

Local Hazard Mitigation Plan For the Oceano Community Services District



March 2019



Prepared by Category Five Professional Consultants, Inc. 



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I. ADOPTION RESOLUTIONS

A. OCSD BOD Adoption Resolution

OCEANO COMMUNITY SERVICES DISTRICT
RESOLUTION NO: 2019 - 04

RESOLUTION ADOPTING A MULTI-JURISDICTIONAL LOCAL
HAZARD MITIGATION PLAN

WHEREAS, mounting costs of disaster recovery in the nation over the past decade has promoted interest in providing effective ways to minimize our country's hazard vulnerability; and

WHEREAS, the Disaster Mitigation Act (DMA) of 2000, also commonly known as "The 2000 Stafford Act Amendments," constitutes an effort by the Federal government to reduce the rising cost of disasters; and

WHEREAS, the Disaster Mitigation Act of 2000 (the Act) requires local governments to develop and submit mitigation plans in order to qualify for the Hazard Mitigation Grant Program (HMGP) project funds; and

WHEREAS, the purpose of the Disaster Mitigation Act of 2000 was to establish a national program for pre-disaster mitigation, streamline administration of disaster relief at both the federal and state levels, and control federal costs of disaster assistance; and

WHEREAS, the District has concluded a planning process which allowed participation by the local community has developed a Local Hazard Mitigation Plan that meets the needs established by the Act.

NOW, THEREFORE, BE IT RESOLVED that the Oceano Community Services District Board hereby adopts the Local Hazard Mitigation Plan attached hereto as Exhibit A.

PASSED AND ADOPTED by the Board of Directors of the Oceano Community Services District on May 22, 2019 by the following vote:

Director Gibson, Director Villa, Director Replogle
AYES: Vice President White, President White
NOES: None
ABSTAIN: None
ABSENT: None

Linda M Austin
President, Board of Directors
of the Oceano Community Services District

ATTEST:

C. J. [Signature]
Board Secretary of the
Oceano Community Services District

APPROVED AS TO FORM:

[Signature]
Jeffrey A. Minnery, District Counsel

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B. FEMA Adoption Resolution

U.S. Department of Homeland Security
1111 Broadway, Suite 1200
Oakland, CA. 94607-4052



FEMA

June 3, 2019

Paavo Ogren
General Manager
Oceano Community Services District
1655 Front Street
Oceano, CA 93445

Dear Mr. Ogren:

We have completed our final review of the *Local Hazard Mitigation Plan for the Oceano Community Services District*, officially adopted by the Oceano Community Services District on May 22, 2019 and found the plan to be in conformance with Title 44 Code of Federal Regulations (CFR) Part 201.6 *Local Mitigation Plans*.

The approval of this plan ensures the Oceano Community Services District's continued eligibility for project grants under FEMA's Hazard Mitigation Assistance programs, including the Hazard Mitigation Grant Program, Pre-Disaster Mitigation Program, and Flood Mitigation Assistance Program. All requests for funding, however, will be evaluated individually according to the specific eligibility, and other requirements of the particular program under which applications are submitted.

FEMA's approval of the *Local Hazard Mitigation Plan for the Oceano Community Services District* is for a period of five years, effective starting the date of this letter. Prior to May 22, 2024, Oceano Community Services District is required to review and revise its plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit it for approval in order to continue to be eligible for mitigation project grant funding. The enclosed plan review tool provides additional recommendations to incorporate into the plan when Oceano Community Services District undertakes its identified plan maintenance process.

If you have any questions regarding the planning or review processes, please contact the FEMA Region IX Hazard Mitigation Planning Team at fema-r9-mitigation-planning@fema.dhs.gov.

Sincerely,

fw Juliette Hayes
Director
Mitigation Division
FEMA, Region IX

Enclosure

cc: Adam Sutkus, Hazard Mitigation Planning Chief, California Governor's Office of Emergency Services
Jennifer Hogan, State Hazard Mitigation Officer, California Governor's Office of Emergency Services

www.fema.gov



II. EXECUTIVE SUMMARY

A. General Plan Description

The mounting cost of disaster recovery in our nation during the past decade has engendered a renewed interest in uncovering effective ways to minimize our country's hazard vulnerability. The Oceano Community Services District has joined a nationwide effort to develop a jurisdiction specific hazard mitigation plan. The goal of this local hazard mitigation plan is to arrive at practical, meaningful, attainable and cost-effective mitigation solutions to minimize the District's vulnerability to identified hazards and ultimately reduce both human and financial losses subsequent to a disaster.

After reviewing existing applicable plans, technical reports and historical data, in-depth risk assessments were performed to identify and evaluate each natural and man-made hazard that could impact the study area. The future probability of these identified hazards and their potential impact to the community is described.

Vulnerability assessments were performed which summarized the identified hazards' impact to each community's critical structures, infrastructure and future development. An estimate of the potential dollar losses to vulnerable structures was determined.

The risk and vulnerability assessments in addition to a local capability assessment were used to determine mitigation goals and objectives to minimize long-term vulnerabilities to the identified hazards. These goals and objectives were the foundation behind the development of a comprehensive range of specific attainable mitigation actions created for each jurisdiction.

An Action Plan was developed to assign responsibility and identify funding for each mitigation action. A plan to maintain, review and monitor the plan over time was created to ensure the goals and objectives are achieved and the plan remains a relevant document.

The entire process was shared with the Oceano Community Services District and a wide range of community stakeholders. The Plan was also shared with the general public and approved by the Oceano Community Services District Board of Directors.



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B. Plan Purpose and Authority

The Disaster Mitigation Act (DMA) of 2000, also commonly known as “The 2000 Stafford Act Amendments” (the Act), constitutes an effort by the Federal government to reduce the rising cost of disasters. The Act stresses the importance of mitigation planning and disaster preparedness prior to an event.

Mitigation Planning Section 322 of the Act requires local governments to develop and submit mitigation plans in order to qualify for the Hazard Mitigation Grant Program (HMGP) project funds. It also increases the amount of HMGP funds available to states meeting the enhanced planning criteria, and enables these funds to be used for planning activities.

For disasters declared after November 1, 2004, the Oceano Community Services District must have an LHMP approved pursuant to §201.6 in order to receive FEMA Pre-Disaster Mitigation (PDM) project grants or to receive post-disaster Hazard Mitigation Grant Program (HMGP) project funding. This LHMP is written to meet the statutory requirements of DMA 2000 (P.L. 106-390), enacted October 30, 2000 and 44 CFR Part 201 – Mitigation Planning, Interim Final Rule, published February 26, 2002.

To facilitate implementation of the DMA 2000, the Federal Emergency Management Agency (FEMA) created an Interim Final Rule (the Rule), published in the Federal Register in February of 2002 at section 201 of 44 CFR. The Rule spells out the mitigation planning criteria for States and local communities. Specific requirements for local mitigation planning efforts are outlined in section §201.6 of the Rule. Local jurisdictions must demonstrate that proposed mitigation actions are based upon a sound planning process that accounts for the inherent risk and capabilities of the individual communities as stated in section §201.5 of the Rule.

In developing this comprehensive Hazard Mitigation Plan, FEMA’s Multi-Hazard Mitigation Planning Guidance (March 2004 and July 2008) was strictly adhered to for the purpose of ensuring thoroughness, diligence, and compliance with the DMA 2000 planning requirements.



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III. PLANNING PROCESS

A. DMA 2000 Requirements

DMA Requirements §201.6(b) and §201.6(c)(1):

An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:

- (1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;
- (2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process; and
- (3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

The plan shall document the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

B. Plan Development and Public Input Process

At the onset of the planning process, a wide-range of community stakeholders, all neighboring communities, and the County of San Luis Obispo was invited to participate in the drafting stage of the Hazard Mitigation Plan. *Please see Preliminary Notice to Neighboring Communities-Attachment B*

Informative letters were sent out to numerous business owners, community groups, and residents in addition to key representatives from neighboring jurisdictions and the County to encourage their participation. These individuals comprised a Hazard Mitigation Planning Group. Planning group meetings were held to: 1) Explain the benefits of constructing a Hazard Mitigation Plan for the Oceano Community Services District, 2) Describe the planning and approval process, 3) Review local hazards of concern, 4) Listen to particular areas concerning stakeholders, 5) Explain the risks and vulnerability to the District's people, buildings and infrastructure, 6) Propose and discuss mitigation goals, objectives and actions, 7) Explain how mitigation actions are prioritized, 8) Describe how the mitigation actions will be carried out, and 9) Encourage stakeholder feedback and public input. A capability assessment and action plan were developed to ensure mitigation actions were realistic and



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attainable and to assign funding sources and responsibility for each proposed activity. These were also reviewed with planning group members.

Once the District and Planning Group Members were satisfied with the newly constructed draft plan and its mitigation goal, objectives and actions, a noticed public forum was held on November 17, 2018. This meeting was widely advertised both locally and in neighboring communities to provide an opportunity for the general public, bordering communities and regional agencies involved in hazard mitigation activities to participate in the planning process. Notice of the public forum was posted at the District office, on the District website and also sent out to Oceano CSD residents in their October 2018 water bills. It was also sent electronically to Oceano Elementary School parents via an app called PeachJar. Additionally, it was posted on the Nextdoor neighborhood website. Further, a postcard mailer announcing the event was sent to all Oceano and Halcyon residents the first week in November. A separate notification letter was sent to the San Luis Obispo County Office of Emergency Services Manager in addition to City Managers from all neighboring communities. (Attachments C and D) Several weeks prior to the public forum, the newly constructed Plan was posted on the District website to enable the public and stakeholders ample time to read and evaluate it. On November 17, the contractors presented the plan highlights and proposed mitigation actions to the general public at the Oceano Community Center located at 1425 19th Street in Oceano. The meeting was well attended. A Power Point presentation provided a detailed explanation of the risks and vulnerabilities the community faced. The mitigation goals, objectives and actions were explained as were the resources that would be used to help mitigate these hazards. Following the presentation, the public was invited to attend a question and answer session where they had the opportunity to provide feedback about the overall Plan and proposed mitigation goals and activities.

The public input was predominantly centered on two issues: 1) the ongoing flooding along Highway 1 and 2) climate warming and the subsequent sea level rise. Most attendees communicated their frustration over these issues while concurrently expressing appreciation that the County and the District appeared to be making progress on the flooding issue.

The public comments also brought to light the fact that over time operations at the neighboring Pismo Beach State Park have resulted in a lowering of the sand dunes in the vicinity of the Pier Avenue beach onramp. This factor coupled with sea level rise creates potential flooding to a portion of the District. The contractors subsequently added new verbiage in a number of areas of the plan to address this issue. For the non-applicable feedback received, the consultants explained why these suggestions were not valid to warrant incorporation into the plan. All comments were reviewed with the stakeholder group and incorporated into the Plan as appropriate.

