrease system efficiency.

Drought can make critical facilities more susceptible to damage from other hazards. When the natural environment is dry, parks and natural preserves in Seal Beach are more at risk of wildfires. Additionally, droughts make soil harder and less able to absorb water, which could intensify flood events and the harm to critical facilities within floodplains when rain occurs.

Long heatwaves can cause roads to deform and buckle because concrete, like other materials, will expand under heat. Weaker spots in the pavement, such as areas that have not been maintained well, are more prone to deform under heat. Therefore, longer and more frequent heat waves will require regular road maintenance and repair, which could become costly.

Social Threat

High Winds and Storms

Events such as high winds and storms can harm people throughout Seal Beach. Homeless persons and persons who work outdoors are more likely to be exposed to these hazards, increasing the threat of injury or mortality. Lower-income households may not be able to afford to retrofit their homes or live in homes built to more rigorous standards and may be at greater risk for harm.

Heat Waves and Drought

Heatwaves can catch people unprepared, especially if a person has an isolated living situation or suffers from chronic illnesses, which could be the case for elderly or disabled persons. Mitigation actions could include notifying residents of impending heat waves several days in advance so that persons with limited mobility or medical conditions can make preparations in advance, such as acquiring fans or cooling units or preparing emergency supply kits that include water. The elderly, children, and people who suffer from certain medical conditions are especially at risk of heat-related health complications. Social factors that include race, ethnicity, poverty, and education level can affect a person's access to resources and knowledge that enables them to protect themselves during heatwaves.

Under drought conditions, water rates increase and residents may be fined for excessive water use. Depending on how rates and fines are structured, this could have a disproportionate impact on lower-income persons, who may not have the financial resources to afford increased water bills and fines on top of other bills. Additionally, community members who work in businesses that suffer during a drought or in industries that rely on large amounts of water could experience financial hardship from lower pay or by losing their job.

Persons living in homelessness are at a high risk of health complications during heat waves, especially persons who are unsheltered. According to data counts by the OC Health Care Agency, in 2017, there were approximately 4,800 homeless individuals in the County, with over 50 percent unsheltered, approximately 25 percent in emergency shelters, and 20 percent in transitional shelters (OC PITC 2017). During a heat wave, homeless individuals might have limited access to a city-designated cooling center and are very vulnerable to heat-strokes and heat-related deaths, particularly if they are living unsheltered.

FLOODING

Physical Threat

A 100-year flood would impact coastal areas along the beach, the Bolsa Chica Wetlands, the Los Cerritos Wetlands, and Gum Grove Park. Although the Naval Weapons Station has not been assigned a flood zone by FEMA, flooding could potentially impact the facilities and materials located within. None of the areas within Seal Beach would be significantly inundated by a 500-year storm, however, environmental

conditions could cause floodplain maps to change in the future. **Table 4-7** shows the key facilities that would be affected by 100- and 500-year floods and potential losses.

TABLE 4-7: KEY FACILITIES IN FLOOD HAZARD ZONE

Category	100 Year	Potential Loss	500 Year	Potential Loss
Community Services	0	0	0	0
Government Facility	0	0	0	0
Miscellaneous	0	0	0	0
Parks and Recreation	0	0	0	0
Sewage	2	$763,906	0	0
Transportation	9	N/A	2	N/A
Water	1	$1,764,044.00	0	0

Source: City of Seal Beach CJPIA Property Schedule, November 27, 2017

Social Threat

Approximately 263 people live in the FEMA-mapped 100-year flood zone. The median household income in this area is slightly less than the City's average, and a higher proportion of people live under the poverty limit. Additionally, the proportion of seniors in this area is greater than the City average. Lower-income persons in flood-prone areas may be unable to afford flood insurance premiums or flood-proofing improvements to their homes, so they may face disproportionate harm from flood events. Persons with mobility challenges or lack of access to vehicles may have difficulty evacuating from a serious flood event, particularly a flash flood. **Table 4-8** shows the populations that are vulnerable to flooding.

TABLE 4-8: FLOOD HAZARD ZONE THREATENED POPULATION METRICS

Threatened Population Metric	100-Year Flood Hazard Zone	500-Year Flood Hazard Zone	City of Seal Beach
Population	263	0	24,367
Households	129	0	12,413
Percentage of households with one or more individuals living with a disability	32.6%	0	31%
Area median income	$46,865	0	$53,818
Percentage of households under the poverty limit	15.5%	0	9.5%
Percentage of people who are senior citizens	35.7%	0	37.5%
Percentage of households consisting of a senior citizen living alone	33.3%	0	30.5%

Source: Esri 2018, ACS 2012-2016

Other Threats

Floodwaters can block roadways because several inches of water is enough to stall cars, and rushing water as shallow as one foot is enough to sweep away small vehicles. Floodwaters can also carry debris that can block roadways, hindering transit, emergency response services, and evacuations. Although rare, serious floods that erode soil around water, wastewater, and natural gas pipes may interrupt these services. Serious damage to a large number of homes or businesses may slow economic activity in Seal Beach until reconstruction activities finish.

SEISMIC HAZARDS

Physical Threat

Seismic hazards can damage buildings and facilities all over the community. Every structure in Seal Beach is at risk of earthquake damage, though the structures and facilities closest to the fault are the most likely to be damaged. As the closest fault to the City, the Newport-Inglewood fault line will mostly likely be the source of the greatest seismic-related damage in Seal Beach.

There is one critical facility in the Alquist-Priolo zone that may be at risk of severe damage due to surface fault rupture during an earthquake. However, surrounding critical facilities could be severely impacted by secondary seismic events, such as liquefaction and tsunamis. As a result, the impact of a major earthquake would be likely devastating and extremely costly in Seal Beach. **Table 4-9** shows that there is one water pump located in the Alquist-Priolo Zone.

TABLE 4-9: KEY FACILITIES IN ALQUIST-PRIOLO ZONE

Category	Alquist-Priolo Zone	Potential Loss
Community Services	0	0
Government Facility	0	0
Miscellaneous	0	0
Parks and Recreation	0	0
Sewage	0	0
Transportation	0	0
Water	1	$1,764,044

The majority of Seal Beach is at risk of liquefaction due the presence of wetlands and the high soil moisture content throughout the City. This does not necessarily mean that all of the City would experience liquefaction during strong seismic shaking, but liquefaction could nevertheless be a costly and severe impact. There are 60 critical facilities that are at risk of being affected by liquefaction (see **Table 4-10**).

TABLE 4-10: LIQUEFACTION ZONE THREATENED POPULATIONS

Category	Liquefaction	Potential Loss
Community Services	2	$3,050,452
Government Facility	4	$7,048,462
Miscellaneous	7	N/A

Parks and Recreation	9	$526,268
Sewage	7	$1,203,700
Transportation	27	N/A
Water	4	$4,826,833

Source: City of Seal Beach CJPIA Property Schedule, November 27, 2017

Social Threat and Vulnerable Populations

The widespread nature of seismic hazards means they are a concern for all community members in Seal Beach, but could have a greater impact on certain populations. Low-income persons stand to be more greatly impacted by seismic threats because they may not be able to afford housing that is seismically retrofitted. Senior citizens or persons living with disabilities may be less able to quickly evacuate. **Table 4-11** shows the social vulnerability of residents living in the Alquist-Priolo Zone.

TABLE 4-11: ALQUIST-PRIOLO HAZARD ZONE THREATENED POPULATION METRICS

Threatened Population Metric	Alquist-Priolo Hazard Zone	City of Seal Beach
Population	65	24,367
Households	23	12,413
Percentage of households with one or more individuals living with a disability	21.7%	31%
Area median income	$150,000	$53,818
Percentage of households under the poverty limit	4.3%	9.5%
Percentage of people who are senior citizens	21.5%	37.5%
Percentage of households consists of a senior citizen living alone	8.7%	30.5%

Source: Esri 2018, ACS 2012-2016.

Over 70 percent of the Seal Beach population lives in the liquefaction hazard zone. Half of this population includes persons who are over the age of 65, and almost 40% of them are living alone. The number of people living with a disability or under the poverty limit is similar to the City as a whole. About 35% of the population lives with a disability and 10% of the households are living on the poverty limit. **Table 4-12** shows the social vulnerability of residents living in the area.

TABLE 4-12: LIQUEFACTION HAZARD ZONE THREATENED POPULATION METRICS

Threatened Population Metric	Liquefaction Hazard Zone	City of Seal Beach
Population	17,737	24,367
Households	9,589	12,413
Percentage of households with one or more individuals living with a disability	35.1%	31%
Area median income	$43,741	$53,818
Percentage of households under the poverty limit	10.3%	9.5%

Percentage of people who are senior citizens	45.53%	55.0%
Percentage of households consists of a senior citizen living alone	36.9%	30.5%

Source: Esri 2018, ACS 2012-2016

Other Threats

Seismic hazards such as seismic shaking and liquefaction have a high likelihood of causing power, water, wastewater, natural gas, and communications outages or disruptions. This will likely impede the proper functioning of government operations or of key critical facilities, like medical facilities or senior care centers. Exceptional seismic events could cause major disruptions to the local economy.

MAN-MADE HAZARDS

Physical Threat

Non-natural hazards are likely to be related to a natural hazard event of significant force, such as a flood, earthquake, or tsunami. Infrastructure failure could affect any critical facility or other structure in Seal Beach. Flooding that follows a tsunami, storm event, or rupture in wastewater infrastructure can carry hazardous materials far from their point of origin.

There are three sites undergoing active cleanup or evaluation due to former activities on the site that involved fuel storage or chemical distribution. These activities involved hazardous materials, such as arsenic, lead, and volatile organic compounds (PCE's and TCE's) that can evaporate easily.

These chemicals could have harmful effects on people, depending on how much and how long a person is exposed to them (ATSDR n.d.a). In particular, PCE's and TCE's could evaporate into the air and become exposed to persons occupying buildings located on the site (ATSDR n.d.). Three critical facilities are located within 500 feet of these sites, Schooner Park, Marina Park and Community Center, and one pump station. Additionally, hazardous materials on the Naval Weapons Base could potentially cause a threat.

Social Threat

The health risks associated with arsenic, lead, PCEs, and TCEs are also dependent on gender, age, body size, and existing health issues (ATSDR n.d.b.). Pregnant women, adolescents, and children are particularly at risk.

Lead exposure can affect can cause children and adolescents to be at risk of impaired immune systems, slowed growth and development, and hearing and speech problems and put pregnant women at risk of having miscarriage or pre-mature birth.[4] Exposure to arsenic can lead to skin problems, stomachaches

[4] Hayden and Winkleman. "Ways to Reduce Exposure to Lead and Arsenic and Protect Your Health in Hayden and Winkelman, Arizona." U.S. Department of Health and Human Services: Agency for Toxic Substances and Disease Registry, n.d.

and nausea, and or cancer from long-term exposure.[5] Exposure to TCE's and PCE's can put children, adolescents, and adults at risk of autoimmune diseases.[6]

[5] "Ways to Reduce Exposure to Lead and Arsenic and Protect Your Health in Hayden and Winkelman, Arizona." U.S. Department of Health and Human Services: Agency for Toxic Substances and Disease Registry, n.d.

[6] "Possible Health Risks from Exposure to TCE & PCE." Agency for Toxic Substances and Disease Registry: Division of Community Health Investigations, n.d.

CHAPTER 5
HAZARD MITIGATION STRATEGY

STRATEGY DEVELOPMENT PROCESS

Seal Beach's hazard mitigation strategy is a comprehensive set of actions that are intended to reduce the impacts of hazard events. These hazard mitigation actions will help to protect the safety and well-being of residents and visitors, critical facilities and facilities of concern, other buildings and structures, key services, the local economy, and other important community assets. Some actions will also help with emergency preparedness, allowing for a more effective community response to hazard events. Preparedness actions are not a required component of an LHMP, but they support and complement mitigation activities, and the Hazard Mitigation Planning Committee chose to include them as part of the overall hazard mitigation strategy.

USE OF HAZARD AND THREAT ASSESSMENT

The Committee relied in part on the hazard profiles and threat assessments in this Plan to develop the actions in the mitigation strategy. The Committee prepared a comprehensive set of mitigation actions that respond to the relevant hazard situations and provide protection to residents, businesses, and community assets in Seal Beach. The Committee took care to ensure that the mitigation actions will help to reduce damage from the most frequent types of hazard events, the most significant that may reasonably occur, and those with the greatest potential to harm the community. The Committee also drafted mitigation actions that will help protect the most vulnerable members of the community and the most vulnerable local assets.

CAPABILITIES ASSESSMENT

As part of the effort to draft mitigation actions, the Committee performed a capabilities assessment—a review of the existing local agencies, public policies, funding sources, individuals, and other resources that can support hazard mitigation activities in Seal Beach. The hazard mitigation actions build off of the existing success of these resources and leverage their capabilities to support improved resiliency in the community. The capabilities assessment looked at the following types of resources:

- Personnel resources: City staff and volunteers, and staff and volunteers at other agencies.
- Plan resource: Advisory or enforceable plans adopted by the City or other agencies.
- Policy resource: Policies adopted and implemented by the City or other agencies.
- Technical resource: Data and tools available to the City.

Table 5-1 shows the capabilities assessment for Seal Beach.

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TABLE 5-1: CAPABILITIES ASSESSMENT

Resource Name	Type of Resource	Ability to Support Mitigation	Website
City of Seal Beach			
Building Code	Policy resource	The Seal Beach Building Code and associated standards (Residential Code, Mechanical Code, Electrical Code, etc.) govern how new buildings are constructed. They are published by the state and are adopted by local communities, sometimes with amendments to make the codes more locally applicable. Mitigation actions to construct buildings to a safer standard, allowing them to better resist damage during a hazard event, may be made part of future building code updates.	http://www.sealbeachca.gov/Departments/Community-Development/Building-Safety
Capital Improvement Plan	Plan resource	The Seal Beach Capital Improvement Plan is a set of construction projects planned for City-owned buildings, facilities, and infrastructure. It is updated every year as part of the City's annual budget and includes projects for the next 5 years. Mitigation actions to retrofit existing City-owned structures or to build new ones that are better able to resist damage may be implemented by including these projects in the Capital Improvement Plan in the future.	http://www.sealbeachca.gov/Departments/Public-Works/Capital-Improvement
Community Development Department	Personnel resource	The Seal Beach Community Development Department is responsible for approving building permits, ensuring that buildings and private property comply with appropriate standards, and conducting short-term and long-term planning activities in the community. As part of these duties, the department enforces the Seal Beach Building Code and all land use regulations. Mitigation actions related to the construction of new structures or retrofits or improvements to existing structures may be implemented through future plan processing by Community Development Department staff.	http://www.sealbeachca.gov/Departments/Community-Development
Community Emergency Response Team	Personnel resource	The Seal Beach Community Emergency Response Team (CERT) is a group of volunteers trained in disaster preparedness, public safety, traffic control, and emergency response. CERT members can conduct disaster preparedness activities as well as light emergency response activities when disaster situations occur. The program is managed by the West Orange County Community Emergency Response Team. Mitigation actions related to community training and education may be further implemented through expansion of the CERT program.	https://www.westcountycert.com
Finance Department	Personnel resource	The Seal Beach Finance Department is responsible for preparing the City's annual budget as well as other financial reports, and handles the receipt and distribution of City funds. The Finance Department may not directly implement mitigation actions, but can support successful implementation by incorporating mitigation actions into the City budget and administration of grant support.	http://www.sealbeachca.gov/Departments/Finance
Fire Department	Personnel resource	The Orange County Fire Authority provides fire protection and firefighting services in Seal Beach. The department's responsibilities include taking preparatory steps to prevent fires or limit their destruction. Mitigation actions related to reducing the likelihood of fires or minimizing injury and damage from fires may be implemented through fire department staff.	http://www.sealbeachca.gov/Departments/Fire

TABLE 5-1: CAPABILITIES ASSESSMENT

Resource Name	Type of Resource	Ability to Support Mitigation	Website
General Plan	Plan resource	The Seal Beach General Plan (adopted in 2003) is the long-term, comprehensive blueprint for development and changes in the community. The policies in the general plan address land uses, public safety, environmental protection, and transportation, and others. The general plan serves as a framework for mitigation actions, establishing the overarching policies for mitigation activities. Mitigation actions may be directly incorporated into the general plan to provide a stronger enforcement mechanism.	http://www.sealbeachca.gov/Departments/Community-Development/Planning-Development/General-Plan
Human Resources Department	Personnel resource	The Seal Beach Human Resources Department is responsible for recruiting and training City staff. Mitigation actions that relate to staff training may be implemented through the Human Resources Department.	http://www.sealbeachca.gov/Departments/Human-Resources
Marine Safety Department	Personnel resource	The Seal Beach Marine Safety and Lifeguards Department is responsible for ensuring the safety of residents and visitors at the community's beaches. This includes closing beaches or restricting beach access when conditions are unsafe. Mitigation actions related to the safety of beach goers and the protection of beach areas may be implemented through Marine Safety and Lifeguards Department staff.	http://www.sealbeachca.gov/Departments/Marine-Safety-Lifeguards
Police Department	Personnel resource	The Seal Beach Police Department is charged with maintaining public safety in the community. As part of this work, the police department is responsible for conducting emergency preparedness activities, investigating criminal activity, and directing traffic. Mitigation actions that relate to the safe movement of traffic (e.g. during evacuations), the public safety of residents during emergency events, and terrorism-related activities may be implemented through police department staff. As emergency preparedness is part of the department's responsibilities, the police department can also widely implement other types of mitigation actions through coordination with other departments and agencies.	http://www.sealbeachca.gov/Departments/Police
Public Works Department	Personnel resource	The Seal Beach Public Works Department is responsible for constructing and maintaining City-owned facilities and infrastructure, including roadways, sidewalks, parks, and open space areas. The department also handles solid waste collection activities in the community. Mitigation actions that involve constructing or retrofitting City-owned facilities and infrastructure may be implemented through Public Works Department staff.	http://www.sealbeachca.gov/Departments/Public-Works
Senior Transportation Program	Personnel resource	The Seal Beach Senior Transportation Program provides transportation services within the community to help ensure effective transportation options for persons with limited mobility. Mitigation actions related to providing transportation services, including assistance with evacuations for persons who are unable to drive, may be implemented through Senior Transportation Program staff.	http://www.sealbeachca.gov/City-Services/Transportation-Services
Water Efficient Landscape Ordinance	Policy resource	The Seal Beach Water Efficient Landscape Ordinance establishes water efficiency standards for new or rehabilitated landscapes in the community. Mitigation measures that relate to outdoor water use may be integrated into the Water Efficient Landscape Ordinance and implemented through enforcement activities.	http://www.qcode.us/codes/sealbeach/view.php?topic=9-9_70&frames=on)

TABLE 5-1: CAPABILITIES ASSESSMENT

Resource Name	Type of Resource	Ability to Support Mitigation	Website
Zoning Code	Policy resource	The Seal Beach Zoning Code is an implementation tool for the City's general plan. It establishes regulations for land uses throughout the community, including where different types of development and land use activity can occur, how these developments can look, and how they may be operated. Mitigation actions that relate to the siting, construction, and operation of new developments in Seal Beach may be implemented through the Zoning Code to ensure these locations address risks identified in the plan.	http://www.qcode.us/codes/sealbeach/view.php?topic=11&frames=on
Orange County			
Municipal Water District of Orange County	Technical resource	The Municipal Water District of Orange County (MWDOC) is a public agency that is the wholesale water provider for large sections of Orange County, including Seal Beach. Mitigation actions related to water use may be implemented with support and assistance from MWDOC.	http://www.mwdoc.com/
Orange County Fire Authority	Technical resource	The Orange County Fire Authority (OCFA) provides fire protection and firefighting services to the unincorporated areas of Orange County and many incorporated communities. Fire-related mitigation actions that require coordination with the county may be implemented in collaboration with OCFA staff.	http://ocfa.org/
Orange County General Plan	Plan resource	The Orange County General Plan is the long-term blueprint for growth and development in the unincorporated areas of Orange County, including the adjacent community of Rossmoor. Mitigation actions that require coordination with the county may be supported by including these actions in the Orange County General Plan.	http://www.ocpublicworks.com/ds/planning/generalplan2005
Orange County Hazard Mitigation Plan	Plan resource	The Orange County Hazard Mitigation Plan identifies and describes the hazard events that may occur in the unincorporated areas of Orange County, and provides a suite of mitigation actions to help decrease the potential damage from these hazards. Mitigation actions for Seal Beach that require coordination with the county may be integrated into the County's Hazard Mitigation Plan. Similar mitigation actions in both the county's and Seal Beach's hazard mitigation plans can lead to a more regionally unified hazard mitigation strategy, which may improve effectiveness.	http://www.ocgov.com/civicax/inc/blobfetch.aspx?BlobID=47524
Orange County Water District	Technical resource	The Orange County Water District (OCWD) is the agency responsible for managing groundwater supplies in Orange County, which is a source of some of the water supply for Seal Beach. Mitigation actions related to groundwater supplies, including groundwater recharge, may be implemented with support and assistance from OCWD.	https://www.ocwd.com/
Regional, State, and Federal Agencies			
Cal-Adapt	Technical resource	Cal-Adapt is an online tool that provides detailed projections for future climate-related conditions in California, including factors such as temperature, precipitation, and sea level rise. These projections can help inform forecasts of future hazard events and can explain how hazard conditions are expected to change. The Committee can use Cal-Adapt to monitor anticipated changes in future climate conditions and adjust mitigation actions accordingly.	http://cal-adapt.org/

TABLE 5-1: CAPABILITIES ASSESSMENT

Resource Name	Type of Resource	Ability to Support Mitigation	Website
California Department of Transportation	Technical resource	The California Department of Transportation (Caltrans) is the state agency with jurisdiction over designated highways, including the Pacific Coast Highway (State Route 1) and the Garden Grove Freeway (State Route 22). Mitigation measures related to ensuring the resiliency of state-designated freeways will be implemented through coordination with Caltrans.	http://www.dot.ca.gov/
California Governor's Office of Emergency Services	Technical resource	The California Governor's Office of Emergency Services (Cal OES) is the state agency responsible for reducing hazards in the state through mitigation activities, conducting emergency planning, supporting emergency response and recovery activities, and acting as a liaison between local and federal agencies on emergency-related issues. It provides guidance on hazard mitigation planning activities, shares best practices, and distributes funding opportunities. The Committee can work with Cal OES to obtain funding to implement LHMP mitigation strategies and to receive guidance on future updates.	http://www.caloes.ca.gov/
California State Hazard Mitigation Plan	Plan resource	The California State Hazard Mitigation Plan assesses the types of hazards that may be present in California. It includes descriptions of these hazards, summaries of past hazard events, descriptions of how these hazards may occur in the future, and how these hazards may harm the people and assets of California. Like a local hazard mitigation plan, the State Hazard Mitigation Plan is updated every five years. The Committee can use the State Hazard Mitigation Plan as a source of information to refine the hazard profiles and vulnerability assessments in future Seal Beach LHMPs.	http://www.caloes.ca.gov/for-individuals-families/hazard-mitigation-planning/state-hazard-mitigation-plan
Federal Emergency Management Agency	Technical resource	The Federal Emergency Management Agency (FEMA) is the federal agency responsible for hazard mitigation, emergency preparedness, and emergency response and recovery activities. It provides guidance to state and local governments on hazard mitigation activities, including best practices and how to comply with federal requirements. FEMA also provides funding for hazard mitigation actions through grant programs.	https://www.fema.gov/
Metropolitan Water District of Southern California	Technical resource	The Metropolitan Water District of Southern California (MWD) is a public agency that supplies water to various water providers throughout the Southern California region, many of whom in turn distribute the water to more localized water suppliers. Water used in Seal Beach that comes from outside Orange County is supplied by MWD. Mitigation actions that involve local water supplies may be implemented through coordination with MWD. The agency may also provide technical support and other resources for mitigation actions involving water use.	http://www.mwdh2o.com/
United States Department of Defense	Technical resource	The United States Department of Defense is the operator of the Naval Weapons Station at Seal Beach. It is responsible for making decisions regarding the transport and storing of explosive ordnance and hazardous materials that could impact Seal Beach or the region at large. Mitigation actions addressing these two potential hazards will be administered by the Navy staff administering the base.	https://www.cnic.navy.mil/regions/cnrsw/installations/nws_seal_beach.html

TABLE 5-1: CAPABILITIES ASSESSMENT

Resource Name	Type of Resource	Ability to Support Mitigation	Website
Private Agencies			
Golden State Water Company	Technical resource	The Golden State Water Company (GSWC) is a private company that provides water services to the area of Seal Beach and other cities in Orange County. Mitigation actions related to water use and water supply may be implemented in collaboration with GSWC staff.	https://www.gswater.com/los-alamitos/
Southern California Edison	Technical resource	Southern California Edison (SCE) is the electrical service provider for Seal Beach. SCE also owns the electrical distribution grid in the community. Mitigation actions relating to the resiliency of Seal Beach's electrical grid will be implemented through coordination with SCE.	https://www.sce.com/
Southern California Gas Company	Technical resource	The Southern California Gas Company (SoCalGas) is the natural gas provider for Seal Beach and also owns the natural gas infrastructure in the community. Mitigation actions that address the resiliency of natural gas infrastructure and services in Seal Beach will be implemented through coordination with SoCalGas.	https://www.socalgas.com/

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EVALUATION OF POTENTIAL HAZARD MITIGATION ACTIONS

The Committee prepared a set of potential mitigation actions based on the hazard profiles, threat assessment, and capabilities assessment; the results of the community survey; discussions among Committee members; and existing best practices. The Committee next evaluated these potential actions using FEMA criteria.

FEMA requires local governments to evaluate the monetary and nonmonetary costs and benefits of potential mitigation actions. Although local governments are not required to assign specific dollar values to each action, they should identify the general size of costs and benefits. The Committee may elect to include measures that have a high cost or low benefits, but such measures should be clearly beneficial to the community and an appropriate use of local resources.

Warning signs, such as this tsunami hazard notice, can be high-priority measures because they are relatively inexpensive, visible, and highly beneficial to large numbers of people. Image from Franco Folini.

In addition, FEMA directs local governments to consider the following questions as part of the financial analysis:

- What is the frequency and severity of the hazard type to be addressed by the action, and how vulnerable is the community to this hazard?
- What impacts of the hazard will the action reduce or avoid?
- What benefits will the action provide to the community?
- What critical facilities, if any, will benefit from the action? How many facilities will benefit, and how important are they to the community?
- What are the environmental benefits or impacts of the action?

The Committee also chose to review and revise the potential hazard mitigation actions using a third set of criteria, known as STAPLE/E (Social, Technical, Administrative, Political, Legal, Economic, and Environmental). The Committee did not formally assess every potential mitigation action under all STAPLE/E criteria, but used the criteria to guide and inform discussion. The Committee also discussed how these criteria could be used to evaluate grant applications the City may submit to receive funding for LHMP implementation. **Table 5-2** shows the STAPLE/E criteria.

TABLE 5-2: STAPLE/E CRITERIA

Issue	Criteria
Social	• Is the action socially acceptable to Seal Beach community members? • Would the action treat some individuals unfairly? • Is there a reasonable chance of the action causing a social disruption?
Technical	• Is the action likely to reduce the risk of the hazard occurring, or will it reduce the effects of the hazard? • Will the action create new hazards, or make existing hazards worse? • Is the action the most useful approach for Seal Beach to take, given the goals of the City and of community members?
Administrative	• Does the City have the administrative capabilities to implement the action? • Are there existing City staff who can lead and coordinate implementation of the measure, or can the City reasonably hire new staff for this role? • Does the City have enough staff, funding, technical support, and other resources to carry out implementation? • Are there administrative barriers to implementing the action?
Political	• Is the action politically acceptable to City officials and to other relevant jurisdictions and political entities? • Do community members support the action?
Legal	• Does the City have the legal authority to implement and enforce the action? • Are there potential legal barriers or consequences that could hinder or prevent implementation of the action? • Is there a reasonable chance that implementation of the action would expose the City to legal liabilities? • Could the action reasonably face other legal challenges?
Economic	• What are the monetary costs of the action, and do the costs exceed the monetary benefits? • What are the start-up and maintenance costs of the action, including administrative costs? • Has funding for action implementation been secured, or is a potential funding source available? • How will funding the action affect the City's financial capabilities? • Could implementation of the action reasonably burden the Seal Beach economy or tax base? • Could there reasonably be other budgetary and revenue impacts to the City?
Environmental	• What are the potential environmental impacts of the action? • Will the action require environmental regulatory approvals? • Will the action comply with all applicable federal, state, regional, and local environmental regulations? • Will the action reasonably affect any endangered, threatened, or otherwise sensitive species of concern?

PRIORITIZATION

As part of the effort to review the hazard mitigation actions, the Committee also prioritized the actions. The prioritization efforts looked at the risks and threats from each hazard, financial costs and benefits, technical feasibility, and community values, among others. Committee members were asked to identify their priority actions through a vote. Items prioritized by at least four Committee members are considered high priority, and those prioritized by one to three members are considered medium priority. Actions not prioritized by any Committee member are considered low priority.

COST ESTIMATES

To meet the cost estimation requirements of the hazard mitigation planning process, the Committee identified relative cost estimates based on their understanding of the mitigation action intent and their experience developing identical or similar programs/implementing projects. Three cost categories based on the City's typical cost criteria were used for budgeting purposes:

- Low cost ($): $33,000 or less[7]
- Medium cost ($$): $33,001 to $300,000[8]
- High cost ($$$): Greater than $300,001[9]

HAZARD MITIGATION ACTIONS

HAZARD MITIGATION GOALS

The goals identified in **Chapter 1** help develop policies to protect community members, ecosystems, and other important assets from hazard events. These goals were developed to ensure consistency with the City's General Plan Safety Element, which will be updated as part of this process. These goals informed the development of mitigation actions and act as checkpoints to help City staff determine the progress of mitigation action implementation.

Based on the criteria and evaluation processes used during the Plan development, the Committee prepared a prioritized list of mitigation actions to improve Seal Beach's resiliency to hazard events. Collectively, these are the community hazard mitigation strategy. **Table 5-3** lists the mitigation actions as well as the prioritization of each action and other details related to implementation.

[7] Determined using the maximum amount of money that can be spent the City Manager at any time, which is $33,000.
[8] Determined using the dollar amount that is equal to one percent of the City's annual budget, which is $300,000.
[9] Anything larger than the dollar-equivalent of one percent of the City's annual budjget.

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TABLE 5-3: MITIGATION ACTIONS

Mitigation Action		Potential Funding Sources	Responsible Agency	Time Frame	Priority	Relative Cost
(P) Preparedness Activities						
P.1	Update the Seal Beach Emergency Operations Plan to identify backup power and communications locations for critical facilities.	General Fund, Grants, Community Facilities Districts, Bonds	Police Department	2021	Medium	$
P.2	Identify an alternative operations location for City departments and other municipal facilities to ensure continuity of operations during a disaster.	General Fund, Grants, Community Facilities Districts, Bonds	All Departments	2020	High	$
P.3	Develop a network of directional public announcement speakers throughout the City to ensure that all residents and visitors are notified of emergency situations and City announcements.	General Fund, Grants, Community Facilities Districts, Bonds	Fire, Police, Public Works	2020	High	$$
P.6	Facilitate improved communication between the City and the Naval Weapons Station regarding hazardous materials storage and transport, and enable first responders to adequately train and prepare for a potential release of hazardous materials.	General Fund, Grants, Community Facilities Districts, Bonds	Fire	Ongoing	Low	$
P.7	Explore the feasibility of connecting critical facilities, including City Hall, Police Station, Lifeguard HQ, and community fire stations, to a microgrid power-supply network.	General Fund, Grants, Community Facilities Districts, Bonds	Fire, Police	TBD	Medium	$
P.8	Continuously update response procedures for first responder departments to properly address hazard events as they emerge.	General Fund, Grants, Community Facilities Districts, Bonds	Fire, Police	Ongoing	Low	$
P. 9	Install energy-efficient equipment to increase the longevity of the fuel supply for backup generators.[10]	General Fund, Grants, Community Facilities Districts, Bonds	Fire, Police	Ongoing	Low	$
P.10	Maintain a list of alternative fuel suppliers and develop a partnership with a reliable fuel supplier to contact in case baseline fuel for City-owned first responder vehicles is insufficient during a hazard event.	General Fund, Grants, Community Facilities Districts, Bonds	Fire, Police	Ongoing	Low	$

[10] https://www.epa.gov/sites/production/files/2015-08/documents/flood_resilience_guide.pdf

TABLE 5-3: MITIGATION ACTIONS

Mitigation Action		Potential Funding Sources	Responsible Agency	Time Frame	Priority	Relative Cost
P.11	Maintain a call list of reliable vendors to rent portable generators in the case of an emergency.	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	Ongoing	Low	$
P.12	Ensure that the City has an adequate supply of sandbags for residents and businesses, including prefilled sandbags for individuals who may be unable to fill them on their own.	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	Ongoing	Low	$$
P.13	Develop a targeted outreach program for residents living in high-priority hazard zones that identifies current steps undertaken by the City to mitigate hazards and provides guidance to residents on individual actions they can take.	General Fund, Grants, Community Facilities Districts, Bonds	Community Development, Fire, Marine Safety & Lifeguards, Police, Public Works	TBD	Medium	$
(1) Multiple Hazards						
1.1	Conduct routine updates of the Facility Conditions Assessment for City-owned infrastructure, buildings, water pumps, and other utilities and coordinate with other agencies to ensure inspections of other important infrastructure. *(Hazards addressed: coastal flooding and storms, erosion, fire, flood, seismic hazards, severe weather, liquefaction)*	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	Ongoing	High	$
1.2	Promptly repair all major deficiencies discovered by inspections to prevent collapse, failure, or damage in the event of a natural disaster. *(Hazards addressed: coastal flooding and storms, erosion, fire, flood, seismic hazards, severe weather, liquefaction)*	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	Ongoing	High	$$$
1.4	Coordinate with Emergency Services and the California Joint Powers Insurance Authority (JPIA) to modify existing risk assessment plans, policies, and documents to include hazards of concern identified in this Local Hazard Mitigation Plan. *(Hazards addressed: All)*	General Fund, Grants, Community Facilities Districts, Bonds	Fire, Police	Ongoing	Low	$

TABLE 5-3: MITIGATION ACTIONS

Mitigation Action		Potential Funding Sources	Responsible Agency	Time Frame	Priority	Relative Cost
1.5	Develop a hazard mitigation outreach program for the City's residents with targeted, specific plans for communities and neighborhoods at particular risk such as: Leisure World, Downtown, College Park East, and others as the City finds appropriate. *(Hazards addressed: All)*	General Fund, Grants, Community Facilities Districts, Bonds	Fire, Police	TBD	Low	$
1.6	Incentivize SoCalGas, Golden State Water Company, Rossmoor Community Services District, and other private gas, oil, and water utility companies to harden their lines passing through the city from potential breaches. Encourage adoption of supervisory control and data acquisition (SCADA) to allow instantaneous shut down of line breaches. Use mitigation grants to incentivize agencies to partner with City to complete projects. *(Hazards addressed: coastal flooding and storms, fire, flood, hazardous materials release, seismic hazards)*	General Fund, Grants, Community Facilities Districts, Bonds	Fire, Police, Public Works	Ongoing	Low	$
1.7	Explore the feasibility of forming a Geologic Hazard Abatement District (GHAD) among property owners living adjacent to or within high-priority geologic hazard zones (fault rupture, tsunami, coastal erosion, etc.). *(Hazards addressed: erosion, seismic hazards, tsunami)*	General Fund, Grants, Community Facilities Districts, Bonds	Finance	TBD	Low	$$
1.8	Upgrade key water pump stations that have failed or have the potential to fail during a 100- or 500-year flood event. *(Hazards addressed: coastal flooding and storms, flood)*	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	2022	High	$$$

TABLE 5-3: MITIGATION ACTIONS

Mitigation Action		Potential Funding Sources	Responsible Agency	Time Frame	Priority	Relative Cost
1.9	Install and harden emergency backup generators at water pump stations, sewer lift stations, city hall, police department, and all other critical facilities as the city may determine necessary. *(Hazards addressed: coastal flooding and storms, fire, flood, seismic hazards, severe weather, tsunami)*	General Fund, Grants, Community Facilities Districts, Bonds	All City Departments	2022	High	$$$
1.10	Encourage the use of porous surfaces on new and significantly retrofitted residential and commercial developments to reduce runoff. *(Hazards addressed: coastal flooding and storms, drought, erosion, flooding)*	General Fund, Grants, Community Facilities Districts, Bonds	Community Development, Public Works	Ongoing	Low	$
(2) Coastal Flooding, Tsunamis, and Erosion						
2.1	Reconstruct or retrofit critical facilities within the coastal zone to meet a building standard that ensures resiliency to flooding or tsunamis, such as the ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures or other building standard.	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	2022	High	$$$
2.2	Develop a coastal erosion baseline map using GIS technology that will aid future monitoring and development processes.	General Fund, Grants, Community Facilities Districts, Bonds	Community Development, Public Works	2023	Medium	$$$
2.4	Install and harden emergency backup generators at water pump stations and sewer lift stations within coastal inundation areas. Ensure that pumps are capable of managing the loads of the 100-year and 500-year flood events.	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	2021	Medium	$$$
(3) Inland Flooding						
3.1	Continue to periodically inspect drainage structures and clean and repair systems as needed. Remind property owners to maintain private drainage structures in order to ensure full capacity.	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	Ongoing	Low	$$
3.2	Develop a Water Meter Retrofit Pilot Program to relocate or modify water meters that are currently below the water table.	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	TBD	Medium	$$$

TABLE 5-3: MITIGATION ACTIONS

Mitigation Action		Potential Funding Sources	Responsible Agency	Time Frame	Priority	Relative Cost
3.3	Follow up on the implementation of high-priority, medium-priority, and low-priority projects laid out in the City's storm drain master plan.	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	Ongoing	Medium	$$$
3.4	Coordinate a program with county, state, and relevant federal agencies to keep all drains and culverts clear of debris to reduce the potential risk of flooding.	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	Ongoing	Low	$
3.5	Work with property owners that generate, store, or dispose of hazardous materials in the 100-year and 500-year flood zones to ensure facilities are adequately flood proofed/protected.	General Fund, Grants, Community Facilities Districts, Bonds	Fire, Police	TBD	Low	$
(4) Seismic (Seismic Shaking, Faulting, and Liquefaction)						
4.1	In coordination with Caltrans, conduct a facilities condition assessment for bridges along evacuation routes to identify bridges that need seismic retrofitting. Consider pursuing highest standard improvement options (e.g., replacement instead of retrofitting) for bridges with seismic deficiencies.	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	Ongoing	High	$$$
4.2	Encourage the installation of seismically appropriate piping for new or replacement pipelines, in close coordination with local water, natural gas, and other providers.	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	TBD	Low	$
4.3	Pursue ground improvement projects, such as constructing a high strength capping layer, soil mixing, stone columns, soil wicks, chemical and pressure grouting, and other soil improvement techniques that reduce liquefaction susceptibility in the event of an earthquake.[11]	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	TBD	Low	$$$

[11] "Earthquake Risk Management: A Toolkit for Decision-Makers" (California Seismic Safety Commission, 1999), https://ssc.ca.gov/forms_pubs/ssc_1999-04_risk_toolkit.pdf.