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The Local Hazard Mitigation Planning Group was comprised of the following agency representatives and key stakeholders:

Name	Agency	Title	Attended Planning Group Meetings	Identified Hazards and Assisted with Mitigation Action Development	Additional Role
Paavo Ogren	Oceano Community Services District	General Manager	Yes	Yes	Liaison to OCSD Board and FCFA Board
Ron Alsop	San Luis Obispo County Office of Emergency Services	Emergency Services Manager	Yes	Yes	Planning Advisor
Stuart MacDonald	San Luis Obispo County Sheriff's Office	Commander	Yes	Yes	Law Enforcement Technical Specialist
Steve Lieberman	Five Cities Fire Authority	Fire Chief	No	No	Technical Specialist Fire Service, Liaison FCFA Board
Karen White	Oceano Community Services District	President	Yes	Yes	Halcyon Community Liaison
Vern Dahl	Oceano Advisory Committee	Vice President, Chair	Yes	Yes	Liaison to OAC
Andy Stenson	Lucia Mar Unified School District	Assistant Superintendent of Business Services	Yes	Yes	School District Specialist, Representative to School District Board

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Dena Bellman	California State Parks	Planner, Park and Recreation Specialist	Yes	Yes	Liaison to State Parks
Nola Engelskirger	County of San Luis Obispo	Staff Engineer, Utilities Division	Yes	Yes	Technical Specialist-Utilities
Jill Ogren	County of San Luis Obispo	Engineer IV	Yes	Yes	Technical Specialist, Flood Control
Mladen Bandov	County of San Luis Obispo Public Works	Water Resources Engineer	Yes	Yes	Technical Specialist, Water Resources
Megan Martin	SLO County Planning and Building	Supervising Planner	Yes	Yes	Land Use and Development Trends
Michael Conger	SLO County Planning and Building	Planner	Yes	Yes	Land Use and Development Trends
Linda Austin	Oceano Depot Association	OCSD BOD Member	Yes	Yes	Historian
Villa Infanto	Arroyo Grande Hospital	Vice President Patient Care	Yes	Yes	Healthcare Specialist
Raymond Davis	Dignity Health	Director of Plant Operations	Yes	Yes	Health Facilities Specialist
Janna Nichols	5 Cities Homeless Coalition	Executive Director	Yes	Yes	Liaison to Social Services
Cynthia Repogle	Oceano Beach Community Association/ OCSD Board	President/ Director	Yes	Yes	Liaison to OAC

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Rebecca Britton	Boys and Girls Club, Oceano	Director of Operations	Yes	Yes	Community Representative
John Taylor	Phelan Taylor Produce Company	Owner	Yes	Yes	Local Business Owner
Lynne Schlenker	Great American Melodrama	Owner	Yes	Yes	Local Business Owner
Robin Harris	South County CERT/ Oceano Resident	Emergency Preparedness Task Force Chair	Yes	Yes	Community Support/ Emergency Response
Nicole Miller	Oceano Community Services District	Account Administrator III	Yes	Yes	Project Supervisor
Dan Sutton	Pismo Oceano Vegetable Exchange	General Manager	Yes	Yes	Local Business Owner
Bob Neumann	Category Five Professional Consultants	Consultant/ Vice-President	Yes	Yes	Technical Specialist- Public Safety
Sheri Eibschutz	Category Five Professional Consultants	Consultant/ President	Yes	Yes	Facilitator/ Planner



C. Incorporation of Existing Plans and Other Information

At the onset of and throughout the hazard mitigation planning process, all applicable local emergency operations plans and geotechnical reports were reviewed and incorporated into this mitigation plan. The following sources were used:

- San Luis Obispo County General Plan including:
 - Land Use Element
 - Open Space Element
 - Safety Element
 - Housing Element
- CAL FIRE/County Fire Management Plan
- California State Hazard Mitigation Plan
- San Luis Obispo County Dam and Levee Failure Plan
- San Luis Obispo County Hazard Mitigation Plan
- San Luis Obispo County Flood Control - Conservation Management Guide
- Local and State land use regulations
- Oceano Storm Water Management Plan
- Oceano Drainage and Flood Control Study (RMC, 2004)
- Past disaster declarations
- Flood Insurance Rate Maps (FIRM's)
- Airport Land Use Plan for the Oceano County Airport
- San Luis Obispo County Office of Emergency Services
 - Flood Plan
 - Tsunami Plan
 - Earthquake Plan
- NASA Global Climate Change Guidance
- National Research Council Sea Level Rise for the Coast of California, Oregon and Washington



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D. Plan Adoption

Once planning group members and the general public had an opportunity to review, ask questions and comment on the proposed plan, the newly constructed LHMP was submitted to the State Hazard Mitigation Office at Cal OES. Upon receipt of approval by the State Hazard Mitigation Office, the plan was forwarded to FEMA for approval. FEMA preliminary adoption of the plan occurred on March 29, 2019. The LHMP was then taken to the Oceano Community Services District Board of Directors for approval on May 22, 2019. Adoption by the local governing body demonstrates the jurisdiction's commitment to fulfilling the hazard mitigation goals and actions outlined in the plan. Adoption legitimizes the plan and authorizes responsible agencies to execute their responsibilities. The OCSD Board of Directors approved and adopted the plan on May 22, 2019. FEMA formally adopted the OCSD Local Hazard Mitigation Plan on June 3, 2019.

IV. JURISDICTION PROFILE

A. Area History

Early Spanish explorers observed Indian settlements in the Oceano vicinity with European explorers arriving in 1769. In 1882, the developer, Coffee Adam Rice, purchased a track of land in Oceano, planned the town, and commenced construction on an enormous Victorian mansion which later was transformed into the Halcyon Sanatorium. In 1895, the Southern Pacific Railroad reached the region and a depot was constructed the following year. The Oceano Depot, which brought passenger, freight and telegraph service is believed to have played a vital role in the settlement of this area. A decade later, developers built the Oceano Pavilion on the beach along with a 1,000 foot pier and two boardwalks.

In 1905, the Villa Hotel was built at the end of Juanita Street. Less than a decade later, this hotel was transformed into the only Buddhist Monastery in North America. During World War II, the Oceano Pavilion became headquarters for the U.S. Coast Guard. It later became a roller skating rink before being torn down in 1961. The primary industry in the region was vegetable growing and packing, clamming, and mining. Despite the fact that the depot suspended passenger, mail and telegraph services in the 1950's, vegetable shipping kept the freight office active until changes in agriculture production and packing methods led to the depot's eventual closure in 1973.

The Oceano Community Services District also includes the community of Halcyon which was founded in 1903 by the Theosophical Temple of the People. In early 2017, the community was placed on the Department of Interior's (National Park Service) Historical Registry as an Historical District.



Oceano Train Depot Constructed in 1896



Oceano Hotel and Oceano Saloon (built in 1902)



B. District Overview

The Oceano Community Services District (OCSD) is an independent special district with approximately 7,600 residents and businesses in Oceano and Halcyon. Oceano is a census designated place with 1.5 square miles of land and .02 square miles of water. Halcyon is an unincorporated community of 125 acres just south of the City of Arroyo Grande.

The area to the east and south of the District consists of the Arroyo Grande Creek flood plain. It is also referred to as the Cienaga Valley. The area is prime farmland and is in constant production, engendering a significant agricultural economic impact.

Oceano is known as the ‘Gateway to the Dunes’ as its beach contains the 1,500 acre Oceano Dunes State Vehicular Recreation Area which is overseen by the California Department of Parks and Recreation. The Oceano Dunes attract a wealth of tourists to the area as it is the singular California Park that offers shoreline camping. Guests can drive off-highway vehicles (OHV) on the beach and dunes alongside the Oso Flaco Natural area. It is also a popular destination for fishing, surfing, clamming, and hiking.

C. District Services

The District provides Fire Protection and Emergency Services, Potable Water service, Garbage and Recycling, Wastewater Collection and Street Lighting. The District is also authorized to offer parks and recreation services but is not doing so at this time. The services are described as follows:

Fire Protection and Emergency Services

Fire and emergency services within the OCSD are provided through the Five Cities Fire Authority (FCFA) which was formed in 2010 under a Joint Powers Agreement (JPA) between the cities of Arroyo Grande, Grover Beach and the Oceano Community Services District. The OCSD pays a portion of the annual costs of FCFA services based on a funding formula established in the FCFA - JPA. One of the OCSD Board of Directors represents the District on the FCFA Board.

Operating out of three fire stations, the Department delivers fire suppression, fire prevention, light and heavy rescue, and emergency medical service at the basic life support level. The average response time to the service area is six minutes, answering some 3,500 calls for service each year.

Potable Water

The OCSD delivers potable water service to approximately 2,200 connections. The District’s water supplies include groundwater, Lopez Lake and State water. The latter two are provided by the County of San Luis Obispo under terms of water supply contracts. The District’s water



supply reliability is relatively high and the district was increasing water in storage during the recent drought.

The California State Division of Drinking Water regulates the District's water supplies. Regulation of the District's groundwater supply is also subject to the stipulations adopted in 2005 for the adjudication of the Santa Maria groundwater basin.

Wastewater Collection

The District offers wastewater collection via a network of local pipelines that run into South San Luis Obispo County Sanitation District (SSLOCSO) pipelines which handles wastewater treatment and disposal. The Central Coast Regional Water Quality Control Board regulates the District's wastewater operations.

Cannon Corporation Engineering Consultants is currently assessing deferred water and wastewater infrastructure projects for the jurisdiction.

Garbage and Recycling

The OCSO provides obligatory solid waste and recycling services through a franchise agreement with South County Sanitary Services, Inc. The District works to abate illegal dumping within the community by offering incentives to promote a cleaner community. They offer 'Neighborhood Clean-up's' where they bring in dumpsters and help with trash disposal. They also offer a trash incentive of up to \$50 to offset the cost of removing large unwanted items.

D. Government

OCSO Governing Board

OCSO is an independent special district governed by a five-member board who are elected by voters residing in Oceano and Halcyon.

OCSO Board meetings are conducted on the second and fourth Wednesdays of the month at 6 pm at the OCSO office at 1655 Front Street in Oceano. Meetings are open to the public.

State and Federal Government

In the State legislature, Oceano is in the 17th Senate District and in the 35th Assembly District. In the United States House of Representatives, Oceano is in California's 24th congressional district.



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E. Demographics

Population Ethnicity

According to the 2010 US Census report, the population density indicated 4,710.2 individuals per square mile. Oceano's 2010 ethnic makeup was comprised of:

- 5,105 White-70.1%
- 3,484 Hispanic or Latino of any race-47.8%
- 120 Native American-1.6%
- 165 Asian-2.3%
- 62 African American-0.9%
- 7 Pacific Islander-0.1%
- 1,509 other races-20.7%
- 318 from 2 or more races-4.4%

Population Age

The median age of Oceano residents was 35.4 years old in 2010, with diverse aging groups residing within the community:

- Median 1,738 (23.9%) individuals under the age of 18
- 747 (10.3%) people aged 18 to 24
- 2,028 (27.8%) residents aged 25 to 44
- 1,870 (25.7%) individuals aged 45 to 64
- 903 (12.4%) people were 65 years of age or older
- Female to male ratio: 100: 101.9



Households

Oceano had 2,603 households in 2010 with an average household size of 2.80. These households were comprised of:

- 904 (34.7%) had minor children residing in them
- 1,147 (44.1%) contained opposite-sex married couples living together
- 360 (13.8%) contained a single female household
- 197 (7.6%) had a single male household
- 97 (7.6%) unmarried opposite-sex partnerships
- 38 (1.5%) same-sex married couples or partnerships
- 680 households (26.1%) were made up of individuals
- 266 (10.2%) had someone living alone who was 65 years of age or older
- There were 1,704 families (65.5% of all households) with an average family size of 3.39.

F. Housing Profile

Oceano's median home value is \$401,400. Over the last 10 years, home appreciation is 13.58%. The median age of real estate within this census designated place is 36 years. Renters comprise 38.81% of the population.

100% of the population resides in households and 0% living in institutional or group quarters. In 2010, there were 3,117 housing units at an average density of 2,015.1 per square mile.

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HOUSING	Oceano, California	United States
Median Home Age	36	37
Median Home Cost	\$401,400	\$185,800
Home Appr. Last 12 months	8.97%	3.74%
Home Appr. Last 5 yrs.	35.53%	16.02%
Home Appr. Last 10 yrs.	13.58%	-0.68%
Property Tax Rate	\$7.34	\$11.80
Homes Owned	42.08%	56.34%
Housing Vacant	19.11%	12.45%
Homes Rented	38.81%	31.21%

AVERAGE RENT FOR HOME OR APARTMENT	Oceano	U.S.
Studio Apartment	\$750	\$712
1 Bedroom Home or Apartment	\$850	\$825
2 Bedroom Home or Apartment	\$1,100	\$1,027
3 Bedroom Home or Apartment	\$1,600	\$1,379
4 Bedroom Home or Apartment	\$1,920	\$1,601

Source: <https://www.bestplaces.net/housing/city/california/oceano>

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VALUE OF OWNER-OCCUPIED HOUSING	Oceano	U.S.
Less Than \$20,000	6.30%	4.57%
\$20,000 to \$39,999	0.82%	3.37%
\$40,000 to \$59,999	4.15%	4.19%
\$60,000 to \$79,999	2.96%	5.74%
\$80,000 to \$99,999	9.41%	6.79%
\$100,000 to \$149,999	8.96%	15.19%
\$150,000 to \$199,999	12.74%	14.69%
\$200,000 to \$299,999	22.15%	18.15%
\$300,000 to \$399,999	11.19%	10.43%
\$400,000 to \$499,999	5.11%	5.70%
\$500,000 to \$749,999	8.96%	6.39%
\$750,000 to \$999,999	4.30%	2.41%
\$1,000,000 or more	2.96%	2.39%

Source: <https://www.bestplaces.net/housing/city/california/oceano>



G. Economy

Job Growth, Income and Occupation

ECONOMY	Oceano	U.S.
Unemployment Rate	4.50%	5.20%
Recent Job Growth	2.58%	1.59%
Future Job Growth	40.66%	37.98%
Sales Taxes	7.50%	6.00%
Income Taxes	8.00%	4.60%
Income per Capita	\$20,725	\$28,555
Household Income	\$48,629	\$53,482
Family Median Income	\$46,545	\$65,443

Source: <https://www.bestplaces.net/economy/city/california/oceano>

POPULATION BY OCCUPATION	Oceano	U.S.
Agriculture, forestry, fishing, hunting	7.75%	1.35%
Mining, quarrying, oil and gas extraction	0.00%	0.61%
Construction	6.87%	6.19%
Manufacturing	5.42%	10.41%
Wholesale trade	2.97%	2.72%
Retail trade	14.68%	11.55%
Transportation and warehousing	2.97%	4.11%
Utilities	0	0



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Information	0.48%	2.12%
Finance and insurance	2.18%	4.69%
Real estate, rental, leasing	0.55%	1.89%
Professional, scientific, technical services	3.09%	6.68%
Management of companies	0.00%	0.08%
Administrative, support, waste management services	6.17%	4.27%
Educational services	7.69%	9.34%
Health care and social assistance	9.65%	13.81%
Arts, entertainment, recreation	1.30%	2.16%
Accommodation, food services	18.19%	7.44%
Other services	4.12%	4.94%
Public administration	5.27%	4.80%

Source: <https://www.bestplaces.net/health/city/california/oceano>

H. Land Use

Existing land use within the Oceano Community Service’s District is a mosaic of varying types of uses, ownership, character, and intensity. Uses include:

- Both low and medium density residential
- Agriculture
- Parks and recreation
- General commercial
- Public



Oceano Community Services District Local Hazard Mitigation Plan

I. Climate

Sperling's comfort index for Oceano, California is an 84 out of 100, where a higher score indicates a more comfortable year-around climate. The U.S. average for the comfort index is 54. This index is based on the total number of days annually within the comfort range of 70-80 degrees, with a penalty applied for any days with excessive humidity. Oceano receives an annual average of 18 inches of rain compared to a U.S. average of 39 inches. There is an average of 34 days per year with measurable precipitation. Snowfall very rarely occurs. Oceano has approximately 185 sunny days each year with a July average high of 70 degrees and a January average low of 43 degrees.

J. Health Index

Oceano has 2.5 physicians per 1,000 population compared to a U.S. average of 2.1 physicians per 1,000 population.

The Oceano air quality is currently ranked 82 on a scale to 100 (higher is better). This is based on new measures of hazardous air pollutants from the EPA, called the National Air Toxics Assessment. Whereas the old analysis was based solely on results from air monitoring stations, this new method is more comprehensive as it models respiratory illness and cancer risk down to the zip code level.

Water quality in Oceano is currently ranked 30 on a scale to 100 (higher is better). It is important to note that this is a measure of Watershed quality, not the water that comes from the faucet. However, the EPA has stated that a healthy watershed is closely related to drinking water quality. The EPA has a complex method of measuring watershed quality using 15 indicators such as pH, chemicals, metals, and bacteria.

Source: <https://www.bestplaces.net/health/city/california/oceano>

K. Schools

There are two schools located within the Oceano Community Services District boundaries under the administration of the Lucia Mar Unified School District. They are:



Oceano Elementary (TK-6)

1551 17th Street
Oceano, CA 93445

Oceano Elementary has an average of 420 students including Transitional Kindergarten, Kindergarten, and first through sixth grades. 80% of the students are Hispanic, 15% are white. 87% of the students are deemed low-income and the school performs below the State average academically.

Adult Education

1425 19th Street
Oceano, CA 93445

The Adult Education School offers English literacy, High School Diploma or GED, and parent participation programs in addition to a variety of community classes.

L. Transportation

The average one-way home to work commute in Oceano, California, takes 28 minutes. 78% of commuters drive their own car alone, 11% carpool, 3% use mass transit, and 5% work from home.

Highways

San Luis Obispo County contains major transportation arteries including U.S. Highway 101, California State Highways 1, 41, 46, 58, and 166. U.S. Highway 101 and Coast Highway 1 run North to South adjacent to and through the community of Oceano.

Rail

There are two Amtrak stations within 30 miles of the Oceano community center.

Bus/Shuttle

San Luis Obispo Regional Transit Authority

SLO RTA offers intercity fixed route public bus transportation in addition to ADA paratransit service throughout San Luis Obispo County.



South County Transit

South County Transit provides public bus transportation service to the southern portion of San Luis Obispo County including Arroyo Grande, Grover Beach, Pismo Beach, and the unincorporated areas of Oceano.

Rideshare

There are specialized transportation services throughout SLO County including senior and airport shuttles, Runabout ADA service and dial-a-ride.

Airports

There are 2 airports within 30 miles of the Oceano community center:

San Luis Obispo County Regional Airport

Most OCSD residents make use of the new San Luis Obispo County Regional Airport, McChesney Field located just south of the City of San Luis Obispo at 975 Airport Drive. Three commercial airlines: American, United, and Alaska operate out of this airport which now offers flights to Los Angeles, San Francisco, Phoenix, Seattle and Denver. This airport is also home to full-service general aviation facility.

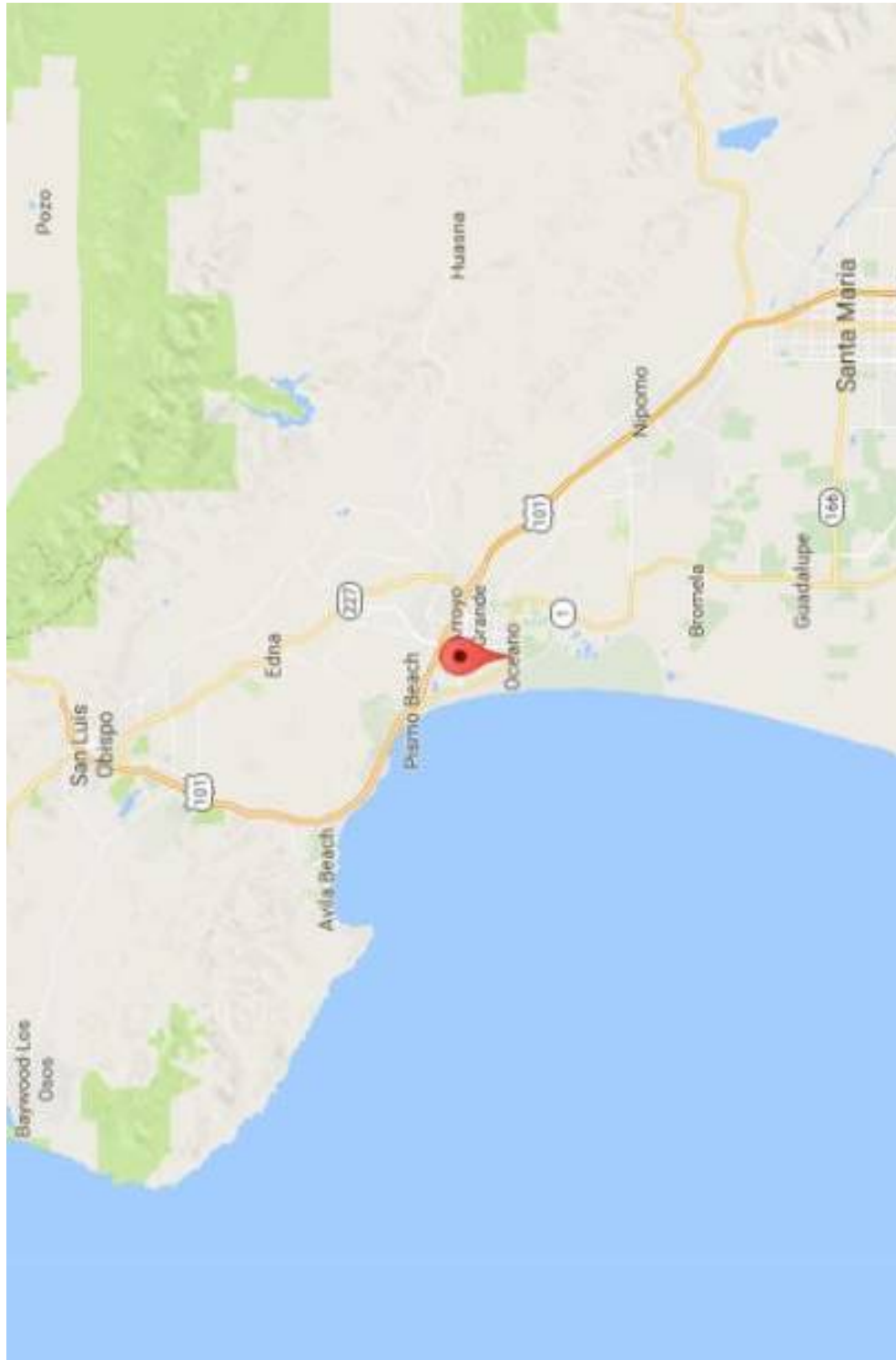
Oceano County Airport

Oceano County Airport is a public airport located one mile west of Oceano's central business district. The airport, which is primarily used for general aviation, only offers non-commercial flights. The airport is on 58 acres with a single runway and no control tower.



Aerial photo of Oceano County Airport

The following maps provide a perspective of the size and layout of the District:



Location of Oceano Community Services District

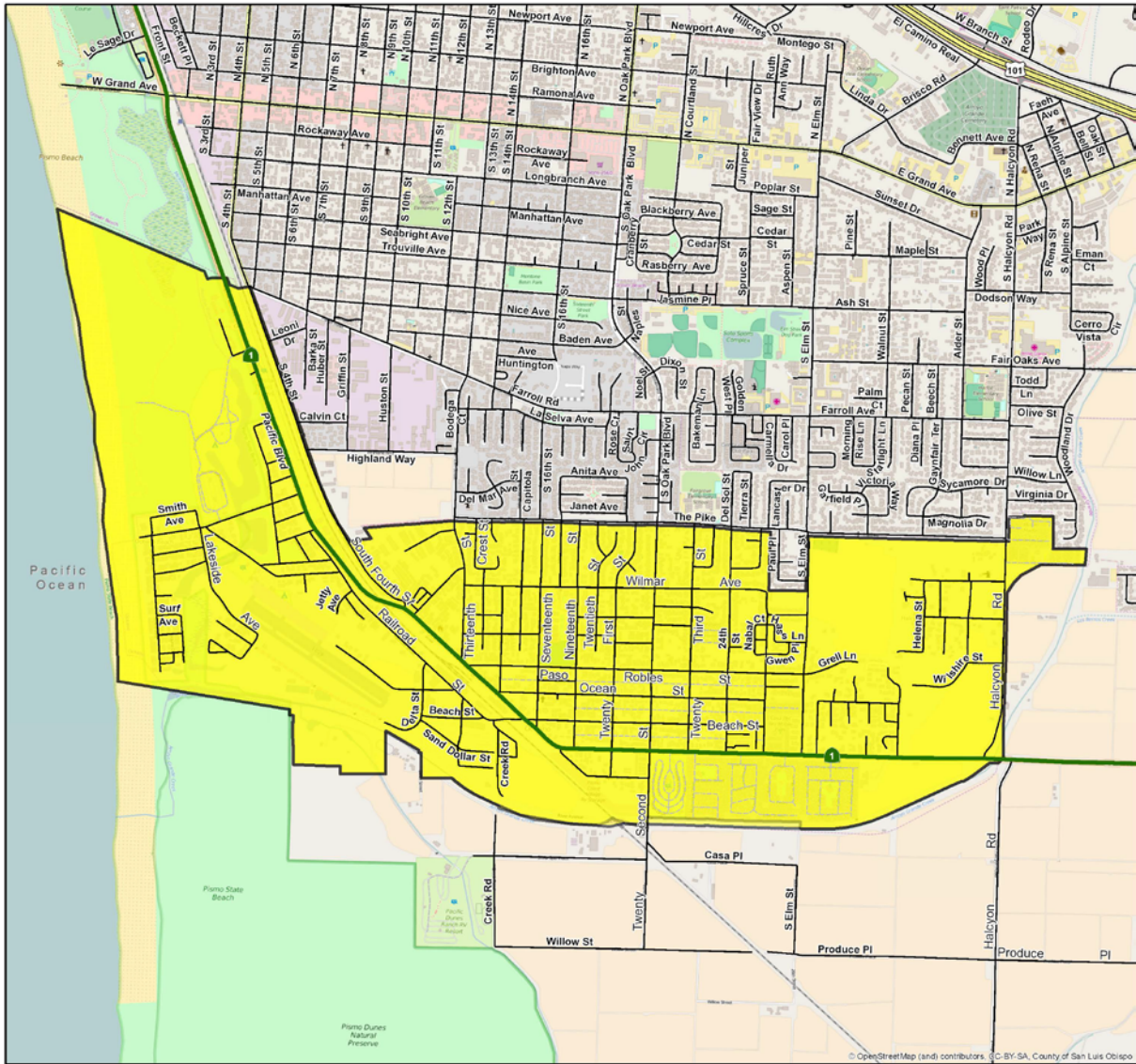


Oceano Community Services District Boundaries Aerial View



Oceano Community Services District Local Hazard Mitigation Plan

Oceano Community Services District Service Area & Sphere of Influence Adopted November 2012



Legend

- Service Area
- Sphere of Influence (Same as Service Area)



Prepared By SLOLAFCO
Name: Oceano_SOI Bndy
Date: 2/10/2016





V. RISK ASSESSMENT

A. DMA 2000 Requirements

DMA Requirement §201.6(c)(2)(i):	The risk assessment shall include a description of the type of all natural hazards that can affect the jurisdiction.
DMA Requirement §201.6(c)(2)(i):	The risk assessment shall include a description of the location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.
DMA Requirement §201.6(c)(2)(iii):	For multi-jurisdictional plans, the risk assessment must assess each jurisdiction’s risks where they vary from the risks facing the entire planning area.

B. Hazard Identification

The following natural hazards can impact this jurisdiction:

- **Earthquake:**
 - **Faulting**
 - **Liquefaction**
- **Extreme Weather:**
 - **Extreme Heat**
 - **Freeze**
 - **Hail Storms**
 - **Snowfall**
 - **Thunderstorms**
- **Windstorms**
- **Coastal Erosion**
- **Drought**
- **Tsunami**
- **Flood**
- **Dam Failure**
- **Levee Failure**

Note: While common throughout most of California, a wildland fire threat does not exist in this community. The weather, topography, and the lack of vegetation all combine to eliminate the wildland fire threat.



In predicting the probability and severity of each hazard, the following guidelines have been utilized:

PROBABILITY

LOW: There has been no past history or very minimal record of the hazard event impacting the study area over the past 40-100 years. However, the possibility of this hazard occurring, while limited, does exist.

MEDIUM: This hazard has impacted the study areas in the past over the last 5-40 years, however the occurrence and impact has been limited. This hazard event may occur again in the future.

HIGH: Given the study areas past history of this hazard event impacting the area in the last 1-4 years on a reoccurring basis, it is likely that this event will occur again.

SEVERITY

LOW: The damage is expected to be minimal. There is no expected loss of life and limited injuries to the general public. On-duty first responders or public works crews should be able to manage the event and deal with the impacts. Financial losses will be limited.

MEDIUM: The damage should be limited and confined to the community or neighboring jurisdictions. There may be life loss and injuries. County Mutual Aid resources should be able to manage the event or deal with the impacts. Financial losses could be significant.

HIGH: The damage could be widespread and severe. Multiple deaths and casualties may occur. Out of County Mutual Aid resources will most likely be required to manage the event or deal with the impacts. Financial losses are expected to be significant.

C. Climate Change-Global Warming

Global warming occurs when carbon dioxide (CO₂) and other air pollutants and greenhouse gases collect in the atmosphere and absorb sunlight and solar radiation that have bounced off the earth's surface. Normally, this radiation would escape into space, but these pollutants, which can last for years to centuries in the atmosphere, trap the heat and cause the planet to get hotter. That's what is known as the greenhouse effect.



Oceano Community Services District Local Hazard Mitigation Plan

Data gathered by NASA and NOAA indicate that the planet's average surface temperature has risen about 2.0 degrees Fahrenheit (1.1 degrees Celsius) since the late 19th century, a change driven largely by increased carbon dioxide and other human-made emissions into the atmosphere. Most of the warming happened in the past 35 years, with 16 of the 17 warmest years on record occurring since 2001. 2016, was found to be the warmest year in our planet's history.

Most of the warming in recent decades is very likely the result of human activities. In the United States, the burning of fossil fuels to make electricity is the largest source of heat-trapping pollution, producing about two billion tons of CO₂ every year. Coal-burning power plants are by far the biggest polluters. The country's second-largest source of carbon pollution is the transportation sector, which generates about 1.7 billion tons of CO₂ emissions a year.

Scientists agree that the earth's rising temperatures are fueling longer and hotter heat waves, more frequent droughts, heavier rainfall, and more powerful hurricanes. In 2015, for example, scientists said that the ongoing drought in California, the state's worst water shortage in 1,200 years, was intensified by 15 to 20 percent by global warming. Further, the odds of similar droughts happening in the future have roughly doubled over the past century. In 2016, the National Academies of Science, Engineering, and Medicine announced that it's now possible to confidently attribute certain weather events, like some heatwaves, directly to climate change.

Source: NASA – Global Climate Change

The earth's ocean temperatures are getting warmer, which means that tropical storms can pick up more energy. It is possible that global warming could turn a category 3 storm into a more dangerous category 4 storm. In fact, scientists have found that the frequency of North Atlantic hurricanes has increased since the early 1980s, as well as the number of storms that reach categories 4 and 5. In 2005, Hurricane Katrina, the costliest hurricane in U.S. history, struck the city of New Orleans. The second costliest was Hurricane Sandy which pummeled the East Coast in 2012.

Source: NASA – Global Climate Change 2018

Each year, scientists learn more about the consequences of global warming, and many agree that environmental, economic, and health consequences are likely to occur if current trends continue. These impacts include:

- Melting glaciers, early snowmelt, and severe droughts will cause more dramatic water shortages and increase the risk of wildfires in the American West.



- Forests, farms, and cities will face troublesome new pests, heat waves, heavy downpours, and increased flooding. All these factors will damage or destroy agriculture and fisheries.
- Disruption of habitats such as coral reefs and Alpine meadows could drive many plant and animal species to extinction.
- Allergies, asthma, and infectious disease outbreaks will become more common due to increased growth of pollen-producing ragweed, higher levels of air pollution, and the spread of conditions favorable to pathogens and mosquitoes.

The impacts of global warming are being felt across the globe. Extreme heat waves have caused tens of thousands of deaths around the world in recent years. And in an alarming sign of events to come, Antarctica has been losing about 134 billion metric tons of ice per year since 2002. This rate could speed up if the population continues burning fossil fuels at the current pace, some experts claim, causing sea levels to rise several meters over the next 50 to 150 years.

Sea Level Rise Projections for California

Tide gauges and satellite observations show that in the past century, mean sea level in California has risen 8 inches (20 cm), keeping pace with the global rise. In the past 15 years however, mean sea level in California has remained relatively constant, and may have been suppressed due to factors such as offshore winds and other oceanographic complexities. Bromirski et al. postulate that persistent alongshore winds have caused an extended period of offshore upwelling that has both drawn coastal waters offshore and replaced warm surface waters with cooler deep ocean water. Both of these factors could offset the global sea level rise trend in this region. However, localized sea level suppression will not continue indefinitely. As the Pacific Decadal Oscillation, wind, and other conditions shift, California sea level will continue rising, likely at an accelerated rate. Sea level is projected to increase by 17 to 66 inches (42 to 167 cm) along much of the California coast by the year 2100.

Source: NRC 2012; Bromirski et al. 2011, 2012

Source: 2012 National Research Council Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future report



Sea Level Rise Projections for California (NRC, 2012)

TIME PERIOD*	NORTH OF CAPE MENDOCINO	SOUTH OF CAPE MENDOCINO
By 2030	-2 – 9 in (-4 – +23 cm)	2 – 12 in (4 – 30 cm)
By 2050	-1 – 19 in (-3 – + 48 cm)	5 – 24 in (12 – 61 cm)
By 2100	4 – 56 in (10 – 143 cm)	17 – 66 in (42 – 167 cm)

*with Year 2000 as a baseline

Source: California Coastal Commission Sea Level Rise Policy Guidance, Aug. 12, 2015

Impacts from sea level rise to the coastal zone include the following:

- Low lying coastal areas may experience more frequent flooding (temporary wetting) or inundation (permanent wetting), and the inland extents of 100-year floods may increase (i.e.-the Pier Avenue ramp located just outside the District boundary).
- Riverine and coastal waters come together at river mouths, coastal lagoons, and estuaries and higher water levels at the coast may cause water to back up and increase upstream flooding (i.e.-Arroyo Grande Creek at the Pacific Oceano).
- Drainage systems that discharge close to sea level could have similar problems, and inland areas may become flooded if outfall pipes back up with salt water.
- Sea level could cause saltwater to enter into groundwater resources or aquifers.

Climate Change-Global warming will undoubtedly have an impact on the naturally occurring hazards in the Oceano Community Services District. Anticipated effects include changes in the range and distribution of plants and animals (pests), and rainfall patterns/intensities (droughts and floods). Public Health impacts can also be expected. Extreme periods of heat and cold, storms, and smoke from fire will have impacts on climate-sensitive diseases and respiratory illnesses. More specific information on impacts can be found in the Drought, Flood, and Tsunami Hazard Profiles of this Plan.



D. Hazard Profiles

➤HAZARD: EARTHQUAKE

Severity: High	Probability: High
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Hazard Definition

An earthquake is a sudden, rapid shaking of the ground caused by the breaking and shifting of rock beneath the earth's surface or along fault lines. For hundreds of millions of years, the forces of plate tectonics have shaped the earth as the huge plates that form the earth's surface move slowly over, under, and past each other. Sometimes the movement is gradual. At other times, the plates are locked together, unable to release the accumulating energy. When the amassed energy grows strong enough, the plates break free causing the ground to shake. Most earthquakes occur at the boundaries where the plates meet, commonly called faults. However, some earthquakes occur in the middle of plates.

Fault

A fault is a fracture in the earth’s crust along which movement has occurred either suddenly during earthquakes or slowly during fault creep. Cumulative displacement may be tens or even hundreds of miles if movement occurs over geologic time. However, individual episodes are generally small, usually less than several feet, and are commonly separated by tens, hundreds, or thousands of years. Damage associated with fault-related ground rupture is normally confined to a fairly narrow band along the trend of the fault. Structures are often not able to withstand fault rupture and utilities crossing faults are at risk of damage. Fault displacement involves forces so great that it is generally not feasible (structurally or economically) to design and build structures to accommodate this rapid displacement. Fault displacement can also occur in the form of barely perceptible movement called “fault creep.” Damage by fault creep is usually expressed by the rupture or bending of buildings, fences, railroads, streets, pipelines, curbs, and other linear features.