TABLE 5-3: MITIGATION ACTIONS

	Mitigation Action	Potential Funding Sources	Responsible Agency	Time Frame	Priority	Relative Cost
(5) Drought						
5.1	Collaborate with the Orange County Water District (OCWD) and Municipal Water District of Orange County (MWDOC), to pursue water efficiency best practices to reduce water demand and the need for imported water as feasible.	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	Ongoing	Low	$
5.2	Develop a focused water leak pilot program to eliminate leaky water mains, sprinklers, and other water fixtures, focusing on areas of the City with the greatest water demand.	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	TBD	Medium	$$
5.3	Ensure the City's emergency water connections and agreements are sufficient to provide a short-term supply during a hazard event. Inspect the connection infrastructure to ensure it is resilient to emergency conditions, and retrofit as needed.	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	Ongoing	Low	$
5.4	Encourage xeriscaping, low-flow water fixtures beyond the state minimum code, and daytime watering restrictions on properties throughout the city to reduce water consumption.	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	Ongoing	Low	$$
(6) Severe Weather						
6.1	Replace exterior City-owned and -operated building components with more hazard-resistant materials.	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	Ongoing	Low	$$$
6.2	Expand use of public facilities (libraries, community centers, etc.) as cooling centers for vulnerable populations during extreme heat events, and assess facility needs in order to automatically open these facilities as cooling centers when temperatures exceed approximately 90 degrees.	General Fund, Grants, Community Facilities Districts, Bonds	Police Department, Community Services/Recreation	TBD	Medium	$
6.3	Explore feasibility for undergrounding utility lines whose poles that could blow over during a severe wind event.	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	TBD	Low	$$$
6.4	Implement a tree-planting program to diversify tree age and increase shaded areas in the City to reduce the effects of extreme heat events.	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	Ongoing	Low	$$

TABLE 5-3: MITIGATION ACTIONS

Mitigation Action		Potential Funding Sources	Responsible Agency	Time Frame	Priority	Relative Cost
6.6	Promote passive cooling design (*brise soleil*, long roof overhangs, locating windows away from southern facades, etc.) in new developments during the design review process.	General Fund, Grants, Community Facilities Districts, Bonds	Community Development	Ongoing	Medium	$
(7) Hazardous Materials Release						
7.2	Pursue full alignment with policies and actions outlined in state and regional plans such as the California Accidental Release Prevention (CalARP) Program and the Orange County Fire Authority Hazardous Materials Area Plan.	General Fund, Grants, Community Facilities Districts, Bonds	Fire	TBD	Low	$
7.4	Continuously inspect businesses and other properties storing hazardous materials. Create an inventory of old storage units that require updates, maintenance, or renovation.	General Fund, Grants, Community Facilities Districts, Bonds	Fire	Ongoing	Low	$
(8) Sea Level Rise						
8.1	Retrofit critical structures in the coastal zone to elevate them above potential sea level rise projections.	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	TBD	Medium	$$$
8.3	Coordinate with NOAA to develop communications or outreach programs to inform homeowners in sea-level rise inundation areas about ways they can protect themselves and their property from floods, such as purchasing flood insurance.	General Fund, Grants, Community Facilities Districts, Bonds	Fire, Police	Ongoing	Low	$
(9) Fire						
9.1	Promote the proper maintenance and separation of power lines and efficient response to fallen power lines.	General Fund, Grants, Community Facilities Districts, Bonds	Fire, Community Services/Recreation	Ongoing	Low	$
9.2	Conduct regular fuel modification projects to reduce fire hazard risks, such as clearing out dead vegetation in parks, open spaces, right-of-way embankments, and other areas that could become fuel for fires, such as within Gum Grove Park and surrounding neighborhoods.	General Fund, Grants, Community Facilities Districts, Bonds	Fire, Community Services/Recreation	Ongoing	Medium	$$

TABLE 5-3: MITIGATION ACTIONS

Mitigation Action		Potential Funding Sources	Responsible Agency	Time Frame	Priority	Relative Cost
9.4	Promote the planting of fire-resistant landscaping in all new developments and significant landscape retrofits in accordance with CAL FIRE recommendations, such as high-moisture, low-resin trees, shrubs, and ground cover.	General Fund, Grants, Community Facilities Districts, Bonds	Community Development	Ongoing	Low	$
9.6	Provide information and resources to residents citywide on ways to improve resilience to home fires.	General Fund, Grants, Community Facilities Districts, Bonds	Fire, OCFA, Police	Ongoing	Low	$

Relative Cost: ($): <$33,000, Low; ($$): $33,001–$300,000, Medium; ($$$)*: >300,001, High

*The threshold for the High cost category is currently set at 1% of the City's annual budget.

NATIONAL FLOOD INSURANCE PROGRAM

Seal Beach participates in the National Flood Insurance Program (NFIP), which was created by Congress in 1968 to provide flood insurance at subsidized rates to homeowners who live in flood-prone areas. Individual communities have the option to participate in the NFIP, although property owners who live in nonparticipating communities with flood-prone areas will not be able to buy flood insurance through the program. Additionally, nonparticipating communities with mapped flood plains cannot receive federal grants or loans for development activities in flood-prone areas and cannot receive federal disaster assistance to repair flood-damaged buildings in mapped flood plains (FEMA 2018a). Seal Beach has participated in NFIP since 1976 (FEMA 2018b).

Although participation is not a dedicated hazard mitigation action, Seal Beach will continue to participate in NFIP and comply with the program's requirements through continued enforcement of the City's Floodplain Management Ordinance (Title 9, Chapter 9.45 of the Seal Beach Municipal Code). This ordinance applies to land within the mapped 100-year floodplain and requires any construction activities in the 100-year floodplain to meet stricter standards to ensure that any new or retrofitted developments are more resilient to flood events. The ordinance also limits the types of land uses and activities in the 100-year floodplain (Seal Beach 2018). As part of the City's efforts to comply with NFIP, Seal Beach will make updates and revisions to the Floodplain Management Ordinance to minimize the threat of harm from flood events. These updates and revisions may be promoted by changes in local demographics, shifts in land uses, changes to flood regimes such as frequency and intensity of flood events, and other factors that may warrant municipal action. The City will also continue to incorporate any changes to the locations and designations of mapped floodplains into future planning documents, including future updates to this Plan.

As of the end of August 2018, there were 449 properties in Seal Beach insured under NFIP, mostly single-family houses or other low-density residential buildings, with a total insured value of approximately $130.8 million. Since the start of the program, NFIP has paid out 123 claims to Seal Beach properties (FEMA 2018c). There are no properties in Seal Beach which have filed claims at least twice—known as repetitive loss properties (FEMA 2018d).

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CHAPTER 6
PLAN MAINTENANCE

In order for this LHMP to remain effective and useful to the community of Seal Beach, it must remain up to date. An updated version of the LHMP will continue to guide hazard mitigation activities in Seal Beach and will help keep the City eligible for state and federal hazard mitigation funding. The Hazard Mitigation Planning Committee has structured this LHMP so that the City can easily update individual sections as new information becomes available and as new needs arise, helping to keep this Plan current.

This chapter discusses how to update this Plan to keep it in compliance with applicable state and federal requirements. This chapter also describes how the City can incorporate the mitigation actions described in Chapter 5 into existing programs and planning mechanisms, and how public participation will remain an important part of Plan monitoring and future update activities.

COORDINATING BODY

The Committee will remain responsible for maintaining and updating the Plan, including evaluating the Plan effectiveness as needed. The members of the Committee will also coordinate implementation of the Plan through their respective positions. A list of the current Committee members is in Chapter 1. In future years, staff and representatives (either current Committee members or other individuals) from the following City organizations should be included in maintenance and update activities:

- Seal Beach City Manager's Office
- Seal Beach Community Development Department
- Seal Beach Community Services/Recreation
- Seal Beach Finance Department
- Seal Beach Fire Department
- Seal Beach Human Resources
- Seal Beach Marine Safety
- Seal Beach Police Department
- Seal Beach Public Works Department

As appropriate, staff from other organizations who sat on the Committee during the preparation of this Plan should be invited to participate in future plan maintenance and update activities:

- City of Cypress Police Department
- Orange County Fire Authority
- Orange County Health Care Agency
- Orange County Intelligence and Assessment Center

- Orange County Public Works
- United States Navy (NWS Seal Beach)

Organizations that did not participate in the preparation of this plan but could be relevant for future discussions or updates to the plan include:

- Boeing
- City of Huntington Beach
- City of Long Beach
- City of Los Alamitos
- City of Westminster
- Leisure World / Golden Rain Foundation
- Los Alamitos Joint Forces Training Base
- Los Alamitos Unified School District
- Orange County Parks
- Orange County Sanitation District
- Orange County Sheriff's Department
- Rossmoor Community Services District
- Southern California Edison
- Southern California Gas Company

The Emergency Services Coordinator, a position in the Seal Beach Police Department, is the staff member responsible for coordinating the Committee and will serve as the project manager for future LHMP updates. The Emergency Services Coordinator may also designate this role to another staff member. The Emergency Services Coordinator or their designee will coordinate maintenance of this Plan, lead the formal Plan review and evaluation activities, direct the Plan update, and assign tasks to other members of the Committee to complete these activities. Such tasks may include collecting data, developing new mitigation actions, updating mitigation actions, making presentations to City staff and community groups, and revising sections of the Plan document.

PLAN IMPLEMENTATION

The effectiveness of the Plan depends on successful implementation of the mitigation actions. This includes integrating mitigation actions into existing City plans, policies, programs, and other implementation mechanisms. The mitigation actions in this Plan are intended to reduce the damage from hazard events, help the City secure funding, and provide a framework for hazard mitigation activities. The members of the Committee have prioritized the hazard mitigation actions, as shown in **Table 5-3** in Chapter 5, and these prioritizations will guide implementation of the actions through new or existing City mechanisms as resources are available. The LHMP project manager (the Emergency Services Coordinator or their designee) is responsible for overseeing the implementation, promotion, and maintenance of this Plan. The project manager is also responsible for facilitating meetings and other coordinating activities related to Plan implementation and maintenance.

This Plan works in concert with the Seal Beach General Plan, particularly the Safety Element. The Safety Element creates a framework for mitigation and preparation activities, and integrates with the goals of this Plan. The LHMP is a way for the City to expand on the goals and policies in the General Plan, identifying specific mitigation actions to achieve the General Plan's high-level objectives. The General Plan and the LHMP collectively help to reduce the threat from hazardous conditions to Seal Beach residents, businesses, visitors, buildings and facilities, infrastructure, key services, ecosystems, and other assets.

PLAN MAINTENANCE

To support maintenance and implementation, this Plan is supported by the Seal Beach Mitigation Implementation Handbook (handbook), provided in **Appendix E** for reference. The handbook is a stand-alone document that gives concise and accessible guidance to jurisdiction staff for implementing and maintaining the Plan. A key component of the handbook is the specific mechanisms that the jurisdiction can use to integrate this Plan into other planning mechanisms within the City.

PLAN EVALUATION

When members of the Committee are not updating the Plan, they should meet at least once a year to go over the implementation of mitigation actions and to evaluate the Plan's effectiveness. These meetings should include:

- Discussion of the timing of implementing the mitigation actions.
- Evaluation of the actions that are being implemented and determining if these actions are succeeding.
- Revisions, as needed, of the prioritization of mitigation actions.
- Integration of the mitigation actions into other mechanisms as needed.

The first of these meetings will be held in the 2019 calendar year. To the extent possible, Committee meetings should be scheduled at an appropriate time in the City's annual budgeting process, which will help ensure that funding and staffing needs for mitigation actions are considered. When the Committee meets to evaluate the Plan, members should consider these questions:

- What hazard events, if any, have occurred in Seal Beach in the past year? What were the impacts of these hazards on the community? Were the impacts mitigated, and if so, how?
- What mitigation actions have been successfully implemented? Have any mitigation actions been implemented but not successfully, and if so, why?
- What mitigation actions, if any, have been scheduled for implementation but have not yet been implemented?

- What is the schedule for implementing future mitigation actions? Is this schedule reasonable? Does the schedule need to be adjusted for future implementation, and are such adjustments appropriate and feasible?
- Have any new issues of concern arisen, including hazard events in other communities or regions, that are not covered by existing mitigation actions?
- Are new data available that could inform updates to the Plan, including data relevant to the hazard profiles and threat assessments?
- Are there any new planning programs, funding sources, or other mechanisms that can support hazard mitigation activities in Seal Beach?

PLAN UPDATES

The information in this Plan, including the hazard profiles, threat assessments, and mitigation actions, are based on the best available information, practices, technology, and methods available to the City and Committee at the time this Plan was prepared. As factors change, including technologies, community demographics and characteristics, best practices, and hazard conditions, it is necessary to update the Plan so that it remains relevant. Additionally, Title 44, Section 201.6(d)(3) of the Code of Federal Regulations requires that LHMPs be reviewed, revised, and resubmitted for approval every five years to remain eligible for federal benefits.

UPDATE METHOD AND SCHEDULE

The update process should begin no later than four years after this Plan is adopted, allowing a year for the update process before the Plan expires. The Emergency Services Coordinator or their designee may also choose to begin the update process sooner, depending on the circumstances. Some reasons for accelerating the update process may include:

- A presidential disaster declaration for Seal Beach or for an area that includes part or the entire city.
- A hazard event that results in one or more fatalities in Seal Beach.

The update process will add new and updated methods, demographic data, community information, hazard data and events, considerations for threat assessments, mitigation actions, and other information as necessary. This will help keep the Plan relevant and current. The Committee will determine the best process for updating the Plan, which should include the following steps:

- Involve at least one member from each City department on the Committee or as a supporting role to contribute as needed.
- Contact non-City organizations that sat on the Committee during preparation of the Plan or other relevant entities to gauge their interest and involve them in the update process.
- Review and update the hazard mapping and threat assessment for critical facilities.

- Revise the threat assessment for populations and other assets.
- Review and revise the mitigation actions as needed, including in response to actions that have been completed, changed, cancelled, or postponed.
- Send a draft of the updated Plan to appropriate external agencies.
- Make a draft of the updated Plan available to members of the public for comment.
- Following public review, send a draft of the updated plan to Cal OES and FEMA for review and approval.
- Adopt the final updated Plan within one year of beginning the update process and within five years of the adoption of the previous Plan.

UPDATE ADOPTION

The Seal Beach City Council is responsible for adopting this Plan and all future updates. As previously mentioned, adoption should occur every five years, within one year of the commencement of the update process and before the current Plan expires. The adoption should take place after FEMA notifies the City that the Plan is "approved pending adoption." Once the City Council adopts the Plan following its approval by FEMA, the police department will transmit a copy of the adopted Plan to FEMA.

PUBLIC INVOLVEMENT

The City will continue to keep members of the public informed about the Committee's actions to review and update the LHMP. The Committee will develop a revised community engagement strategy that reflects the City's updated needs and capabilities. The updated strategy should include a tentative schedule and plan for public meetings, recommendations for the use of the City website and social media accounts, and content for public outreach documentation. The Committee will also distribute annual progress reports to Seal Beach community members.

POINT OF CONTACT

The Emergency Services Coordinator for Seal Beach is the primary point of contact for this Plan and for future updates. At the time of writing, the Emergency Services Coordinator is Corporal Julia Clasby, available at (562) 799-4100 x1145.

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CHAPTER 7
SOURCES

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CITY OF SEAL BEACH

APPENDICES

LOCAL HAZARD MITIGATION PLAN

October 2018

APPENDIX A
MEETING MATERIALS

Hazard Mitigation Planning Committee invitation

Hazard Mitigation Planning Committee Meeting #1 Agenda and Sign-In Sheet

Hazard Mitigation Planning Committee Meeting #2 Agenda and Sign-In Sheet

Hazard Mitigation Planning Committee Meeting #3 Agenda and Sign-In Sheet

Hazard Mitigation Planning Committee Meeting #4 Agenda and Sign-In Sheet

From:	Julia Clasby
To:	Julia Clasby; Michael Henderson; Kasandra Bowden; Jill Ingram; Crystal Landavazo; Tim Kelsey; Vikki Beatley; Robert Acosta; Patrick Gallegos; Joe Bailey; Steve Myrter; Steven Fowler; Brian Gray
Cc:	Aaron Pfannenstiel; Hannah Fong
Subject:	Hazard Mitigation Planning Committee meeting schedule
Date:	Tuesday, April 17, 2018 6:17:58 PM

Hi All,

As you all know, we are in the process of creating Seal Beach's first Local Hazard Mitigation Plan. You have all been selected as members of the City's Hazard Mitigation Planning Committee (HMPC). As a committee, we will need to meet regularly to review all proposed methods, materials, and content for outreach activities; and we will serve as the primary liaisons with community members on the project (e.g. answering public inquiries about the LHMP).

Here is the schedule for our committee meetings and the three public meetings:

LHMP Meeting 1	5/2/2018	3:00-5:00pm
LHMP Meeting 2	5/30/2018	3:00-5:00pm
LHMP Meeting 3	6/27/2018	3:00-5:00pm
LHMP Meeting 4	7/25/2018	3:00-5:00pm

LHMP Public Meeting 1	5/30/2018	6:00-8:00pm
LHMP Public Meeting 2	6/27/2018	6:00-8:00pm
LHMP Public Meeting 3	TBA August/September 2018	6:00-8:00pm

I have sent out an Outlook invite for our first committee meeting, held at the Seal Beach EOC.

Please do not hesitate to contact me or Sergeant Henderson if you have any questions or concerns.

Thanks!

Julia

Julia Clasby, Police Corporal / Emergency Services Coordinator
City of Seal Beach Police Department
911 Seal Beach Boulevard, Seal Beach, CA 90740
(562) 799-4100 Ext. 1145
(562) 493-0634 (Fax)

For information about Seal Beach, please see our City website: http://www.sealbeachca.gov

Hazard Mitigation Planning Team Meeting #1

May 2, 2018 ; 3:00-5:00 pm

Seal Beach Emergency Operations Center
911 Seal Beach Blvd
Seal Beach, CA 90740

AGENDA

1. City Manager Introduction (5 minutes)
2. Seal Beach Team Time Requirements (5 minutes)
3. Team Introductions (5 minutes)
4. Local Hazard Mitigation Plan and Climate Vulnerability Assessment Overview (15 minutes)
5. Project goals and expectations (10 minutes)
6. Hazard Mitigation/Climate Vulnerability Planning Team Roster (10 minutes)
7. Communication Protocols (5 minutes)
8. Data Needs (20 minutes)
9. Community Engagement and Outreach Strategy (10 minutes)
10. Hazard Identification/Prioritization (30 minutes)
11. Next Steps (5 minutes)

City of Seal Beach
Hazard Mitigation Plan Planning Meeting Sign-In
May 2, 2018

Name and Department	Title	Signature
Jill Ingram	CM	
Vikki Beatley	Director of Finance	
Kasey Bowden	Director of Communications	
Crystal Landavazo	Interim Director of Community Development	
Steve Fowler Planning	Assistant Planner	
Dan Spencer	OCFA	
Loree Erpelding	Cypress PD	
Joe Bailey Marine Safety	Chief	
Tim Kelsey Recreation	Recreation Manager	
David Spitz Public Works	Associate Engineer	
Steve Mahler PW	PW Director	
Brian Gray	Police Cpl.	

City of Seal Beach
Hazard Mitigation Plan Planning Meeting Sign-In
May 2, 2018

Name and Department	Title	Signature
MIKE HENDERSON	POLICE SGT.	

City of Seal Beach
Local Hazard Mitigation Plan

1. Hazard Mitigation Planning Committee Meeting #2

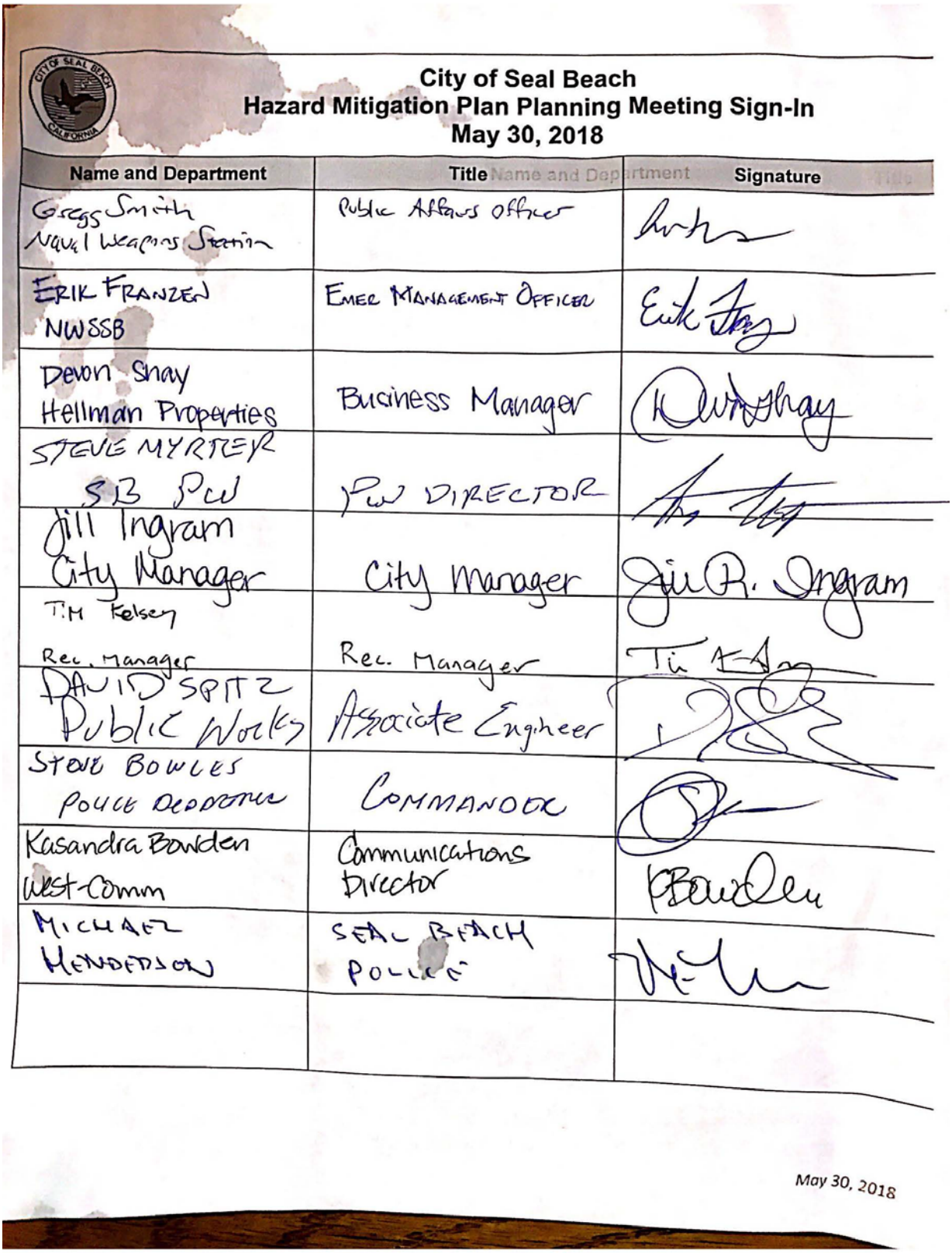
Wednesday, May 30th, 3:00-5:00 p.m.
Seal Beach City Council Chambers
211 8th Street, Seal Beach, CA 90740

2. Agenda

1. Introductions (5 minutes)
2. Review of Project Goals (5 minutes)
3. Review of Hazard Prioritization (5 minutes)
4. Hazard Profiles/Mapping Discussion (75 minutes)
5. Next Steps (5 minutes)

3. Next Meeting:

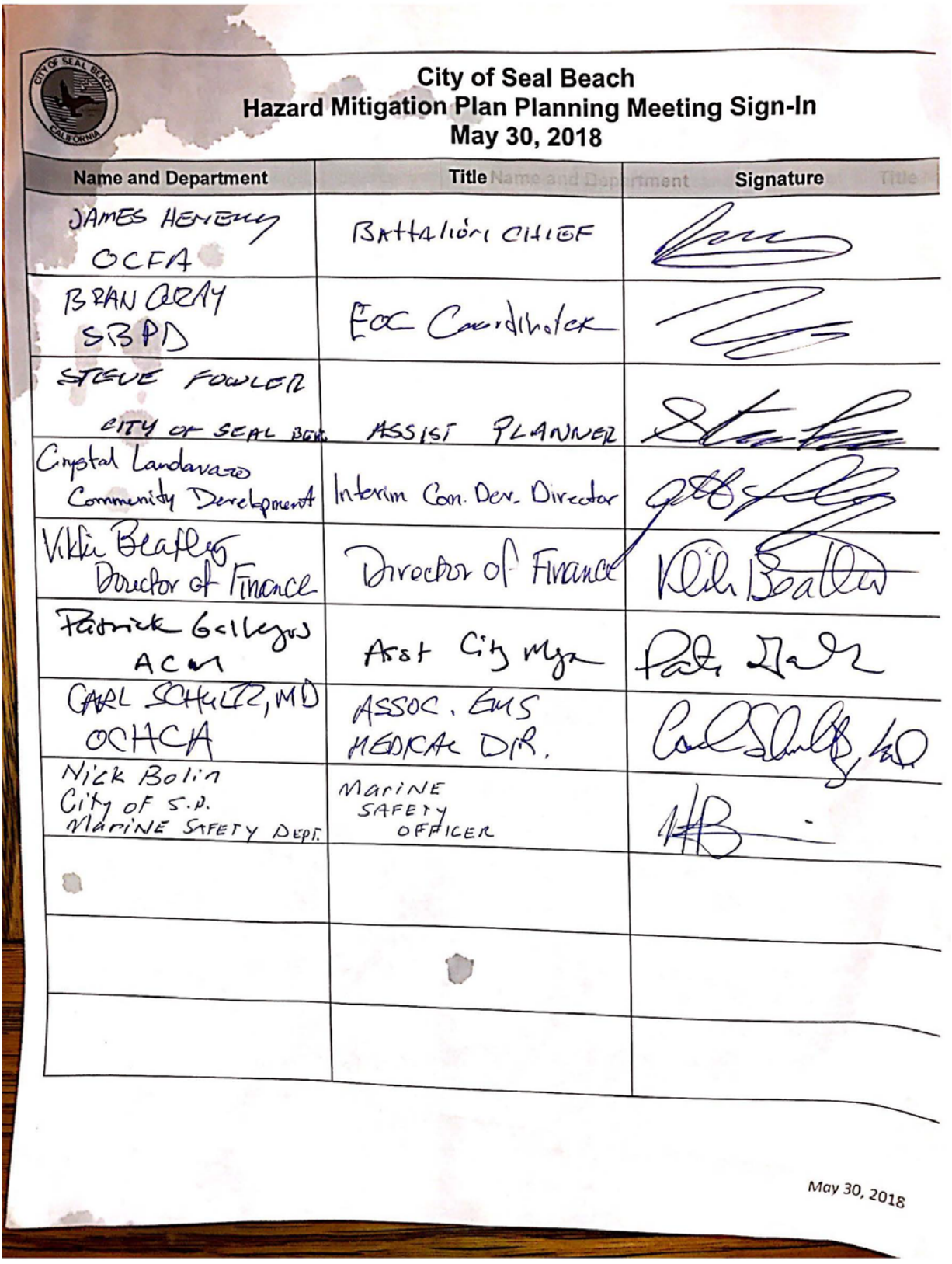
Date: **June 27, 2017**
Time: **3:00-5:00 PM**
Location: **TBD**
Topic: **Review of Risk Assessment**



City of Seal Beach
Hazard Mitigation Plan Planning Meeting Sign-In
May 30, 2018

Name and Department	Title	Signature
Gregg Smith Naval Weapons Station	Public Affairs Officer	
ERIK FRANZEN NWSSB	EMER MANAGEMENT OFFICER	
Devon Shay Hellman Properties	Business Manager	
STEVE MYRTER SB PW	PW DIRECTOR	
Jill Ingram City Manager	City Manager	
TIM Kelsey Rec. Manager	Rec. Manager	
DAVID SPITZ Public Works	Associate Engineer	
STEVE BOWLES POLICE DEPARTMENT	COMMANDER	
Kasandra Bowden West-Comm	Communications Director	
MICHAEL HENDERSON	SEAL BEACH POLICE	

May 30, 2018



City of Seal Beach
Hazard Mitigation Plan Planning Meeting Sign-In
May 30, 2018

Name and Department	Title	Signature
JAMES HENERY OCFA	BATTALION CHIEF	
BRAN GRAY SBPD	EOC Coordinator	
STEVE FOWLER CITY OF SEAL BCH.	ASSIST PLANNER	
Crystal Landavazo Community Development	Interim Com. Dev. Director	
Vikki Beatley Director of Finance	Director of Finance	Vikki Beatley
Patrick Gallegos ACM	Asst City Mgr	
CARL SCHULTZ, MD OCHCA	ASSOC. EMS MEDICAL DIR.	
Nick Bolin City of S.B. MARINE SAFETY DEPT.	MARINE SAFETY OFFICER	

May 30, 2018

City of Seal Beach
Local Hazard Mitigation Plan

1. Hazard Mitigation Planning Committee Meeting #3

Wednesday, June 27th, 3:00-5:00 p.m.
Seal Beach City Council Chambers
211 8th Street, Seal Beach, CA 90740

2. Agenda

a. Introductions (5 minutes)
b. Review of Project Goals (5 minutes)
c. Review of Hazard Prioritization (5 minutes)
d. Threat Assessment Discussion (45 minutes)
e. Mitigation Strategies Discussion (30 minutes
f. Next Steps (5 minutes)

3. Next Meeting:

Date: **July 25th, 2017**
Time: **3:00-5:00 PM**
Location: **TBD**
Topic: **Review of Mitigation Actions**

City of Seal Beach
Hazard Mitigation Plan Planning Meeting Sign-In
June 27, 2018

Name and Department	Title	Signature
Brion Gren SBPD	Corporal	
Vikki Beatley Finance	DIRECTOR OF FINANCE	
Patrick Gallegos	Asst CM	
STEVE FOWLER PLANNING	ASST PLANNER	
Crystal Landavazo Com. Dev.	Interim Com. Dev. Director	
Tim Kelsey Recreation	Recreation Manager	
DAVID SPITZ Public Works	Associate Engineer	
Jill Ingram	City Manager	
Joe Bailey	Marine Safety Chief	
MIKE HENDERSON	POLICE SERGEANT	
Kasandra Bowden	Comm Director	

City of Seal Beach
Local Hazard Mitigation Plan

1. Hazard Mitigation Planning Committee Meeting #4

Wednesday, July 25th, 3:00-5:00 p.m.
Seal Beach City Council Chambers
211 8th Street, Seal Beach, CA 90740

2. Agenda

1. Review of Draft Mitigation Actions (75 minutes)
2. Prioritization of Draft Mitigation Actions (15 minutes)
3. Q&A (10 minutes)
4. Next Steps (5 minutes)

3. Next Meeting:

Date: **August 22, 2018**
Time: **6:00-8:00 pm**
Location**: Fire Station 48**
Topic: **Community Outreach Meeting for College Park East/West**

City of Seal Beach
Hazard Mitigation Plan Planning Meeting Sign-In
July 25, 2018

Name and Department	Title	Signature
Devon Shay Hellman Properties	Business Mgr	
Kasey Bowden West-Comm	Communications Director	
Julia Clasby Seal Beach PD	Emergency Services Coordinator	
VIKKI BEATLEY	DIRECTOR OF FINANCE	
Tim Kelsey, Recreation	Recreation Manager	
Jeff Huey OCFA	Battalion Chief	
Patrick Gallegos ACM 086	ACM	

July 25, 2018

City of Seal Beach
Hazard Mitigation Plan Planning Meeting Sign-In
July 25, 2018

Name and Department	Title	Signature
Esther Cummings	Seal Beach Nat'l Wildlife Refuge Volunteer	Esther A Cummings
DAVID SPITZ P.W.	Associate Engineer	
STEVE MYRTER PW	PW DIRECTOR	
Joe Bailey	Marine Safety	
Jill Ingram	City Manager	
MIKE HENDERSON	ADMIN. SERGEANT	
STEVE FOWLER	ASSISTANT PLANNER	
Crystal Landavazo	Interim Community Development Director	

July 25, 2018

APPENDIX B
COMMUNITY OUTREACH MATERIALS

COMMUNITY ENGAGEMENT STRATEGY

CITY OF SEAL BEACH LHMP WEBSITE

COMMUNITY KICKOFF MEETING PRESENTATION, COMMENT BOARDS, AND SIGN-IN SHEETS

COMMUNITY MEETING #2 COMMENT BOARDS AND SIGN-IN

COMMUNITY MEETING #3 COMMENT BOARDS AND SIGN-IN

COMMUNITY MEETING #4 COMMENT BOARDS AND SIGN-IN

SEAL BEACH LHMP ONLINE SURVEY RESULTS

COMMUNITY ENGAGEMENT STRATEGY

The City of Seal Beach is currently developing a Local Hazard Mitigation Plan (LHMP), which will be the strategic plan to assess and reduce the threats that the community faces from current and future hazard conditions. Based on preliminary discussions, these hazards are:

- Flooding and Coastline Disturbances;
- Earthquakes and Liquefaction;
- Tsunamis;
- Wildfire; and
- Tornadoes, Waterspouts, and Wind Events;

Guidelines from the Federal Emergency Management Agency (FEMA) requires that the City create opportunities for members of the public to be involved in the development of the plan, at a minimum during its initial drafting stage and during plan approval, and that such opportunities be documented. This process helps ensure that the LHMP reflects community values, concerns, and priorities. Seal Beach will follow these guidelines when preparing its LHMP, and will go above the minimum FEMA requirements to secure more extensive community involvement as opportunities allow.

Key Terms

Hazard: A natural or human-caused event with the potential to cause damage.

Resiliency: The ability of a population or asset to reduce a threat.

Risk: The chance that a hazard, especially one of a particular size or intensity, will occur.

Threat: The potential of a hazard to do harm.

Vulnerability: A weakness that increases the threat posed to a population or asset

The overarching goals of the LHMP document as are follows:

- Enhance the resilience of community members, private property, and natural systems to hazard events.
- Keep critical services and government functions operational by protecting key infrastructure in Seal Beach.
- Ensure that the City of Seal Beach is eligible for increased funding for hazard mitigation and disaster recover activities.
- Support compliance with state laws that require addressing specific hazards and other items, including the effects of climate change.

These goals will be reflected throughout the community outreach process, with the intent to educate community members and obtain feedback in an open and transparent manner to support preparation of the LHMP. The engagement process should be respectful and neutral, providing all participants with the opportunity to express their opinions in a productive way. This Community Engagement Strategy describes how Seal Beach will conduct outreach to members of the local community and other stakeholders of importance, in a flexible and outcome-oriented manner.

PROJECT TEAM AND RESPONSIBILITIES

The LHMP is being prepared by a project team, comprised of members from the City's Hazard Mitigation Planning Committee (HMPC), key stakeholders (as discussed in the Community Members section), and technical consulting firm PlaceWorks. The HMPC members are as follows:

- Julia Clasby: Emergency Manager, Police Department (HMPC Leader)
- Jill Ingram: City Manager
- Michael Henderson: Administrative Sergeant, Police Department
- Kasandra Bowden: Police Communications Director, West Cities Police Communications
- Brian Gray: Corporal, Police Department (Emergency Operations Center)
- David Spitz: Associate Engineer, Public Works
- Crystal Landavazo: Interim Community Development Director, Community Development (Planning)
- Steve Fowler: Assistant Planner, Community Development (Building and Safety)
- Tim Kelsey: Recreation Manager, Community Services/Recreation
- Vikki Beatley: Director, Finance
- Patrick Gallegos: Assistant City Manager, City Manager's Office
- Joe Bailey: Chief, Marine Safety
- Steve Myrter: Director, Public Works
- Devon Shay: Business Manager, Hellman Properties
- Nick Bolin: Officer, Marine Safety
- Loree Erpelding: Volunteer Coordinator, City of Cypress Police Department
- Esther Cummings: Volunteer, Seal Beach National Wildlife Refuge*
- Erik Franzen: Emergency Management Officer, United States Navy (Naval Weapons Station – Seal Beach)*
- Gregg Smith: Public Affairs Officer, United States Navy (Naval Weapons Station – Seal Beach)*
- Robert Acosta: Battalion Chief, Orange County Fire Authority*
- James Henery: Battalion Chief, Orange County Fire Authority*

- Jeff Hoey: Battalion Chief, Orange County Fire Authority*
- Dave Spencer: Battalion Chief, Orange County Fire Authority*
- Carl Schultz, MD: Associate Emergency Medical Services Medical Director, Orange County Fire Authority*
- Aaron Pfannenstiel, Senior Planner and Seal Beach LHMP Project Manager, PlaceWorks

The members of the HMPC will be responsible for reviewing all proposed methods, materials, and content for outreach activities. As the local experts, they will be able to provide valuable information about how best to reach community members, and to share information and receive feedback effectively. It is likely that at least one member of the HMPC, Julia Clasby or a designee, will attend meetings and other outreach events to serve as a representative of the City. HMPC staff will serve as the primary liaisons with community members on the project (e.g. answering public inquiries about the LHMP), and will be responsible for distributing content through the preferred means.

Members of the project team from PlaceWorks will prepare a description of the recommended community engagement strategy, as well as materials and content for outreach activities. This may include digital and print materials, as well as any other items used for community engagement. At least one member of the PlaceWorks team will attend meetings and other outreach events, helping to facilitate the event and serving as technical experts as needed. PlaceWorks will also be responsible for collecting and analyzing the results of engagement activities, and sharing these results with other members of the project team.

COMMUNITY MEMBERS

During community engagement activities, the project team will reach out to two groups of community members. The project team will engage members of the general public, which includes people who live and/or work in Seal Beach, as well as those who own property or run businesses in the community. Additionally, the project team will work with key stakeholders, who represent agencies, businesses, or other organizations that are present in the community or are otherwise important to local health, safety, and quality of life. Such stakeholders do not include representatives from City agencies. The project team anticipates the following key stakeholders:

- Orange County Emergency Management
- Orange County Fire Authority
- Orange County Intelligence Assessment Center
- Southern California Edison
- Southern California Gas Company
- Orange County Water District
- Orange County Public Works
- Orange County Health Care Agency
- US Department of the Navy (NWS Seal Beach)
- Orange County Sanitation District
- Rossmoor Community Services District

- Leisure World / Golden Rain Foundation
- Boeing
- Los Alamitos Unified School District
- Los Alamitos Joint Forces Training Base
- City of Huntington Beach
- City of Long Beach

Modifications to this list may occur throughout the process if additional stakeholders are identified.