The California Geological Survey (CGS) is charged with recording and mapping faults throughout California. The Alquist-Priolo Earthquake Fault Zoning (AP) Act was passed into law following the destructive February 9, 1971 magnitude 6.6 San Fernando earthquake. The AP Act provides a mechanism for reducing losses from surface fault rupture on a statewide basis. The intent of the AP Act is to insure public safety by prohibiting the placement of most structures for human occupancy across traces of active faults that constitute a potential hazard to structures from surface faulting or fault creep. Fault zoning is continually updated and reviewed by CGS and it is likely that other faults in addition to those currently listed by CGS will be added to the list in the future.



The primary active faults within the County identified by the AP Act include the San Andreas, San Simeon-Hosgri, and Los Osos faults. Two recent studies performed by CGS have estimated the maximum credible ground acceleration that could be generated by active and potentially active faults. Deterministic peak horizontal ground accelerations from these studies range from a low of 0.4 g in the central portion of the County to a high of about 0.7 g along the San Andreas, Rinconada, Oceanic-West Huasna, and coastal fault zones.

The only known mapped fault in the vicinity of Oceano is the Oceano fault. The buried trace of the potentially active Oceano fault is interpreted to strike northwest along the southwestern side of the Cienaga Valley about 1,000 meters southwest of Oceano, and goes offshore near the mouth of Arroyo Grande Creek. Although the fault is classified as potentially active by CGS, review of the Oceano fault suggests that the fault is inactive. The Oceano fault presents a very low fault rupture hazard to Oceano. Although the Oceano fault is likely inactive, it is undesirable to site structures over any fault as a result of non-uniform foundation support conditions and the potential for co-seismic movement that could result from earthquakes on other nearby faults.

Other mapped faults within the South County area include the potentially active Wilmar Avenue fault and the inactive Pismo fault. The Wilmar Avenue fault is exposed in the sea cliff near Pismo Beach and the buried trace of the fault is inferred to strike northwest - southeast parallel and adjacent to U.S. Highway 101 beneath portions of Arroyo Grande.

In 2008, the Shoreline Fault was discovered off the coast in the area of the Diablo Canyon Power Plant which is owned and operated by Pacific Gas and Electric Company (PG&E). The initial study of the fault, using conservative assumptions about the total length of the fault zone, indicates that a potential magnitude 6.5 strike-slip earthquake is possible. Follow up investigations were performed by PG&E in 2009 and 2010 and more detailed studies are planned in order to refine the size and potential of the fault.

Source: Report on the Analysis of the Shoreline Fault Zone, Central Coastal California, Report to the U.S. Nuclear Regulatory Commission, January 2011, PG&E

Historically active faults are generally thought to present the greatest risk for future movement and, therefore, have the greatest potential to result in earthquakes. Active and potentially active faults in San Luis Obispo County are shown on the map found at the end of this section.

Liquefaction

Liquefaction occurs when ground shaking causes the mechanical properties of some fine grained, saturated soils to liquefy and act as a fluid. It is the result of a sudden loss of soil strength due to a rapid increase in soil pore water pressures caused by ground shaking. In order for liquefaction to occur, three general geotechnical characteristics must exist:

1) ground water should be present within the potentially liquefiable zone, 2) the potentially liquefiable zone should be granular and meet a specific range in grain-size distribution, and



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3) the potentially liquefiable zone should be of low relative density. If those factors are present and strong ground motion occurs, then those soils could liquefy depending upon the intensity and duration of the strong ground motion. Liquefaction that produces surface effects generally occurs in the upper 40 to 50 feet of the soil column, although the phenomenon can occur deeper than 100 feet. The duration of ground shaking is also an important factor in causing liquefaction to occur. The larger the earthquake magnitude, and the longer the duration of strong ground shaking, the greater the potential there is for liquefaction to occur.

The areas of San Luis Obispo County most susceptible to the effects of liquefaction are those areas underlain by young, poorly consolidated, saturated granular alluvial sediments. These soil conditions are most frequently found in areas that have been inundated with river and flood plain deposits. These conditions do exist in the low lying areas near the Oceano Lagoon and Airport.



Damage to a home in Oceano caused by liquefaction resulting from the 2003 San Simeon Earthquake.

Maps which delineate the areas of San Luis Obispo County and Oceano that are susceptible to liquefaction can be found at the end of this section.



History

Where earthquakes have struck before, they will strike again. The Central California Coast has a history of damaging earthquakes, primarily associated with the San Andreas Fault. However, there have been a number of magnitude 5.0 to 6.5 earthquakes on other faults which have affected large portions of the Central Coast. Recent events include the December 2003 - 6.5 magnitude San Simeon Earthquake and the September 2004 - 6.0 magnitude Parkfield Earthquake.

The following are historic earthquakes that had an effect on San Luis Obispo County:

1830 San Luis Obispo Earthquake

The 1830 earthquake is noted in the annual report from the Mission, and had an estimated magnitude of 5. The location of the event is poorly constrained and cannot be attributed to a specific fault source, but the earthquake reportedly occurred somewhere near San Luis Obispo.

1857 Fort Tejon Earthquake

The approximate 7.9 Fort Tejon earthquake of 1857 was one of the greatest earthquakes ever recorded in the United States. It left a surface rupture scar over 350 kilometers (210 miles) in length along the San Andreas Fault and a maximum surface offset of about 9 meters (30 feet). Yet, despite the immense scale of this quake, only two people were reported killed by the effects of the shock. The exact location of the epicenter is not known. The event is referred to as the Fort Tejon earthquake, because that was the location of the greatest damage. There is evidence to suggest that the epicenter may have been in the Cholame and Parkfield area, which is located in and near the northeastern portions of San Luis Obispo County as a number of foreshocks, 1 to 9 hours before the main event, were report in this area.

Source: <http://www.data.scec.org/significant/forttejon1857.html>

The fact that only two lives were lost was primarily due to the nature of the quake's setting. California in 1857 was sparsely populated, especially in the regions of strongest shaking, and this fact, along with good fortune, kept the loss of life to a minimum. The effects of the quake were quite dramatic, even frightening. Were the Fort Tejon shock to happen today, the damage would easily run into billions of dollars, and the loss of life would likely be substantial, as the present day communities of Wrightwood, Palmdale, Frazier Park, and Taft (among others) all lie upon or near the 1857 rupture area.

1906 San Francisco Earthquake

This earthquake has been studied in detail and the effects in San Luis Obispo County have been documented. Modified Mercalli intensity ratings ranged from III-IV in the inland and north coast portions of the County, and IV-V in the south coast areas. The higher intensities



were felt in areas underlain by alluvial soil, while the lower intensities occurred in areas underlain by bedrock formations.

1916 Avila Beach Earthquake

This magnitude 5.1 event occurred offshore of Avila Beach in San Luis Bay. The earthquake reportedly resulted in tumbling smokestacks of the Union Oil Refinery at Port San Luis, and a landslide that blocked the Pacific Coast railroad tracks. The maximum intensity appears to be approximately VI, but the available descriptions of the shaking are somewhat limited.

1952 Arvin-Tehachapi Earthquake

This 7.7 magnitude earthquake occurred on the White Wolf fault, located south and west of Bakersfield. Throughout most of the San Luis Obispo County, ground shaking intensities of VI were felt. Intensities of IV-V were experienced in the northwest portion of the County, and magnitude VIII intensities were felt in the Cuyama area, in the southeast portion of the County. The higher intensities were likely due to closer proximity to the earthquake epicenter.

1952 Bryson Earthquake

This magnitude 6.2 earthquake likely occurred on the Nacimiento fault, and resulted in intensity ratings of VI throughout most of the western portion of the County. Intensities of IV-V were experienced in the eastern portion of the County. Higher intensities were generally felt in the coastal valley areas that are underlain by alluvial soils.

2003 San Simeon Earthquake

The San Simeon Earthquake struck at 11:15 a.m. on December 22, 2003. The magnitude 6.5 earthquake is attributed to having occurred near the San Simeon/Oceanic/Hosgri Fault system. The epicenter was approximately six miles from the community of San Simeon. As a result of the quake Cambria experienced a residential structure fire, and several commercial and residential buildings were damaged. Some roadways were obstructed and debris blocked some streets. This earthquake resulted in 2 deaths in the City of Paso Robles and water/wastewater infrastructure in the community of Oceano suffered a three million dollar loss.

1934, 1966 and 2004 Parkfield Earthquakes

These earthquakes were all three in the range of magnitude 6.0 and occurred on the San Andreas Fault in or near the northeast corner of the County. Earthquake intensities generally conformed to anticipated characteristics for events of this size, with intense shaking (VII-VIII) being limited to a relatively small area near the epicenters of the quakes. Moderate shaking was experienced in most of the central and western parts of the County. A variation from the expected intensity characteristics was experienced in the La Panza area during the



1934 earthquake. La Panza is approximately 40 miles south of the fault rupture area, but experienced earthquake intensities of VII.

Other Earthquakes

Earthquakes which have occurred outside yet were felt within the County during the last century include events such as the 7.0 Lompoc earthquake in 1927, and the 7.7 Arvin Tehachapi earthquake of 1952. Other more recent earthquakes, such as the 1983 - 6.7 Coalinga earthquake, 1989 - 7.1 Loma Prieta earthquake, 1992 - 7.5 Landers earthquake and the 1994 - 6.6 Northridge earthquake were felt in San Luis Obispo County, however, there was no damage to structures.

Hazard Potential

The Hazard Potential for earthquakes is dependent upon a multitude of factors. A brief description of those factors is presented below:

- **Earthquake Magnitude**

Earthquake magnitude, as generally measured by either the Richter or Moment Magnitude scale, is a measurement of energy released by the movement of a fault. As the amount of energy released by an earthquake increases, the potential for ground shaking impacts also increases.

- **Distance from Epicenter**

Earthquake energy generally dissipates (or attenuates) with distance from a fault. Over long distances, this loss of energy can be significant, resulting in a significant decrease in ground shaking with increased distance from the epicenter.

- **Duration of Strong Shaking**

The duration of the strong ground shaking constitutes a major role in determining the amount of structural damage and the potential for ground failure that can result from an earthquake. Larger magnitude earthquakes have longer durations than smaller earthquakes.

- **Effects of Ground Shaking**

The primary effect of ground shaking is the damage or destruction of buildings, infrastructure, and possible injury or loss of life. Building damage can range from minor cracking of plaster to total collapse. Disruption of infrastructure facilities can



include damage to utilities, pipelines, roads, and bridges. Ruptured gas and water lines can result in fire and scour/inundation damage, respectively, to structures. Secondary effects can include geologic impacts such as co-seismic fault movement along nearby faults, seismically induced slope instability, liquefaction, lateral spreading, and other forms of ground failure and seismic response.

- **Local Geologic Conditions**

The geologic and soil conditions at a particular site have the potential to substantially increase the effects of ground shaking. The thickness, density, and consistency of the soil, as well as shallow ground water levels, have the potential to amplify the effects of ground shaking depending on the characteristics of the earthquake. In general, the presence of unconsolidated soils above the bedrock surface can amplify the ground shaking caused by an earthquake.

- **Fundamental Periods**

Every structure has its own fundamental period or natural vibration. If the vibration of ground shaking coincides with the natural vibration period of a structure, damage to the structure can be greatly increased. The extent of damage suffered during an earthquake can also depend on non-geologic factors. The type of building and its structural integrity will influence the severity of the damage suffered. Generally, small, well-constructed, one and two-story wood and steel frame buildings have performed well in earthquakes because of their light weight and flexibility. Reinforced concrete structures also usually perform well. Buildings constructed from non-flexible materials, such as unreinforced brick and concrete, hollow concrete block, clay tile, or adobe, are more vulnerable to earthquake damage.

Impacts on People and Housing

In any earthquake, the primary consideration is saving lives. Time and effort must also be dedicated to providing for social issues such as reuniting families, providing shelter to displaced persons, and restoring basic needs and services. Major efforts will be required to remove debris and clear roadways, demolish unsafe structures, assist in reestablishing public services and utilities, and provide continuing care and temporary housing for affected citizens.

Effects on Commercial and Industrial Structures

After any earthquake, individuals are likely to lose wages due to the inability of businesses to function because of damaged goods and/or facilities. With business losses, the County of



San Luis Obispo will lose revenue. Economic recovery from even a minor earthquake will be critical to the communities involved.

Effects on Infrastructure

The damage caused can lead to the paralysis of the local infrastructure: police, fire, medical and governmental services.

Effects on Agriculture

Earthquakes can cause loss of human life, loss of animal life, and property damage to structures and land dedicated to agricultural uses. The most significant long-term impacts on agriculture from earthquakes are those that arise from the cascading effects of fire and flood.

Unreinforced Masonry Buildings

Unreinforced masonry building type structures consist of buildings made of unreinforced concrete and brick, hollow concrete blocks, clay tiles, and adobe masonry. Buildings constructed of these materials are heavy and brittle, and typically provide little earthquake resistance. In small earthquakes, unreinforced buildings can crack, and in strong earthquakes, they have a tendency to collapse. These types of structures pose the greatest structural risk to life and safety of all general building types. Non-structural items and building components can also influence the amount of damage that buildings suffer during an earthquake. Unreinforced parapets, chimneys, facades, signs, and building appendages can all be shaken loose, creating a serious risk to life and property.

Compliant with the State of California's Alquist-Priolo Special Studies Zone Act, the inventorying and public notification of these structures, based on the probability of a damaging quake occurring, is required. Only two of these structures can be found in the study area, both located in the commercial district along Front Street. They both present a very limited public safety threat as they are small and not used for public occupancy.

Relationship to Other Hazards – Cascading Effects

Earthquakes can cause many cascading effects such as fires, flooding, hazardous materials spills, utility disruptions, landslides, and transportation emergencies. Ground shaking may cause tsunamis or seiche, the rhythmic sloshing of water in lakes or bays. Economic impacts to a community through the loss of property and sales tax revenues from damaged businesses can be significant.



Plans and Programs in Place

The San Luis Obispo County Office of Emergency Services (OES) and the Five Cities Fire Authority (FCFA) in coordination with local, state, and federal emergency response organizations, continually work to better prepare the District's residents for the impacts of a significant earthquake event.

The San Luis Obispo County Planning and Building Department ensures that all new construction complies with current codes and ordinances regarding earthquake safety within the District.

First responder agencies regularly train on building collapse awareness, light rescue techniques, mass casualty triage and treatment, and have a limited amount of equipment and resources available to facilitate heavy rescue operations.

A detailed Earth Response Plan for San Luis Obispo County is in place, developed by the Office of Emergency Services. The Plan is coordinated with the State of California Earthquake Plan.

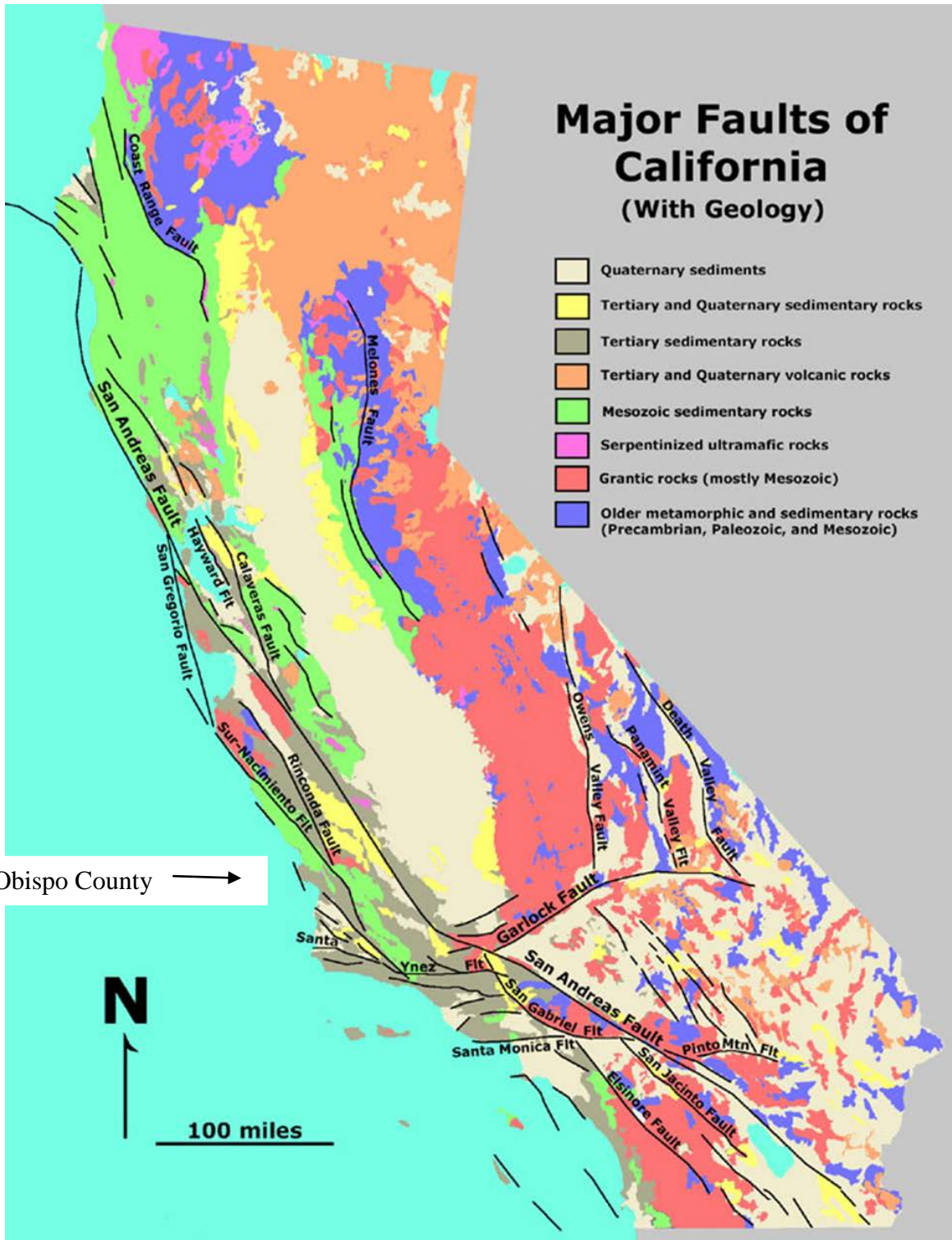
Future Probability - Risk Assessment Conclusion

Over the past 100 years, 13 earthquakes of magnitude 5 or greater have occurred within the County and/or surrounding areas. Based on this historical data of damaging earthquakes and the fact that District is located within a seismically active region, the probability is rated **HIGH**.

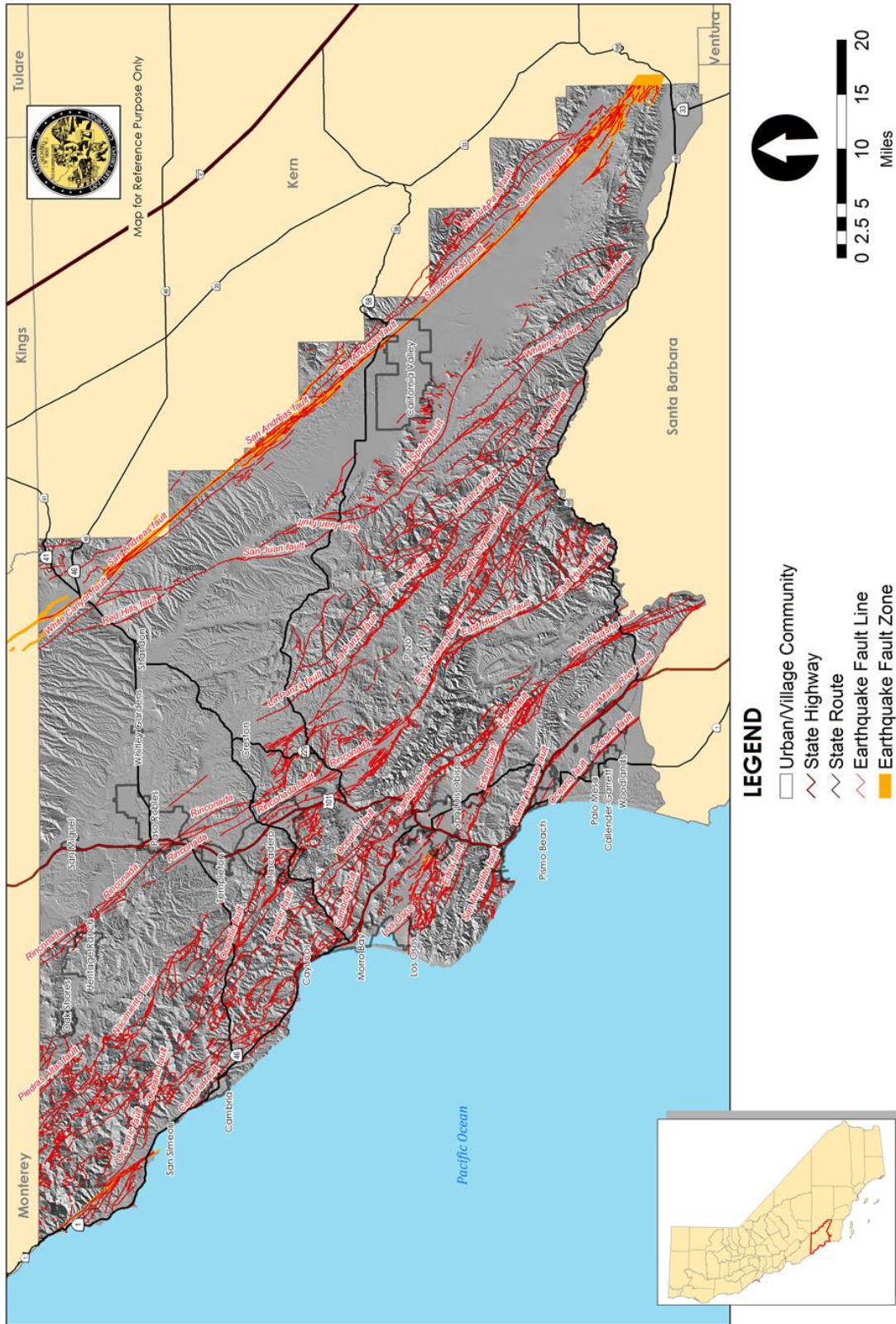
Both direct and indirect consequences of a major earthquake will severely stress the resources of the both the District, the FCFA, and the County and will require a high level of self-help, coordination and cooperation. Outside assistance from other local, regional, state, federal and private agencies may be delayed by more than 72 hours, depending upon the regional severity of the earthquake. Given the properties at risk and the cascading effects the severity is rated as **HIGH**.