PUBLIC MEETINGS

In-person public meetings allow members of the Seal Beach community to learn about the LHMP, including the process of the plan development, hazards of concern, and feasible steps the City and community members can take to improve resiliency. These meetings allow for members of the community to speak directly to City staff and other stakeholders about the project, and to provide useful feedback. Discussions at in-person meetings are often more detailed and involved than those through online media.

All meetings will emphasize the project goals and the City's intent in preparing the LHMP, as discussed above. The meetings will also provide an opportunity for members of the project team to address any misconceptions about the LHMP. Educational material to correct other misconceptions that may arise could be distributed as part of other outreach activities, including being posted online and on the City's social media accounts. Example misconceptions may include:

- "Seal Beach must have an LHMP to receive disaster relief funding". In actuality, communities are eligible for federal disaster relief funding regardless of whether they have an LHMP or not. However, the State of California limits its share of disaster relief funding to 75 percent of the costs not paid by the federal government unless the community has a valid LHMP, at which point the State may pay more than 75 percent.
- "The LHMP must analyze all potential hazards". An LHMP must only look at natural hazards. Human-caused hazards may be included for the sake of improving overall community safety, but are not necessary. FEMA only provides funding to help mitigate natural hazards.

The City is planning to hold 3 public meetings at key stages of the process, with the opportunities for additional engagement opportunities as desired by the HMPC.

MEETING 1

The first meeting is intended to kick off the process for members of the public. At this meeting, City staff and other members of the project team will share information about the LHMP and what it is, the process used to prepare it, and future opportunities for engagement. Attendees will be able to sign up for notifications about future outreach events and opportunities to become involved. This meeting will involve a presentation by members of the project team, and will be followed by a collaborative dialogue among community members, and between community members and members of the project team. This will allow members of the public to explain, from their perspective, what they think is most important for the City to know and address in the LHMP. Posters, handouts, and other materials will be used as appropriate to support a constructive session.

This meeting is currently scheduled for Wednesday | May 30, 2018 at 6 PM at Seal Beach City Council Chambers.

MEETING 2

The second meeting will share the outcomes of initial analyses for the LHMP, including information about the hazards present in Seal Beach, the threats posed by these hazards, and the overall community vulnerability. This meeting will feature a presentation of all the work done to date by the HMPC with a community visioning activity afterwards that allows participants to comment on areas of concern in the community and potential hazard mitigation strategies.

This meeting is currently scheduled for Wednesday | June 27, 2018 at 6 PM at Leisure World Clubhouse.

MEETING 3

The third meeting will share the same agenda as Meeting 2. The outcomes of initial analyses for the LHMP will be discussed, including information about the hazards present in Seal Beach, the threats posed by these hazards, and the overall community vulnerability. This meeting will feature a presentation of all the work done to date by the HMPC with a community visioning activity afterwards that allows participants to comment on areas of concern in the community and potential hazard mitigation strategies.

This meeting is currently scheduled for August 22, 2018 at 6 PM at Fire Station 48.

MEETING 4

The fourth meeting will share the same agenda as Meeting 2 and 3. The outcomes of initial analyses for the LHMP will be discussed, including information about the hazards present in Seal Beach, the threats posed by these hazards, and the overall community vulnerability. This meeting will feature a presentation of all the work done to date by the HMPC with a community visioning activity afterwards that allows participants to comment on areas of concern in the community and potential hazard mitigation strategies.

This meeting is currently scheduled for September 5, 2018 at 6 PM at Marina Community Center.

ONLINE AND MEDIA ENGAGEMENT

Engagement through online systems and media outlets allows the City to reach a wide audience without requiring extensive effort by project staff. Online methods are well suited to receive community input on specific issues, and allow community members to participate who may be unable to attend in-person meetings. Local media outlets allow the City to easily send out notifications and other information that reaches a large segment of the community. There are multiple elements of online and media engagement that will be used during the development of the Seal Beach LHMP.

PROJECT WEBSITE

The project website will be a simple, one-stop location for community members to learn about the LHMP. It will contain information about what an LHMP is, why the City is preparing one, and how community members can get involved, along with other topics. The website will also include links to materials and plan documents as they become available, and will contain notifications about upcoming events related to the plan development.

SOCIAL MEDIA

The use of social media accounts, such as Facebook, Twitter, and NextDoor, is an easy way for the City to send quick notifications or bursts of information about the project to a large number of community members. The City can use its social media accounts to send out information about upcoming events or other opportunities for public involvement. The following are a list of existing accounts that could be used:

- Facebook: Community Services /Recreation, Police Department
- Instagram: Police Department
- Twitter: Community Services/ Recreation, Police Department
- NextDoor
- Nixle
- Council Member newsletters

ONLINE SURVEY

The online survey is an effective way to collect information and comments from community members about issues of importance to the LHMP. The survey will include questions about community members' past experience and familiarity with emergency conditions, level of preparedness for future emergencies, and preferred actions for the City to take to increase community resiliency, along with other questions that the project team chooses to add. Links to the survey can be posted on the project website and distributed through social media announcements. The project team can also distribute paper copies of the survey during community events or meetings, if desired.

PRESS RELEASES

Press releases allow the City to send out information about upcoming project milestones or other notifications to local media outlets, including print media, television, and radio. The City can use these documents to alert members of the public about the status of the project and upcoming events, often in conjunction with postings on social media and on the project website. The number of press releases should be limited (e.g. one to announce the beginning of public engagement, one to announce the release of the public draft plan, and potentially a third if warranted), as too many press releases will likely be ignored.

CONTENT FOR ONLINE AND MEDIA ENGAGEMENT

The following material can be used for the online and media engagement components of the community engagement strategy. It can also be adapted and revised as the project proceeds and specifics change.

PROJECT WEBSITE CONTENT

Local Hazard Mitigation Plan

The City of Seal Beach is preparing a Local Hazard Mitigation Plan, or LHMP. This plan will help create a safer community for residents, businesses, and visitors. The LHMP allows public safety officials and city staff, elected officials, and members of the public understand the threats from natural and human-caused hazards in our community. The plan will also recommend specific actions to proactively decrease these threats before disasters occur.

Why have an LHMP?

An LHMP will let Seal Beach plan for future emergencies. Usually, after a disaster occurs, communities take steps to recover from the emergency and rebuild. A LHMP is a way for the City to become more prepared in advance of these disasters, so when they do occur, less damage occurs and recovery is easier. Our community can use LHMP strategies to reduce instances of property damage, injury, and loss of life from disasters. Besides protecting public health and safety, this approach can save money. Studies estimate that every dollar spent on mitigation saves an average of four dollars on response and recovery costs. An LHMP can also help to strengthen the mission of public safety officers, such as police and fire department staff, providing them with clear roles and responsibilities to build a safer community.

Besides helping to protect Seal Beach, our LHMP will make the City eligible for grants from the Federal Emergency Management Agency (FEMA) that can be used to further improve safety and preparedness in the community. Having an adopted LHMP can also make Seal Beach eligible to receive more financial assistance from the State when disasters do occur.

What is in our LHMP?

The City of Seal Beach LHMP includes four main sections:

- A summary of the natural and human-caused hazards that pose a risk to our community. This will include descriptions of past disaster events and the chances of these disasters occurring in the future.
- An assessment of the threat to Seal Beach, which will describe how our community is vulnerable to future disasters. The plan will look at the threat to important buildings and infrastructure, such as police and fire stations, hospitals, roads, and utility lines. It will also look at the threat to community members, particularly disadvantaged persons.
- A hazard mitigation strategy, which will lay out specific policy recommendations for Seal Beach to carry out over the next five years. These recommendations will help reduce the threat that our community faces from hazard events.
- A section on maintaining the plan, which will help ensure that our LHMP is kept up-to-date. This will make it easier for us to continue to proactively protect ourselves, and will also keep the City eligible for additional funding.

What hazards will our LHMP help protect against?

The City plans to include the following natural hazards in our LHMP:

- Flooding and Coastline Disturbances;
- Earthquakes and Liquefaction;
- Tsunamis;
- Wildfire; and
- Tornadoes, Waterspouts, and Wind Events;

Our LHMP will also look at how climate change may affect these hazards and may include other hazards that pose a threat to our community.

How is our LHMP being prepared?

The City has assembled a Hazard Mitigation Planning Committee (HMPC), which includes representatives from public safety officials and City departments, and will guide the overall development of our LHMP. The HMPC is supported by key stakeholders, and technical consultants. Together, these participants form the project team responsible for preparing our plan.

When will our LHMP be done?

The project team plans to release a first draft of the Seal Beach LHMP for public review in Fall 2018. After members of the public provide comments and feedback, the project team will revise the plan, and send it to state and federal agencies for review and approval. Once approved by state and federal agencies, the Seal Beach City Council will approve the final LHMP. We hope to have the plan ready for adoption in the early 2019, but it may be later depending how long state and federal review takes.

How can I get involved?

You can get involved in preparing our LHMP in different ways.

- The project team will hold public meetings to share information about our LHMP and obtain community feedback. The first of these meetings is scheduled for Day, Date, 2018.
- The City will release an online survey to members of the public in the spring of 2018, asking for information about past experience with natural hazards and how our LHMP can be the most useful. Take the survey when it comes out, and encourage your friends and family to do the same.
- The City will release a draft of the completed LHMP for public review. Please review and provide comments on this document, either at in-person meetings or in writing.
- Encourage members of the Seal Beach City Council to adopt the plan. Then, encourage them to put the plan into effect.
- Reach out to the project team [insert contact information] for more ways to stay involved.

What can I do now to be better prepared for disasters?

- Know the hazards that may affect you at your home, work, or school. You can find out more at http://myhazards.caloes.ca.gov/.

- Assemble an emergency kit for your home. In a disaster, you may have to rely on supplies in your emergency kit for at least three days. Be sure to include supplies for any pets and anyone in your home with special needs. Learn more at https://www.ready.gov/build-a-kit.
- Have a disaster plan for your household, including how people should contact each other if a disaster occurs and where you should meet.
- Learn about your neighbors and how to help them. In a disaster, emergency responders may not be able to reach your neighborhood for a while. Know if your neighbors have any special needs, and be sure to check on them as soon as you can.
- Make sure your homeowner's or renter's insurance covers you from disasters such as earthquakes and floods. If these disasters occur, having good insurance coverage will help you recover easier.
- Volunteer with an emergency response or community service organization that does work on disaster education and preparation.
- Speak to your employer about creating a disaster recovery, workforce communication, and/or business continuity plan. If they already have one or more of these plans in place, make sure you and your co-workers know it.
- Join West Orange County Regional Community Emergency Response Team (West County CERT), a group of volunteers trained by several Cities in western Orange County (including Seal Beach) to assist emergency responders during disasters. Training is free and offered at times throughout the year. Learn more at http://www.sealbeachca.gov/Departments/Police/Volunteer-Programs#cert

SOCIAL MEDIA POSTS

Facebook

Project/meeting announcement

Help us build a safer Seal Beach! Our city is currently preparing a Local Hazard Mitigation Plan (LHMP), which will provide information about our community's vulnerabilities to disasters and what we can do to be more prepared. Come to [LOCATION] at [TIME] on [DATE] to learn more and get involved. Additional information is located here: [PROJECT WEBSITE].

Survey

Let your voice be heard as we plan for a safer Seal Beach! Our city is looking for engaged community members to take a quick survey on hazards and emergency preparations. Your responses will help in the preparation of our Local Hazard Mitigation Plan (LHMP). All survey responses are completely anonymous. Take the survey at [SURVEY LINK] and learn more about the LHMP at [PROJECT WEBSITE].

Public plan release

With the help of our active and involved community members, we have prepared a first draft of our Local Hazard Mitigation Plan (LHMP). This plan will help our community learn about and prepare for future emergencies, building a safer Seal Beach for everyone. You can read the plan at [LINK], and submit comments for how to make the LHMP better at [COMMENT FIELD/WEBSITE/EMAIL ADDRESS]. You can

also make in-person comments at our public meeting at [LOCATION] at [TIME] on [DAY]. Help us make our LHMP the best it can be!

Twitter

Project/meeting announcement

Our city is writing a new plan to help us build a safer Seal Beach. Come to our public kickoff meeting to learn more and get involved! [Link to webpage announcement – use URL shortener]

Survey

We want your opinion to help us build a safer Seal Beach! Take a few minutes to take our Local Hazard Mitigation Plan survey at [Link to survey – use URL shortener].

Public plan release

The first draft of our plan to help us build a safer Seal Beach for everyone is out! Read the plan and comment online or in person. Learn more at [Link to website post – use URL shortener].

BLOG/NEWSLETTER POSTS

Project/meeting announcement

Wildfires. Floods. Earthquakes. We've all heard about these disasters and many of us have lived through them, often several times. It's easy to think that there's nothing we can really do about these events, but while we often can't stop them from happening, we can make sure that the damage to our community is reduced.

At the City of Seal Beach, we want to make our community as safe as it can be, which is why we're preparing a Local Hazard Mitigation Plan (LHMP). These plans will help our community assess the potential for future disasters, take steps to prepare for them, and make us eligible for additional funding from the federal and state government. Our LHMP will cover four major topics.

- Summarizing the natural and human-caused hazards that pose a threat to our community.
- Looking at how our community members, buildings, and infrastructure are vulnerable to these hazards.
- Outlining a Hazard Mitigation Strategy, with specific policy recommendations for future actions to help reduce the threat from these hazards.
- Maintaining and updating the plan, keeping it current in the face of changing conditions.

Our LHMP is being prepared by public safety officials and City staff, with support from key stakeholders, other affected agencies, and technical consultants. Community input is vital to ensure that our plan reflects the opinions, concerns, and goals of the community. The first of three community meetings will be held on Day, Date, 2018 at 6 PM at Seal Beach City Council Chambers. Come to the meeting and learn

about the project, talk with our team, and share your thoughts about how we can make Seal Beach more resilient.

Can't make the meeting? We'll be releasing an online survey soon that will let you weigh in on our plan. We'll also be hosting future meetings and events to get feedback and raise awareness about reducing the threat from disasters. To learn more, visit our project website at [WEBSITE] or contact [CONTACT PERSON] at [CONTACT INFORMATION].

Survey

The City of Seal Beach recently started work on a Local Hazard Mitigation Plan (LHMP), a five-year strategy to identify and reduce the threats from natural and human-caused disasters to our community. This plan is being prepared by public safety officials and City staff, with support from key stakeholders, other affected agencies, and technical consultants. It's vital to us that our LHMP reflects the opinions, concerns, and goals of our community members, which is why we want your input.

We've posted an online survey for all community members, which will help us better understand the issues important to you, how prepared we are as a community, and what actions we should take to be better prepared in the future. The survey should only take five to ten minutes of your time, and all responses are completely anonymous. Take the survey at [Link to survey], and encourage your family and friends in Seal Beach to do the same.

To learn more about the Seal Beach LHMP, visit our project website at [WEBSITE] or contact [CONTACT PERSON] at [CONTACT INFORMATION].

Public plan release

Since April 2018, we've been working on a Local Hazard Mitigation Plan (LHMP), a five-year strategy to identify and reduce the threats from natural and human-caused disasters to our community. This plan is being prepared by public safety officials and City staff, with support from key stakeholders, other affected agencies, and technical consultants. Feedback and comments from other Seal Beach community members have helped to ensure that the plan reflects the opinions, concerns, and goals of our residents and businesses.

A first draft of the completed plan is now available, and we want your input. Tell us what you think about the plan and ways we can improve it. We want to hear all your ideas.

We'll integrate public comments into the plan prior to transmittal to state and Federal agencies. You can share your comments until [DATE]. You can read the plan here, [LINK]; and send your comments to [ADDRESS]. You can also come to our public meeting at [TIME] on [DATE] at [LOCATION] to talk to project staff and share your thoughts directly with the City Council and City staff.

SAMPLE PRESS RELEASE

The City of Seal Beach has begun preparation of a Local Hazard Mitigation Plan (LHMP), a five-year strategic plan to improve local resilience to hazard events. Development of the plan, the first such plan for

Seal Beach, is being funded through a grant from the Federal Emergency Management Agency (FEMA). The plan is being prepared by public safety officials and City staff, with support from key stakeholders, other affected agencies, and technical consultants. It will also incorporate regular feedback from key Seal Beach community members. The City plans to release a draft of the plan for public review in January of 2018, with final adoption planned for summer of 2018 following approval from the California Office of Emergency Services and FEMA.

The Seal Beach LHMP will summarize the natural and human-caused hazards that pose a threat to the community, including drought, flooding, earthquakes, and wildfires. As a part of this process, the plan will identify how climate change is expected to affect future hazards in Seal Beach. The LHMP will analyze how community members, buildings, and infrastructure are vulnerable to the threats posed by these hazards. It will outline a Hazard Mitigation Strategy that will provide specific policy and action recommendations to City staff and community partners to improve overall resiliency to hazard events. The plan will also include steps to maintain it and keep it updated, including keeping the plan current in the face of changing conditions.

In addition to protecting Seal Beach from current and future hazards, having an LHMP will allow Seal Beach to be eligible for grants from FEMA for additional hazard mitigation efforts, under the provisions of the federal Robert T. Stafford Act and the Disaster Mitigation Act of 2000. It will also make Seal Beach eligible to receive additional disaster relief funding from the State of California, per California Government Code Section 8685.9.

CITY OF SEAL BEACH LHMP WEBSITE

- LOCAL HAZARD MITIGATION PLAN

The City of Seal Beach is preparing a Local Hazard Mitigation Plan, or LHMP. This plan will help create a safer community for residents, businesses, and visitors. The LHMP allows public safety officials and city staff, elected officials, and members of the public understand the threats from natural and human-caused hazards in our community. The plan will also recommend specific actions to proactively decrease these threats before disasters occur.

WHY HAVE AN LHMP?

Community Meeting Presentation

An LHMP will let Seal Beach plan for future emergencies. Usually, after a disaster occurs, communities take steps to recover from the emergency and rebuild. An LHMP is a way for the City to become more prepared in advance of these disasters, so when they do occur, less damage occurs and recovery is easier. Our community can use LHMP strategies to reduce instances of property damage, injury, and loss of life from disasters. Besides protecting public health and safety, this approach can save money. Studies estimate that every dollar spent on mitigation saves an average of four dollars on response and recovery costs. An LHMP can also help to strengthen the mission of public safety officers, such as police and fire department staff, providing them with clear roles and responsibilities to build a safer community.

Besides helping to protect Seal Beach, our LHMP will make the City eligible for grants from the Federal Emergency Management Agency (FEMA) that can be used to further improve safety and preparedness in the community. Having an adopted LHMP can also make Seal Beach eligible to receive more financial assistance from the State when disasters do occur.

WHAT IS IN OUR LHMP?

The City of Seal Beach LHMP includes four main sections:

- A summary of the natural and human-caused hazards that pose a risk to our community. This will include descriptions of past disaster events and the chances of these disasters occurring in the future.
- An assessment of the threat to Seal Beach, which will describe how our community is vulnerable to future disasters. The plan will look at the threat to important buildings and infrastructure, such as police and fire stations, hospitals, roads, and utility lines. It will also look at the threat to community members, particularly disadvantaged persons.
- A hazard mitigation strategy, which will lay out specific policy recommendations for Seal Beach to carry out over the next five years. These recommendations will help reduce the threat that our community faces from hazard events.

- A section on maintaining the plan, which will help ensure that our LHMP is kept up-to-date. This will make it easier for us to continue to proactively protect ourselves, and will also keep the City eligible for additional funding.

WHAT HAZARDS WILL OUR LHMP HELP PROTECT AGAINST?

The City plans to include the following natural hazards in our LHMP:

- Flooding and Coastline Disturbances;
- Earthquakes and Liquefaction;
- Tsunamis;
- Wildfire; and
- Tornadoes, Waterspouts, and Wind Events;

Our LHMP will also look at how climate change may affect these hazards and may include other hazards that pose a threat to our community.

HOW IS OUR LHMP BEING PREPARED?

The City has assembled a Hazard Mitigation Planning Committee (HMPC), which includes representatives from public safety officials and City departments, and will guide the overall development of our LHMP. The HMPC is supported by key stakeholders, and technical consultants. Together, these participants form the project team responsible for preparing our plan.

WHEN WILL OUR LHMP BE DONE?

The project team plans to release a first draft of the Seal Beach LHMP for public review in Fall 2018. After members of the public provide comments and feedback, the project team will revise the plan, and send it to state and federal agencies for review and approval. Once approved by state and federal agencies, the Seal

Beach City Council will approve the final LHMP. We hope to have the plan ready for adoption in the early 2019, but it may be later depending how long state and federal review takes.

HOW CAN I GET INVOLVED?

You can get involved in preparing our LHMP in different ways.

- The project team will hold public meetings to share information about our LHMP and obtain community feedback. The first of these meetings is scheduled for:

  Community Outreach Meeting #1 - May 30th 2018, Seal Beach Council Chambers, 6:00 pm to 8:00 pm

  Community Outreach Meeting #2 - June 27th 2018, Leisure World Clubhouse #4, 6:00 pm to 8:00 pm

  Community Outreach Meeting #3 - September 5th 2018, Marina Community Center, 6:00 pm to 8:00 pm

*Added: Community Outreach Meeting #4 - August 22nd 2018, OCFA Fire Station #48 - Community Room, 6:00 pm to 8:00 pm

- The City has an online survey available to members of the public asking for information about past experience with natural hazards and how our LHMP can be the most useful. Take the survey, and encourage your friends and family to do the same.

TAKE SURVEY

- The City will release a draft of the completed LHMP for public review. Please review and provide comments on this document, either at in-person meetings or in writing.
- Reach out to the project team for more ways to stay involved (email address is hazardmitigation@sealbeachca.gov).

WHAT CAN I DO NOW TO BE BETTER PREPARED FOR DISASTERS?

- Know the hazards that may affect you at your home, work, or school. You can find out more at http://myhazards.caloes.ca.gov/.
- Assemble an emergency kit for your home. In a disaster, you may have to rely on supplies in your emergency kit for at least three days. Be sure to include supplies for any pets and anyone in your home with special needs. Learn more at https://www.ready.gov/build-a-kit.
- Have a disaster plan for your household, including how people should contact each other if a disaster occurs and where you should meet.
- Learn about your neighbors and how to help them. In a disaster, emergency responders may not be able to reach your neighborhood for a while. Know if your neighbors have any special needs, and be sure to check on them as soon as you can.
- Make sure your homeowner's or renter's insurance covers you from disasters such as earthquakes and floods. If these disasters occur, having good insurance coverage will help you recover easier.

- Volunteer with an emergency response or community service organization that does work on disaster education and preparation.
- Speak to your employer about creating a disaster recovery, workforce communication, and/or business continuity plan. If they already have one or more of these plans in place, make sure you and your co-workers know it.
- Join West Orange County Regional Community Emergency Response Team (West County CERT), a group of volunteers trained by several Cities in western Orange County (including Seal Beach) to assist emergency responders during disasters. Training is free and offered at times throughout the year.

CITY HALL 211 EIGHTH STREET, SEAL BEACH, CA 90740
(562) 431-2527

COMMUNITY KICKOFF MEETING PRESENTATION

Agenda/Overview

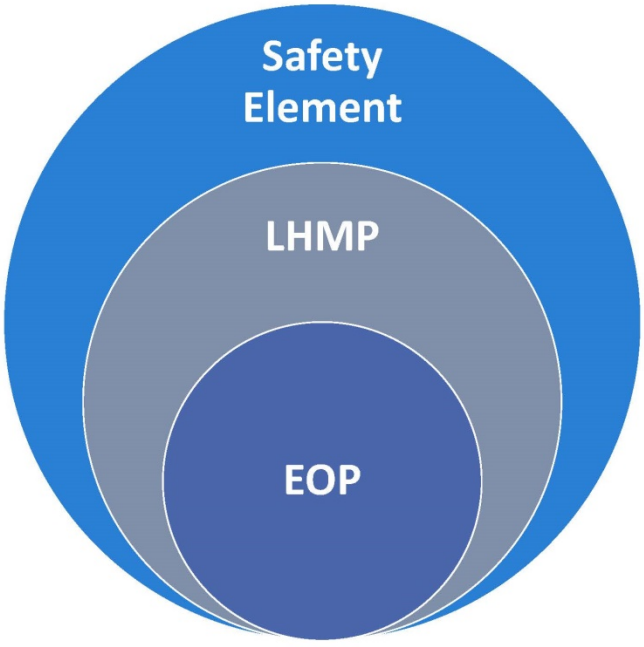
- Welcome/Introductions
- Project Background
- Project Funding
- Hazard Mitigation Planning Committee
- Overview of a Local Hazard Mitigation Plan
- Overview of the Project Work Plan (Community Input)
- Public Engagement Opportunities
- Questions and Answers

Project Background

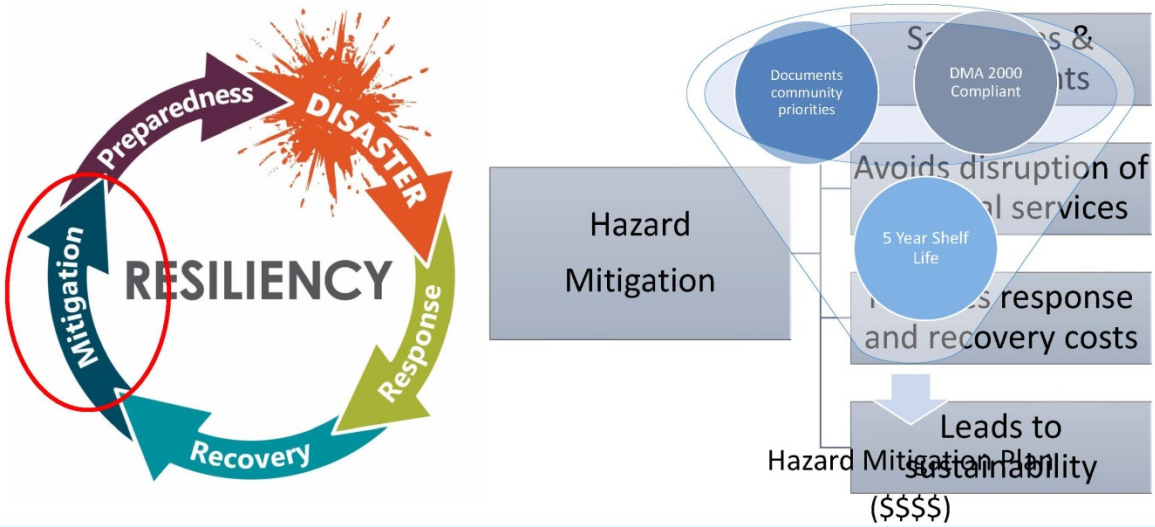
What	Who	Why
• Preparation of a Local Hazard Mitigation Plan (LHMP)	• Led by Seal Beach Police Department	• Assist the City with future mitigation grant opportunities

How

- Integrate the LHMP with the City's General Plan Safety Element to comply with recent legislation



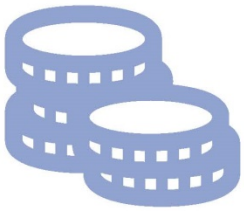
What is Hazard Mitigation (Plan)



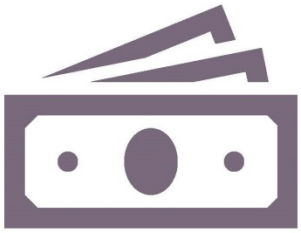
PLACEWORKS

Project Funding

- City Received a Grant from the Federal Emergency Management Agency (FEMA)



- City staff time applies to the matching funds requirement of the grant



Address Local Seal Beach Issues

- Low-Lying Coastline
- Circulation Constraints
  - NWS-Seal Beach
  - Congestion
- Past Hazards
  - Coastal Storms
  - Flooding
  - Tsunami
  - Extreme Weather
  - Fire

Post-It Note Exercise

Hazard Mitigation Planning Committee

Public Works Department	Fire Department (OCFA)	Community Development Department	Community Services/ Recreation
City Manager's Office	Human Resources	Marine Safety Department	Police Department (Project Lead)

Residents and Businesses

External Stakeholders

Misconceptions

"Seal Beach must have an LHMP to receive disaster relief funding". ➡ FALSE

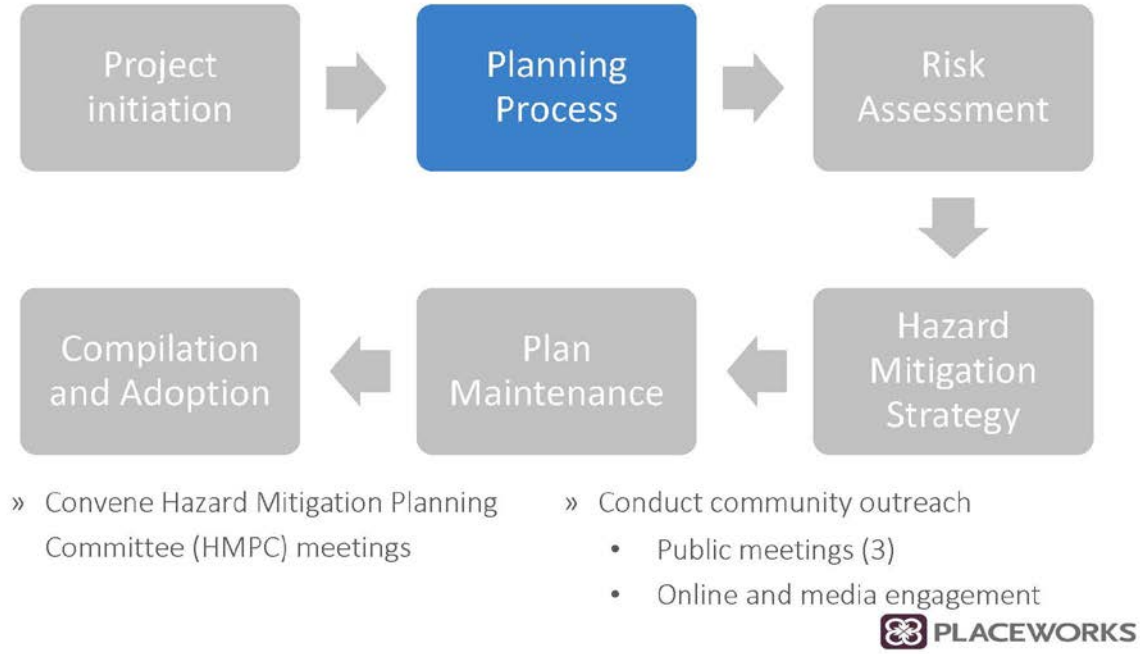
In actuality, communities are eligible for federal disaster relief funding regardless of whether they have an LHMP or not. However, the State of California limits its share of disaster relief funding to 75 percent of the costs not paid by the federal government unless the community has a valid LHMP, at which point the State may pay more than 75 percent.

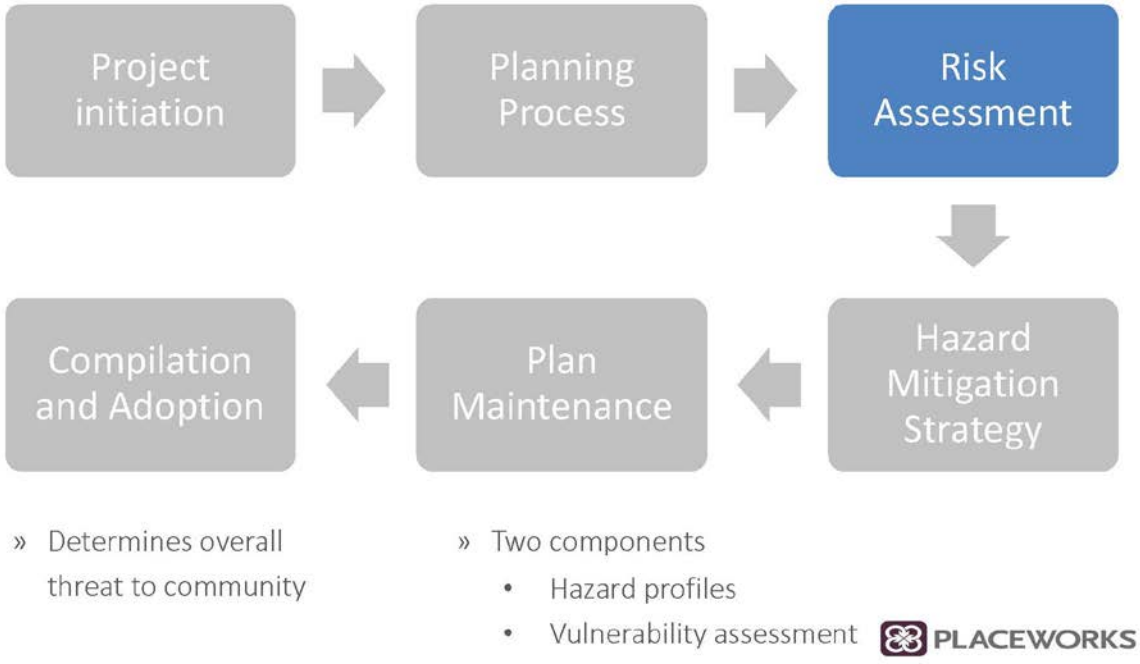
Misconceptions

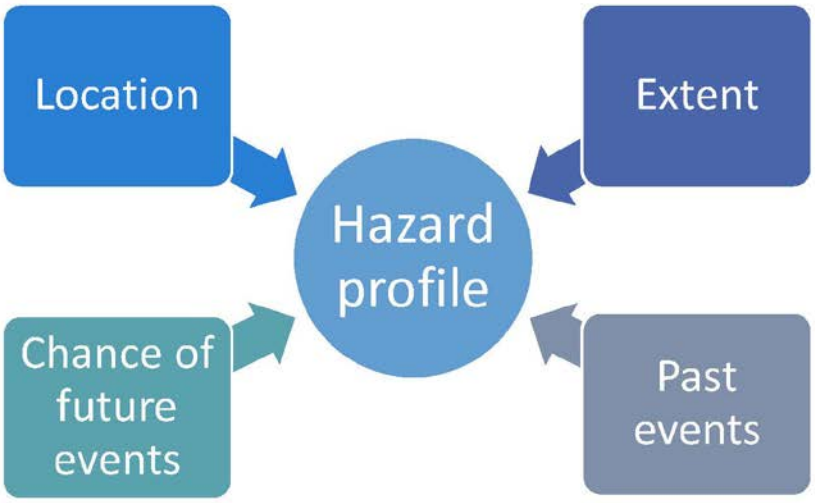
"The LHMP must analyze all potential hazards". ➡ FALSE

An LHMP must only look at natural hazards. Human-caused hazards may be included for the sake of improving overall community safety, but are not necessary. FEMA only provides funding to help mitigate natural hazards.


Overview of the Plan Development Process
Project Initiation
Planning Process
Risk Assessment
Hazard Mitigation Strategy
Plan Maintenance
Compilation and Adoption
Project Initiation
Planning Process
Risk Assessment
Hazard Mitigation Strategy
Plan Maintenance
Compilation and Adoption
» Establish Project Goals
» Determine Format/ Content
» Finalize Plan Approach
» Collect Data
PLACEWORKS


Project initiation
Planning Process
Risk Assessment
Hazard Mitigation Strategy
Plan Maintenance
Compilation and Adoption
» Convene Hazard Mitigation Planning Committee (HMPC) meetings
» Conduct community outreach
• Public meetings (3)
• Online and media engagement
PLACEWORKS


Project initiation
Planning Process
Risk Assessment
Hazard Mitigation Strategy
Plan Maintenance
Compilation and Adoption
» Determines overall threat to community
» Two components
• Hazard profiles
• Vulnerability assessment
PLACEWORKS



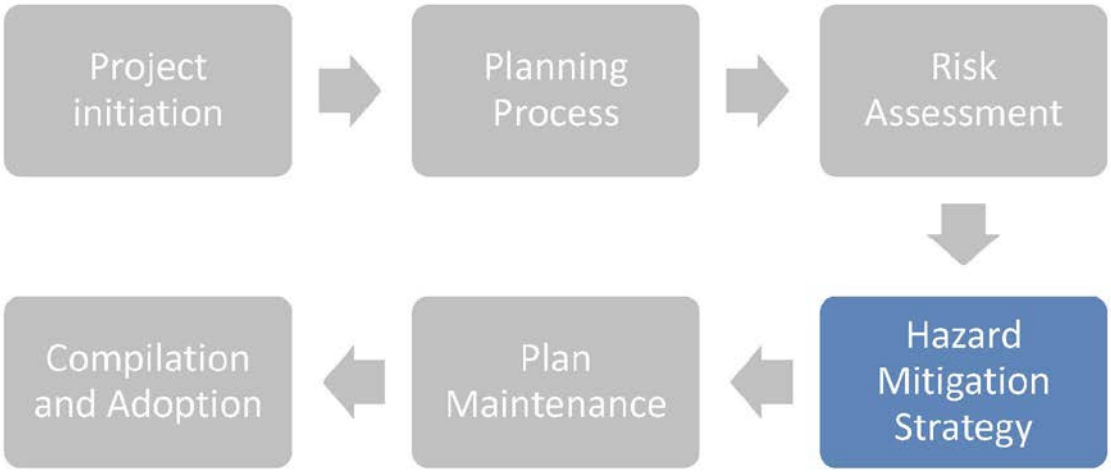
» Describes hazards that affect community

» Explains why some hazards are excluded

Dot Exercise

PLACEWORKS

PLACEWORKS



» Mitigation Actions

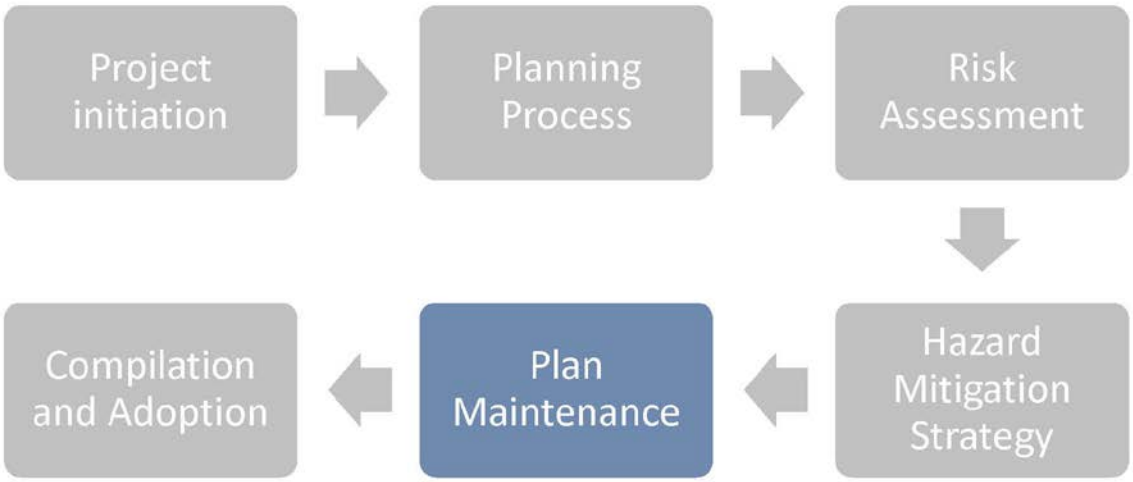
- Future steps undertaken by the City to reduce potential vulnerabilities

PLACEWORKS

Mitigation Strategies/Actions

Goals	• Overarching objectives
Strategies	• Comprehensive, specific measures
Action plan	• Prioritizes measures • Includes implementation details

PLACEWORKS

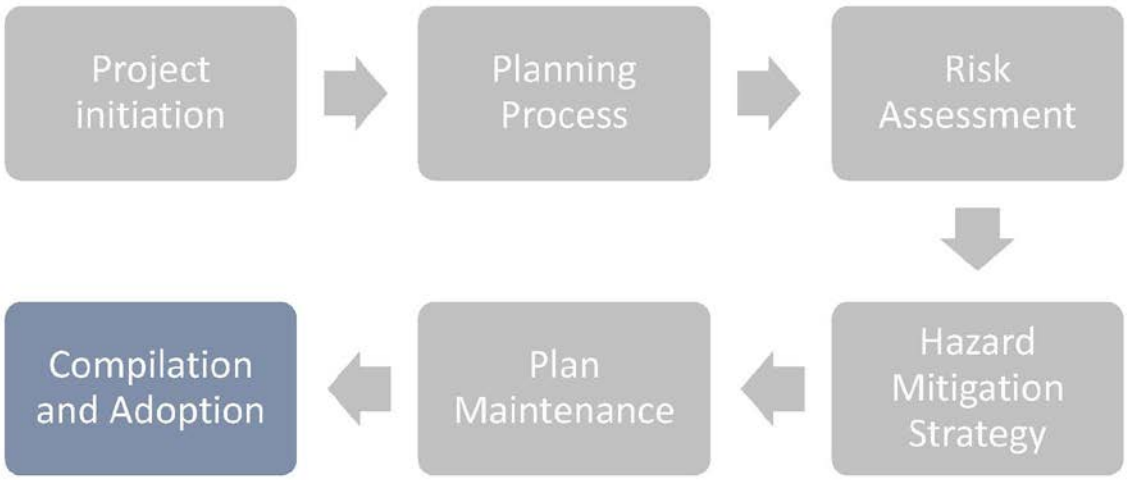


» Ensures plan remains valid during five-year horizon

» Includes regular updates on implementation

» Provides guidance for future updates

PLACEWORKS



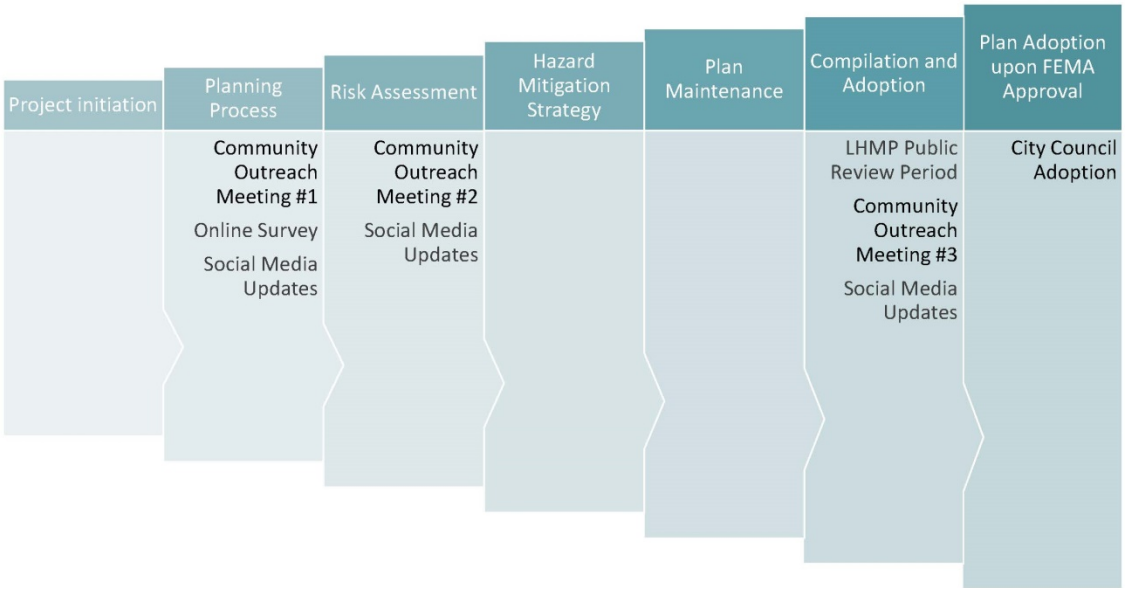
» Public review

» Approval from Cal OES and FEMA

» Final City Council adoption

PLACEWORKS

Public Engagement Opportunities



How to Stay Engaged/Informed

Seal Beach LHMP Website

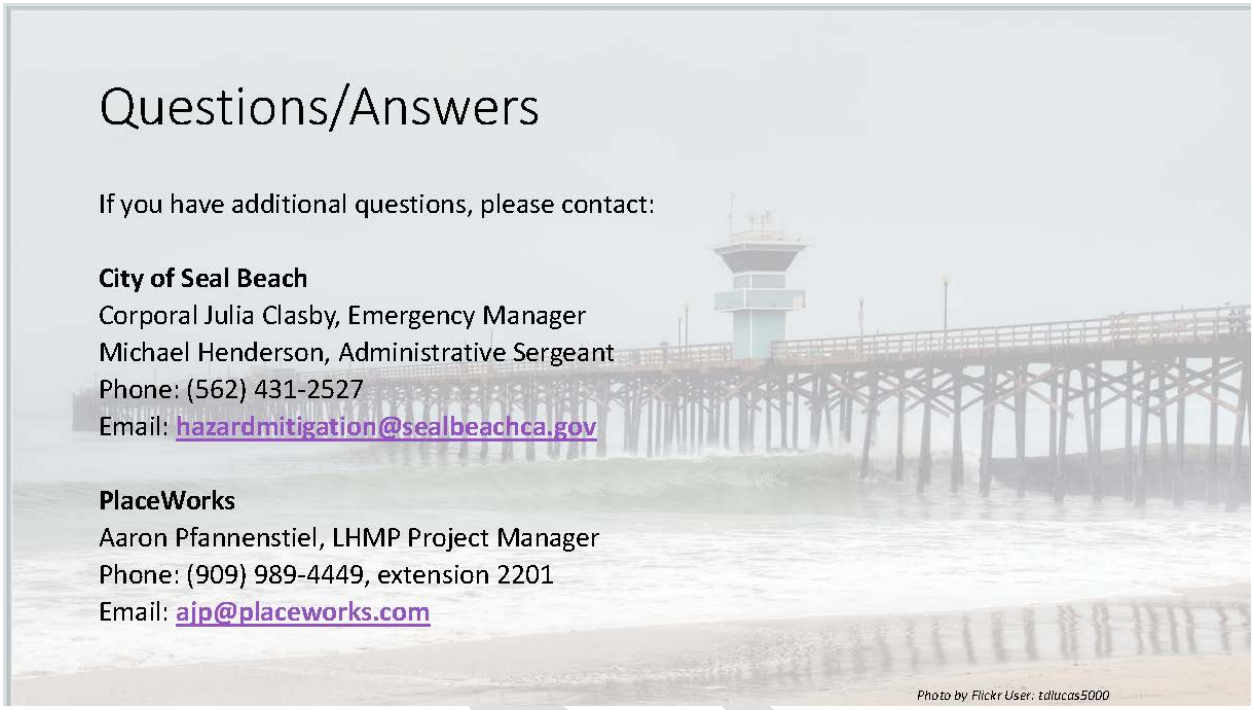
http://www.sealbeachca.gov/Departments/Police/Public-Safety/Local-Hazard-Mitigation-Plan

Seal Beach LHMP Survey

https://www.surveymonkey.com/r/B7YGJ6J

Social Media
Twitter: @SealBeachPolice

Facebook: @SealBeachPoliceDepartment


Questions/Answers
If you have additional questions, please contact:
City of Seal Beach
Corporal Julia Clasby, Emergency Manager
Michael Henderson, Administrative Sergeant
Phone: (562) 431-2527
Email: hazardmitigation@sealbeachca.gov
PlaceWorks
Aaron Pfannenstiel, LHMP Project Manager
Phone: (909) 989-4449, extension 2201
Email: ajp@placeworks.com
Photo by Flickr User: tdlucas5000

City of Seal Beach
Local Hazard Mitigation Plan | Hazard Profile Open House

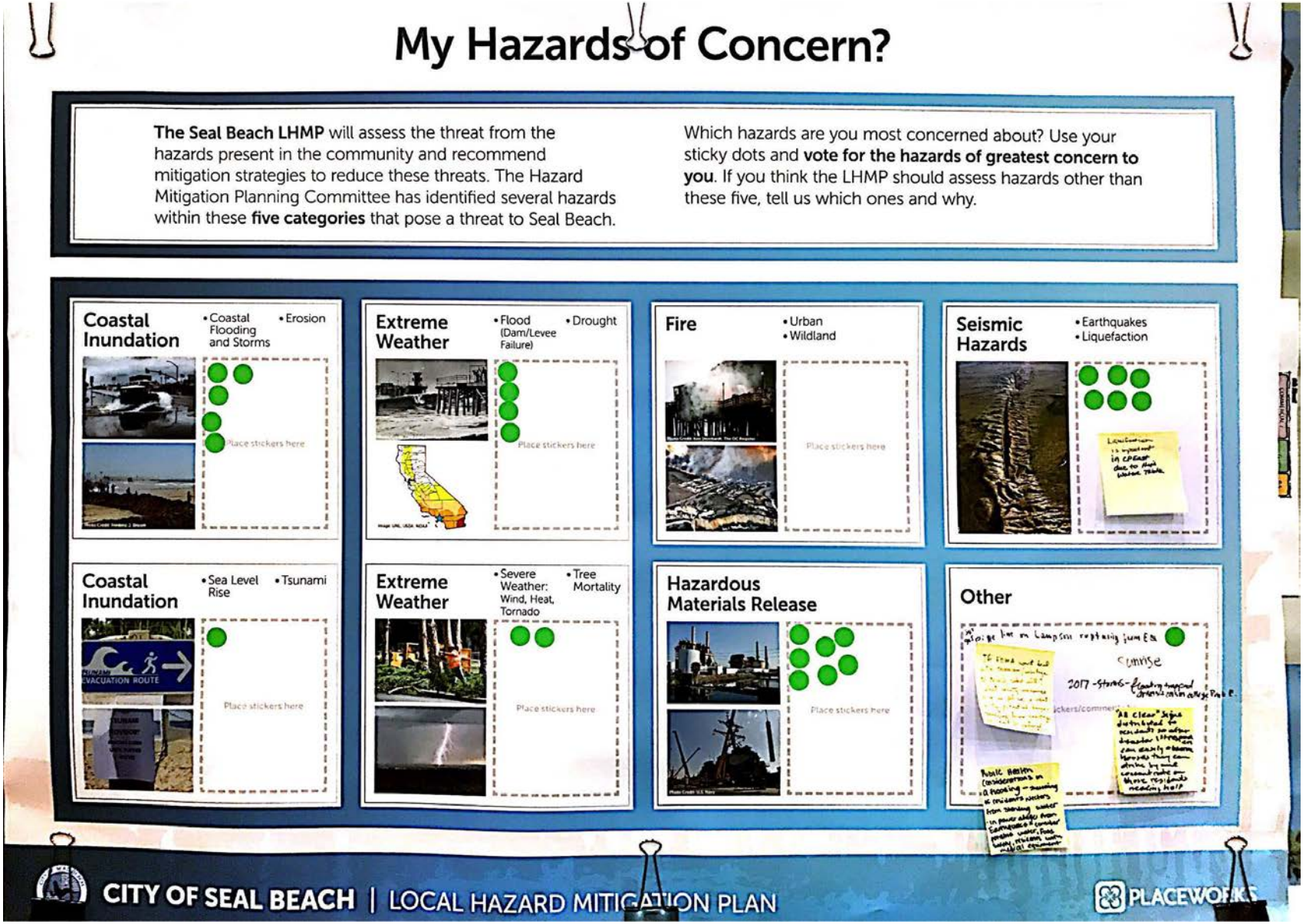
Name	City of Residence	Did you attend the previous meeting?	How did you hear about this meeting?	What is your email address?	May we contact you with news and updates about the LHMP?
Patty Campbell	SB		papers	Campbellpe@aol.com	yes
Schelly Sustarsic	Seal Beach		email	SSUSTARSIC@Seal BeachCa.gov	yes ✓
John Pohlmann	" "		"	jlpohlcat@roadrunner.com	yes ✓
Gregg Smith	SB			gregg.smith@navy.mil	✓
Sandra Massa-Lavitt	SB	Yes		MASSALAVITT@AOL.COM	✓

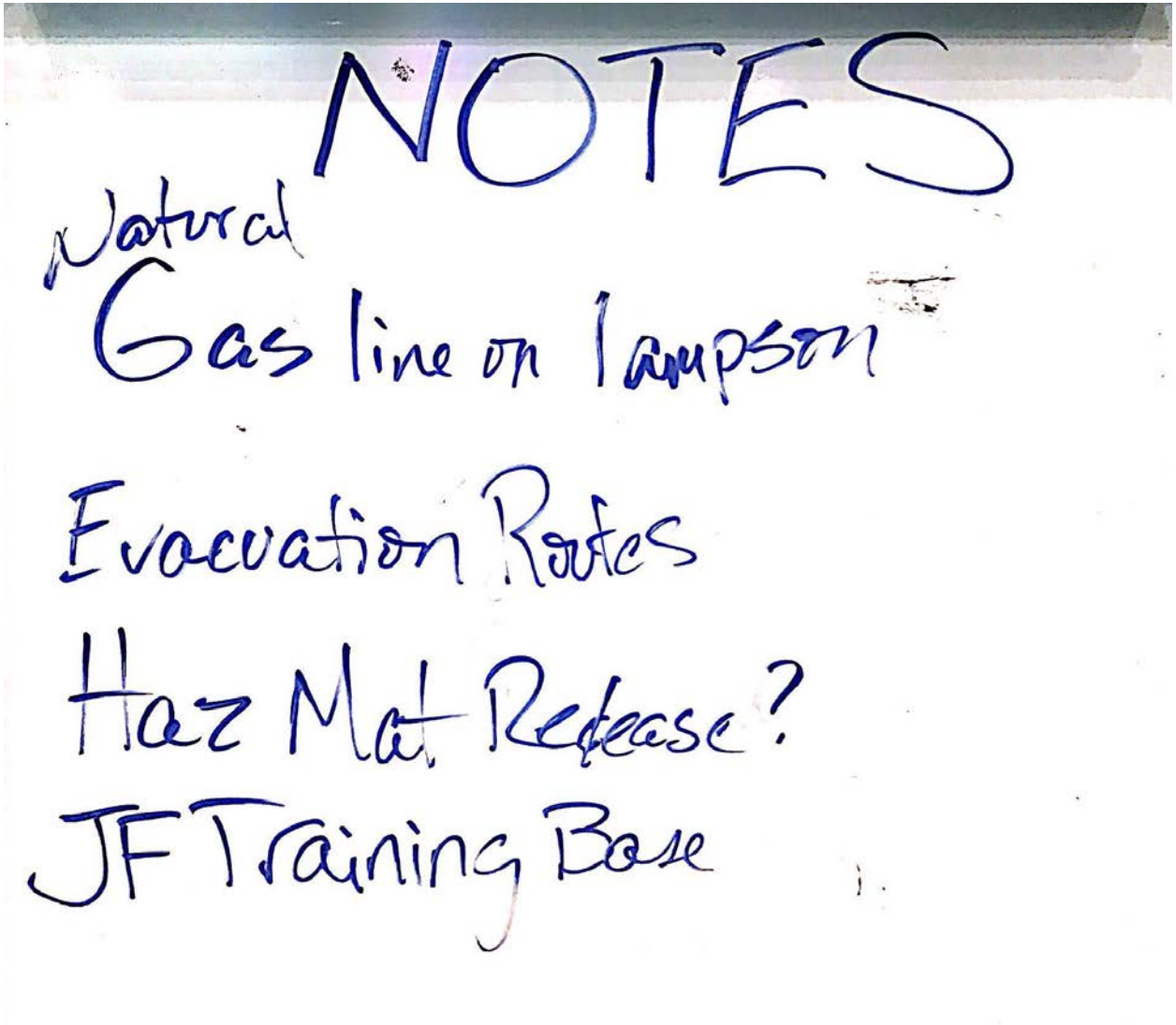
May 30, 2018

City of Seal Beach
Local Hazard Mitigation Plan | Hazard Profile Open House

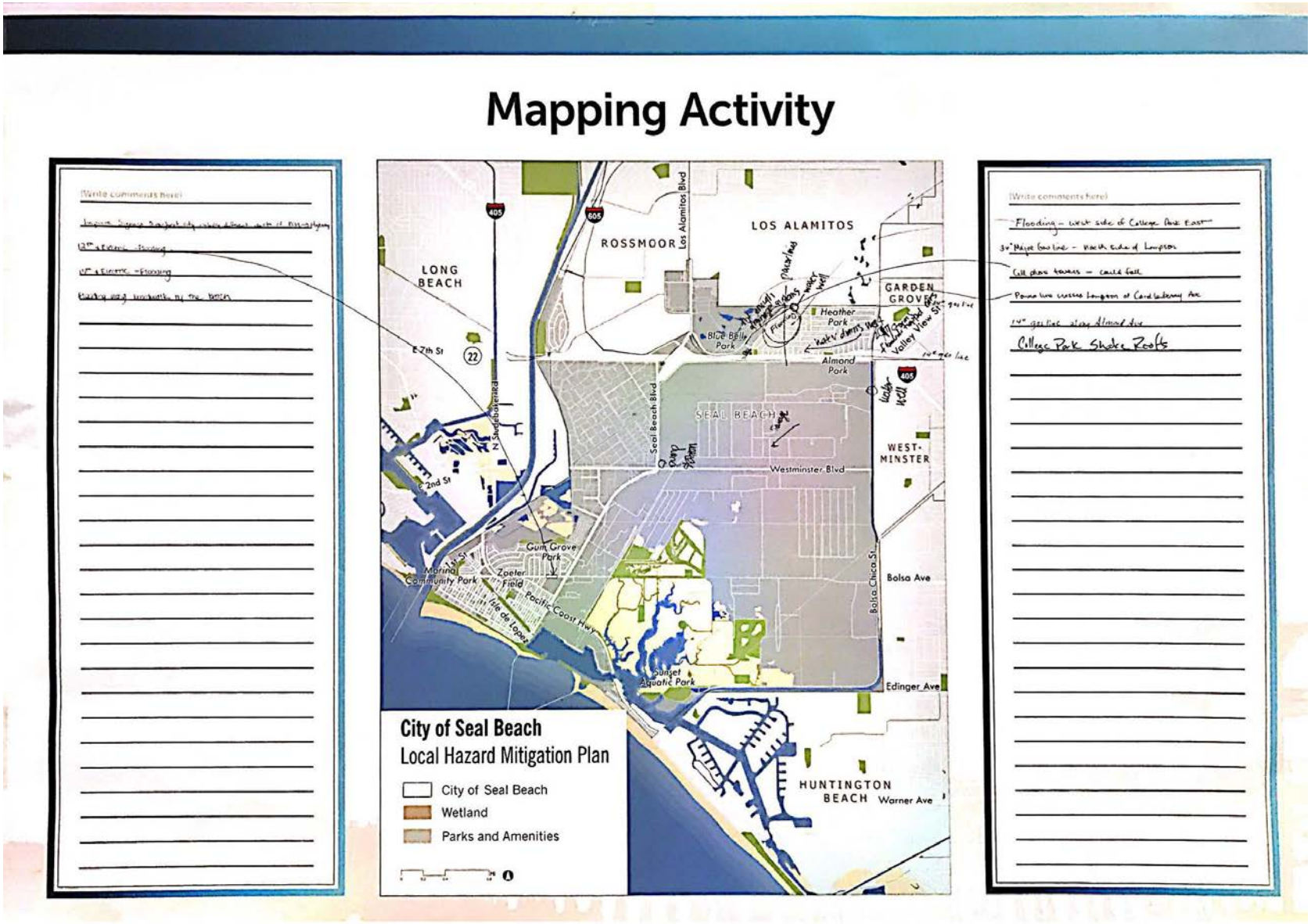
Name	City of Residence	Did you attend the previous meeting?	How did you hear about this meeting?	What is your email address?	May we contact you with news and updates about the LHMP?
Jim Brady	Seal Beach	No	City Council meeting	JBRADY@dslextreme.com	Yes
Ellen Stewart	Seal Beach		Text from Police	ENStewart@gmail.com	yes
Sofia Oratowski	Seal Beach		Text from mom	Sofia@crownbakery.com	yes
Gabriela Hurtado	Seal Beach	No	Nixle	gabriela.hurtado@longbeach.gov	Yes

May 30, 2018

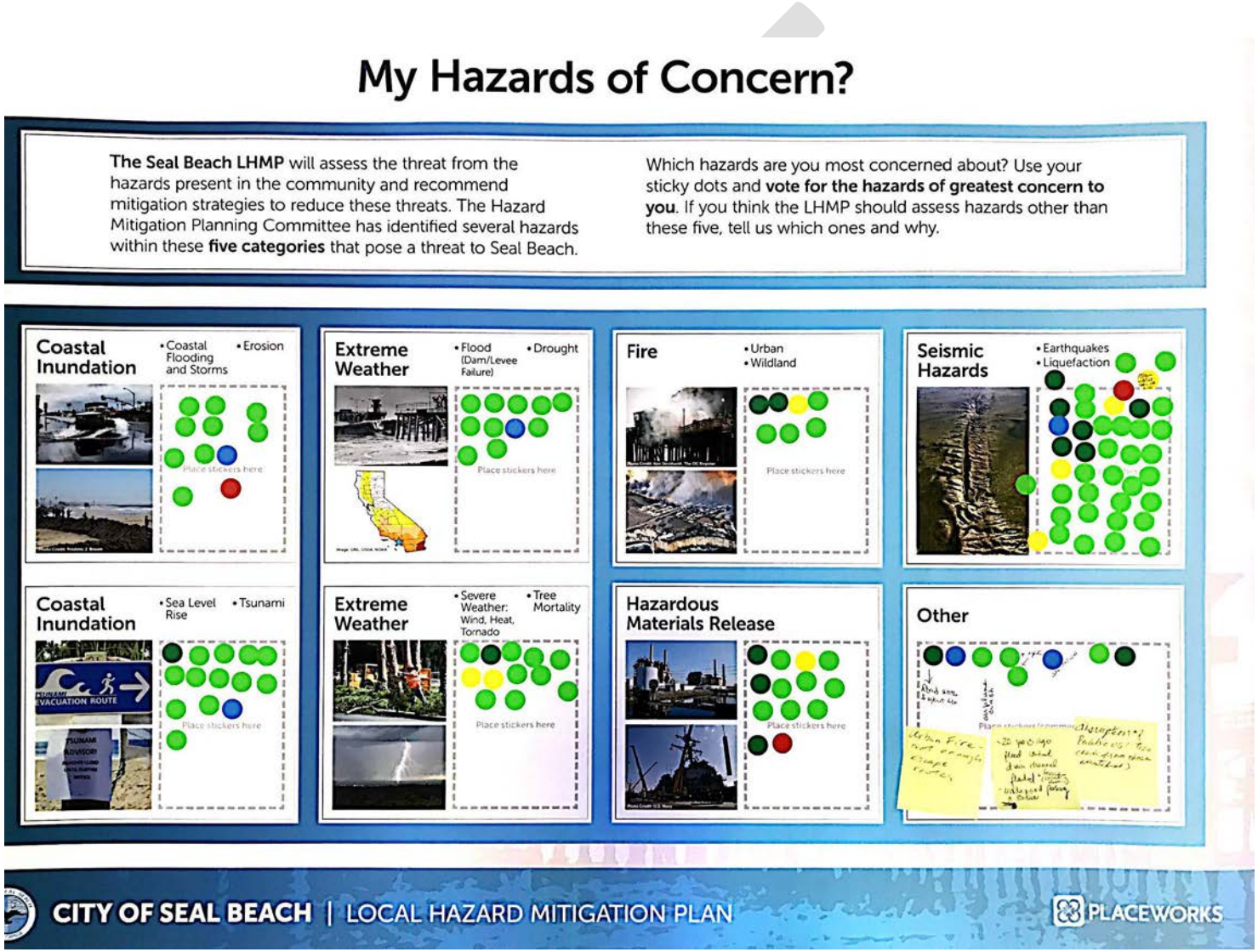

My Hazards of Concern?
The Seal Beach LHMP will assess the threat from the hazards present in the community and recommend mitigation strategies to reduce these threats. The Hazard Mitigation Planning Committee has identified several hazards within these five categories that pose a threat to Seal Beach.
Which hazards are you most concerned about? Use your sticky dots and vote for the hazards of greatest concern to you. If you think the LHMP should assess hazards other than these five, tell us which ones and why.
Coastal Inundation
• Coastal Flooding and Storms
• Erosion
Place stickers here
Extreme Weather
• Flood (Dam/Levee Failure)
• Drought
Place stickers here
Fire
• Urban
• Wildland
Place stickers here
Seismic Hazards
• Earthquakes
• Liquefaction
Coastal Inundation
• Sea Level Rise
• Tsunami
EVACUATION ROUTE
Place stickers here
Extreme Weather
• Severe Weather: Wind, Heat, Tornado
• Tree Mortality
Place stickers here
Hazardous Materials Release
Place stickers here
Other
CITY OF SEAL BEACH | LOCAL HAZARD MITIGATION PLAN
PLACEWORKS

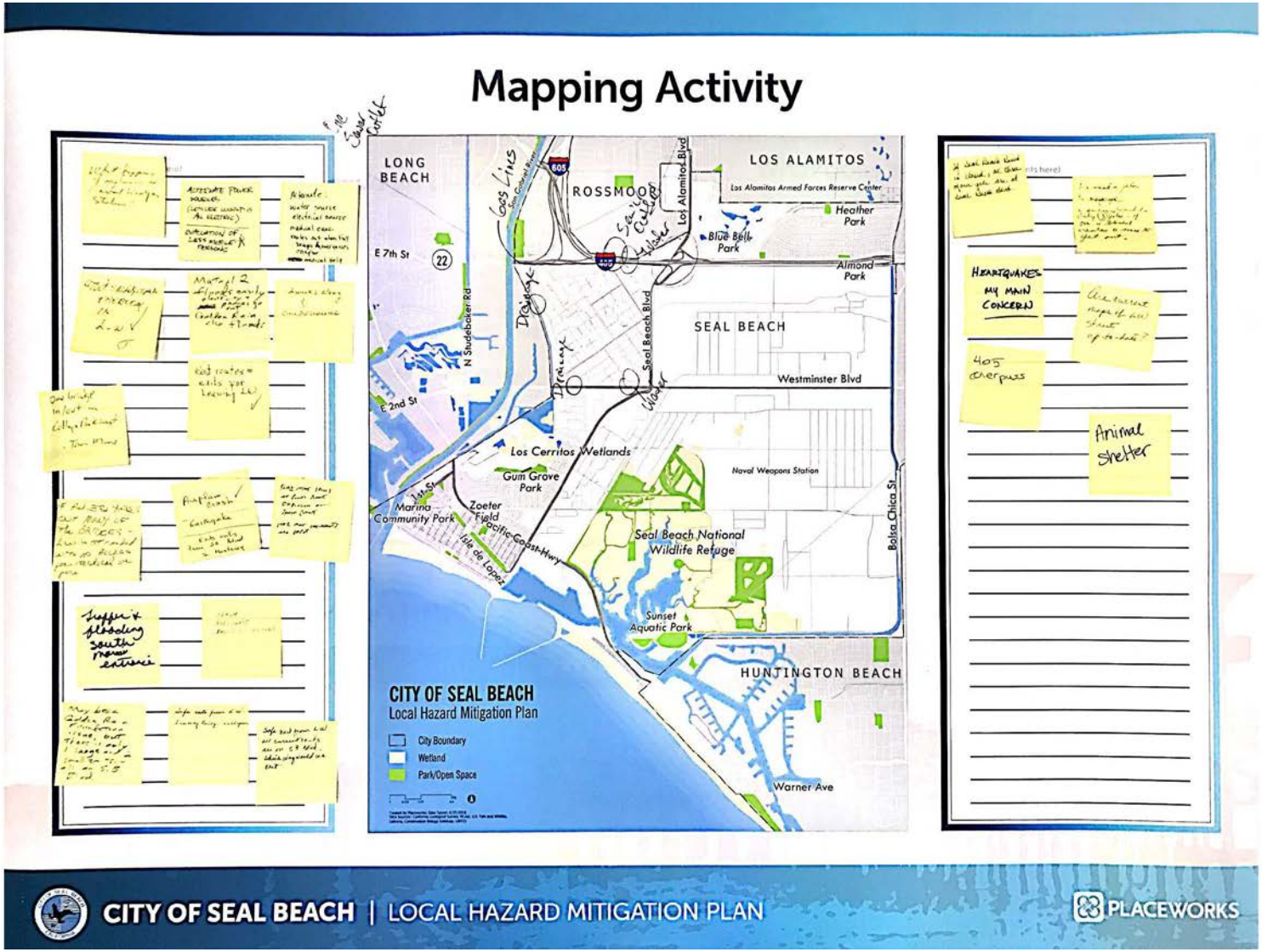

NOTES
Natural
Gas line on Lampson
Evacuation Routes
Haz Mat Release?
JF Training Base

Mapping Activity



COMMUNITY MEETING #2 COMMENT BOARDS AND SIGN-IN





City of Seal Beach
Local Hazard Mitigation Plan | Community Meeting

Name	City of Residence	How did you hear about this meeting?	What is your email address?	May we contact you with news and updates about the LHMP?
MARTY WILLIAMS	SEALBCH	LEISUREWORLD		NO
Christine Harris	Seal Beach	L.W. newspaper		
Bev Bender	SB	LW	beverleybender@gmail.com	X
Lynne Burt-Jenkins	SB	LW Paper	lbjcariad@hotmail.com	✓
Mary Greer	SB	LW Paper	jaegreer53@gmail.com	✓
Jim GREER	SB	" "	4dotrdad@gmail.com	✓

June 27, 2018

City of Seal Beach
Local Hazard Mitigation Plan | Community Meeting

Name	City of Residence	How did you hear about this meeting?	What is your email address?	May we contact you with news and updates about the LHMP?
Bob Walz	Seal Beach	Both	[illegible].bikebob@roadrunner.com	☐
Lorelei Horan	Seal Beach	neighbor	lihoran@yahoo.com	yes
Brenda Hemry	Seal Beach	Meeting	bh53olds@Hotmail.com	Yes
Michael Chang	Seal Beach		MICHAEL.BC.CHANG@GMAIL.COM	YES
Joyce Fitz	S.B.	L.W. News		☐
Lyn Pohlmann	S.B.	email	lynjoh1964@gmail.com	Yes
Linda Barney	S.B.	L.W. Weekly	LASTEPIPHANY@HOTMAIL.COM	yes
JOHN RETTMAN		EMail	JNRCAL@YAHOO.COM	✓
				☐

June 27, 2018

City of Seal Beach
Local Hazard Mitigation Plan | Community Meeting

Name	City of Residence	How did you hear about this meeting?	What is your email address?	May we contact you with news and updates about the LHMP?
Doris Sandrick	Seal Beach	LW News	dorissandrick_4@hotmail.com	✓
Kathy Almeida	Seal Beach	Elsy Gomez	kauaikate78@yahoo.com	✓
JERRY THOMAS	SEAL BEACH	NHN LEISURE WORLD	[illegible]@aol.com	
Paula McCann	Seal Beach	LW News	rddawgg12@yahoo.com	yes ✓
[illegible]	SB	—	[illegible]	✓
Rana Fabian			hanasfabian1@ETT.net	✓
Elizabeth Kennedy	Seal Beach	LW News	dancingliz2007@hotmail.com	✓
DAVID SPITZ	HB	work	dspitz@sealbeachca.gov	
Sue Rotter	SB	LW Newspaper	sue@rotter.us	✓

June 27, 2018

City of Seal Beach
Local Hazard Mitigation Plan | Community Meeting

Name	City of Residence	How did you hear about this meeting?	What is your email address?	May we contact you with news and updates about the LHMP?
Pat Miller	Seal Beach	Paper	—	☐
Nick Massetti	Seal Beach	Paper	—	☐
[illegible]	"	"		☐
Marge Dodero	Seal Beach Leisure World	I'm a mutual director	dudeross@verizon.net	✓
[illegible]	L.W. Seal Bch	L.W. News	TSUBIA50@gmail.com	☐
Jeannette Andruss	Seal Beach		jeannetteandruss@gmail.com	✓
Beth Mayer	Seal Beach	LW News		☐
Sonia [illegible]	S.B.	ELOY	hwyharry@gmail.com	☐
DAVID A. LOPEZ	S.B.	EMAIL	OCAIRORS@ME.COM	✓

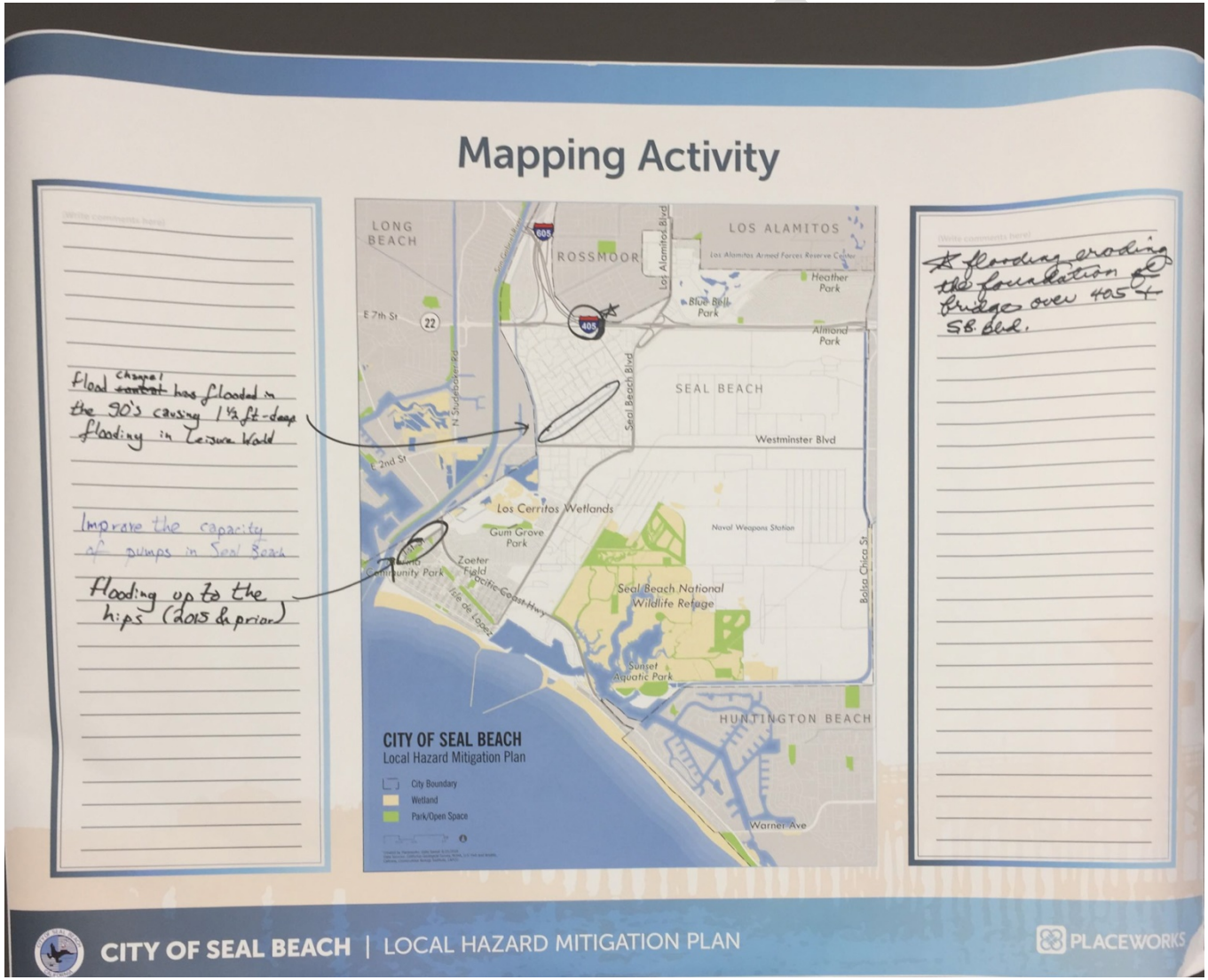
June 27, 2018

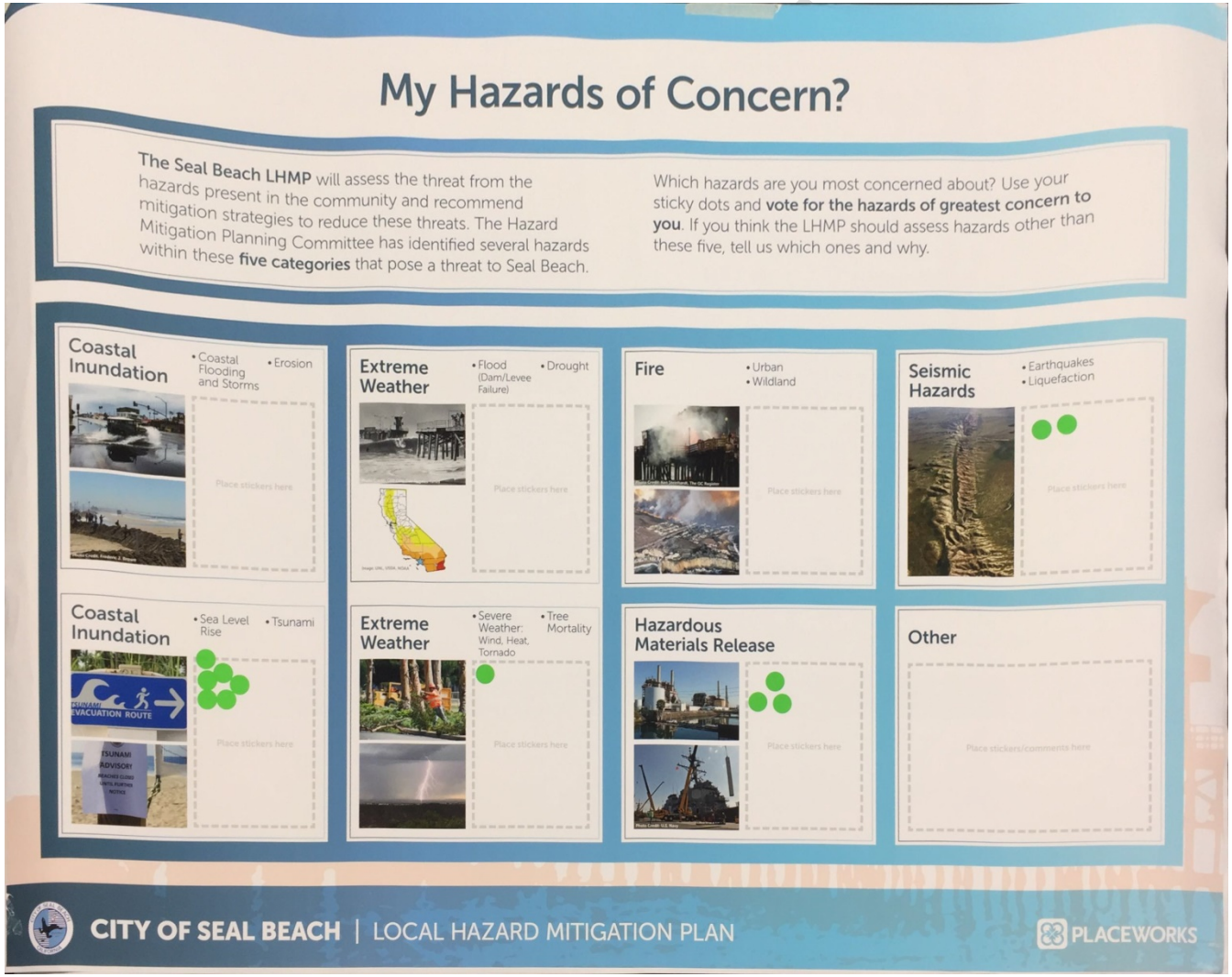
City of Seal Beach
Local Hazard Mitigation Plan | Community Meeting