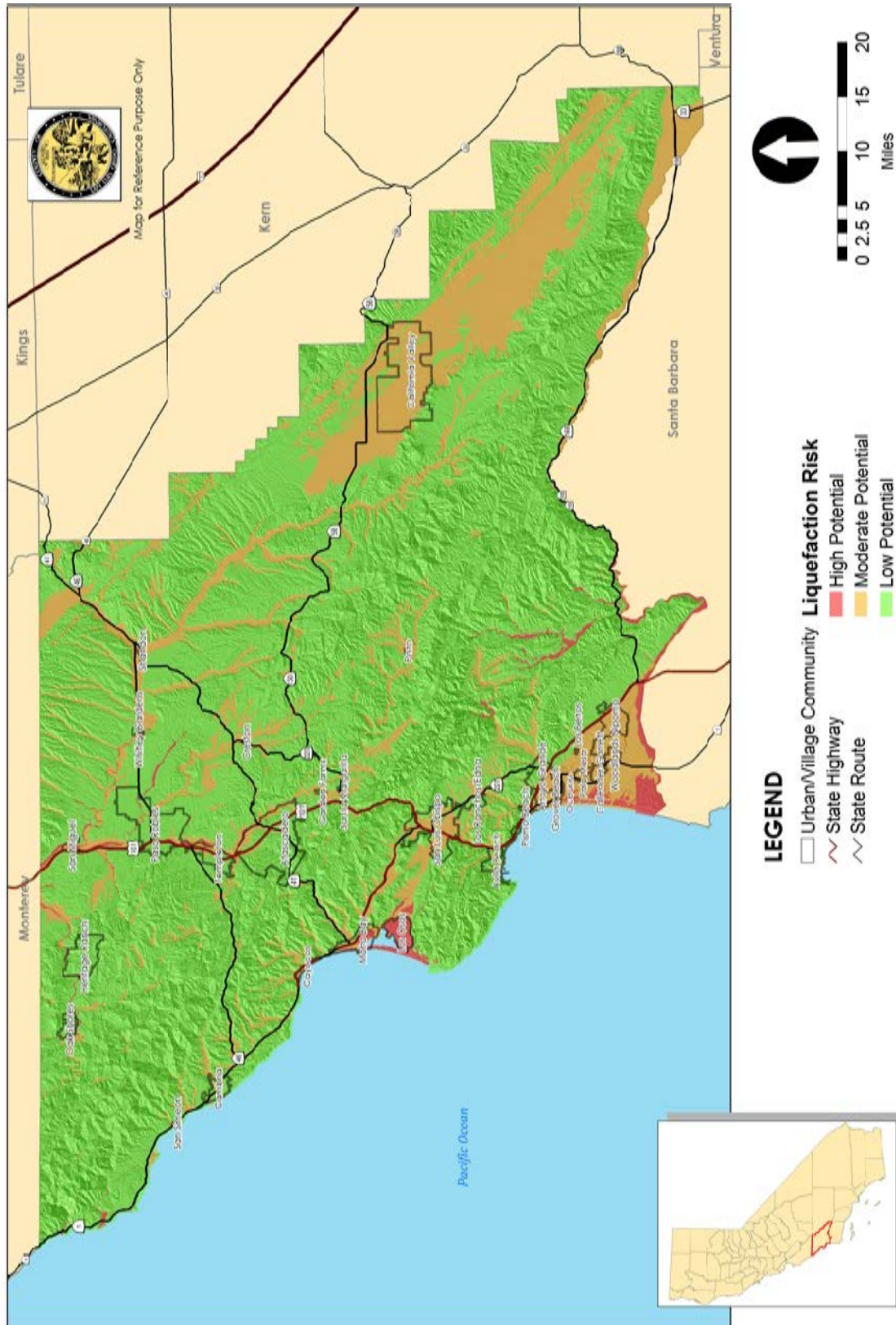
MAJOR FAULTS OF CALIFORNIA



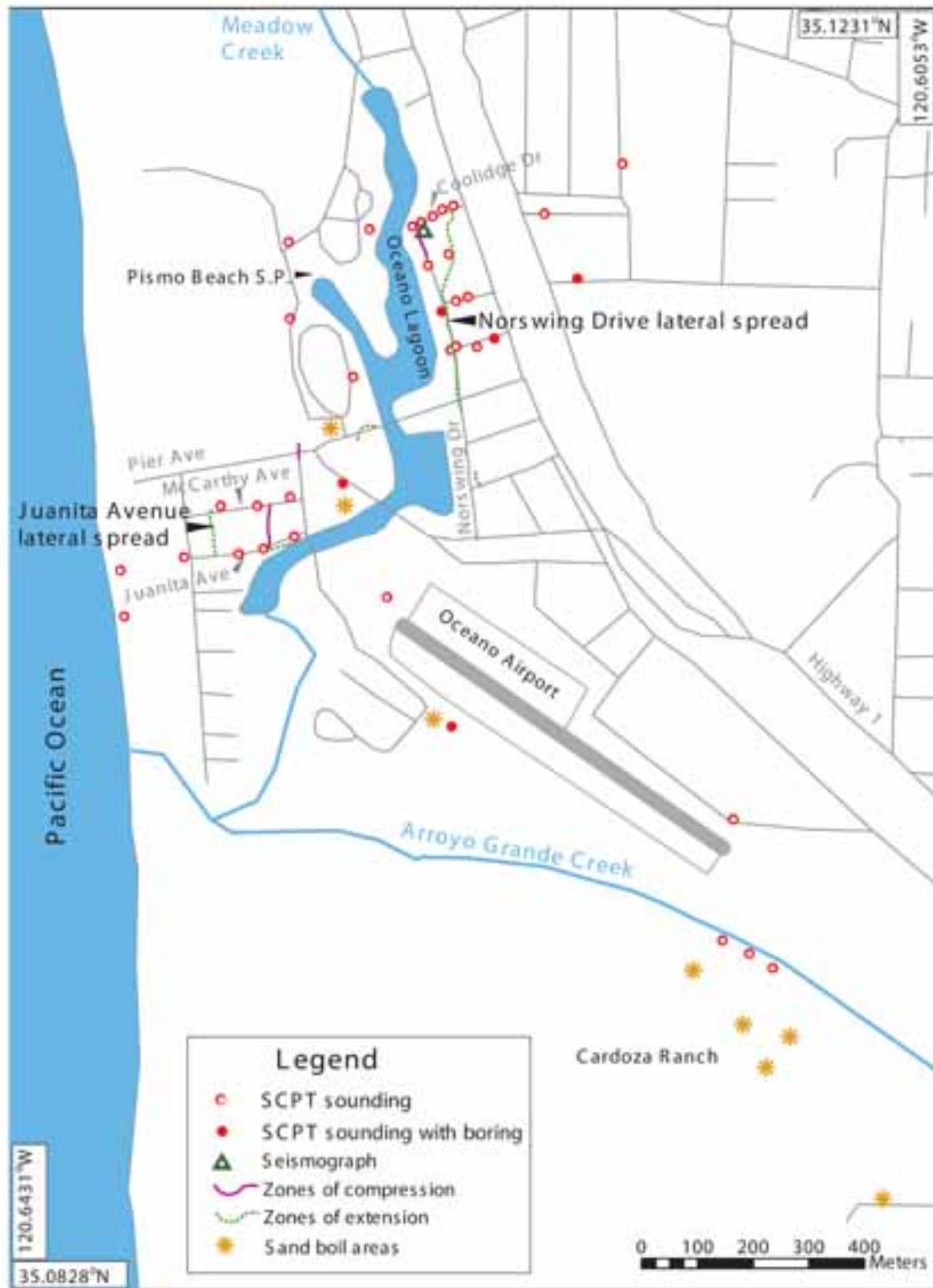
Oceano Community Services District Local Hazard Mitigation Plan



EARTHQUAKE ZONES AND FAULT LINES



LIQUEFACTION RISK MAP



Map of Oceano with Ground Failure and Liquefaction Areas, USGS SCPT Soundings and Borings, and Portable Digital Seismograph



➤HAZARD: FLOODING

Severity: Medium	Probability: High
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Hazard Definition

A flood is defined as an overflowing of water onto an area of land that is normally dry. Floods generally occur from natural weather related causes, such as sudden snow melts, often in conjunction with a wet or rainy spring, or with sudden and very heavy rainfall. Floods can also result from human causes such as a dam impoundment bursting.

Rainfall and inclement weather are primarily seasonal phenomena in the study area which boasts a mild Mediterranean climate. Generally the rainy season is from November through March. The yearly rainfall average for Oceano is just less than 18 inches, however much higher amounts can be expected in the coastal mountains to the east, for example Lopez Lake will often receive double that amount in a year. Even during moderately sized storms, flooding can also occur in low-lying areas that have poor drainage an example being Highway 1 between 13th and 17th streets in Oceano.

Many factors can increase the severity of floods including: fires in watershed areas, the placement of structures or fill material in flood-prone areas, and tidal or storm influence in low-lying coastal areas. Additionally, the construction of impervious surfaces such as roadways and rooftops will result in increased runoff.

Sea level rise due to global warming is likely to have minimal flood impact on most of the community of Oceano due to protective sand dunes and the overall elevation of most of the community. However, two areas of concern exist: the protective sand dunes are breached by the Pier Avenue beach ramp and the Arroyo Grande Creek at its terminus at the Pacific Ocean. The potential for water to enter the marsh area behind the dunes is high. A more detailed description and current plans and projects in place can be found in the Tsunami portion of this Plan.

For floodplain management purposes, the Federal Emergency Management Agency (FEMA) will often use the term “100-year flood” to describe the size or magnitude. These terms are misleading. It is not a flood that occurs once every 100 years. Rather, it is the flood elevation that has a 1 percent chance of being equaled or exceeded each year. Thus, a 100-year flood could occur more than once in a relatively short period of time.

The 100-year flood, which is the standard used by most federal and state agencies, is used by the National Flood Insurance Program (NFIP) as the standard for floodplain management and to determine the need for flood insurance.



Oceano Community Services District Local Hazard Mitigation Plan

Areas within the 100 and 500-year flood plain of the study area are found in the San Luis Obispo County Flood Hazard Map found in at the end of this section.

Monthly Rainfall Averages (Annual = Approximately 15 inches/year)

MONTHLY AVERAGES AND RECORDS- °F						
Date	Average Low	Average High	Record Low	Record High	Average Precipitation	Average Snow
January	43°	65°	24° (1950)	85° (1976)	3.59"	0"
February	44°	66°	28° (1996)	90° (1995)	3.87"	0"
March	45°	67°	23° (1963)	90° (2000)	3.46"	0"
April	46°	69°	31° (1999)	101° (1989)	1.13"	0"
May	47°	70°	30° (1988)	100° (1970)	0.41"	0"
June	51°	71°	37° (1999)	99° (1976)	0.07"	0"
July	53°	71°	38° (1949)	104° (1953)	0.03"	0"
August	53°	72°	39° (1963)	108° (1962)	0.02"	0"
September	53°	73°	35° (1988)	100° (1966)	0.32"	0"
October	51°	73°	32° (1949)	99° (1964)	0.62"	0"
November	46°	69°	29° (1986)	91° (1997)	1.7"	0"
December	42°	66°	24° (1990)	92° (1958)	2.57"	0"



History

Over the years, the study area has experienced flooding events that have resulted in extensive property damage. Historical floods in the District and surrounding areas include:

January and February, 1969

In January of 1969, a series of storms delivered rainfall that totaled over 18 inches in the coastal areas of the county. In February, another series of storms delivered another 5 to 10 inches. Streets, highways, and utilities throughout the County were heavily damaged.

January, 1973

Much like the floods of 1969, the 1973 storm produced a ten-hour period of unusually heavy rainfall. Many creeks and streams throughout the county overtopped their banks and inundated a number of areas.

February 22, 1993

Cambria received 2.5 inches of rain in a two hour period. Flash flooding occurred causing \$500,000 damage to four businesses and several residences.

January and March, 1995

A series of powerful and slow-moving storms brought heavy rain and strong winds to all of Central California. Serious flooding occurred in all coastal and many inland streams. In March, 18 inches of rain fell in Cambria and the West Village was completely inundated, with water as deep as six feet on Main Street.

December 2005 and early January, 2006

A series of storms battered the County. Most of the damage occurred New Year's Eve and day. High winds and saturated soils resulted in significant tree falls throughout the county causing heavy damage to a number of homes and businesses. There was one fatality which was the result of a tree falling on a pick-up truck while it was traveling on U.S. Highway 101.

March, 2001

Central and Southern California were significantly impacted by a powerful storm that delivered up to 6 inches of rain in some of the coastal areas of San Luis Obispo County. The mountain area of the county received even more, with reports of up to 13 inches. The heavy rain produced numerous flooding incidents. In Oceano, the Arroyo Grande Creek overflowed, destroying numerous crops and damaging one home. The Pacific Dunes RV



Park flooded. In Arroyo Grande, flooding along Corbett Creek caused damage to four homes and five classrooms at Arroyo Grande High School. In Pismo Beach, Pismo Creek flooding damaged homes in Pismo Coast Village.