Name	City of Residence	How did you hear about this meeting?	What is your email address?	May we contact you with news and updates about the LHMP?
Jan Kuhl	Seal Beach	from Eloy Gomez	janetgkuhl@gmail.com	☒
Sage Collum	Seal Beach	Eloy Gomez	collumcom@gmail.com	☒
Tom Moore	Seal Beach	City	tjmoore99@yahoo.com	☑
Jon Tressal	" "	paper		☑
Teresa Turner	" "	paper	tturner3311@att.net	☑
Mike Lessin	" "	paper	mikey53154@aol	☑
Steve Malone	" "	SIGN		☐
Richard Hark				☐
Lilian Silva	Seal Bch	paper	JAASILVA@AOL.COM	☑

June 27, 2018

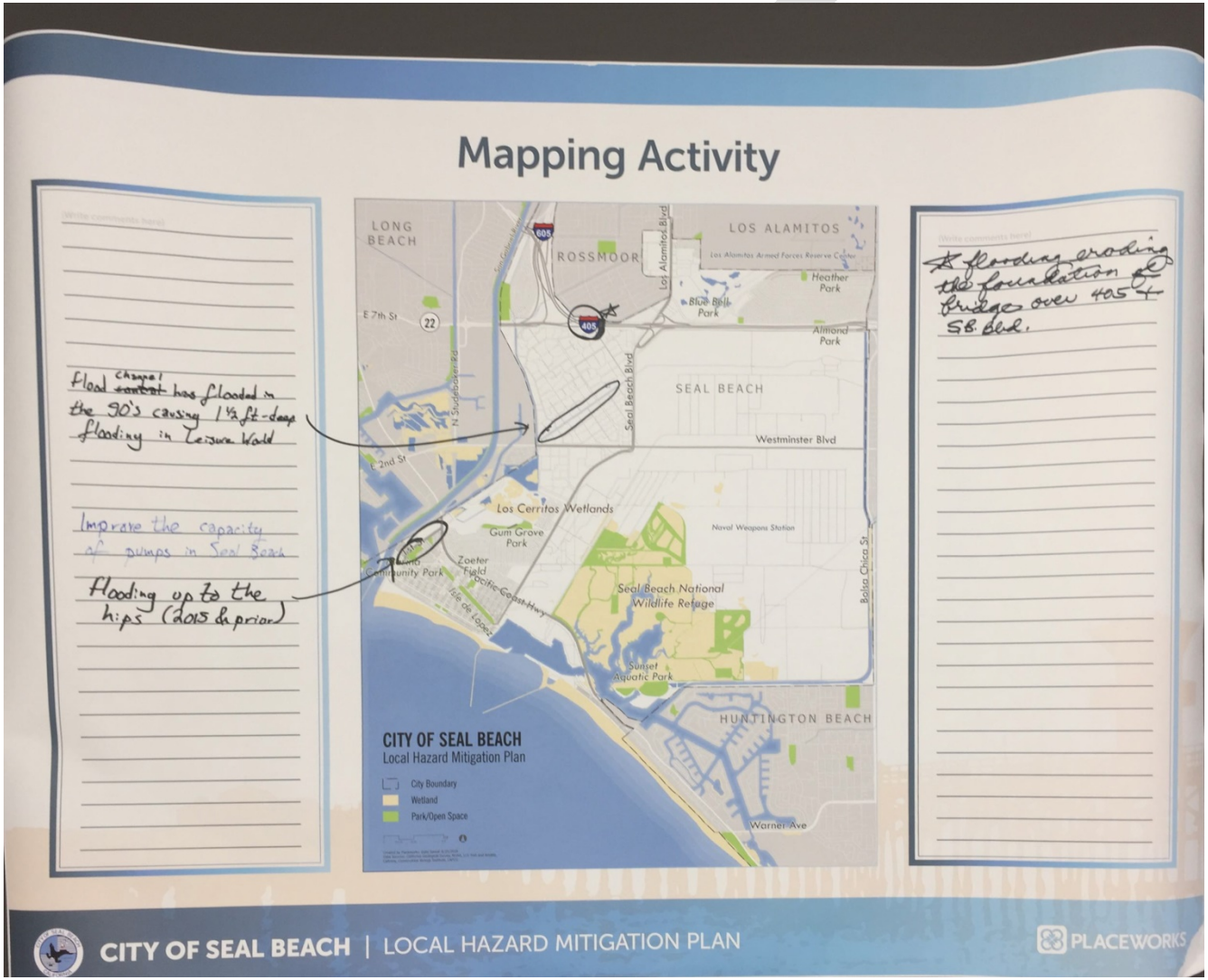
COMMUNITY MEETING #3 COMMENT BOARDS AND SIGN-IN

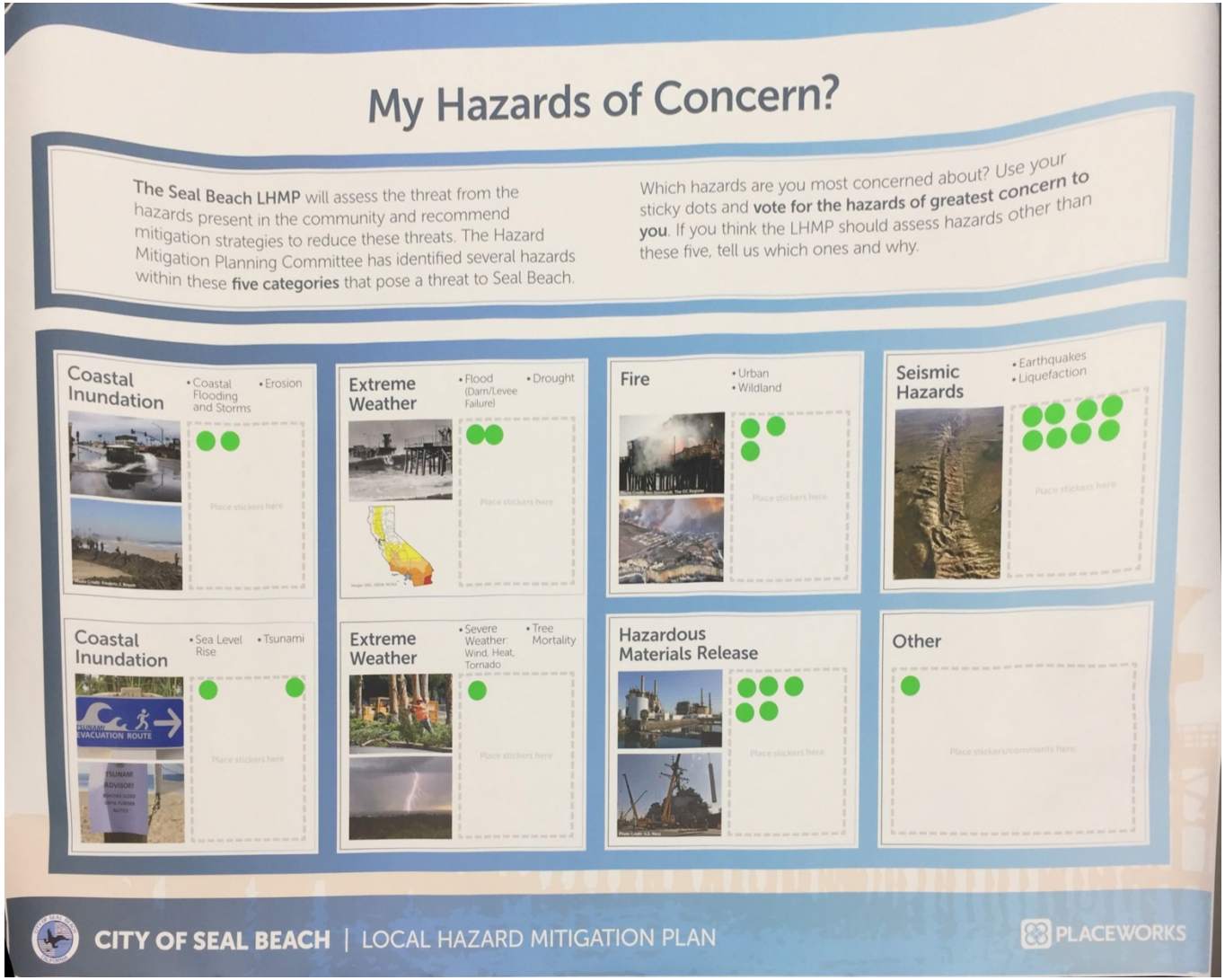


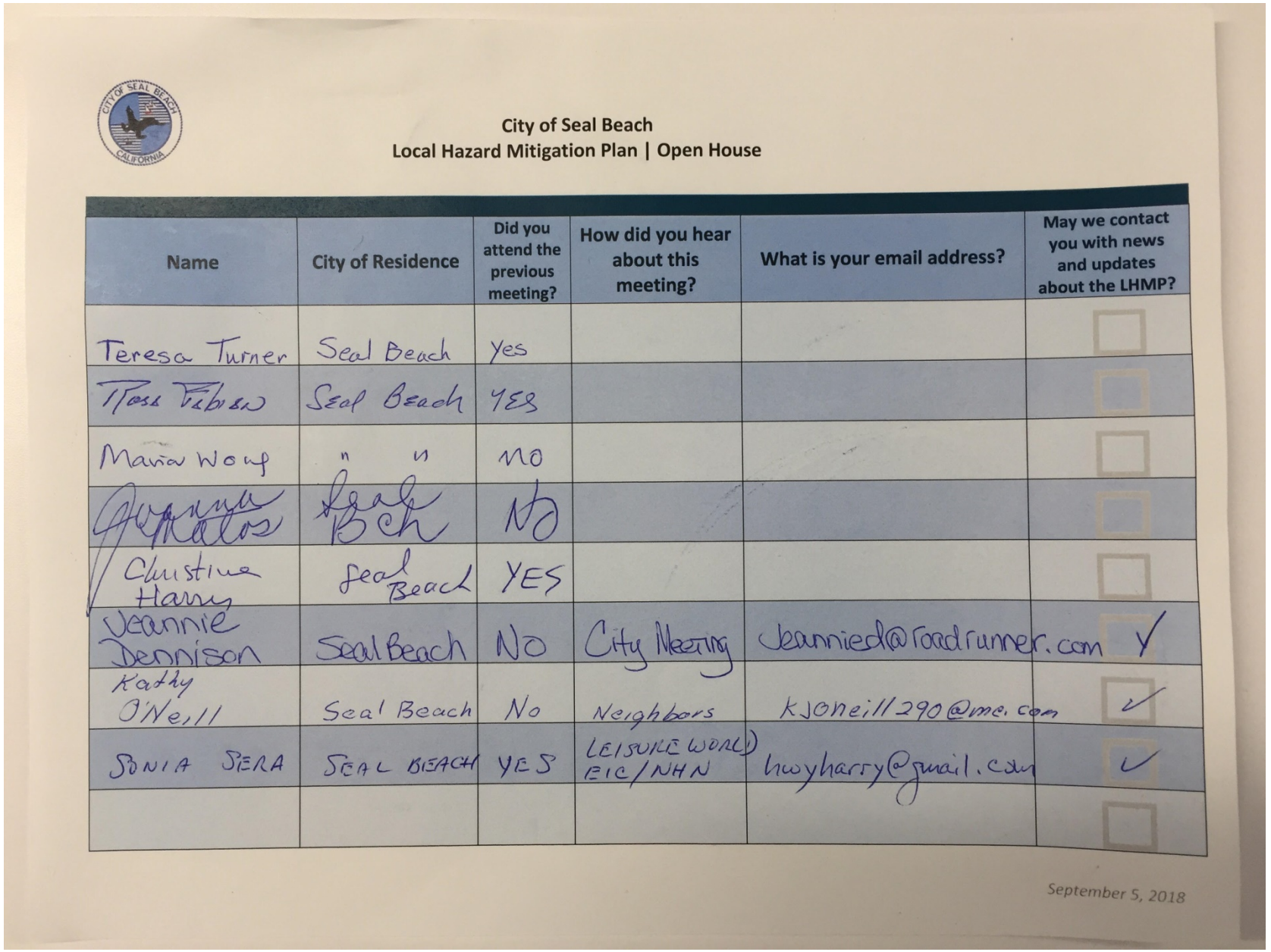

My Hazards of Concern?
The Seal Beach LHMP will assess the threat from the hazards present in the community and recommend mitigation strategies to reduce these threats. The Hazard Mitigation Planning Committee has identified several hazards within these five categories that pose a threat to Seal Beach.
Which hazards are you most concerned about? Use your sticky dots and vote for the hazards of greatest concern to you. If you think the LHMP should assess hazards other than these five, tell us which ones and why.
Coastal Inundation
• Coastal Flooding and Storms
• Erosion
Place stickers here
Extreme Weather
• Flood (Dam/Levee Failure)
• Drought
Place stickers here
Fire
• Urban
• Wildland
Place stickers here
Seismic Hazards
• Earthquakes
• Liquefaction
Place stickers here
Coastal Inundation
• Sea Level Rise
• Tsunami
EVACUATION ROUTE
TSUNAMI ADVISORY
Place stickers here
Extreme Weather
• Severe Weather: Wind, Heat, Tornado
• Tree Mortality
Place stickers here
Hazardous Materials Release
Place stickers here
Other
Place stickers/comments here
CITY OF SEAL BEACH | LOCAL HAZARD MITIGATION PLAN
PLACEWORKS

[SIGN-IN SHEET WILL BE ADDED HERE]

COMMUNITY MEETING #4 COMMENT BOARDS AND SIGN-IN




My Hazards of Concern?
The Seal Beach LHMP will assess the threat from the hazards present in the community and recommend mitigation strategies to reduce these threats. The Hazard Mitigation Planning Committee has identified several hazards within these five categories that pose a threat to Seal Beach.
Which hazards are you most concerned about? Use your sticky dots and vote for the hazards of greatest concern to you. If you think the LHMP should assess hazards other than these five, tell us which ones and why.
Coastal Inundation
• Coastal Flooding and Storms
• Erosion
Place stickers here
Extreme Weather
• Flood (Dam/Levee Failure)
• Drought
Place stickers here
Fire
• Urban
• Wildland
Place stickers here
Seismic Hazards
• Earthquakes
• Liquefaction
Place stickers here
Coastal Inundation
• Sea Level Rise
• Tsunami
TSUNAMI EVACUATION ROUTE
TSUNAMI ADVISORY
Place stickers here
Extreme Weather
• Severe Weather: Wind, Heat, Tornado
• Tree Mortality
Place stickers here
Hazardous Materials Release
Place stickers here
Other
Place stickers/comments here
CITY OF SEAL BEACH | LOCAL HAZARD MITIGATION PLAN
PLACEWORKS



City of Seal Beach
Local Hazard Mitigation Plan | Open House

Name	City of Residence	Did you attend the previous meeting?	How did you hear about this meeting?	What is your email address?	May we contact you with news and updates about the LHMP?
Teresa Turner	Seal Beach	Yes			☐
Tess Tibbon	Seal Beach	YES			☐
Maria Wong	" "	NO			☐
Joanna Matos	Seal Bch	NO			☐
Christina Harry	Seal Beach	YES			☐
Jeannie Dennison	Seal Beach	NO	City Meeting	Jeannied@roadrunner.com	✓
Kathy O'Neill	Seal Beach	No	Neighbors	KJoneill290@me.com	✓
SONIA SIERA	SEAL BEACH	YES	LEISURE WORLD EIC/NHN	hwyharry@gmail.com	✓
					☐

September 5, 2018

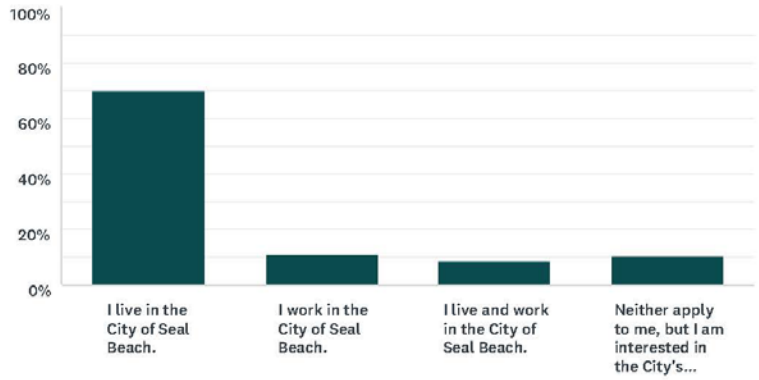
SEAL BEACH LHMP ONLINE SURVEY RESULTS

See pages B-48 to B-95 for survey results.

Seal Beach LHMP Community Input

Q1 Please indicate whether you live or work in the City of Seal Beach.

Answered: 189 Skipped: 2



ANSWER CHOICES	RESPONSES	
I live in the City of Seal Beach.	69.84%	132
I work in the City of Seal Beach.	11.11%	21
I live and work in the City of Seal Beach.	8.47%	16
Neither apply to me, but I am interested in the City's resiliency.	10.58%	20
TOTAL		189

Seal Beach LHMP Community Input

Q2 What is the ZIP code of your home?

Answered: 191 Skipped: 0

#	RESPONSES	DATE
1	92683	7/24/2018 4:44 PM
2	93003	7/24/2018 7:38 AM
3	90740	7/24/2018 6:58 AM
4	90740	7/22/2018 9:35 AM
5	90740	7/21/2018 8:54 PM
6	90815	7/20/2018 4:40 PM
7	92882	7/20/2018 1:58 PM
8	92870	7/20/2018 12:03 PM
9	92646	7/20/2018 10:22 AM
10	92708	7/20/2018 10:11 AM
11	90640	7/20/2018 9:23 AM
12	9	7/20/2018 6:30 AM
13	90803	7/19/2018 10:04 PM
14	92688	7/19/2018 7:59 PM
15	90805	7/19/2018 5:20 PM
16	92625	7/19/2018 5:02 PM
17	90740	7/19/2018 5:00 PM
18	91745	7/19/2018 4:48 PM
19	90740	7/15/2018 8:40 AM
20	90740	7/14/2018 3:28 PM
21	90740	7/14/2018 2:17 PM
22	08904	7/14/2018 9:51 AM
23	90740	7/13/2018 3:34 PM
24	90740	7/12/2018 10:30 PM
25	90740	6/27/2018 1:06 PM
26	90740	6/26/2018 1:42 PM
27	90740	6/20/2018 7:32 PM
28	90740	6/12/2018 8:11 PM
29	90740	6/11/2018 12:02 PM
30	92707	5/31/2018 1:41 AM
31	90740	5/30/2018 6:01 PM
32	90740	5/30/2018 12:40 PM
33	90740	5/30/2018 10:51 AM
34	90740	5/30/2018 10:31 AM
35	90740	5/30/2018 9:59 AM

Seal Beach LHMP Community Input

36	90740	5/29/2018 10:10 AM
37	37210	5/25/2018 1:43 PM
38	90740	5/25/2018 9:41 AM
39	90740	5/25/2018 7:53 AM
40	90740	5/20/2018 6:39 PM
41	90740	5/18/2018 2:49 PM
42	90740	5/18/2018 1:32 PM
43	90720	5/18/2018 10:23 AM
44	90740	5/15/2018 7:40 PM
45	90740	5/13/2018 5:19 PM
46	90740	5/13/2018 2:51 PM
47	90740	5/13/2018 1:14 PM
48	90740	5/11/2018 9:28 PM
49	90740	5/11/2018 12:42 PM
50	90740-2923	5/11/2018 11:29 AM
51	90808	5/11/2018 11:03 AM
52	90740	5/11/2018 7:34 AM
53	90740	5/10/2018 11:30 PM
54	90740	5/10/2018 9:56 PM
55	90740	5/10/2018 6:33 PM
56	90740	5/10/2018 4:37 PM
57	90620	5/10/2018 3:16 PM
58	90740	5/10/2018 3:15 PM
59	90740	5/10/2018 12:36 PM
60	90740	5/10/2018 11:02 AM
61	90630	5/10/2018 10:53 AM
62	90620	5/10/2018 10:52 AM
63	90740	5/10/2018 10:18 AM
64	90740	5/10/2018 9:24 AM
65	90720	5/10/2018 9:01 AM
66	90740	5/10/2018 8:33 AM
67	90740	5/10/2018 8:19 AM
68	90740	5/10/2018 8:07 AM
69	90740	5/10/2018 7:56 AM
70	90740	5/10/2018 7:06 AM
71	90740	5/10/2018 6:18 AM
72	90740	5/10/2018 5:57 AM
73	90740	5/10/2018 4:47 AM
74	90740	5/10/2018 4:32 AM
75	90740	5/10/2018 3:52 AM
76	90740	5/9/2018 10:14 PM

Seal Beach LHMP Community Input

77	90740	5/9/2018 9:55 PM
78	90740	5/9/2018 9:42 PM
79	90620	5/9/2018 9:28 PM
80	90740	5/9/2018 9:26 PM
81	90720	5/9/2018 9:11 PM
82	90740	5/9/2018 9:01 PM
83	90740	5/9/2018 8:44 PM
84	90740	5/9/2018 8:35 PM
85	90740	5/9/2018 8:27 PM
86	90740	5/9/2018 8:22 PM
87	90720	5/9/2018 8:21 PM
88	92627	5/9/2018 8:10 PM
89	90740	5/9/2018 8:01 PM
90	90740	5/9/2018 7:51 PM
91	90740	5/9/2018 7:15 PM
92	90740	5/9/2018 6:44 PM
93	90740	5/9/2018 6:40 PM
94	90740	5/9/2018 6:34 PM
95	90740	5/9/2018 6:20 PM
96	90740	5/9/2018 6:11 PM
97	92683	5/9/2018 5:55 PM
98	90740	5/9/2018 5:54 PM
99	90720	5/9/2018 5:46 PM
100	90740	5/9/2018 5:25 PM
101	90740	5/9/2018 5:21 PM
102	90740	5/9/2018 5:20 PM
103	90740	5/9/2018 5:07 PM
104	90740	5/9/2018 4:19 PM
105	90740	5/9/2018 4:02 PM
106	90720	5/9/2018 4:00 PM
107	90740	5/9/2018 3:51 PM
108	90740	5/9/2018 3:47 PM
109	90740	5/9/2018 3:45 PM
110	90740	5/9/2018 3:45 PM
111	90740	5/9/2018 3:37 PM
112	90740-2909	5/9/2018 3:20 PM
113	90814	5/9/2018 3:16 PM
114	90808	5/9/2018 2:58 PM
115	90740	5/9/2018 2:58 PM
116	90740	5/9/2018 2:56 PM
117	90740	5/9/2018 2:53 PM

Seal Beach LHMP Community Input

118	90740	5/9/2018 2:48 PM
119	90740	5/9/2018 2:42 PM
120	90740	5/9/2018 2:22 PM
121	90740	5/9/2018 2:14 PM
122	90740	5/9/2018 2:05 PM
123	90740	5/9/2018 2:04 PM
124	90740	5/9/2018 2:01 PM
125	90740	5/9/2018 1:59 PM
126	90740	5/9/2018 1:58 PM
127	90740	5/9/2018 1:52 PM
128	90740	5/9/2018 1:49 PM
129	90740	5/9/2018 1:46 PM
130	90742	5/9/2018 1:45 PM
131	90740	5/9/2018 1:38 PM
132	90740	5/9/2018 1:26 PM
133	90740	5/9/2018 1:26 PM
134	90740	5/9/2018 1:26 PM
135	90740	5/9/2018 1:21 PM
136	90740	5/9/2018 1:18 PM
137	90740	5/9/2018 1:11 PM
138	90740	5/9/2018 1:06 PM
139	90740	5/9/2018 12:58 PM
140	90740	5/9/2018 12:52 PM
141	92649	5/9/2018 12:52 PM
142	90740	5/9/2018 12:48 PM
143	90740	5/9/2018 12:47 PM
144	90740	5/9/2018 12:46 PM
145	90740	5/9/2018 12:46 PM
146	90740	5/9/2018 12:45 PM
147	90740	5/9/2018 12:39 PM
148	90740	5/9/2018 12:35 PM
149	90740	5/9/2018 12:31 PM
150	90740	5/9/2018 12:30 PM
151	90740	5/9/2018 12:24 PM
152	90740	5/9/2018 12:20 PM
153	90740	5/9/2018 12:19 PM
154	92646	5/9/2018 12:16 PM
155	90740	5/9/2018 12:14 PM
156	90740	5/9/2018 12:12 PM
157	90740	5/9/2018 12:12 PM
158	90740	5/9/2018 12:11 PM

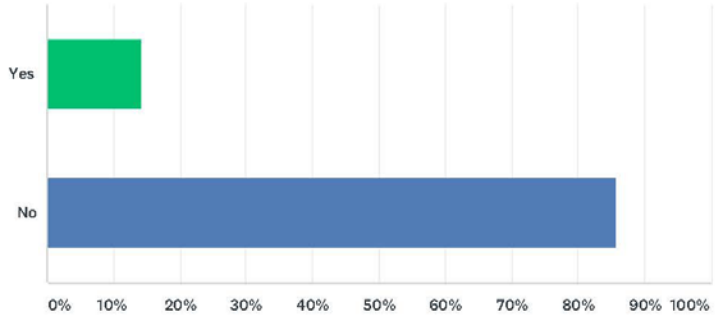
Seal Beach LHMP Community Input

159	90740	5/9/2018 12:10 PM
160	90740-2916	5/9/2018 12:09 PM
161	90740	5/9/2018 12:07 PM
162	90720	5/9/2018 12:07 PM
163	90277	5/9/2018 12:05 PM
164	90740	5/9/2018 12:02 PM
165	90740	5/9/2018 12:01 PM
166	90740	5/9/2018 11:59 AM
167	90740	5/9/2018 11:59 AM
168	90740	5/9/2018 11:58 AM
169	90740	5/9/2018 11:57 AM
170	90740	5/9/2018 11:57 AM
171	90740	5/9/2018 11:56 AM
172	90740	5/9/2018 11:56 AM
173	90720	5/9/2018 11:55 AM
174	90740	5/9/2018 11:55 AM
175	90740-2941	5/9/2018 11:54 AM
176	92649	5/9/2018 11:54 AM
177	90740	5/9/2018 11:54 AM
178	90740	5/9/2018 11:54 AM
179	90740	5/9/2018 11:54 AM
180	90740	5/9/2018 11:53 AM
181	90740	5/9/2018 11:53 AM
182	90740	5/9/2018 11:53 AM
183	90740	5/9/2018 11:53 AM
184	90740	5/9/2018 11:52 AM
185	90740	5/9/2018 11:52 AM
186	90740	5/9/2018 11:52 AM
187	00740	5/9/2018 11:51 AM
188	90740	5/9/2018 11:50 AM
189	90740	5/9/2018 11:50 AM
190	90740	5/9/2018 11:35 AM
191	90740	5/9/2018 11:18 AM

Seal Beach LHMP Community Input

Q3 Have you been impacted by a disaster in your current residence?

Answered: 191 Skipped: 0

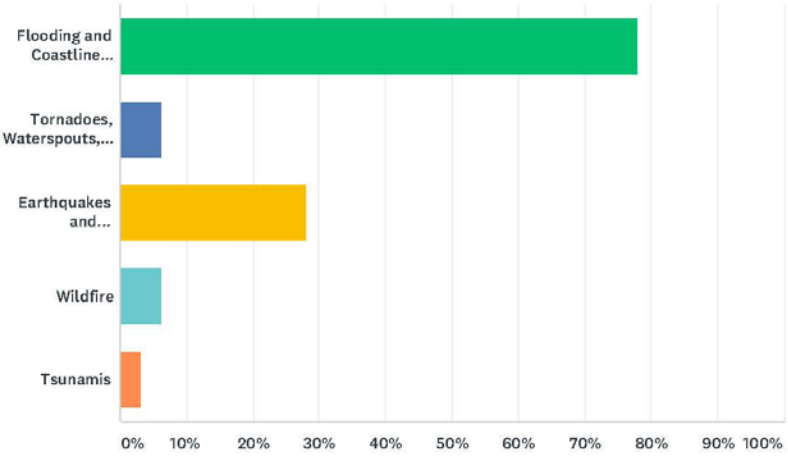


ANSWER CHOICES	RESPONSES	
Yes	14.14%	27
No	85.86%	164
TOTAL		191

Seal Beach LHMP Community Input

Q4 If you answered yes to the previous question, please select the type of disaster that you have been impacted by (select all that apply).

Answered: 32 Skipped: 159



ANSWER CHOICES	RESPONSES	
Flooding and Coastline Disturbances	78.13%	25
Tornadoes, Waterspouts, and Wind Events	6.25%	2
Earthquakes and Liquefaction	28.13%	9
Wildfire	6.25%	2
Tsunamis	3.13%	1
Total Respondents: 32		

#	PLEASE LIST ANY ADDITIONAL HAZARDS THAT HAVE PREVIOUSLY IMPACTED YOUR NEIGHBORHOOD OR HOME.	DATE
1	Excessive number of dogs present on city streets and public areas including parks and beach	7/24/2018 6:58 AM
2	N/A	7/20/2018 10:22 AM
3	None	7/20/2018 6:30 AM
4	Flooding on Corsair Way in Bridgeport.	6/11/2018 12:02 PM
5	None	5/30/2018 10:31 AM
6	none	5/25/2018 9:41 AM
7	Take n leaked into house requiring wall removal, mold abatement and subsequent test and wall closure	5/9/2018 8:35 PM
8	None	5/9/2018 8:10 PM
9	Na	5/9/2018 6:11 PM
10	Homeless people.	5/9/2018 5:46 PM
11	Flooding	5/9/2018 5:07 PM

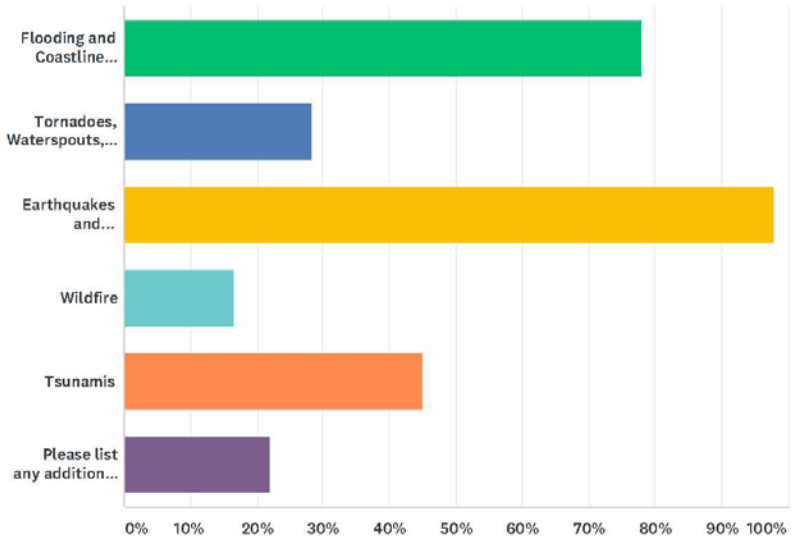
Seal Beach LHMP Community Input

12	none	5/9/2018 3:16 PM
13	Coyotes	5/9/2018 2:53 PM
14	crime	5/9/2018 12:58 PM
15	None	5/9/2018 12:47 PM
16	Shifting of building, cracks in structures from earthquakes. Severe asthma to wildfires and structure fires. Travel restricted due to street flooding	5/9/2018 12:07 PM
17	N/A	5/9/2018 12:02 PM
18	NA	5/9/2018 11:54 AM
19	Flooding from the pump station not being ready to handle the rain water	5/9/2018 11:54 AM
20	Flooded channel that runs though Leisure World	5/9/2018 11:54 AM
21	n/a	5/9/2018 11:18 AM

Seal Beach LHMP Community Input

Q5 The following hazards could potentially impact the City. Please mark the THREE (3) hazards that are of most concern to your neighborhood or home.

Answered: 187 Skipped: 4



ANSWER CHOICES	RESPONSES	
Flooding and Coastline Disturbances	78.07%	146
Tornadoes, Waterspouts, and Wind Events	28.34%	53
Earthquakes and Liquefaction	97.86%	183
Wildfire	16.58%	31
Tsunamis	44.92%	84
Please list any additional hazards that present a threat to your neighborhood or home.	21.93%	41
Total Respondents: 187		

#	PLEASE LIST ANY ADDITIONAL HAZARDS THAT PRESENT A THREAT TO YOUR NEIGHBORHOOD OR HOME.	DATE
1	Number of dogs	7/24/2018 6:58 AM
2	Terrorist attacks on Naval Weapons Station Seal Beach.	7/22/2018 9:35 AM
3	We do not have a disaster emergency plan that I am aware of in Leisure World. As a Seal Beach RACES member I am also associated with LW Amateur Radio Club and could help with communication between the LW and the SB Emergency Control Center.	7/14/2018 2:17 PM
4	fire from unsafe wiring AND/OR fire after earthquake	7/13/2018 3:34 PM
5	Military base accident / air crash.	6/27/2018 1:06 PM

Seal Beach LHMP Community Input

6	air plane noise and pollution, steam plant and pollution ,navy weapons contamination, freeway noise leaking gas pipeline to steam plant which needs repair , noise from steam plant, homeless	6/20/2018 7:32 PM
7	seal level rise	6/12/2018 8:11 PM
8	A threat to the Naval Weapons Station--flooding, deliberate attack (sabotage), accidental detonation of ammunition (including nukes?)--could have cataclysmic consequences to residences, the police station, and our US naval operations in the Pacific. What is our evacuation plan, and what steps should be taken to lessen the possibility of such disasters?	5/30/2018 9:59 AM
9	aircraft crash; gas line explosion; downed power lines; freeway explosion; trees toppling in high winds	5/20/2018 6:39 PM
10	homeless encampments	5/18/2018 10:23 AM
11	Power plant incidents from DWP or AES	5/13/2018 5:19 PM
12	man made disasters, riots or explosions at the weapons station	5/13/2018 2:51 PM
13	Fires or explosions occurring by the oil rigs.	5/11/2018 9:28 PM
14	Issues related to naval base	5/10/2018 8:07 AM
15	hazards that could impact my home: airplane accident (JFTB is right behind my home) and gas explosion (34" main line from San Diego to Santa Barbara is also directly behind my home -- an explosion on that line would devastate a square mile)	5/10/2018 6:18 AM
16	Major Fire in Old Town area	5/10/2018 5:57 AM
17	Nitrous oxide explosions at Hayes Power or AES power plants.	5/9/2018 9:55 PM
18	Increased Crime	5/9/2018 9:42 PM
19	Criminal activity following after any disturbance	5/9/2018 8:44 PM
20	Telephone poles and high voltage power lines that can be affected by earthquakes in densely populated areas resulting in both fire and structural damage.	5/9/2018 8:27 PM
21	Proximity to naval base- potential target during war	5/9/2018 6:34 PM
22	Spreading of home fires in our closed community (Leisure World).	5/9/2018 5:54 PM
23	Homeless people and tsunamis	5/9/2018 5:46 PM
24	Oil/gas industry accidents, accident at naval weapons station	5/9/2018 5:07 PM
25	Pipeline leakage and or rupture, explosions.	5/9/2018 3:47 PM
26	SB Naval weapons station, Los Alamitos Joint Forces Reserve Center	5/9/2018 3:20 PM
27	No alternate exit available in College Park West in the event the bridge collapses.	5/9/2018 2:56 PM
28	Coyotes	5/9/2018 2:53 PM
29	Street flooding here in College Park East during heavy rainstorms. Extended (>2 hour) electrical power outages, especially as caused to electrical infrastructure either above or below ground by wind, rain or earthquake.	5/9/2018 2:22 PM
30	Noise and pollution from freeway in CPE	5/9/2018 2:01 PM
31	High pressure natural gas line running down Lampson Ave. is only a few yards away from my backyard	5/9/2018 1:59 PM
32	Water contamination	5/9/2018 1:58 PM
33	Accidents at the Navel Weapons Center, or the Joint Forces Training Base	5/9/2018 1:46 PM
34	Fire	5/9/2018 1:45 PM
35	Gum grove firr	5/9/2018 1:26 PM
36	Lack of policing and fire mitigation in Gum Grove Park Noise pollution from LADWP power plants	5/9/2018 1:18 PM
37	Wildfire	5/9/2018 1:06 PM
38	Living in an earthquake prone state it's an obvious fear	5/9/2018 12:16 PM
39	Air quality disturbances due to any emergencies	5/9/2018 12:07 PM

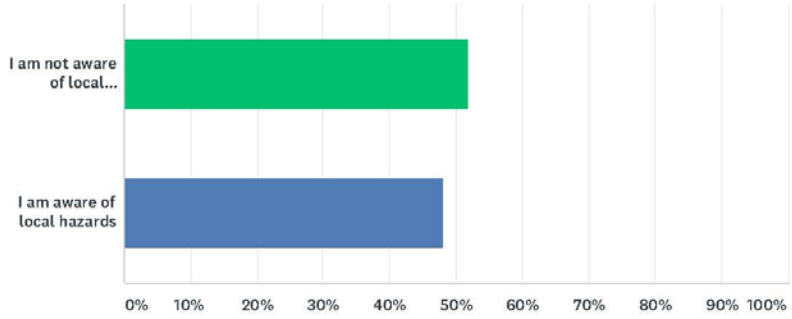
Seal Beach LHMP Community Input

40	Wind and rain damage	5/9/2018 11:54 AM
41	The homeless meth-users	5/9/2018 11:53 AM

Seal Beach LHMP Community Input

Q6 The planning team is using various data sources to identify hazards in your community; however, some of these data sources do not provide data at a general citywide level. Are there any small-scale issues, such as ponding at a certain intersection during rain, that you would like the planning team to consider?

Answered: 183 Skipped: 8



ANSWER CHOICES	RESPONSES	
I am not aware of local hazards	51.91%	95
I am aware of local hazards	48.09%	88
TOTAL		183

#	PLEASE PROVIDE AS MUCH DETAIL AS POSSIBLE, INCLUDING LOCATION AND TYPE OF HAZARD.	DATE
1	Poor water drainage at various points such as south side Electric/ 11th and 12th Streets	7/24/2018 6:58 AM
2	Ponding in college park east during heavy rains	7/21/2018 8:54 PM
3	8th Street & PCH	7/20/2018 12:03 PM
4	7th/Marina	7/19/2018 10:04 PM
5	Trailer park on 1st PCH x Marina	7/19/2018 7:59 PM

Seal Beach LHMP Community Input

6	Wind events are producing power outages. Concern about Naval Weapons Station Seal Beach as a primary global target for nuclear, terrorist or conventional attack. The 12th Street & PCH intersection where Sarah Childs Kreuger was killed. The intersection needs enhancement for the protection of pedestrians and cyclists. Appropriate and thoroughly vetted and followed maintenance protocols on all storm drain runoff components (catch-basins, piping, pumping and flow direction.) We need to encourage citizens to take a to be determined "top 3 (or 5) steps to protect and preserve their lives and property from [crime, loss of power, water events, wind events, extreme heat, etc.]." We should encourage transparently, more residents & businesses to have individual action plans for safety and security in a tool designed for them to follow as a checklist. Though we are currently not in a full drought, we should not lose sight of water reclamation, preservation, and holding mechanisms. The same could be said of energy. What can the City do in partnership with all stakeholders to create an emergency energy resource network? I could see this done with collaboration with SCE for solar panels on businesses and homes. What about as the pier construction begins, could there be some hydro-electric power generation capacity built into the structure? Incentives for businesses and residents to have battery or generator backup power reserves? Finally, though I am a huge supporter of both the VIPs program and CERT training, personally, it is nearly impossible for me to attend the training necessary to achieve either of those "certifications" or designations. There must be a way for working professionals and families to secure success in this area. In regards to seismic activity, is there a way to direct citizens and property owners to a resource to which we can determine what buildings are seismically sound and secure? If not, how can that be determined and is a timeline for retrofitting possible, feasible or affordable for all the private property of Seal Beach? Thank you for considering my thoughts.	7/15/2018 8:40 AM
7	Downtown area especially 11th and Electric flood all the time	7/14/2018 3:28 PM
8	The ground in which our condos reside	7/14/2018 2:17 PM
9	CPE floods heavily in a light rain. Enough so that people may water ski behind a pickup truck in the street.	6/27/2018 1:06 PM
10	street gutter drainage in the southwest area of leisure world and overflow of the golden rain channel through leisure world	6/12/2018 8:11 PM
11	Ponding occurs on Corsair Way just west of the Corsair Way and Electric Ave intersection. Other areas are also affected nearby.	6/11/2018 12:02 PM
12	Flooding in Bridgeport.	5/30/2018 6:01 PM
13	Our neighborhood depends on the city's public works department to pump storm water in order to prevent flooding in large storm events.	5/30/2018 10:51 AM
14	Ponding and water runoff/drainage are the biggest risks I have seen.	5/30/2018 10:31 AM
15	Flooding on the western side of College Park East	5/20/2018 6:39 PM
16	Occasionally when it rains hard enough water pools, even at the catch basins, in CPE.	5/18/2018 1:32 PM
17	We live at the corner of Mainway and Martha Ann in Rossmoor. In the 1990s, we actually had a rainy spell. The drainage ditch, which runs about 150 feet from our home, was either obstructed or simply couldn't handle the amount of run-off. Being in a low area, the water level rose to the point where cars were being swept down the street. The water level was well over the front sidewalk and inching up into the front yard. Folks were stranded on top of their cars.	5/18/2018 10:23 AM
18	Possible flooding in LeisurevWorld	5/13/2018 5:19 PM
19	Ponding on Marlin Ave at most intersections. In heavy rain flooding of Marlin Ave.	5/13/2018 1:14 PM
20	Intersection of Catalina Ave and Coastline. There is not a drain in the area. During heavy rainfall the water floods the street.	5/11/2018 9:28 PM
21	Flooding in areas of College Park East during heavy rainfall.	5/10/2018 11:30 PM
22	The drainage canals in Leisure World can get plugged up and flooding will start.	5/10/2018 9:56 PM
23	I live in CPE and when it rains heavily the streets flood terribly.	5/10/2018 6:33 PM
24	Pinding after heavy rains at the corner of Coastline and Mar Vista	5/10/2018 3:15 PM
25	There have been flooding on our HOA streets and common area property.	5/10/2018 10:53 AM

Seal Beach LHMP Community Input

26	In parts of Old Town there is pooling of water during heavy rain. Not sure if this is a pumping problem, design problem or what. I'm also concerned about rising water and increased flooding during storm surges and high tides.	5/10/2018 10:18 AM
27	When it rains, Marlin Ave. Seal Beach floods quickly.	5/10/2018 7:56 AM
28	flooding at intersections on Ironwood Avenue where drains are located	5/10/2018 6:18 AM
29	Ponding at intersection of Catalina Avenue and Coastline after heavy rains.	5/10/2018 4:32 AM
30	Flooding in College Park East when there is heavy rain.	5/9/2018 10:14 PM
31	collapse of drainage ditch between Leisure World and both power plants. Is an earthern berm ditch that had damage in a 20 flood level storm February 2016.	5/9/2018 9:55 PM
32	Seal Beach seems to be a "collecting place" of inland problems.	5/9/2018 9:42 PM
33	Flooding at Myra and Barbara cir, flooding at Cerritos and Holder st. They both flood during rain.	5/9/2018 9:28 PM
34	Please educate drivers to stop for school busses.	5/9/2018 9:26 PM
35	Localized flooding on Main Street, parts of PCH, Marina Drive	5/9/2018 9:01 PM
36	Gum Grove Park represents fire hazards that could result in the entire Seal Beach Hill burning, like the Oakland Hills Fire. While some of the tinder-box has been removed, there is no significant fire-break between homes that back up to the park, electric lines, etc. The park remains open during high wind events, or high temperature events, and is not closed by policy during +90'F or +15 mph winds. There are not enough fire hydrants along the back side and perimeters of Gum Grove Park. Cameras are needed in throughout Gum Grove for remote surveillance of fire risk, fire outbreak, homeless trespassing, tobacco/pot smoking, or other fire related risk behavior. Additional fire risk areas extend along the far end past Gum Grove park that lead to the Apollo Business Park area.	5/9/2018 8:44 PM
37	Landing and SB Blvd s Wells as PCH and Seal Beach Blvd.	5/9/2018 8:35 PM
38	Electric Ave and Clipper Way floods when we have heavy rains.	5/9/2018 8:22 PM
39	PCH cross walks.	5/9/2018 7:51 PM
40	Our street floods any time it rains steadily	5/9/2018 7:15 PM
41	Flooding in Bridgeport and along south of pier homes	5/9/2018 6:11 PM
42	During King Tides the drainage ditch on the Navy property @ Seal Beach Blvd. and Landing overflows into the street. The level around the drainage ditch needs to be raised.	5/9/2018 5:46 PM
43	Flooding near the trailer park	5/9/2018 5:21 PM
44	Severe Ponding on lampson ave affecting southbound lanes, between tennis center and Ayres hotel.	5/9/2018 5:07 PM
45	OUCH and 8th St.	5/9/2018 4:19 PM
46	Flooding during rain at 12th and Electric.	5/9/2018 4:02 PM
47	Flooding at interchange of 22 fwy-7th St.-Studebaker. In Long Beach but only exit/entrance for College Park West Seal Beacv	5/9/2018 3:47 PM
48	College Park East often has flood spots due to inadequate drain placement with very slight sloping. This is most evident for sudden heavy rain storms.	5/9/2018 3:45 PM
49	Intersection flooding Lampson and Candleberry, Lampson and Heather, Ironwood and Fuschia (car was totaled by floodwater), Heather and Hazelnut, Lampson and Basswood	5/9/2018 3:20 PM
50	Ponding during moderate to heavy rain at 7th and Marina is very bad.	5/9/2018 3:16 PM
51	Ponding at the beach residents.	5/9/2018 2:58 PM
52	PCH from main north to 5th St	5/9/2018 2:58 PM
53	Entrance to College Park West - making a left turn onto College Park Drive	5/9/2018 2:56 PM
54	The sidewalks on Main Street are a hazard.	5/9/2018 2:53 PM

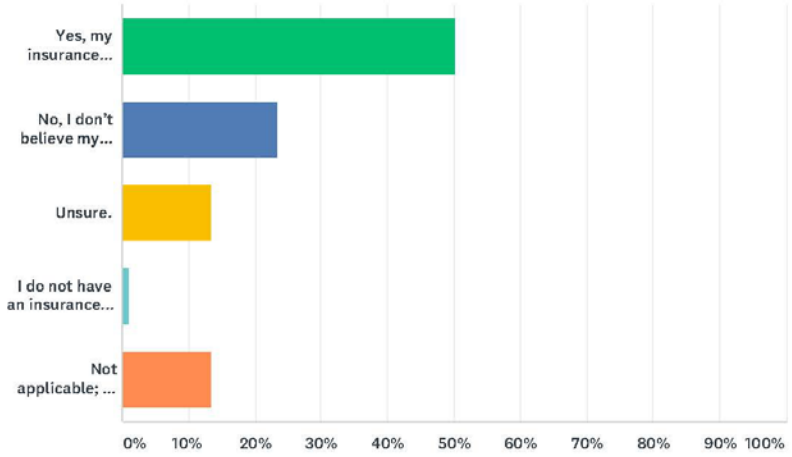
Seal Beach LHMP Community Input

55	Elder Ave/Ironwood Ave intersection is prone to flooding or "ponding" (although less so than during the 1990s) which can cause numerous problems to nearby homes as well as causing "upstream" flooding on Elder Ave. Since the electrical, telephone and cable lines are underground this flooding can potentially seep into those vaults and conduits and cause extended outages.	5/9/2018 2:22 PM
56	College park drive near entry if storm drain is blocked	5/9/2018 2:14 PM
57	Flooding at Magnolia and Birchwood in CPE	5/9/2018 2:01 PM
58	High pressure natural gas line running down Lampson Ave. is only a few yards away from my backyard General flooding that occurs on the north-west area of College Park East during prolonged storms	5/9/2018 1:59 PM
59	Flooding w/in Seal Beach Shores and along First Stree during major storm events	5/9/2018 1:52 PM
60	Flooding on Lampson both in Seal Beach, and in Garden Grove approaching Seal Beach	5/9/2018 1:46 PM
61	the large eucalyptus trees that line the freeway behind our homes, seem unsafe if big winds come through.	5/9/2018 1:38 PM
62	Flooding along Lampson when gains are heavy	5/9/2018 1:11 PM
63	Ponding on Bolsa Avenue at the base of uphill streets is an issue with heavy rainfall. Potential for wildfire on dry wetlands @ SBNWR and Los Alamitos adjacent to Gum Grove Park — as well as dry trees in Gum Grove — are a great concern, especially during Santa Ana wind conditions blowing toward The Hill neighborhood. And of course earthquake and tsunami potentials.	5/9/2018 1:06 PM
64	The intersection of Marina Dr. and 7th St. and 1st St. in front of Eaves Apts. (driveway into LAST parking lot - closest to SB Shores) are prone to flooding during heavy rain storms.	5/9/2018 12:46 PM
65	Flooding at Pch and main st	5/9/2018 12:45 PM
66	Fires	5/9/2018 12:39 PM
67	In cpw I do worry about what we would do if the bridge to our neighborhood went out. Also, if there was a tsunami, most people don't realize that the wave would sweep right up the river to cpw.	5/9/2018 12:12 PM
68	ponding on Lampson during heavy rains & dumb drivers!	5/9/2018 12:09 PM
69	Street flooding in seal beach and surrounding areas north of 405 can cause serious problems with evacuation. Must coordinate with nearby cities	5/9/2018 12:07 PM
70	Electric and 12th always floods when it rains, as well as Electric and 13th.	5/9/2018 12:02 PM
71	Studebaker/7th street 22 West offramp at the light	5/9/2018 12:01 PM
72	Candleberry & Daisy St	5/9/2018 11:58 AM
73	10th and Electric, Old Town	5/9/2018 11:57 AM
74	Flooding at Electric and Seal Beach Blvd	5/9/2018 11:57 AM
75	There is pooling during rain at marlin and rivera, next to the school gate and covers the crosswalk for the kids and marlin and balboa.	5/9/2018 11:54 AM
76	The uneven sidewalks along Main Street.	5/9/2018 11:53 AM
77	Ponding at 2nd and Marina during every rain. Leaves gather and theres no drainage. It gets deep very quickly.	5/9/2018 11:53 AM
78	Flooding in Old Town and certain intersections	5/9/2018 11:52 AM
79	Lampson flooding between sunrise and basswood on eastbound right lane	5/9/2018 11:35 AM
80	ponding at 7th & electric ponding at 7th and Marina ponding at marina park streets	5/9/2018 11:18 AM

Seal Beach LHMP Community Input

Q7 If you are a homeowner, do you have adequate homeowners' insurance to cover the hazards that could impact your home?

Answered: 187 Skipped: 4

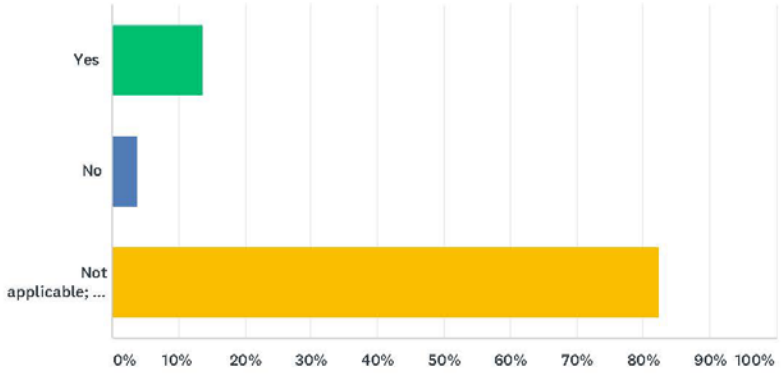


ANSWER CHOICES	RESPONSES	
Yes, my insurance coverage should be adequate.	50.27%	94
No, I don't believe my insurance coverage would be adequate for a major disaster.	23.53%	44
Unsure.	13.37%	25
I do not have an insurance policy.	1.07%	2
Not applicable; I rent my current residence.	13.37%	25
Total Respondents: 187		

Seal Beach LHMP Community Input

Q8 If you rent your residence, do you have renters' insurance?

Answered: 183 Skipped: 8

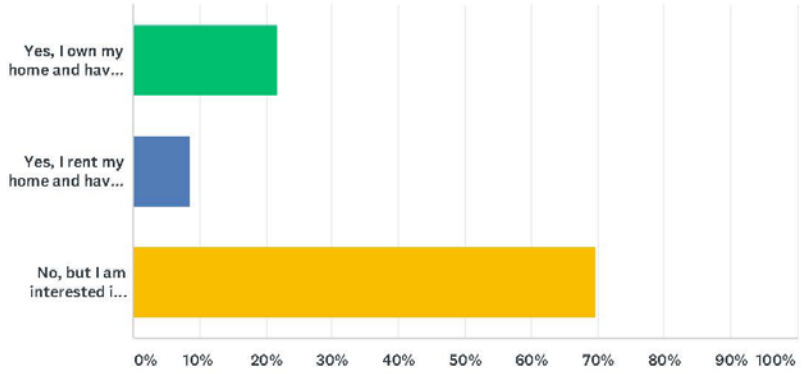


ANSWER CHOICES	RESPONSES	
Yes	13.66%	25
No	3.83%	7
Not applicable; I own my residence.	82.51%	151
TOTAL		183

Seal Beach LHMP Community Input

Q9 Do you have flood insurance for your home?

Answered: 175 Skipped: 16

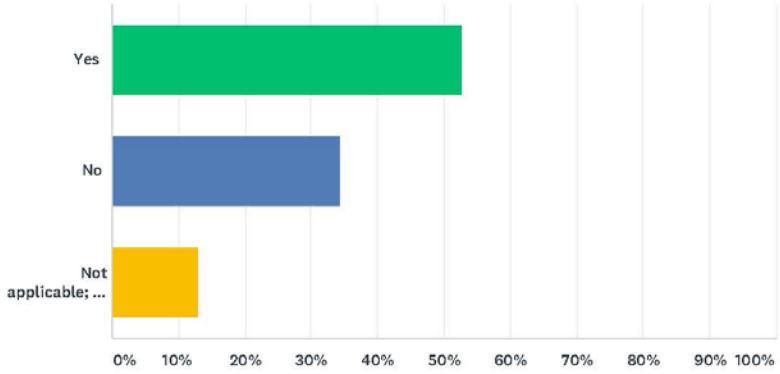


ANSWER CHOICES	RESPONSES	
Yes, I own my home and have flood insurance.	21.71%	38
Yes, I rent my home and have flood insurance.	8.57%	15
No, but I am interested in reviewing flood insurance options (http://www.floodsmart.gov/floodsmart/).	69.71%	122
TOTAL		175

Seal Beach LHMP Community Input

Q10 Have you done anything to your home to make it less vulnerable to hazards such as earthquakes, floods, and fires?

Answered: 184 Skipped: 7



ANSWER CHOICES	RESPONSES	
Yes	52.72%	97
No	34.24%	63
Not applicable; I rent my residence.	13.04%	24
TOTAL		184

#	IF NOT, DO YOU PLAN TO? (PLEASE SPECIFY)	DATE
1	Impractical to completely surround the house with sandbags.	7/22/2018 9:35 AM
2	If I remodel, I will bring areas of the house up to current code for an earthquake and insulation purpose. A city sponsored plan to install seismic gas shut offs would be good. It is on my list for my home, but I feel that many of my neighbors would not bother.	6/27/2018 1:06 PM
3	Sealed cracks in slab	5/20/2018 6:39 PM
4	Plan ahead. Secured items in household.	5/18/2018 1:32 PM
5	I have remodeled my home and upgraded it for seismic standards.	5/15/2018 7:40 PM
6	Have done all I can.	5/11/2018 7:34 AM
7	Added higher levels of concrete with drainage.	5/10/2018 7:56 AM
8	Strapped furniture, no wall hangings over bed, cabinets have locks, water and food stored, go-bag prepared, CERT and first aid trained	5/9/2018 9:01 PM
9	I am on the hill with less exposure to possible flooding. I have earthquake and fire insurance.	5/9/2018 6:20 PM
10	I have an earthquake preparedness box near my front door.	5/9/2018 5:54 PM
11	Working on preparedness	5/9/2018 2:56 PM
12	K	5/9/2018 2:04 PM
13	Installed finer-mesh screens over attic vent openings and spark screens over chimney opening	5/9/2018 1:59 PM
14	Dont understand the question.	5/9/2018 1:26 PM
15	Cannot think of anything necessary.	5/9/2018 11:59 AM

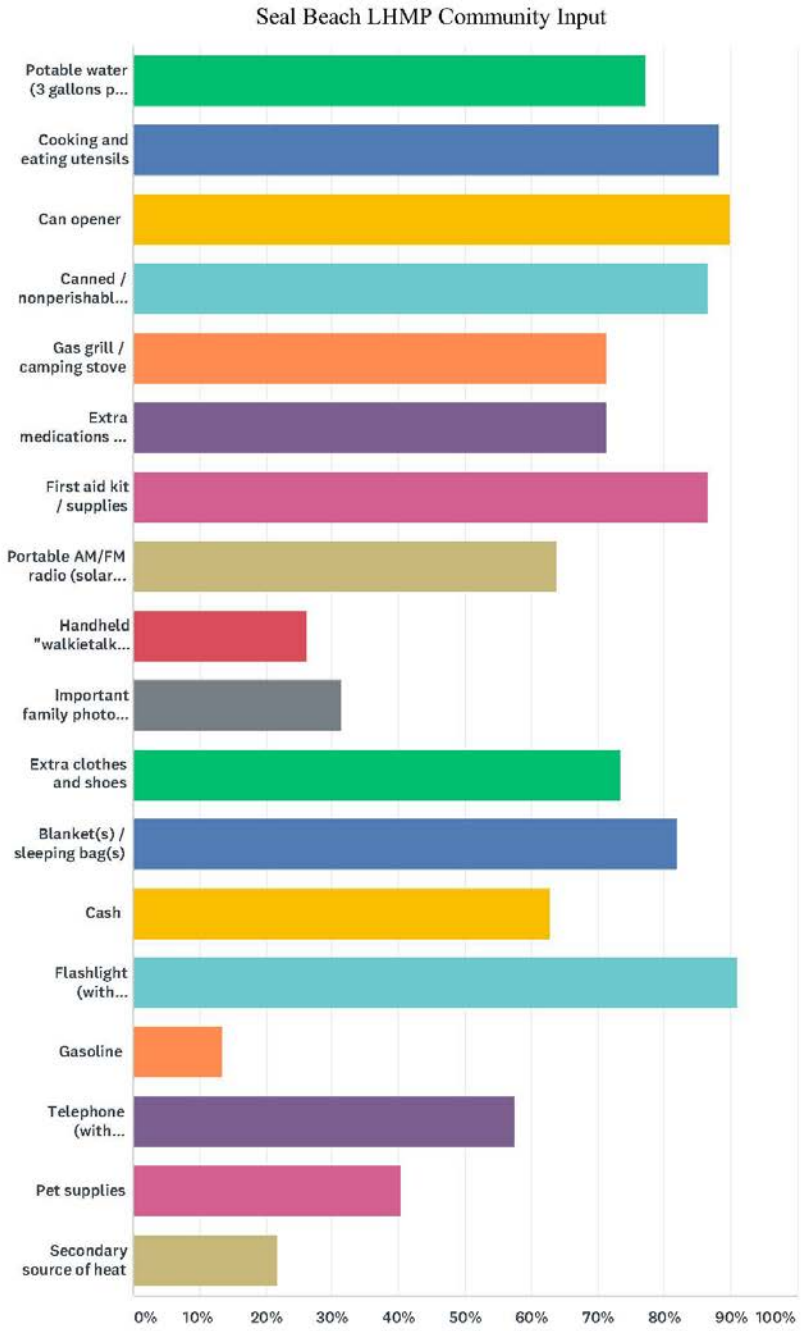
Seal Beach LHMP Community Input

16	Restructured foundation to move with earth	5/9/2018 11:54 AM

Seal Beach LHMP Community Input

Q11 If a severe hazard event occurred today such that all services were cut off from your home (power, gas, water, sewer) and you were unable to leave or access a store for 72 hours, which of these items do you have readily available?

Answered: 188 Skipped: 3



ANSWER CHOICES	RESPONSES	
Potable water (3 gallons per person)	77.13%	145

Seal Beach LHMP Community Input

Cooking and eating utensils	88.30%	166
Can opener	89.89%	169
Canned / nonperishable foods (ready to eat)	86.70%	163
Gas grill / camping stove	71.28%	134
Extra medications and contact lenses (if applicable)	71.28%	134
First aid kit / supplies	86.70%	163
Portable AM/FM radio (solar powered, hand crank, or batteries)	63.83%	120
Handheld "walkietalkie" radios (with batteries)	26.06%	49
Important family photos / documentation in a water- and fireproof container	31.38%	59
Extra clothes and shoes	73.40%	138
Blanket(s) / sleeping bag(s)	81.91%	154
Cash	62.77%	118
Flashlight (with batteries)	90.96%	171
Gasoline	13.30%	25
Telephone (with batteries)	57.45%	108
Pet supplies	40.43%	76
Secondary source of heat	21.81%	41
Total Respondents: 188		

#	WHAT ELSE DO YOU HAVE IN YOUR EMERGENCY KIT?	DATE
1	Two generators, firewood for fireplace, extra batteries	7/24/2018 4:44 PM
2	Extra fuel for gas grill/camping stove; contact information of family out-of-state; gloves; lightweight jacket; hat/cap; rain gear; portable potty; small tool that contains screwdrivers; pocket knife; trash bags; generators; two way radio (husband has access to talk on it).	7/20/2018 10:11 AM
3	High visibility jackets and hats, bicycles for local and emergency transport with pannier bags and baskets, infra-red film blanket, fire extinguisher, chemical illumination rods, candles, sanitary supplies (portable enclosed hygiene kit - toothbrush, toothpaste, soap, toilet paper, hand sanitizer, spray isopropyl alcohol, etc.)	7/15/2018 8:40 AM
4	Amateur Radio Transceiver	7/14/2018 2:17 PM
5	Portable solar panel kit with a small battery, suitable for charging small devices. I do not have 3 gallons of potable water per person per day (family of 4 would be 36 gallons), but I do plan on using water in a hot tub and rain water collection barrels for non potable uses.	6/27/2018 1:06 PM
6	skills	6/20/2018 7:32 PM
7	cell phones	5/30/2018 9:59 AM
8	trash bags, lantern	5/20/2018 6:39 PM
9	Fire starting flints, portable ham radio,	5/18/2018 2:49 PM
10	I am a member of West Orange County Regional CERT.	5/18/2018 1:32 PM
11	Solar generator	5/13/2018 5:19 PM
12	Fire extinguishers	5/11/2018 11:03 AM
13	Walkie talkies are really old need new ones	5/11/2018 7:34 AM
14	Out of state contact, emergency plan & meeting place	5/10/2018 3:16 PM

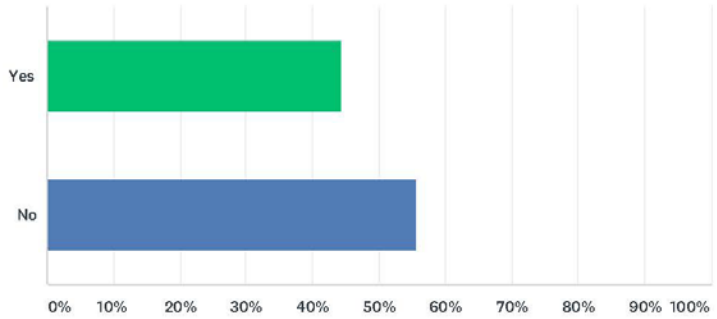
Seal Beach LHMP Community Input

15	tarps, rope and rocks.	5/9/2018 9:55 PM
16	Peroxide, bandaids	5/9/2018 9:42 PM
17	Generator	5/9/2018 9:28 PM
18	Poncho, tennis shoes	5/9/2018 9:26 PM
19	gloves, helmet, knee pads, extra contact lenses, toilet paper, deck of cards, breath mints, toiletries, whistle, signal mirror, hand wipes and sanitizer	5/9/2018 9:01 PM
20	tent, wood cutting tools,	5/9/2018 8:44 PM
21	Knife,lighter,multitool,small shovel,boots or protective footwear	5/9/2018 8:27 PM
22	Batteries	5/9/2018 6:11 PM
23	Portable medical instruments (blood pressure, temperature, ...).	5/9/2018 3:45 PM
24	Pry bars, extensive first aid supplies, tourniquets, braces, plastic sheeting, gas powered generator, camping tent, fire extinguishers, duct tape, goggles, gloves, hard hats, rain gear, extension cords, etc, etc, etc.....	5/9/2018 3:20 PM
25	Fire extinguishers	5/9/2018 2:58 PM
26	Ax, knife and water filter	5/9/2018 2:58 PM
27	Solar generators	5/9/2018 1:18 PM
28	Hard hat, sturdy shoes, leather work gloves, water filter	5/9/2018 1:06 PM
29	Extra propane tanks	5/9/2018 12:31 PM
30	Candles, matches.	5/9/2018 12:12 PM
31	Emergency generator and desalination filter	5/9/2018 12:07 PM
32	CERT training materials, limited bandages (need new kit),	5/9/2018 12:07 PM
33	hard hat, safety glasses, whistle.	5/9/2018 11:59 AM
34	Gas generator	5/9/2018 11:56 AM
35	Cleaning Gaza band aids cotton alcohol	5/9/2018 11:54 AM
36	Weapons.	5/9/2018 11:53 AM

Seal Beach LHMP Community Input

Q12 Are you familiar with the special needs of your neighbors in the event of a disaster situation (special needs may include limited mobility, severe medical conditions, memory impairments)?

Answered: 189 Skipped: 2

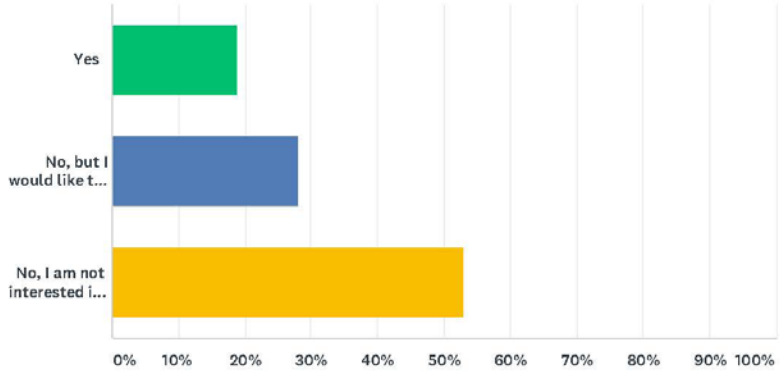


ANSWER CHOICES	RESPONSES	
Yes	44.44%	84
No	55.56%	105
TOTAL		189

Seal Beach LHMP Community Input

Q13 Are you a trained member of your Community Emergency Response Team (CERT)?

Answered: 185 Skipped: 6

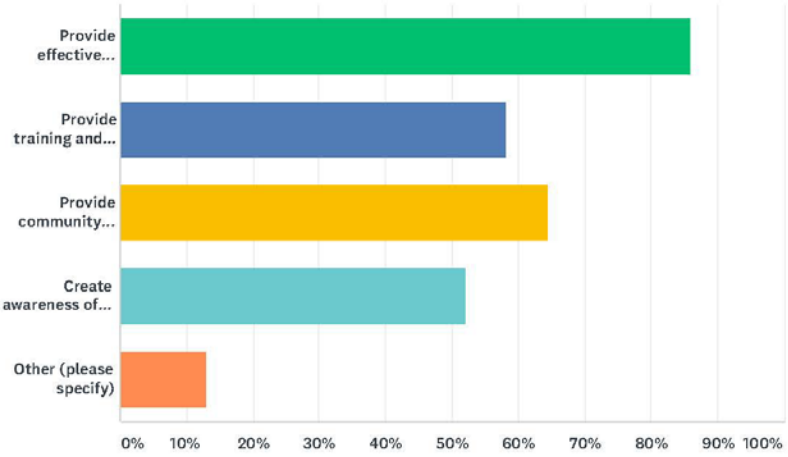


ANSWER CHOICES	RESPONSES	
Yes	18.92%	35
No, but I would like to learn more about CERT.	28.11%	52
No, I am not interested in being a trained CERT member.	52.97%	98
TOTAL		185

Seal Beach LHMP Community Input

Q14 How can the City help you become better prepared for a disaster? (choose all that apply)

Answered: 186 Skipped: 5



ANSWER CHOICES	RESPONSES	
Provide effective emergency notifications and communication.	86.02%	160
Provide training and education to residents and business owners on how to reduce future damage.	58.06%	108
Provide community outreach regarding emergency preparedness.	64.52%	120
Create awareness of special needs and vulnerable populations.	52.15%	97
Other (please specify)	12.90%	24
Total Respondents: 186		

#	OTHER (PLEASE SPECIFY)	DATE
1	None	7/20/2018 6:30 AM
2	Don't just look to "disaster" rather, longer-term strategies to mitigate on-going or transformative disasters - increasing temperature trend, decreasing water availability, the next "big one" earthquake which is seismically overdue, etc.	7/15/2018 8:40 AM
3	hyper-local info about CERT members: who is a block captain for instance. What vulnerable population is near my home, to be looked in on immediately	6/27/2018 1:06 PM
4	Fix and test the water pump station that continues to fail.	6/11/2018 12:02 PM
5	What is/are our evacuation plan(s)?	5/30/2018 9:59 AM
6	The greatest disaster threats to Seal Beach are earthquakes and liquefaction. The most important thing the City can do is get the Water and Sewage systems back online as soon as possible so that we can occupy our homes.	5/25/2018 7:53 AM
7	Actively promote CERT.	5/18/2018 1:32 PM
8	Advertise local CERT training functions.	5/18/2018 10:23 AM
9	Leisure World has cut back on preparedness due fear of liability. We're told we are on our own.	5/13/2018 5:19 PM

Seal Beach LHMP Community Input

10	Improve the mobile loudspeaker - couldn't understand the one used when a tornado was close by	5/10/2018 4:37 PM
11	Hold regular emergency preparedness meetings and drills.	5/10/2018 10:18 AM
12	Provide list of suggested emergency items on City Website, inform residents and businesses of free staging areas where portable cots, blankets, snacks are available in emergencies.	5/9/2018 9:42 PM
13	Sorry, but the Cities do not even have training for bike riding safety or Drug resistance nor the hazards of the new new Vape smoking. Let alone the hazards of Pot and the fact from what I understand there are only about three percent of officers that can preform a test to see if a person is loaded. The cities have more than enough to do, I appreciate the job the Police do with such minimal support.	5/9/2018 9:28 PM
14	Promote Neighbor 4 Neighbor	5/9/2018 9:01 PM
15	Control traffic and access to the Hill neighborhood following an event. Looting and theft will be the result after 3 days of diminished services.	5/9/2018 8:44 PM
16	Investigate and publicize potential PIPELINE rsks and safety approaches to these if an emergency. Investigate and improve seasonal flooding (with city of long beach and cal-trans?) at interchange mentioned above--we could not get safely in or out from CPW during times of intensive rain in past years, including last year. I have photos.	5/9/2018 3:47 PM
17	Offer CERT trainings Make available and train group leaders in the MAP YOUR NEIGHBORHOOD program. I used program in Washington State and it is outstanding in preparing groups of neighbors to make effective initial response to disasters. I would be enthused about helping to set it in motion in Seal Beach!	5/9/2018 1:06 PM
18	All the above	5/9/2018 12:16 PM
19	W	5/9/2018 12:12 PM
20	Address the impact of people being unable or unwilling to stay indoors after disaster. Coordinate better with other cities. Have much more active CERT team, training, contacts, and coordinate with other CERT groups (huntington beach for instance). Reach out to surrounding area to address homeless	5/9/2018 12:07 PM
21	Internet unavailable; what radio stations? No sewer? Place to congregate? Church?	5/9/2018 12:05 PM
22	can't think of anything.	5/9/2018 11:59 AM
23	Run exercises in neighborhoods to test status/awareness	5/9/2018 11:56 AM
24	Sell kits	5/9/2018 11:52 AM

Seal Beach LHMP Community Input

Q15 What is the ZIP code of your workplace?

Answered: 93 Skipped: 98

#	RESPONSES	DATE
1	90740	7/24/2018 4:45 PM
2	90740	7/20/2018 4:41 PM
3	90740	7/20/2018 12:03 PM
4	90740	7/20/2018 10:22 AM
5	90740	7/20/2018 10:11 AM
6	90740	7/20/2018 6:30 AM
7	90740	7/19/2018 10:05 PM
8	90740	7/19/2018 8:00 PM
9	90740	7/19/2018 5:20 PM
10	90740	7/19/2018 5:02 PM
11	90740	7/19/2018 5:01 PM
12	90740	7/15/2018 8:41 AM
13	92648	7/14/2018 3:29 PM
14	90630	7/14/2018 2:17 PM
15	90740	7/13/2018 3:35 PM
16	N/A	7/12/2018 10:31 PM
17	90280	6/27/2018 1:06 PM
18	90740	6/20/2018 7:33 PM
19	90740	6/12/2018 8:11 PM
20	90740	6/11/2018 12:03 PM
21	90740	5/31/2018 1:41 AM
22	90740	5/30/2018 12:40 PM
23	We are retired.	5/30/2018 10:00 AM
24	92683	5/29/2018 10:11 AM
25	90720	5/25/2018 9:42 AM
26	Not applicable	5/25/2018 7:54 AM
27	90058	5/18/2018 2:49 PM
28	90720	5/18/2018 1:33 PM
29	92658	5/15/2018 7:40 PM
30	90740	5/13/2018 5:20 PM
31	90740	5/13/2018 2:51 PM
32	Retired	5/11/2018 11:03 AM
33	90740	5/11/2018 7:34 AM
34	90720	5/10/2018 11:30 PM
35	I am retired.	5/10/2018 9:57 PM

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Seal Beach LHMP Community Input

36	90505	5/10/2018 6:34 PM
37	Stay at home mom	5/10/2018 3:15 PM
38	None	5/10/2018 12:37 PM
39	90630	5/10/2018 10:54 AM
40	92833	5/10/2018 10:52 AM
41	90740	5/10/2018 9:25 AM
42	90740	5/10/2018 8:34 AM
43	90802	5/10/2018 4:33 AM
44	92647	5/10/2018 3:53 AM
45	92703	5/9/2018 10:15 PM
46	90740	5/9/2018 9:42 PM
47	90620	5/9/2018 9:28 PM
48	90740	5/9/2018 9:27 PM
49	90803	5/9/2018 9:11 PM
50	90803	5/9/2018 9:01 PM
51	90502	5/9/2018 8:45 PM
52	90740	5/9/2018 8:35 PM
53	90740	5/9/2018 8:23 PM
54	91706	5/9/2018 8:21 PM
55	90740	5/9/2018 8:01 PM
56	92626	5/9/2018 6:35 PM
57	90740	5/9/2018 6:20 PM
58	Na	5/9/2018 6:12 PM
59	N/A	5/9/2018 5:56 PM
60	90822	5/9/2018 5:55 PM
61	90740	5/9/2018 5:47 PM
62	90740	5/9/2018 3:51 PM
63	90740	5/9/2018 3:17 PM
64	90808	5/9/2018 2:58 PM
65	91214	5/9/2018 2:58 PM
66	90245	5/9/2018 2:57 PM
67	90740	5/9/2018 2:14 PM
68	90740	5/9/2018 2:01 PM
69	92626	5/9/2018 1:59 PM
70	92649	5/9/2018 1:46 PM
71	90012	5/9/2018 1:26 PM
72	90740	5/9/2018 1:18 PM
73	90740	5/9/2018 12:59 PM
74	90803	5/9/2018 12:20 PM
75	90740	5/9/2018 12:14 PM
76	N/A	5/9/2018 12:13 PM

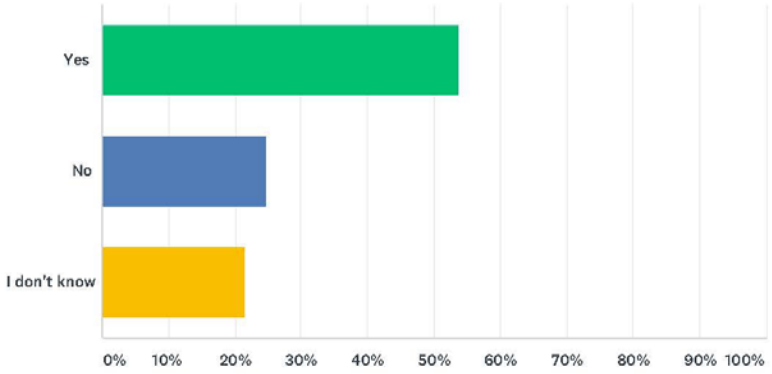
Seal Beach LHMP Community Input

77	90720	5/9/2018 12:07 PM
78	90815	5/9/2018 12:02 PM
79	92653	5/9/2018 12:01 PM
80	90740	5/9/2018 11:58 AM
81	90740	5/9/2018 11:57 AM
82	Retired	5/9/2018 11:57 AM
83	90740	5/9/2018 11:56 AM
84	92780	5/9/2018 11:55 AM
85	92651	5/9/2018 11:54 AM
86	90740	5/9/2018 11:54 AM
87	90806	5/9/2018 11:54 AM
88	90740	5/9/2018 11:53 AM
89	90740	5/9/2018 11:52 AM
90	90740	5/9/2018 11:52 AM
91	Retured	5/9/2018 11:52 AM
92	92626	5/9/2018 11:50 AM
93	90740	5/9/2018 11:19 AM

Seal Beach LHMP Community Input

Q16 Does your employer have a plan for disaster recovery in place?

Answered: 93 Skipped: 98

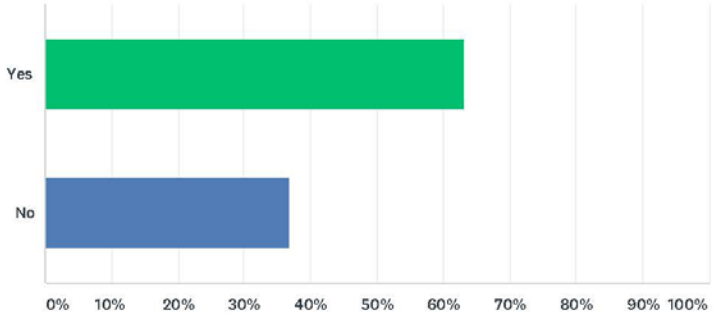


ANSWER CHOICES	RESPONSES	
Yes	53.76%	50
No	24.73%	23
I don't know	21.51%	20
TOTAL		93

Seal Beach LHMP Community Input

Q17 Does your employer have a workforce communications plan to implement following a disaster so they are able to contact you?

Answered: 87 Skipped: 104

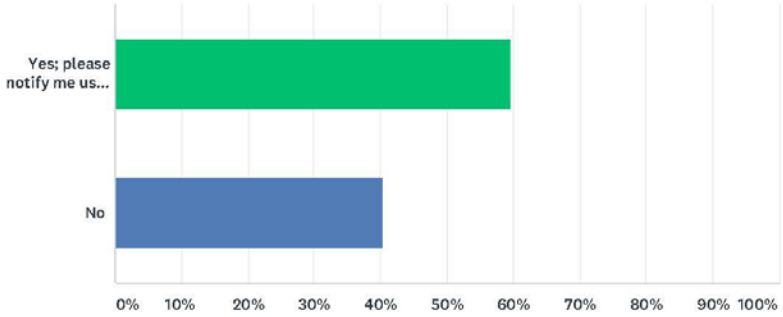


ANSWER CHOICES	RESPONSES	
Yes	63.22%	55
No	36.78%	32
TOTAL		87

Seal Beach LHMP Community Input

Q18 Would you like to be contacted when the Draft 2018 Seal Beach Hazard Mitigation Plan is available for review?

Answered: 176 Skipped: 15



ANSWER CHOICES	RESPONSES	
Yes; please notify me using my contact information in the next question.	59.66%	105
No	40.34%	71
TOTAL		176

Seal Beach LHMP Community Input

Q19 If you would like to be notified of future opportunities to participate in hazard mitigation and resiliency planning, please provide your name and e-mail address. If you do not have an e-mail address, please provide your mailing address.

Answered: 102 Skipped: 89

ANSWER CHOICES	RESPONSES	
Full Name	98.04%	100
Email Address	96.08%	98
Street Address	78.43%	80
City, State, Zip	84.31%	86

#	FULL NAME	DATE
1	JERRY PALO	7/24/2018 7:38 AM
2	Joseph F Lazzari	7/24/2018 7:00 AM
3	Victor Grgas	7/22/2018 9:47 AM
4	Karen Kassawara	7/21/2018 8:55 PM
5	Seth Eaker	7/15/2018 8:42 AM
6	Kellee Fritzal	7/14/2018 3:30 PM
7	Richard Crowe	7/14/2018 2:19 PM
8	Karol Bailey	7/13/2018 3:35 PM
9	William H De Witt	6/27/2018 1:07 PM
10	Christine Bittner	6/26/2018 1:45 PM
11	Brian Gray	5/31/2018 1:42 AM
12	Michaela O'Neill	5/30/2018 6:02 PM
13	Brooke Nicholas	5/30/2018 12:41 PM
14	Susan Perrell	5/30/2018 10:52 AM
15	Jackson Shaw	5/30/2018 10:32 AM
16	john pohlmann	5/30/2018 10:03 AM
17	David Lopez	5/29/2018 10:12 AM
18	Paul Wayne	5/25/2018 7:59 AM
19	Lance Smith	5/18/2018 2:55 PM
20	DAVID ATKINS	5/18/2018 1:34 PM
21	Sheridan Pyle	5/18/2018 10:25 AM
22	Rich Bluth	5/15/2018 7:41 PM
23	Curtin, SPHR Daniel	5/13/2018 5:21 PM
24	Alexander Roelofs	5/13/2018 2:52 PM
25	Rita Hayes	5/11/2018 9:30 PM
26	Frank Hall	5/11/2018 11:05 AM

Seal Beach LHMP Community Input

27	Mary testerman	5/11/2018 7:36 AM
28	Terri Epps	5/10/2018 11:32 PM
29	Hermie Asido	5/10/2018 3:20 PM
30	Christina Simon	5/10/2018 3:17 PM
31	Thomas Patrick O'Toole	5/10/2018 10:56 AM
32	Jeannette Andruss	5/10/2018 10:19 AM
33	Kurt Johnson	5/10/2018 9:26 AM
34	Billie J Diaz	5/10/2018 8:35 AM
35	Jacque Wesolek	5/10/2018 7:57 AM
36	Patricia Campbell	5/10/2018 6:22 AM
37	Ryan Olson	5/10/2018 3:54 AM
38	Paula Schmidt	5/9/2018 10:17 PM
39	Camille King Thompson	5/9/2018 9:56 PM
40	Diane Lenning	5/9/2018 9:45 PM
41	Kathryn Carroll Orr	5/9/2018 9:41 PM
42	Charles Zapotosky	5/9/2018 9:35 PM
43	Wink Chase	5/9/2018 9:03 PM
44	Chris Buthe	5/9/2018 8:48 PM
45	Julia McConaghy	5/9/2018 8:37 PM
46	Ray Longoria	5/9/2018 8:24 PM
47	Anna Bilyk	5/9/2018 8:22 PM
48	Shay M. Brown	5/9/2018 8:13 PM
49	Barbara Evans	5/9/2018 6:41 PM
50	Kristin Bloser	5/9/2018 6:36 PM
51	Diane Rebecca Martin	5/9/2018 6:22 PM
52	Na	5/9/2018 6:12 PM
53	Shelley Middleton	5/9/2018 5:57 PM
54	Frank bindels	5/9/2018 5:08 PM
55	F	5/9/2018 4:00 PM
56	Kristen Lewandowski	5/9/2018 3:52 PM
57	John Kastner	5/9/2018 3:46 PM
58	Norma Toohey	5/9/2018 3:38 PM
59	Joseph M Horejsi MD	5/9/2018 3:24 PM
60	not at this time but thank you	5/9/2018 3:17 PM
61	Brent Gustin	5/9/2018 2:59 PM
62	Garry Herron	5/9/2018 2:23 PM
63	Robert McCone	5/9/2018 2:16 PM
64	Kent Ramseyer	5/9/2018 2:02 PM
65	Geri Jones	5/9/2018 1:59 PM
66	Terry Brennan	5/9/2018 1:53 PM
67	Holly	5/9/2018 1:47 PM

Seal Beach LHMP Community Input

68	Dave DePina	5/9/2018 1:38 PM
69	Morton Baum	5/9/2018 1:28 PM
70	Dani Junkes	5/9/2018 1:23 PM
71	Jillian Gallery	5/9/2018 1:08 PM
72	Lisa Landau	5/9/2018 1:00 PM
73	Rene Haas	5/9/2018 12:49 PM
74	Karen Ferretti	5/9/2018 12:47 PM
75	Diane Reksc	5/9/2018 12:46 PM
76	Elizabeth Kennedy	5/9/2018 12:42 PM
77	Kenny Wong	5/9/2018 12:40 PM
78	Susan Bremser	5/9/2018 12:34 PM
79	Diane McFadden	5/9/2018 12:26 PM
80	Dr Linda Curci	5/9/2018 12:21 PM
81	Denise Gardiner	5/9/2018 12:20 PM
82	Leslie Coleman	5/9/2018 12:16 PM
83	Jeff Aase	5/9/2018 12:16 PM
84	Mari Cobb	5/9/2018 12:16 PM
85	Katherine Turner	5/9/2018 12:14 PM
86	Pam Drake	5/9/2018 12:12 PM
87	Lori Thompson	5/9/2018 12:07 PM
88	Gabriela Hurtado	5/9/2018 12:05 PM
89	Pamela Miller	5/9/2018 12:00 PM
90	Ellery Deaton	5/9/2018 11:58 AM
91	Marian Last	5/9/2018 11:56 AM
92	Pete Wu	5/9/2018 11:56 AM
93	A OBRIEN	5/9/2018 11:56 AM
94	George Mathews	5/9/2018 11:55 AM
95	Suzy Hutton	5/9/2018 11:55 AM
96	Darlene Black	5/9/2018 11:54 AM
97	Dean Duncan	5/9/2018 11:54 AM
98	Ken Asbury	5/9/2018 11:51 AM
99	Glenn Newman	5/9/2018 11:38 AM
100	Marc Loopesko	5/9/2018 11:20 AM
#	**EMAIL ADDRESS**	**DATE**
1	jpalo@dcorllc.com	7/24/2018 7:38 AM
2	jsblazzari@gmail.com	7/24/2018 7:00 AM
3	vgrg123@aol.com	7/22/2018 9:47 AM
4	Karenkassa@yahoo.com	7/21/2018 8:55 PM
5	seth@blackmarbleconsulting.com	7/15/2018 8:42 AM
6	kfritzal@surfcity-hb.org	7/14/2018 3:30 PM
7	rcrowe1@mac.com	7/14/2018 2:19 PM

Seal Beach LHMP Community Input

8	karolbailey@getbusyliving.com	7/13/2018 3:35 PM
9	ke6lbm@ke6lbm.com	6/27/2018 1:07 PM
10	whosmom333@gmail.com	6/26/2018 1:45 PM
11	bgray@sealbeachca.gov	5/31/2018 1:42 AM
12	moneill290@me.com	5/30/2018 6:02 PM
13	Susan@outdoorsynergy.net	5/30/2018 10:52 AM
14	jackson.shaw@gmail.com	5/30/2018 10:32 AM
15	jpohlcat@roaddrunner.com	5/30/2018 10:03 AM
16	ocairops@me.com	5/29/2018 10:12 AM
17	cpwayne@roadrunner.com	5/25/2018 7:59 AM
18	smithlrds@twc.com	5/18/2018 2:55 PM
19	david_a_atkins@yahoo.com	5/18/2018 1:34 PM
20	pylesheridan@gmail.com	5/18/2018 10:25 AM
21	sbbsix@gmail.com	5/15/2018 7:41 PM
22	dcurtinla@gmail.com	5/13/2018 5:21 PM
23	alexander.roelofs@navy.mil	5/13/2018 2:52 PM
24	Rita.ricksb@gmail.com	5/11/2018 9:30 PM
25	Docmohave@gmail.com	5/11/2018 11:05 AM
26	Marys_kids@yahoo.com	5/11/2018 7:36 AM
27	Tepps@losal.org	5/10/2018 11:32 PM
28	asido.h@gmail.com	5/10/2018 3:20 PM
29	stinasimon@yahoo.com	5/10/2018 3:17 PM
30	otoole111@aol.com	5/10/2018 10:56 AM
31	jeannetteandruss@gmail.com	5/10/2018 10:19 AM
32	kurtdjohnson@aol.com	5/10/2018 9:26 AM
33	billied@gte.net	5/10/2018 8:35 AM
34	jacquesf350@yahoo.com	5/10/2018 7:57 AM
35	Campbellpe@aol.com	5/10/2018 6:22 AM
36	ryoly@aol.com	5/10/2018 3:54 AM
37	schmidtycommittee@yahoo.com	5/9/2018 10:17 PM
38	thompdog3@gmail.com	5/9/2018 9:56 PM
39	diane@lenning.com	5/9/2018 9:45 PM
40	Kathyorrtravel@icloud.com	5/9/2018 9:41 PM
41	charleszap0606@sbcglobal.net	5/9/2018 9:35 PM
42	wink4re@aol.com	5/9/2018 9:03 PM
43	chris.buthe@me.com	5/9/2018 8:48 PM
44	Julia.McConaghy@gmail.com	5/9/2018 8:37 PM
45	ray90740@gmail.com	5/9/2018 8:24 PM
46	annabilyk@yahoo.com	5/9/2018 8:22 PM
47	sshaymarie@aol.com	5/9/2018 8:13 PM
48	seashore140@yahoo.com	5/9/2018 6:41 PM

Seal Beach LHMP Community Input

49	Kbloser@yahoo.com	5/9/2018 6:36 PM
50	dmart1n@hotmail.com	5/9/2018 6:22 PM
51	shelley125@me.com	5/9/2018 5:57 PM
52	Fb90740@gmail.com	5/9/2018 5:08 PM
53	cyberk10@yahoo.com	5/9/2018 3:52 PM
54	Kseiff@uci.edu	5/9/2018 3:48 PM
55	john@kastner.us	5/9/2018 3:46 PM
56	campshouse@verizon.net	5/9/2018 3:38 PM
57	jmhorejsi@gmail.com	5/9/2018 3:24 PM
58	Magfgarc@aol.com	5/9/2018 2:59 PM
59	G3racer@msn.com	5/9/2018 2:59 PM
60	garryherron@roadrunner.com	5/9/2018 2:23 PM
61	Rmccone@jrwatson.com	5/9/2018 2:16 PM
62	ramseyerkent@gmail.com	5/9/2018 2:02 PM
63	bobgeri88@yahoo.com	5/9/2018 1:59 PM
64	terrybennan57@earthlink.net	5/9/2018 1:53 PM
65	hollyschlange@gmail.com	5/9/2018 1:47 PM
66	david.depina@yahoo.com	5/9/2018 1:38 PM
67	alexmb9@msn.com	5/9/2018 1:28 PM
68	djjunkes@aol.com	5/9/2018 1:23 PM
69	jilliangallery@gmail.com	5/9/2018 1:08 PM
70	lisalandau714@gmail.com	5/9/2018 1:00 PM
71	renehaas2003@yahoo.com	5/9/2018 12:49 PM
72	KFERRETTI4@GMAIL.COM	5/9/2018 12:47 PM
73	dianereksc@gmail.com	5/9/2018 12:46 PM
74	Dancingliz2007@hotmail.com	5/9/2018 12:42 PM
75	Mits3000gt94@yahoo.com	5/9/2018 12:40 PM
76	Susan.bremser@yahoo.com	5/9/2018 12:34 PM
77	diane.mcfadden@sbcglobal.net	5/9/2018 12:26 PM
78	drlindacurci@gmail.com	5/9/2018 12:21 PM
79	denise.gardiner@gmail.com	5/9/2018 12:20 PM
80	Moddy23@icloud.com	5/9/2018 12:16 PM
81	jaase@bondservices.com	5/9/2018 12:16 PM
82	kcmari@verizon.net	5/9/2018 12:16 PM
83	Kathyturner0908@gmail.com	5/9/2018 12:14 PM
84	tellpam@yahoo.com	5/9/2018 12:12 PM
85	Lori@reedex.com	5/9/2018 12:07 PM
86	gabriela.hurtado@longbeach.gov	5/9/2018 12:05 PM
87	la_woman_4real@yahoo.com	5/9/2018 12:00 PM
88	ellerydeaton@gmail.com	5/9/2018 11:58 AM
89	marianlast@aol.com	5/9/2018 11:56 AM

Seal Beach LHMP Community Input

90	china7908@gmail.com	5/9/2018 11:56 AM
91	Cleantime@cleantime101.com	5/9/2018 11:56 AM
92	GeoMathews@aol.com	5/9/2018 11:55 AM
93	Suzyhutton@verizon.net	5/9/2018 11:55 AM
94	Ddashsast@gmail.com	5/9/2018 11:54 AM
95	Clhduncan@aol.com	5/9/2018 11:54 AM
96	kena01@yahoo.com	5/9/2018 11:51 AM
97	g.nn@verizon.net	5/9/2018 11:38 AM
98	mloopesko@roadrunner.com	5/9/2018 11:20 AM
#	**STREET ADDRESS**	**DATE**
1	290 MAPLE COURT SUITE 290	7/24/2018 7:38 AM
2	155 - 13th St.	7/24/2018 7:00 AM
3	211 15th Street	7/22/2018 9:47 AM
4	201 11th Street, #6	7/15/2018 8:42 AM
5	311 11th Street D	7/14/2018 3:30 PM
6	13291 Twin Hills Drive Unit 60C	7/14/2018 2:19 PM
7	3851 h	6/27/2018 1:07 PM
8	13580 Medinac Ln., 101g	6/26/2018 1:45 PM
9	911 seal beach blvd	5/31/2018 1:42 AM
10	290 Electric Ave	5/30/2018 6:02 PM
11	322 14th St	5/30/2018 12:41 PM
12	417 Galleon Way	5/30/2018 10:52 AM
13	310 Regatta Way	5/30/2018 10:32 AM
14	620 taper dr.	5/30/2018 10:03 AM
15	4480 Elder Avenue	5/29/2018 10:12 AM
16	430 Coastline Dr	5/18/2018 2:55 PM
17	2602 Mainway Drive	5/18/2018 10:25 AM
18	412 Crystal Place	5/15/2018 7:41 PM
19	13361 ElDorado Drive 201A	5/13/2018 5:21 PM
20	800 Seal Beach Blvd, Building 10	5/13/2018 2:52 PM
21	740 Catalina Ave	5/11/2018 9:30 PM
22	3081 Palo Verde Ave.	5/11/2018 11:05 AM
23	615 ebb tide place	5/11/2018 7:36 AM
24	900 Marvista Ave	5/10/2018 3:17 PM
25	4071 Avenida Sevilla	5/10/2018 10:56 AM
26	12340 Seal Beach Boulevard-Suite B-131	5/10/2018 9:26 AM
27	729 Southshore Drive	5/10/2018 8:35 AM
28	428 Beryl Cove Way	5/10/2018 7:57 AM
29	4433 Ironwood Avenue	5/10/2018 6:22 AM
30	116 5th St #A	5/10/2018 3:54 AM
31	4297 Fir Ave	5/9/2018 10:17 PM

Seal Beach LHMP Community Input

32	966 Heron Circle	5/9/2018 9:45 PM
33	4709 Candleberry Avenue	5/9/2018 9:41 PM
34	10081 Brabara Cir.	5/9/2018 9:35 PM
35	840 Driftwood Ave (for now)	5/9/2018 9:03 PM
36	616 Taper Drive	5/9/2018 8:48 PM
37	235 Seal Beach Blvd	5/9/2018 8:37 PM
38	250 Clipper Way	5/9/2018 8:24 PM
39	596 Victoria Street A101	5/9/2018 8:13 PM
40	233 15th Street	5/9/2018 6:36 PM
41	13060 Del Monte Dr. 46Q	5/9/2018 5:57 PM
42	3681 fuchsia st	5/9/2018 5:08 PM
43	228 8th Street	5/9/2018 3:52 PM
44	4541 Elder Avenue	5/9/2018 3:46 PM
45	930 Catalina Ave.	5/9/2018 3:38 PM
46	3851 Goldenrod Street	5/9/2018 3:24 PM
47	1410 Crestview Ave	5/9/2018 2:59 PM
48	4373 Elder Avenue	5/9/2018 2:23 PM
49	101 Main Street, suite A	5/9/2018 2:16 PM
50	4949 Ironwood Ave.	5/9/2018 2:02 PM
51	1080 Brookline rd 213E	5/9/2018 1:59 PM
52	57 Riversea Road	5/9/2018 1:53 PM
53	17111 4th St	5/9/2018 1:47 PM
54	College Park Drive	5/9/2018 1:38 PM
55	640 Island View Drive	5/9/2018 1:23 PM
56	645 Taper Drive	5/9/2018 1:08 PM
57	1198 PCH #D512	5/9/2018 1:00 PM
58	617 Beachcomber Dr	5/9/2018 12:49 PM
59	129 Cottonwood Ln	5/9/2018 12:47 PM
60	13550 Del Monte Dr #110B	5/9/2018 12:42 PM
61	211 7th Street	5/9/2018 12:40 PM
62	1130 coastline dr.	5/9/2018 12:34 PM
63	1501 Ocean Ave	5/9/2018 12:21 PM
64	1100 Coastline Dr	5/9/2018 12:20 PM
65	4440 Dogwood Ave.	5/9/2018 12:16 PM
66	155 Yale Lane	5/9/2018 12:14 PM
67	3845 farquhar avenue unit 302	5/9/2018 12:12 PM
68	15526 Commerce Ln	5/9/2018 12:07 PM
69	118 13th st., Apt 3	5/9/2018 12:05 PM
70	13481 Fairfield Ln. 59E	5/9/2018 12:00 PM
71	130 4th	5/9/2018 11:58 AM
72	3372 Rowena dr	5/9/2018 11:56 AM

Seal Beach LHMP Community Input

73	633 Sea Breeze Drive	5/9/2018 11:56 AM
74	4673 Guava Ave., Seal Beach	5/9/2018 11:55 AM
75	625 Taper Dr	5/9/2018 11:55 AM
76	233 7th Street	5/9/2018 11:54 AM
77	1015 Driftwood Ave	5/9/2018 11:54 AM
78	1210 1/2 Ocean Ave	5/9/2018 11:51 AM
79	3660 Aster Street	5/9/2018 11:38 AM
80	244 - 7th	5/9/2018 11:20 AM
#	**CITY, STATE, ZIP**	**DATE**
1	VENTURA, CA 93003	7/24/2018 7:38 AM
2	Seal Beach	7/24/2018 7:00 AM
3	Seal Beach	7/22/2018 9:47 AM
4	Seal Beach	7/15/2018 8:42 AM
5	Seal Beach CA 90740	7/14/2018 3:30 PM
6	Seal Beach, Ca.90740	7/14/2018 2:19 PM
7	Seal Beach	7/13/2018 3:35 PM
8	Seal Beach, ca 90740	6/27/2018 1:07 PM
9	Seal Beach 90740	6/26/2018 1:45 PM
10	seal beach, ca 90740	5/31/2018 1:42 AM
11	Seal Beach, CA 90740	5/30/2018 6:02 PM
12	Seal Beach, CA 90740	5/30/2018 12:41 PM
13	Seal Beach , Ca 90740	5/30/2018 10:52 AM
14	Seal Beach, CA 90740	5/30/2018 10:32 AM
15	seal beach ca 900740	5/30/2018 10:03 AM
16	Seal Beach, CA 90740	5/29/2018 10:12 AM
17	Seal Beach, CA 90740	5/18/2018 2:55 PM
18	Rossmoor, CA 90720	5/18/2018 10:25 AM
19	90740	5/15/2018 7:41 PM
20	90740	5/13/2018 5:21 PM
21	Seal Beach, CA 90740-5000	5/13/2018 2:52 PM
22	Seal Beach , CA 90740	5/11/2018 9:30 PM
23	Long Beach, Ca. 90808	5/11/2018 11:05 AM
24	Seal beach CA 90740	5/11/2018 7:36 AM
25	Seal Beach Ca. 90740	5/10/2018 3:17 PM
26	Cypress, CA 90630-3411	5/10/2018 10:56 AM
27	Seal Beach, CA 90740	5/10/2018 9:26 AM
28	Seal Beach, CA 90740	5/10/2018 8:35 AM
29	Seal Beach	5/10/2018 7:57 AM
30	90740	5/10/2018 6:22 AM
31	Seal Beach	5/10/2018 3:54 AM
32	Seal Beach CA 90740	5/9/2018 10:17 PM

Seal Beach LHMP Community Input

33	90740	5/9/2018 9:56 PM
34	Seal Beach, CA 90740	5/9/2018 9:45 PM
35	Seal Beach, CA 90740	5/9/2018 9:41 PM
36	Buena Park, Ca. 90620	5/9/2018 9:35 PM
37	Seal Beach, CA 90740	5/9/2018 9:03 PM
38	Seal Beach, CA 90740	5/9/2018 8:48 PM
39	Seal Beach CA 90740	5/9/2018 8:37 PM
40	Seal Beach, CA 90740	5/9/2018 8:24 PM
41	Costa Mesa, CA 92627	5/9/2018 8:13 PM
42	Seal Beach, CA 90740	5/9/2018 6:41 PM
43	Seal Beach, CA 90740	5/9/2018 6:36 PM
44	SEAL BEACH, CA 90740	5/9/2018 5:57 PM
45	Seal beach ca 90740	5/9/2018 5:08 PM
46	90740	5/9/2018 3:52 PM
47	Seal Beach, CA 90740	5/9/2018 3:46 PM
48	Seal Beach, CA 90740	5/9/2018 3:38 PM
49	Seal Beach, CA 90740-2909	5/9/2018 3:24 PM
50	Seal Beach Ca 90740	5/9/2018 2:59 PM
51	Seal Beach	5/9/2018 2:23 PM
52	Seal Beach, CA 90740	5/9/2018 2:16 PM
53	Seal Beach, CA 90740	5/9/2018 2:02 PM
54	90740	5/9/2018 1:59 PM
55	Seal Beach, Ca. 90740	5/9/2018 1:53 PM
56	Sunset Beach Ca 90742	5/9/2018 1:47 PM
57	Seal Beach CA	5/9/2018 1:38 PM
58	Seal Beach	5/9/2018 1:28 PM
59	Seal Beach, CA. 90740	5/9/2018 1:23 PM
60	Seal Beach, CA 90740	5/9/2018 1:08 PM
61	Seal Beach, CA 90740	5/9/2018 1:00 PM
62	Seal Beach, CA 90740	5/9/2018 12:49 PM
63	SEAL BEACH	5/9/2018 12:47 PM
64	Seal Beach	5/9/2018 12:46 PM
65	Seal Beach, CA 90740	5/9/2018 12:42 PM
66	Seal Beach, CA 90740	5/9/2018 12:40 PM
67	Seal beach, ca 90740	5/9/2018 12:34 PM
68	Seal Beach	5/9/2018 12:21 PM
69	Seal Beach	5/9/2018 12:20 PM
70	Seal Beach, CA 90740	5/9/2018 12:16 PM
71	Seal Beach	5/9/2018 12:16 PM
72	Seal Beach CA 90740	5/9/2018 12:14 PM
73	Los Alamitos	5/9/2018 12:12 PM

Seal Beach LHMP Community Input

74	Huntington Beach CA 92649	5/9/2018 12:07 PM
75	Seal Beach, CA 90740	5/9/2018 12:05 PM
76	Seal Beach, CA 90740	5/9/2018 12:00 PM
77	Seal Beach, CA 90740	5/9/2018 11:58 AM
78	Rossmoor. Ca. 90720	5/9/2018 11:56 AM
79	Seal Beach, CA 90740	5/9/2018 11:56 AM
80	90740-2941	5/9/2018 11:55 AM
81	Seal Beach, CA 90740	5/9/2018 11:55 AM
82	Seal Beach, CA 90749	5/9/2018 11:54 AM
83	Seal Beach CA 90740	5/9/2018 11:54 AM
84	90740	5/9/2018 11:51 AM
85	Seal Beach, CA 90740	5/9/2018 11:38 AM
86	Seal Beach, CA 90740	5/9/2018 11:20 AM

Seal Beach LHMP Community Input

Q20 Please provide us with any additional comments/suggestions/questions that you have regarding your risk of future hazard events.

Answered: 38 Skipped: 153

#	RESPONSES	DATE
1	There are many bridges in the City of Seal Beach as well as my home. If the bridges are unsafe to travel how would this be addressed?	7/24/2018 4:50 PM
2	Designated shelters should be pre-provisioned with emergency supplies.	7/22/2018 9:47 AM
3	Thank you for the survey and encouraging participation.	7/15/2018 8:42 AM
4	See note about emergency communication	7/14/2018 2:19 PM
5	start with shelter, water purification, food and transportation.	6/20/2018 7:46 PM
6	You MUST address potential threats to the Naval Weapons Station and prepare plans to deal with any and all threats, both prevention and mitigation should a disaster occur.	5/30/2018 10:03 AM
7	Focus on earthquakes, which are the source of greatest risk and are the highest probability of occurrence. Engineer the water and sewage lines to survive in a major quake.	5/25/2018 7:59 AM
8	Marking out / indicating where / path of travel to... the local hospitals / emergency room is located.	5/18/2018 2:55 PM
9	I am happy that I received this survey and that Seal Beach is being proactive in this matter.	5/18/2018 1:34 PM
10	Leisure World Mutuals have abandoned emergency preparedness out of fear of liability	5/13/2018 5:21 PM
11	I appreciate the City and Police Department taking steps to prepare for disasters.	5/10/2018 10:19 AM
12	You do not have any meetings planned north of the freeway; please schedule at least one up here.	5/10/2018 6:22 AM
13	100 , 500 and 1000 year floodplain issue with the mighty San Gabriel River.	5/9/2018 9:56 PM
14	What is the plan for protection against interlopers looking for food or whatever?	5/9/2018 9:45 PM
15	I am most concerned when the traffic light goes out on Seal Beach Blvd and freeway entrance. When we have an emergency, I would like the city to have someone direct the traffic there. The lines of traffic back up quickly. That 4 way stop may be a challenge for Leisure World folks. It is very stressful for me at 60 years old. That is why I brought it up. Also, there is another traffic concern: When drivers exit 405 north, then want to turn right on Seal Beach Blvd there is a double right lane. A heckuva lot "Hollywood" stops. Anyway, my husband and I have seen people in crosswalk coming from Ayers Hotel we presume, walking across the boulevard. The drivers in outside left lane to make the right turn DON'T EVEN SEE THE PEDESTRIANS.	5/9/2018 9:41 PM
16	These day I find people on the freeway don't even grasp the concept of a fast lane and slow lane, nor have they been trained on entering a freeway, let alone how to drive in the rain. These items are everyday and yet are not understood, I would consider starting at the beginning and a good source of training adults is to train their children, most children can look something up faster than an adult plan take five minutes to put the phone down and talk to their kids. One thing that is not needed is any more useless signs, no one ever looks at them.	5/9/2018 9:35 PM
17	Good luck with your project, Julia. I know it will be done well and benefit the City. I'll miss working with you.	5/9/2018 9:03 PM
18	Preparation should include "drills" to be conducted city-wide, planned far in advance, and include citizens, businesses, City, County, and the Seal Beach Navy Weapons Station. They should include Los Alamitos, College Park, and the CHP.	5/9/2018 8:48 PM
19	Next CERT training	5/9/2018 8:37 PM
20	The more community connections and communication the better	5/9/2018 8:13 PM
21	Thanks for doing this survey. It's a great start.	5/9/2018 6:22 PM

Seal Beach LHMP Community Input

22	Na	5/9/2018 6:12 PM
23	Thank you.	5/9/2018 3:48 PM
24	Request that you provide detailed fault line maps and liquefaction maps of our entire city	5/9/2018 2:02 PM
25	Water contamination	5/9/2018 1:59 PM
26	All efforts should be voluntary not mandatory	5/9/2018 1:28 PM
27	Toxic pollution from developing oil wells on Pumpkin Patch property as Seal is downwing	5/9/2018 1:21 PM
28	None	5/9/2018 12:49 PM
29	Exactly how high elevation does one need to seek in case of tsunami	5/9/2018 12:16 PM
30	We need to go deeper than just preliminary preparedness. Need to really get trained, in community, businesses, and govt. Civil defense type drills, and coordination. As former employee of county coroner, i highly recommend coordination of response with coroner and sheriff, education teams, etc	5/9/2018 12:12 PM
31	I think emergency preparedness is very important, especially living so close to the beach. I'd like to see more information on tsunami evacuation routes and notifications.	5/9/2018 12:05 PM
32	Please provide info if College Park West bridge goes out after earthquake	5/9/2018 12:03 PM
33	n/a	5/9/2018 12:00 PM
34	Please don't expend city funds to influence effects of severe weather or so called climate change.	5/9/2018 12:00 PM
35	A lot of people who live in my neighborhood are self-entitled. They feel like they deserve to be taken care of first in an emergency situation. That is why I am ready to take care of my family and my family alone should the shit hit the fan. In the meantime, it would be great if we can take all these homeless bums out of here. I'm honestly more concerned about that than I am earthquakes and tsunamis.	5/9/2018 11:56 AM
36	Scared	5/9/2018 11:56 AM
37	Na	5/9/2018 11:54 AM
38	this is a great start, you are doing well	5/9/2018 11:20 AM

APPENDIX C
ADOPTION RESOLUTION

City council resolution of adoption

The adoption resolution will be added to the LHMP in the final version, pending adoption by the Seal Beach City Council.

APPENDIX D
KEY FACILITIES INVENTORY

This is a list of the names, address, and categorization of the 48 key facilities in Seal Beach. The specific location of energy-related facilities and their vulnerabilities are not disclosed for security reasons. Additionally, addresses are not given for some other facilities, predominately bridges.

KEY FACILITIES INVENTORY

Name	Type	Address
1st Street Pump Station	Wastewater Pump Station	1st Street and Ocean Avenue
Beach Maintenance yard	Government Building	
West End Pump Station	Wastewater Pump Station	43 1/2 Riversea Road
Marina Park + Community Center	Public park	151 Marina Drive
Corsair Park	Public park	Corsair Way
Schooner Park	Public park	Schooner Way and Dory Way
Seal Beach Ocean Pier	Pier	800 Ocean Avenue
8th Street Pump Station	Wastewater Pump Station	8th Street and Ocean Avenue
Police substation	Police station	820 Ocean Avenue
Fire Station 44	Municipal Building	718 Central Avenue
Lifeguard Headquarters	Government Building	888 Ocean Avenue
Eisenhower Park	Public park	Ocean Avenue and Main Street
City Hall	Government Building	211 8th Street
Mary Wilson Library	Community facility	707 Electric Avenue
Seal Beach Senior Center	Community facility	707 Electric Avenue
Zoeter Field	Public park	12th Street and Landing Avenue

Electric Avenue Greenbelt	Public park	Edison Avenue
Gum Grove Park	Public park	Crestview Avenue and Avalon Drive
OC SD Pump Station	Wastewater Pump Station	Electric Avenue and Seal Beach Boulevard
Pump Station #35	Wastewater Pump Station	200 Seal Beach Boulevard
Edison Park	Public park	99 College Park Drive
McGaugh School	Community facility	1698 Bolsa Avenue
Leisure World Clubhouse 2	Community facility	13681 El Dorado Drive
Naval Weapons Station Seal Beach	Military facility	800 Seal Beach Boulevard
Adolfo Lopez Pump Station/City Maintenance Yard	Wastewater Pump Station	1776 Adolfo Lopez Drive
Leisure World Clubhouse 4	Community facility	1419 Northwood Road
Leisure World Clubhouse 3	Community facility	1421 Northwood Road
Navy Reservoir	Water Storage or Well	Naval Weapons Station Seal Beach
Seal Beach Police Department	Police station	911 Seal Beach Boulevard
Leisure World Clubhouse 5	Community facility	1661 C Golden Rain Road
Leisure World Clubhouse 6	Community facility	1661 E Golden Rain Road
Leisure World Healthcare Center	Community facility	1661 Golden Rain Road
Boeing Pump Station	Wastewater Pump Station	2710 Seal Beach Boulevard
Leisure World Well	Water Storage or Well	2700 North Gate Road
Leisure World Clubhouse 1	Community facility	1880 Golden Rain Road
Seal Beach Pump Station (OCSD)	Wastewater Pump Station	Westminster Boulevard and Seal Beach Boulevard
Fire Station 48	Municipal Building	3131 North Gate Road
Beverly Manor Water Reservoir and Well	Water Storage or Well	3101 North Gate Road
North Seal Beach Community Center	Community facility	3333 St. Cloud Street

Sunset Aquatic Station	Wastewater Pump Station	2901 Edinger Avenue
Seal Beach Tennis Center	Community facility	3900 Lampson Avenue
Bluebell Park	Public park	Almond Avenue and Bluebell Street
Aster Park	Public park	Aster Street and Candleberry Avenue
Lampson Well	Water Storage or Well	4307 Lampson Avenue
Heather Park	Public park	Heather Street and Lampson Avenue
Almond Park	Public park	4600 Almond Avenue
Arbor Park	Public park	4665 Lampson Avenue
Bolsa Chica Well	Water Storage or Well	3333 Bolsa Chica Road

CITY OF SEAL BEACH

Local Hazard Mitigation Plan Implementation Workbook

OCTOBER 2018

WHAT IS THIS WORKBOOK?

The Local Hazard Mitigation Plan (LHMP) for the City of Seal Beach features an evaluation of Seal Beach's hazards as well as a variety of hazard mitigation actions corresponding to each hazard type. These actions are intended to preserve public safety, maintain critical municipal government operations and services when hazard events emerge, and empower community members to take hazard mitigation actions on an individual level. This Implementation Workbook (Workbook) is intended for use by City staff and decision makers after the LHMP is adopted. It will:

- Give clear instructions as to what to following adoption of the LHMP.
- Simplify future updates to the LHMP.
- Assist the City in receiving grant funding relating to mitigation action.
- Guide annual plan review actions.

HOW DO I USE THIS WORKBOOK?

This Workbook can help City staff and decision makers in several different situations. If and when the events listed below occur, consult the respective sections of this Workbook for advice on how best to proceed:

- A disaster declaration has been announced
    - By the Seal Beach City Council
    - By the State of California
    - By the federal government
- I want to apply for mitigation grant funding
- Seal Beach is undergoing its budgeting process
- Seal Beach is holding its annual meeting of the Hazard Mitigation Planning Team
- Seal Beach is updating its annual policy and regulatory documents
    - The Local Hazard Mitigation Plan
    - The Safety Element of the General Plan
    - The Housing Element of the General Plan
    - The Zoning Code

WHO MAINTAINS THIS WORKBOOK?

Seal Beach's Emergency Services Coordinator, a staff position in the Seal Beach Police Department, is responsible for maintaining this Workbook. The Emergency Services Coordinator may choose to delegate this responsibility to other City staff members.

WHAT TO DO WHEN A DISASTER HAS BEEN PROCLAIMED OR DECLARED

Disasters may be proclaimed or declared by the Seal Beach City Council, the State of California, or the federal government. Responsibilities may differ depending on who proclaims or declares the disaster. If multiple organizations proclaim or declare a disaster, consult all applicable lists.

THE SEAL BEACH CITY COUNCIL

If the Seal Beach City Council (or the Director of Emergency Services, if the City Council is not in session) proclaims a Local Emergency, take the following steps:

- ☐ Update Attachment 1 with information about the disaster. Include information about cumulative damage, including any damage outside of Seal Beach.
- ☐ Discuss opportunities for local assistance with the representatives from the California Office of Emergency Services (Cal OES).
- ☐ If the disaster damages local infrastructure or City-owned facilities, repair or rebuild the structure to be more resilient, following applicable hazard mitigation actions. A list of actions, organized by hazards, is included as Attachment 4.
- ☐ Chapter 7 of the Seal Beach LHMP states that the City should consider updating the LHMP if a disaster causes a loss of life in the community, even if there is no state disaster proclamation or federal disaster declaration that includes part or all of Seal Beach. If there is a loss of life in Seal Beach, consider updating the LHMP. Consult the section on updating the LHMP in this Workbook for details.

THE STATE OF CALIFORNIA

If the State of California proclaims a disaster for Seal Beach, or an area that includes part or all of Seal Beach, take the following steps:

- ☐ Update Attachment 1 with information about the disaster. Include information about cumulative damage, including any damage outside of Seal Beach.
- ☐ Collaborate with representatives from Cal OES to assess the damage from the event.
- ☐ Discuss opportunities for local assistance with representatives from Cal OES.
- ☐ If the disaster damages local infrastructure or City-owned facilities, repair or rebuild the structure to be more resilient, following applicable hazard mitigation actions. A list of actions, organized by hazards, is included as Attachment 4.
- ☐ If the disaster may escalate into a federal disaster declaration, begin any necessary coordination with representatives from the Federal Emergency Management Agency (FEMA).
- ☐ Chapter 7 of the Seal Beach LHMP states that the City should consider updating the LHMP if a disaster leads to a state disaster proclamation or federal disaster declaration that includes

part or all of Seal Beach, even if there is no loss of life. Consider updating the LHMP. Consult the section on updating the LHMP in this Workbook for details.

THE FEDERAL GOVERNMENT

If the federal government declares a disaster for Seal Beach, or any area that includes part or all of Seal Beach, take the following steps:

- ☐ Update Attachment 1 with information about the disaster. Include information about cumulative damage, including any damage outside of Seal Beach.
- ☐ Collaborate with representatives from Cal OES and FEMA to assess the damage from the event.
- ☐ Determine if Seal Beach will be eligible for public assistance funds related to the federal disaster declaration. These funds can be used to reimburse the City for response and recovery activities. If the City is eligible, work with FEMA and Cal OES representatives to enact the necessary requirements and receive funding.
- ☐ If the disaster damages local infrastructure or City-owned facilities, repair or rebuild the structure to be more resilient, following applicable hazard mitigation actions. A list of actions, organized by hazards, is included as Attachment 4.
- ☐ The Hazard Mitigation Grant Program (HMGP) is a FEMA program that helps fund hazard mitigation activities after a disaster event. Seal Beach may be eligible for funding because of the federal disaster declaration, although not all activities may meet the program's requirements. If Seal Beach is eligible, work with FEMA to apply for this funding.
- ☐ Chapter 7 of the Seal Beach LHMP states that the City should consider updating the LHMP if a disaster leads to a state disaster proclamation or federal disaster declaration that includes part or all of Seal Beach, even if there is no loss of life. Consider updating the LHMP. Consult the section on updating the LHMP in this Workbook for details.

I WANT TO APPLY FOR MITIGATION GRANT FUNDING

There are three potential grant funding programs that FEMA administers for hazard mitigation activities. Two of these programs, the Pre-Disaster Mitigation (PDM) and Flood Mitigation Assistance (FMA) funding sources, are available to communities with a LHMP that complies with FEMA guidelines and has been adopted within the past five years. The third funding program is the Hazard Mitigation Grant Program (HMGP), which is available for communities that are part of a federal disaster declaration. This section discusses the PDM and FMA programs, and how to apply for them. The HMGP is discussed under the "Federal Government" subsection of the above "What to Do When a Disaster Has Been Proclaimed or Declared" section.

PRE-DISASTER MITIGATION

The PDM grant program is a competitive, nation-wide program that awards funding for planning activities and physical development programs that mitigate against future natural hazards. Development projects

must be identified in a hazard mitigation plan that meets FEMA guidelines and was adopted within the past five years. When applying to this program, review the list of hazard mitigation actions in Attachment 4 to see which projects may be eligible. Planning efforts for communities that lack a valid hazard mitigation plan may be eligible for funding if the effort would create a valid hazard mitigation plan. All PDM grant applications are processed through the State. To learn more, consult with Cal OES representatives or visit the FEMA webpage on the program. At time of writing, this webpage is available at https://www.fema.gov/pre-disaster-mitigation-grant-program.

Take the following steps to apply for PDM funding:

- ☐ Confirm that the program is currently accepting funding applications. Check with representatives from Cal OES or consult the Cal OES webpage on the PDM program. At time of writing, this webpage is available at http://www.caloes.ca.gov/cal-oes-divisions/hazard-mitigation/pre-disaster-flood-mitigation.
- ☐ Identify the actions from the hazard mitigation strategy (see Attachment 4) that call on the City to pursue funding or list grants as a potential funding source. Confirm that the actions are consistent with the requirements of the PDM grant.
- ☐ Coordinate with Cal OES representatives to compile and submit materials for the grant application.

FLOOD MITIGATION ASSISTANCE

The FMA grant program is a competitive, national program that awards funding for physical development projects and planning efforts that mitigate against long-term damage from flooding. The funding is only available to communities that participate in the National Flood Insurance Program (NFIP), which Seal Beach currently does. Communities must also have a valid hazard mitigation plan that meets FEMA guidelines in order to be eligible, and all projects must be consistent with the list of actions in the hazard mitigation strategy. When applying to this program, review the list of hazard mitigation actions in Attachment 4 to see which projects may be eligible. As with the PDM program, applications for the FMA program must be processed through the State. To view more information, consult with Cal OES representatives or visit the FEMA webpage on the program. At time of writing, this webpage is available at https://www.fema.gov/flood-mitigation-assistance-grant-program.

Take the following steps to apply for FMA funding:

- ☐ Confirm that the program is currently accepting funding applications. Check with representatives from Cal OES or consult the Cal OES webpage on the FMA program. At time of writing, this webpage is available at http://www.caloes.ca.gov/cal-oes-divisions/hazard-mitigation/pre-disaster-flood-mitigation.
- ☐ Identify the actions from the hazard mitigation strategy (see Attachment 4) that call on the City to pursue funding or list grants as a potential funding source. Confirm that the actions are consistent with the requirements of the FMA grant.
- ☐ Coordinate with Cal OES representatives to compile and submit materials for the grant application

SEAL BEACH IS GOING THROUGH THE BUDGETING PROCESS

Seal Beach's budget process is an ideal opportunity to secure funding for hazard mitigation actions, and to ensure that hazard mitigation efforts are incorporated into the City's fiscal priorities. Seal Beach currently operates on an annual budget cycle that runs from July 1 to June 30. During this process, City staff should take the following steps to incorporate hazard mitigation into Seal Beach's annual budget:

- ☐ Include hazard mitigation activities into Seal Beach's list of Capital Improvement Projects (CIP). Review the list of hazard mitigation actions in Attachment 4 and identify the projects that can be included into the list of CIP or can support efforts in the list of CIP.
- ☐ Review the risk and threat assessments in the LHMP (Chapter 3 and Chapter 4) to ensure that all items in the list of CIP are being planned, designed, and constructed so as to minimize the threat from hazard events.
- ☐ Identify opportunities to identify state-alone hazard mitigation actions through the annual budget process. Include appropriate items from Attachment 4 in the budget as stand-alone line items, particularly items that the Hazard Mitigation Planning Team (Planning Team) considered a high priority.
- ☐ Set aside staff to conduct hazard mitigation activities, including time to participate in Planning Team meeting and time to research, prepare, and submit PDM and FMA grant opportunities (consult the "I Want to Apply for Mitigation Grant Funding" section above).
- ☐ Ensure that hazard mitigation activities are reflected in each department's priorities and earmarked time for specific goals.

SEAL BEACH IS CONDUCTING ITS ANNUAL MEETING OF THE HAZARD MITIGATION PLANNING TEAM

The hazard mitigation planning process brings together representatives from multiple City agencies, as well as other relevant stakeholders, and provides a forum to discuss the hazards in Seal Beach and how to mitigate them effectively. As mentioned in Chapter 7 of the LHMP, the Planning Team should meet at least once each year, beginning a year after the LHMP is adopted. During these meetings, the Planning Team should discussed implementation progress and integration of hazard mitigation actions in other City documents. At these meetings, the Planning Team can review the status of the hazard mitigation actions and discuss whether completed or in-progress actions are working as expected. These meetings also allow the Planning Team to strategically plan for the upcoming year.

It may help for the Planning Team to meet early in the year, in advance of annual budget activities. Attachment 3 contains an example of Planning Team meeting agenda.

The annual meeting should include representatives from City departments and other organizations that originally prepared the LHMP. Representatives from other relevant organizations should also be invited. During the preparation of the LHMP, the following individuals were part of the Planning Team:

HAZARD MITIGATION PLANNING TEAM MEMBERS

AGENCY	REPRESENTATIVE
City Manager's Office	Jill Ingram
City Manager's Office	Patrick Gallegos
Community Development (Building and Safety)	Steve Fowler
Community Development (Planning)	Crystal Landavazo
Community Services/Recreation	Tim Kelsey
Emergency Operations Center	Brian Cray
Finance	Vikki Beatley
Hellman Properties	Devon Shay
Marine Safety	Nick Bolin
Marine Safety	Joe Bailey
National Wildlife Refuge	Esther Cummings
Naval Weapons Station Seal Beach	Erik Franzen
Naval Weapons Station Seal Beach	Gregg Smith
Orange County Fire Authority	James Henery
Orange County Fire Authority	Jeff Hoey
Orange County Fire Authority	Dave Spencer
Orange County Health Care Agency	Carl Schultz, MD
Police; West Cities Police Communication	Kassandra Bowden
Police	Julia Clasby (Committee Leader)
Police; Emergency Operations Center	Brian Gray
Police	Michael Henderson
Public Works	David Spitz

In advance of Planning Team meetings, consider using Attachment 1 to maintain an accurate list of recent disaster events that have occurred in and around Seal Beach since the LHMP was adopted. At the Planning Team meeting, review the Plan Maintenance Table (Attachment 2) to identify any gaps in the LHMP or any other component of the Plan that needs updating. This also allows Planning Team members the opportunity to review the actions in the hazard mitigation strategy (Attachment 4) and ensure that they are implemented as intended.

SEAL BEACH IS UPDATING ITS POLICY AND REGULATORY DOCUMENTS

If Seal Beach is updating the LHMP, the Safety Element or Housing Element of the General Plan, or the Zoning Code, consult the following applicable section.

LOCAL HAZARD MITIGATION PLAN

All LHMPs should be updated every five years. This helps keep the plan up to date and ensures that it reflects the most recent guidance, requirements, science, and best practices. An updated LHMP also helps keep Seal Beach eligible for hazard mitigation grants that require a valid, recent LHMP (see "I Want to Apply for Mitigation Grant Funding"), along with an increased amount of post-disaster recovery funds.

The update process for the LHMP takes approximately one year. To ensure that a new LHMP comes into effect before the previous one expires, the update process should begin no later than four years after the plan is adopted. Updates may occur sooner at the City's discretion. Potential reasons for updating the LHMP sooner may include a state disaster proclamation or federal disaster declaration that covers part or all of Seal Beach, or if a disaster leads to a loss of life in Seal Beach (see the "What to Do When a Disaster Has Been Proclaimed or Declared" section), as discussed in Chapter 7 of the LHMP.

Take the following steps to update the LHMP:

ASSEMBLE THE HAZARD MITIGATION PLANNING TEAM

- ☐ Convene a Planning Team meeting no later than four years after the LHMP is adopted. Invite the regular Planning Team members, along with representatives from other organizations that may have a role to play in the update process.
- ☐ Review the current status of mitigation actions, including if there are any that are not being implemented as planned or are not working as expected. Determine if there have been any changes in hazard events, regulations, best practices, or other items that should be incorporated into an updated LHMP.
- ☐ Decide if there is a need for a technical consultant to assist with the LHMP update, and conduct consultant selection activities if needed. If a consultant is desired, the selection process should begin a few months before the update gets underway.
- ☐ Create and implement a community engagement strategy, building off of the strategy prepared for the existing LHMP. Describe in-person and online engagement strategies and

materials, including ideas for meetings and workshops, draft community surveys, content for websites and press releases, and other materials that may be useful.

UPDATE THE RISK AND THREAT ASSESSMENTS

- ☐ Review and update the risk assessment to reflect the most recent conditions in Seal Beach. Consider recent hazard events, new science associated with hazards and climate change, new development and land use patterns, and other recent changes on local conditions.
- ☐ Evaluate the status of all key facilities. Update the list if new facilities that have been constructed, or if existing facilities have been decommissioned. Re-assess the threat to key facilities.
- ☐ Review the demographics of community residents, and update the threat assessment for vulnerable populations and other community members.
- ☐ Assess any changes to the threat to all other community assets, including key services, other facilities, and economic drivers.

UPDATE THE MITIGATION ACTIONS

- ☐ Update the existing hazard mitigation actions to reflect actions in progress. Remove actions that have been completed, or revise them to increase their effectiveness. Revise actions that have been abandoned or delayed so as to make them more feasible, or remove them from the list of mitigation actions if they are no longer appropriate for Seal Beach.
- ☐ Develop mitigation actions to improve the status of hazard mitigation activities in Seal Beach by addressing any issues not covered by the existing LHMP.
- ☐ Ensure that the feedback from the community engagement activities are reflected in the new and updated mitigation actions.

REVIEW AND ADOPT THE UPDATED PLAN

- ☐ Review the other chapters and appendices of the LHMP to reflect any changes made through the update process.
- ☐ Release the updated Plan to Planning Team members, and revise the Plan to reflect any comments by Planning Team members.
- ☐ Distribute the updated Plan to any appropriate external agencies not including in the Planning Team, and revise the plan as appropriate in response to any comments.
- ☐ Release the updated Plan publicly for review, and make revisions to the Plan to reflect public comments.
- ☐ Submit the plan to Cal OES and FEMA for approval, and make any revisions as needed.
- ☐ Submit the plan to the Seal Beach City Council for adoption.

THE SAFETY ELEMENT OF THE GENERAL PLAN

The Safety Element is a required component of Seal Beach's General Plan. It can be updated as a stand-alone activity, or as part of a more comprehensive process to update multiple sections or all of the General Plan. The Safety Element does not need to be updated on any set schedule, but updates should be frequent enough for the element to remain current and applicable to the community.

Local communities can incorporate their LHMP into their Safety Element as allowed under Section 65302.6 of the California Government Code, as long as the LHMP meets minimum federal guidelines. This allows communities to be eligible for an increased share of post-disaster relief funding from the State if a hazard situation occurs, as per Section 8685.9 of the California Government Code.

Take the following steps to incorporate the LHMP into the Safety Element:

INCORPORATE NEW REQUIREMENTS INTO THE SAFETY ELEMENT, AND ENSURE THAT THE LHMP IS CONSISTENT WITH THE SAFETY ELEMENT

- ☐ Review the requirements for Safety Elements in Section 65302(g)(1) of the California Government Code, and for LHMPs in Section 65302.6 of the California Government Code. Ensure that both documents meet all state requirements.
- ☐ Ensure that the information in both plans do not contradict each other, and that any inconsistencies are corrected to use the most accurate and appropriate information. This information should include community descriptions, risk assessment, and threat assessment.
- ☐ Ensure that the policies in the Safety Element support the LHMP and provide a planning framework for specific hazard mitigation actions.

THE HOUSING ELEMENT OF THE GENERAL PLAN

The Housing Element is a required component of Seal Beach's General Plan. Section 65583 of the California Government Code requires a Housing Element to analyze and plan for new residential growth in a community, including residential growth for households with an annual income below the area median. Similar to an LHMP, state regulations require that the Housing Elements be updated regularly to remain current and valid.

The Housing Element is not required to contain any information or policies that relate to hazards, although it may include policies that address retrofitting homes to improve resiliency. However, state law links the regular schedule of Housing Element updates to mandatory revisions to other General Plan elements. For example, Section 65302(g)(2) of the California Government Code requires that communities that update their Housing Element on or after January 1, 2009 also update their Safety Element to include specific information and policies related to flood protection. As the LHMP is incorporated into the Safety Element, updates to the Housing Element may indirectly trigger updates to the LHMP.

To update the LHMP concurrent with updates to the Housing Element, take the following steps:

ENSURE THAT THE LHMP MEETS ANY NEW REQUIREMENTS FOR THE SAFETY ELEMENT THAT MAY BE TRIGGERED BY A HOUSING ELEMENT UPDATE

- ☐ Section 65302(g) of the California Government Code lists a number of requirements for the Safety Element of the General Plan. Some of these requirements are triggered by updates to the Housing Element. Check to see if there are any new requirements of this nature. Note that the requirement is linked to the date of adoption of the new Housing Element, not the date the update process begins.
- ☐ Because the LHMP is incorporated into the Safety Element, any amendments or revisions to the Safety Element triggered by the Housing Element update may be made directly in the LHMP. Requirements triggered by the Housing Element are unlikely to require a full rewrite of the LHMP, but the process should fully involve the Planning Team and include appropriate community engagement.
- ☐ Adopt the updated LHMP and incorporate it into the Safety Element. If necessary, amend the Safety Element to ensure the two documents are consistent (review the "Incorporate New Requirements Into the Safety Element, and Ensure that the LHMP is Consistent with the Safety Element" subsection above).

THE SEAL BEACH MUNICIPAL CODE

Seal Beach's Municipal Code contains a set of standards that guide land uses and development in the community. These standards include where different types of buildings and land use activities may be located, how these structures must be built, and how they must be operated or maintained. The Municipal Code may include requirements that structures (particularly new structures or those undergoing substantial renovations) incorporate hazard-resistant features, be located outside of the most hazard-prone areas, or take other steps to reduce hazard vulnerability.

All communities in California are required to adopt the minimum state Building Standard Code (BSC), which includes some hazard mitigation requirements for new or significantly renovated structures. The BSC is generally updated every three years, with supplemental code updates halfway into each update cycle. Title 9 of Seal Beach's Municipal Code (Public Property, Public Works, and Building Regulations) incorporates the BSC, along with additional standards as desired by the City that goes beyond the state minimum. For example, a number of clauses in Title 9 of the Municipal Code include stricter standards for fire protection sprinklers in new or significantly renovated buildings.

As a participant in the National Flood Insurance Program (NFIP), Seal Beach is required to include a Floodplain Management section in its Municipal Code, which is included in the Municipal Code, Chapter 9.45, as the City's Floodplain Management Regulations. These regulations establish standards for development and operation of facilities within mapped flood-prone areas. In addition to this section, Seal Beach (like all other communities) has a Zoning Code as part of its Municipal Code, which implements the land use and development standards of the General Plan. Other sections of the Seal Beach Municipal Code may include additional standards related to hazard mitigation activities.

With the exception of the Floodplain Management Regulations and the minimum standards in the BSC, Seal Beach is not required to incorporate hazard-related requirements in the Municipal Code. However,

the Municipal Code is an effective tool for implementing hazard mitigation measures that relate to the siting, construction, and operation of new buildings and other structures. Substantial updates to the Municipal Code, including the Buildings and Construction and Zoning Code sections, should be done in a way that is consistent with the LHMP.

INCLUDE HAZARD-RELATED REQUIREMENTS IN APPICABLE SECTIONS OF THE SEAL BEACH CODE OF ORDINANCES

- ☐ If the BSC is being updated, evaluate the hazard-related requirements of all sections in the new BSC. Identify any areas where it may be feasible to add or revise standards to help reduce the threat from hazard events. Ensure that these standards are consistent with the LHMP. Consider whether standards should be applied to all structures, or to specific types of structures or to structures in a limited area (such as a flood plain).
- ☐ If the Zoning Code is being updated, ensure that all requirements do not expose community members or community assets to an excessive risk of harm. Where feasible, use the requirements to strengthen community resiliency to hazard events. Ensure that these standards are consistent with the LHMP. Consider possible standards such as overlay zones that strengthen zoning requirements in hazard-prone areas, landscaping and grading requirements that buffer development from hazards, siting and design standards that make structures more resilient, and other strategies as appropriate.

ATTACHMENT 1: DISASTER INFORMATION TABLE

Use this table to fill out information about any disaster events that have occurred in Seal Beach or nearby, and have had an effect on the community. Include the date and location of the disaster event, the damages associated with the event, and any information about disaster proclamations or declarations resulting from the event.

DATE	LOCATION	DAMAGES *	DECLARATION DETAILS †

* Includes number and type of injuries, number of deaths, and cost of physical damage
† If the disaster was proclaimed or declared by the local, state, and/or federal government

ATTACHMENT 2: PLAN MAINTENANCE TABLE

Use this table when reviewing the LHMP as part of the Planning Team's annual activities. For each section of the LHMP, note if any changes should be made to make the Plan more effective for the community. This includes noting if anything in the LHMP is incorrect or if any important information is missing. Make revisions that are consistent with these notes as part of the next update to the LHMP.

SECTION	IS ANYTHING INCORRECT?	IS ANYTHING MISSING?	SHOULD ANY OTHER CHANGES BE MADE?
Multiple sections or throughout			
Chapter 1: Introduction			
Chapter 2: Community Profile			
Chapter 3: Risk Assessment			
Chapter 4: Threat Assessment			
Chapter 5: Community Capability Assessment			
Chapter 6: Mitigation Strategy			
Chapter 7: Plan Maintenance			
Appendices			

ATTACHMENT 3: SAMPLE AGENDA AND TOPICS FOR THE HAZARD MITIGATION PLANNING TEAM

This attachment includes a sample agenda and discussion topics for the annual meeting of the Planning Team. Meetings do not have to follow this order or structure, but the items included in this attachment should be addressed as part of the annual meeting. During the update process for the LHMP, it is likely that the Planning Team will meet more frequently. The meetings of the Planning Team during the update process will involve different discussion topics.

Item 1: Recent hazard events

1.1. What hazard events have occurred this past year in Seal Beach, or nearby in a way that affected the community?

- Identify events that caused loss of life or significant injury to Seal Beach community members, significant property damage in Seal Beach, or widespread disruption to Seal Beach.
- More minor events should also be identified if there is a need for a community response to mitigate against future such events.

1.2. What are the basic facts and details behind any such hazard events?

- Consider the size and location of the affected area, any measurements of severity, any injuries and deaths, the cost of any damage, the number of people displaced or otherwise impacted, and other relevant summary information.
- Ensure that these facts and details are clearly recorded for future Plan updates, including through use of the Disaster Information Table (Attachment 1).

Items 2: Mitigation action activities

2.1. What mitigation actions have been fully implemented? Are they working as expected, or do they need to be revised?

2.2. What mitigation actions have started to be implemented since the Planning Team last met? Is implementation of these actions proceeding as expected, or are there any barriers or delays? If there are barriers or delays, how can they be removed?

2.3. What mitigation actions are scheduled to begin implementation in the next year? Are there any factors that could delay implementation, or weaken the effectiveness of the actions? How can these factors be addressed?

2.4. What resources are needed to support planned, in-process, or ongoing mitigation actions? Does the City have access to these resources? If not, how can the City obtain access to these resources?

Item 3: Information sharing

3.1. Is the City communicating with all appropriate local jurisdictions, including neighboring communities, Orange County, and special districts? This should include information on district-specific hazard situations, mitigation actions, and other relevant information.

3.2. Is the communicating with the appropriate state and federal agencies? Is the City receiving information about new regulations, best practices, and data that relates to hazard mitigation activities?

3.3. Are there opportunities for the City to improve coordination with local, state, and federal jurisdictions and agencies?

Item 4: Budgetary planning

4.1. What are the financial needs for Seal Beach to support implementation of planned and in-process mitigation actions, including ongoing items? Is there sufficient funding for all measures in the LHMP that are planned for the next year, including in-process and ongoing items? If sufficient funding is not available, how can the City obtain these funds?

4.2. If it is not feasible for the City to support all planned, in-process, or ongoing mitigation actions, which ones should be prioritized?

4.3. Are there hazard-related activities not included in the LHMP that should be budget for? Can the City obtain the necessary funding for these activities?

Item 5: Strategic planning

5.1. Which grants are available for hazard mitigation activities, and which activities are best positioned to secure funding?

5.2. How should the agencies and other organizations represented on the Planning Team coordinate to maximize the chances of receiving funding?

5.3. Are there any scheduled or anticipated updates to other City documents that could relate to hazard mitigation activities? How can the Planning Team share information with staff and any technical consultants responsible for these updates, and ensure that the updates will enhance community resiliency?

5.4. What capital projects are scheduled or anticipated? Are these capital projects being designed and built to be resistant to hazard events? Are there opportunities for these projects to support hazard mitigation activities?

5.5. How can Planning Team members coordinate efforts with those responsible for capital projects to take advantage of economies of scale that will make hazard mitigation activities easier to implement?

5.6. Has it been four years since the adoption of the LHMP? If so, lay out a timeline for Plan update activities, including additional meetings of the Planning Team. Identify if a technical consultant is needed, and begin the contracting process if so.

5.7. Are there any other opportunities for Planning Team members and the organizations they represent to coordinate efforts?

Items 6: New business

6.1. Are there any other items related to the Planning Team's mission?

There is no content on this page.

ATTACHMENT 4: HAZARD MITIGATION STRATEGY

	Mitigation Action	Potential Funding Sources	Responsible Agency	Time Frame	Priority	Relative Cost
(P) Preparedness Activities						
P.1	Update the Seal Beach Emergency Operations Plan to identify backup power and communications locations for critical facilities.	General Fund, Grants, Community Facilities Districts, Bonds	Police Department	2021	Medium	$
P.2	Identify an alternative operations location for City departments and other municipal facilities to ensure continuity of operations during a disaster.	General Fund, Grants, Community Facilities Districts, Bonds	All Departments	2020	High	$
P.3	Develop a network of directional public announcement speakers throughout the City to ensure that all residents and visitors are notified of emergency situations and City announcements.	General Fund, Grants, Community Facilities Districts, Bonds	Fire, Police, Public Works	2020	High	$$
P.6	Facilitate improved communication between the City and the Naval Weapons Station regarding hazardous materials storage and transport, and enable first responders to adequately train and prepare for a potential release of hazardous materials.	General Fund, Grants, Community Facilities Districts, Bonds	Fire	Ongoing	Low	$
P.7	Explore the feasibility of connecting critical facilities, including City Hall, Police Station, Lifeguard HQ, and community fire stations, to a microgrid power-supply network.	General Fund, Grants, Community Facilities Districts, Bonds	Fire, Police	TBD	Medium	$
P.8	Continuously update response procedures for first responder departments to properly address hazard events as they emerge.	General Fund, Grants, Community Facilities Districts, Bonds	Fire, Police	Ongoing	Low	$
P. 9	Install energy-efficient equipment to increase the longevity of the fuel supply for backup generators.[1]	General Fund, Grants, Community Facilities Districts, Bonds	Fire, Police	Ongoing	Low	$

[1] https://www.epa.gov/sites/production/files/2015-08/documents/flood_resilience_guide.pdf

	Mitigation Action	Potential Funding Sources	Responsible Agency	Time Frame	Priority	Relative Cost
P.10	Maintain a list of alternative fuel suppliers and develop a partnership with a reliable fuel supplier to contact in case baseline fuel for City-owned first responder vehicles is insufficient during a hazard event.	General Fund, Grants, Community Facilities Districts, Bonds	Fire, Police	Ongoing	Low	$
P.11	Maintain a call list of reliable vendors to rent portable generators in the case of an emergency.	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	Ongoing	Low	$
P.12	Ensure that the City has an adequate supply of sandbags for residents and businesses, including prefilled sandbags for individuals who may be unable to fill them on their own.	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	Ongoing	Low	$$
P.13	Develop a targeted outreach program for residents living in high-priority hazard zones that identifies current steps undertaken by the City to mitigate hazards and provides guidance to residents on individual actions they can take.	General Fund, Grants, Community Facilities Districts, Bonds	Community Development, Fire, Marine Safety & Lifeguards, Police, Public Works	TBD	Medium	$
(1) Multiple Hazards						
1.1	Conduct routine updates of the Facility Conditions Assessment for City-owned infrastructure, buildings, water pumps, and other utilities and coordinate with other agencies to ensure inspections of other important infrastructure. *(Hazards addressed: coastal flooding and storms, erosion, fire, flood, seismic hazards, severe weather, liquefaction)*	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	Ongoing	High	$
1.2	Promptly repair all major deficiencies discovered by inspections to prevent collapse, failure, or damage in the event of a natural disaster. *(Hazards addressed: coastal flooding and storms, erosion, fire, flood, seismic hazards, severe weather, liquefaction)*	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	Ongoing	High	$$$

Mitigation Action		Potential Funding Sources	Responsible Agency	Time Frame	Priority	Relative Cost
1.4	Coordinate with Emergency Services and the California Joint Powers Insurance Authority (JPIA) to modify existing risk assessment plans, policies, and documents to include hazards of concern identified in this Local Hazard Mitigation Plan. *(Hazards addressed: All)*	General Fund, Grants, Community Facilities Districts, Bonds	Fire, Police	Ongoing	Low	$
1.5	Develop a hazard mitigation outreach program for the City's residents with targeted, specific plans for communities and neighborhoods at particular risk such as: Leisure World, Downtown, College Park East, and others as the City finds appropriate. *(Hazards addressed: All)*	General Fund, Grants, Community Facilities Districts, Bonds	Fire, Police	TBD	Low	$
1.6	Incentivize SoCalGas, Golden State Water Company, Rossmoor Community Services District, and other private gas, oil, and water utility companies to harden their lines passing through the city from potential breaches. Encourage adoption of supervisory control and data acquisition (SCADA) to allow instantaneous shut down of line breaches. Use mitigation grants to incentivize agencies to partner with City to complete projects. *(Hazards addressed: coastal flooding and storms, fire, flood, hazardous materials release, seismic hazards)*	General Fund, Grants, Community Facilities Districts, Bonds	Fire, Police, Public Works	Ongoing	Low	$
1.7	Explore the feasibility of forming a Geologic Hazard Abatement District (GHAD) among property owners living adjacent to or within high-priority geologic hazard zones (fault rupture, tsunami, coastal erosion, etc.). *(Hazards addressed: erosion, seismic hazards, tsunami)*	General Fund, Grants, Community Facilities Districts, Bonds	Finance	TBD	Low	$$
1.8	Upgrade key water pump stations that have failed or have the potential to fail during a 100- or 500-year flood event. *(Hazards addressed: coastal flooding and storms, flood)*	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	2022	High	$$$

	Mitigation Action	Potential Funding Sources	Responsible Agency	Time Frame	Priority	Relative Cost
1.9	Install and harden emergency backup generators at water pump stations, sewer lift stations, city hall, police department, and all other critical facilities as the city may determine necessary. *(Hazards addressed: coastal flooding and storms, fire, flood, seismic hazards, severe weather, tsunami)*	General Fund, Grants, Community Facilities Districts, Bonds	All City Departments	2022	High	$$$
1.10	Encourage the use of porous surfaces on new and significantly retrofitted residential and commercial developments to reduce runoff. *(Hazards addressed: coastal flooding and storms, drought, erosion, flooding)*	General Fund, Grants, Community Facilities Districts, Bonds	Community Development, Public Works	Ongoing	Low	$
(2) Coastal Flooding, Tsunamis, and Erosion						
2.1	Reconstruct or retrofit critical facilities within the coastal zone to meet a building standard that ensures resiliency to flooding or tsunamis, such as the ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures or other building standard.	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	2022	High	$$$
2.2	Develop a coastal erosion baseline map using GIS technology that will aid future monitoring and development processes.	General Fund, Grants, Community Facilities Districts, Bonds	Community Development, Public Works	2023	Medium	$$$
2.4	Install and harden emergency backup generators at water pump stations and sewer lift stations within coastal inundation areas. Ensure that pumps are capable of managing the loads of the 100-year and 500-year flood events.	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	2021	Medium	$$$
(3) Inland Flooding						
3.1	Continue to periodically inspect drainage structures and clean and repair systems as needed. Remind property owners to maintain private drainage structures in order to ensure full capacity.	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	Ongoing	Low	$$

Mitigation Action		Potential Funding Sources	Responsible Agency	Time Frame	Priority	Relative Cost
3.2	Develop a Water Meter Retrofit Pilot Program to relocate or modify water meters that are currently below the water table.	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	TBD	Medium	$$$
3.3	Follow up on the implementation of high-priority, medium-priority, and low-priority projects laid out in the City's storm drain master plan.	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	Ongoing	Medium	$$$
3.4	Coordinate a program with county, state, and relevant federal agencies to keep all drains and culverts clear of debris to reduce the potential risk of flooding.	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	Ongoing	Low	$
3.5	Work with property owners that generate, store, or dispose of hazardous materials in the 100-year and 500-year flood zones to ensure facilities are adequately flood proofed/protected.	General Fund, Grants, Community Facilities Districts, Bonds	Fire, Police	TBD	Low	$
(4) Seismic (Seismic Shaking, Faulting, and Liquefaction)						
4.1	In coordination with Caltrans, conduct a facilities condition assessment for bridges along evacuation routes to identify bridges that need seismic retrofitting. Consider pursuing highest standard improvement options (e.g., replacement instead of retrofitting) for bridges with seismic deficiencies.	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	Ongoing	High	$$$
4.2	Encourage the installation of seismically appropriate piping for new or replacement pipelines, in close coordination with local water, natural gas, and other providers.	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	TBD	Low	$
4.3	Pursue ground improvement projects, such as constructing a high strength capping layer, soil mixing, stone columns, soil wicks, chemical and pressure grouting, and other soil improvement techniques that reduce liquefaction susceptibility in the event of an earthquake.[2]	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	TBD	Low	$$$

[2] "Earthquake Risk Management: A Toolkit for Decision-Makers" (California Seismic Safety Commission, 1999), https://ssc.ca.gov/forms_pubs/ssc_1999-04_risk_toolkit.pdf.

	Mitigation Action	Potential Funding Sources	Responsible Agency	Time Frame	Priority	Relative Cost
(5) Drought						
5.1	Collaborate with the Orange County Water District (OCWD) and Municipal Water District of Orange County (MWDOC), to pursue water efficiency best practices to reduce water demand and the need for imported water as feasible.	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	Ongoing	Low	$
5.2	Develop a focused water leak pilot program to eliminate leaky water mains, sprinklers, and other water fixtures, focusing on areas of the City with the greatest water demand.	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	TBD	Medium	$$
5.3	Ensure the City's emergency water connections and agreements are sufficient to provide a short-term supply during a hazard event. Inspect the connection infrastructure to ensure it is resilient to emergency conditions, and retrofit as needed.	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	Ongoing	Low	$
5.4	Encourage xeriscaping, low-flow water fixtures beyond the state minimum code, and daytime watering restrictions on properties throughout the city to reduce water consumption.	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	Ongoing	Low	$$
(6) Severe Weather						
6.1	Replace exterior City-owned and -operated building components with more hazard-resistant materials.	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	Ongoing	Low	$$$
6.2	Expand use of public facilities (libraries, community centers, etc.) as cooling centers for vulnerable populations during extreme heat events, and assess facility needs in order to automatically open these facilities as cooling centers when temperatures exceed approximately 90 degrees.	General Fund, Grants, Community Facilities Districts, Bonds	Police Department, Community Services/Recreation	TBD	Medium	$
6.3	Explore feasibility for undergrounding utility lines whose poles that could blow over during a severe wind event.	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	TBD	Low	$$$

Mitigation Action		Potential Funding Sources	Responsible Agency	Time Frame	Priority	Relative Cost
6.4	Implement a tree-planting program to diversify tree age and increase shaded areas in the City to reduce the effects of extreme heat events.	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	Ongoing	Low	$$
6.6	Promote passive cooling design (*brise soleil*, long roof overhangs, locating windows away from southern facades, etc.) in new developments during the design review process.	General Fund, Grants, Community Facilities Districts, Bonds	Community Development	Ongoing	Medium	$
(7) Hazardous Materials Release						
7.2	Pursue full alignment with policies and actions outlined in state and regional plans such as the California Accidental Release Prevention (CalARP) Program and the Orange County Fire Authority Hazardous Materials Area Plan.	General Fund, Grants, Community Facilities Districts, Bonds	Fire	TBD	Low	$
7.4	Continuously inspect businesses and other properties storing hazardous materials. Create an inventory of old storage units that require updates, maintenance, or renovation.	General Fund, Grants, Community Facilities Districts, Bonds	Fire	Ongoing	Low	$
(8) Sea Level Rise						
8.1	Retrofit critical structures in the coastal zone to elevate them above potential sea level rise projections.	General Fund, Grants, Community Facilities Districts, Bonds	Public Works	TBD	Medium	$$$
8.3	Coordinate with NOAA to develop communications or outreach programs to inform homeowners in sea-level rise inundation areas about ways they can protect themselves and their property from floods, such as purchasing flood insurance.	General Fund, Grants, Community Facilities Districts, Bonds	Fire, Police	Ongoing	Low	$
(9) Fire						
9.1	Promote the proper maintenance and separation of power lines and efficient response to fallen power lines.	General Fund, Grants, Community Facilities Districts, Bonds	Fire, Community Services/Recreation	Ongoing	Low	$

Mitigation Action		Potential Funding Sources	Responsible Agency	Time Frame	Priority	Relative Cost
9.2	Conduct regular fuel modification projects to reduce fire hazard risks, such as clearing out dead vegetation in parks, open spaces, right-of-way embankments, and other areas that could become fuel for fires, such as within Gum Grove Park and surrounding neighborhoods.	General Fund, Grants, Community Facilities Districts, Bonds	Fire, Community Services/Recreation	Ongoing	Medium	$$
9.4	Promote the planting of fire-resistant landscaping in all new developments and significant landscape retrofits in accordance with CAL FIRE recommendations, such as high-moisture, low-resin trees, shrubs, and ground cover.	General Fund, Grants, Community Facilities Districts, Bonds	Community Development	Ongoing	Low	$
9.6	Provide information and resources to residents citywide on ways to improve resilience to home fires.	General Fund, Grants, Community Facilities Districts, Bonds	Fire, OCFA, Police	Ongoing	Low	$

Relative Cost: ($): <$33,000, Low; ($$): $33,001–$300,000, Medium; ($$$)*: >300,001, High

*The threshold for the High cost category is currently set at 1% of the City's annual budget.