December, 2004

A quick moving and powerful storm brought flash flooding and heavy rain to the Central Coast of California. Rainfall amounts ranged from 1 to 3 inches on the coastal plains to 3 to 6 inches in the more mountainous regions of the county. Flooding problems were reported throughout the county.

December, 2010

A series of slow-moving storms brought heavy rain and strong winds to the County. The most severe damages began on December 19, with primarily affected areas in the South County, particularly in the Oceano area. Damages reported to Cal EMA were just over \$2,000,000 in private property losses and an estimated cost and loss total to local governments of just over \$1,100,000 for a total storm damage cost estimate of approximately \$3,135,000.

February, 2017

Wind storm resulted in the downing of 15-20 large eucalyptus, cypress and pine trees in the village of Halcyon.

Annual Basis

Relatively moderate rain storms cause flooding along Highway 1 from 4th to 13th street. (*See photo at end of this section*)

Flood Hazard Potential

Flooding in Oceano is a result of heavy flows in Arroyo Grande Creek and Meadow Creek. The most significant inundation area is near the creeks' confluences with the ocean. Areas subject to flooding as a result of a 100-year storm generally extend south of Highway 1 and west of Pier Avenue. During a major event flooding would occur at the Oceano County Airport and surrounding properties, along with extensive areas located to the south of the community.



Oceano Community Services District Local Hazard Mitigation Plan

On nearly an annual basis, the low lying areas of Oceano, specifically the areas mentioned above will flood even in moderate rain storms. The County of San Luis Obispo and the Flood Control District have initiated two projects to mitigate some of the flooding. One project will address the flooding along Hwy 1 at 13th street where the most frequent and potentially dangerous flooding occurs on a regular basis. The project will construct drainage facilities (culverts and basins) that will convey run-off from Hwy 1 and 13th Street to the Arroyo Grande Creek Channel. This project has received funding from Caltrans, Community Development Block Grants, SLO Council of Governments, and the County but quotes received for the project exceeded the original engineers' estimate and the project is now looking to obtain a long term loan from USDA to make up the shortfall. Due to the number of agencies involved such as the federally regulated Oceano Airport and Union Pacific Railroad, and proximity to riparian habitat the permitting and coordination effort has been complex and time consuming. The second project the County initiated via Zone 1/1A is the Arroyo Grande Creek Channel Waterway Management Project. This project will help reduce the risk of the channel overtopping in certain storms by restoring the flood capacity of the channel while maintaining critical habitat for at least two endangered species. This project has received \$6.8 million dollars in grants from the State and FEMA. The project is in the final design phase and implementation of the project should occur in the next 1-2 years. Once these two projects are completed, they will eliminate the frequent flooding of two structures existing along Highway 1 between 13th Street and Front Street. Flooding of consequence occurs nowhere else in the District.

- **Effects on People and Housing**

Direct impacts of flooding can include injuries and loss of life, damage to property and health hazards from ruptured sewage lines and damaged septic systems. Secondary impacts include the cost and commitment of resources for flood fighting services, clean-up operations, and the repair or replacement of damaged structures.

- **Effects on Commercial and Industrial Structures**

Flooding can cause damage to commercial and industrial structures, vegetation, crops and livestock. Beach erosion results in the loss of sand from coastal areas. This hazard can accelerate the rate of erosion of coastal bluffs, and can also contribute to increased wave-related damage to coastal structures.

- **Effects on Infrastructure**

Flooding can cause damage to roads, communication facilities and other infrastructure.

- **Effects on Agriculture**

Effects on agriculture can be devastating. Flooding can damage crops and livestock. In addition to the obvious impacts on crops and animals, flooding can have deleterious effects on soil and the ability to reinvigorate the agricultural activities impacted once the flood



Oceano Community Services District Local Hazard Mitigation Plan

waters recede. Damage to water resources such as underground irrigation systems, water storage reservoirs, springs and other natural water bodies could have a serious effect upon agriculture operations.

Dam Failure

Although the probability of this type of hazard occurring is highly unlikely, it warrants consideration because a considerable portion of Oceano is located in the inundation area of Lopez Dam. In the event of complete failure of Lopez Dam, at 100% capacity, water would flow in a westerly direction following Arroyo Grande Creek, approximately 3,000 feet in each direction of the centerline of the creek channel. Water flows would pass through the rural areas directly below the dam and then into the cities of Arroyo Grande, Grover Beach, and the community of Oceano, some schools within the Lucia Mar Unified School District and the Sanitation District before reaching the ocean. Substantial impacts to life and property are a significant possibility in the City of Arroyo Grande. The threat diminishes as the distance from the dam increases and as the flood plain widens as it approaches Grover Beach. In Grover Beach, if the Lopez Dam were at full capacity and experienced a total failure, the low lying areas south of Grand Avenue and west of Highway 1 would be impacted. In Oceano, the inundation is predicted to follow the 100 year flood map and would include Highway 1, the Oceano Elementary School, Oceano Airport, the rail system, and Oceano Campground.

The County Dam and Levee Failure Plan indicates that at 100% capacity and with a complete failure water would reach U.S. 101, just north of the community of Oceano in approximately 40 minutes.

The State of California Division of Safety of Dams (DSOD) conducts periodic reviews to evaluate dam safety and a considerable amount of work was completed in 2004 in order to bring the dam into compliance with current seismic standards and mitigate the potential for liquefaction of the underlying subsoils found in the creek bed below the Lopez Dam. Inundation maps are in the process of being updated and will be public after DSOD approves the new maps.

Please see Flood Zone Map found at the end of this section.



Oceano Community Services District Local Hazard Mitigation Plan

Levee Failure

The area to the east and south of the District consists of the Arroyo Grande Creek flood plain. It is also referred to as the Cienaga Valley. The area is prime farmland and is in constant production, having a significant agricultural economic impact.

In 1961, the Arroyo Grande Creek Flood Control Project was completed. The main feature of the project was a levee system that confines the lower 3 miles of Arroyo Grande Creek, and a portion of Los Berros Creek as they flow to the Pacific Ocean. Over the years, the system has lost much of its carrying capacity and in 2001, the southern portion of the Arroyo Grande levee was breached near the Union Pacific railroad bridge. This failure resulted in extensive flooding of hundreds of acres of farmland. Should the northern portion have failed, the results would have been dramatic. The communities of Grover Beach and Oceano as well as the campgrounds, airport, and wastewater treatment plant would have been at risk.

Relationship to Other Hazards - Cascading Effects

While there are some benefits associated with flooding, such as the replenishment of beach sand, and the supplement of nutrients to agricultural lands, it is generally considered a hazard to development in flood plain areas. Floods can cause many cascading effects. Fire can break out as a result of dysfunctional electrical equipment. Hazardous materials can also get into floodways, causing health concerns and polluted water supplies. In many instances during a flood, the drinking water supply will be contaminated. Other problems and hazards associated with flooding and inclement weather include: utility disruptions, broken power lines lying on the ground, and communication system failures.

High winds often accompany winter storms and may cause significant damage in the planning area by blowing down trees that have been killed or damaged by drought, disease or insect infestation. The eucalyptus trees found along Highway 1 and the railroad present and in scattered locations throughout the planning area present a moderate threat to the community.

Plans and Programs in Place

San Luis Obispo County Public Works Department, Office of Emergency Services (OES), and the Five Cities Fire Authority, in coordination with local, state, and federal emergency response organizations, continually work to better prepare residents of Oceano for the impact of flooding events. The Flood Control and Water Conservation District annually sends out a Flooding and Evacuation Brochure detailing important safety information to all of the residents of Oceano.



Oceano Community Services District Local Hazard Mitigation Plan

First responder agencies, both law enforcement and fire, regularly train on water rescue and dealing with the cascading effects that can result from flooding. The local chapter of the American Red Cross is prepared to assist citizens in shelter welfare issues.

The San Luis Obispo County Planning and Building Department stipulate and enforces codes and ordinances that ensure that buildings are not situated in flood zones.

It should be noted that the community of Oceano, along with all of San Luis Obispo County's unincorporated areas, are included in the National Flood Insurance Program (NFIP), which allows property owners in flood prone areas very reasonable flood insurance rates. The County of San Luis Obispo is committed to remaining a NFIP participating agency and the projects currently in the planning and permitting phases will eliminate the repetitive flooding of the NFIP structures in the community.

Flood Control Districts

The San Luis Obispo County Flood Control and Water Conservation District has three subsidiary zones of benefit, two of which have direct impact on flooding within the community of Oceano. The Arroyo Grande Creek - Zone 1 and Los Berros Creek - Zone 1/A Districts primary focus is the maintenance of the Arroyo Grande Creek Flood Control Channel. Additionally, they are also concerned with the flooding, erosion, water quality within the boundaries of Zone 1 and 1A. The third zone, Zone 3 deals with the impacts of dam failure and drought.

In September of 2006, the OCSD signed on as a party to the Arroyo Grande Watershed and Memorandum of Understanding (MOU). The purpose of the MOU is to provide an overall understanding and accountability consensus between the parties to better protect, manage, and enhance the watershed, creating a sustainable future for the surrounding communities and the environment.

In 2010, a long-term maintenance plan for the Arroyo Grande Creek Channel was developed and funded by Zone 1 and 1A. This plan is called the Arroyo Grande Creek Channel Waterway Management Program (AGWMP). The AGWMP was adopted and the associated Environmental Impact Report was certified by the Board of Supervisors on November 2, 2010.

National Weather Service

The National Weather Service uses a number of methods to get weather statements out to the general population. Examples include the Emergency Alert System, NOAA Weather Radio All Hazards (NWR), and smart phone Wireless Emergency Alerts (WEA). For certain



Oceano Community Services District Local Hazard Mitigation Plan

significant extreme weather events, the County could potentially use the reverse 9-1-1 system. An Early Warning System siren, located throughout the Diablo Canyon Emergency Planning Zone Area, which includes the Oceano area, could be utilized to alert residents to a flooding event.

Due to the unique and consistent weather patterns in the area, the National Weather Service (NWS) has broken the County into three weather forecast zones: San Luis Obispo County Central Coast, San Luis Obispo County Interior Valleys, and San Luis Obispo County Mountains. The NWS uses a multi-tier system of weather statements to notify the public of threatening weather conditions specific to these areas. These statements are used in conjunction with specific weather phenomena to convey different levels of risk. In order of increasing risk, these statements are:

Weather Related Terminology

- **Outlook** - A Hazardous Weather Outlook is issued daily to indicate that a hazardous weather or hydrologic event may occur in the next several days. The outlook will include information about potential severe thunderstorms, heavy rain or flooding, winter weather, extremes of heat or cold, etc., that may develop over the next seven days with an emphasis on the first 24 hours of the forecast. It is intended to provide information to those who need considerable lead time to prepare for the event.
- **Advisory** - An advisory is issued when a hazardous weather or hydrologic event is occurring, imminent, or likely. Advisories are for "less serious" conditions than warnings that may cause significant inconvenience, and if caution is not exercised could lead to situations that may threaten life or property. The NWS may activate weather spotters in areas affected by advisories to help them better track and analyze the event.
- **Watch** - A watch is used when the risk of a hazardous weather or hydrologic event has increased significantly, but its occurrence, location, or timing is still uncertain. It is intended to provide enough lead time so those who need to set their plans in motion can do so. A watch means that hazardous weather is possible. People should have a plan of action in case a storm threatens and they should listen for updates and possible warnings especially when planning travel or outdoor activities. The National Weather Service may activate weather spotters in areas affected by watches to help them better track and analyze the event.
- **Warning** - A warning is issued when a hazardous weather or hydrologic event is occurring, imminent, or likely. A warning means weather conditions pose a threat to



life or property. People in the path of the storm need to take protective action. NWS may activate weather spotters in areas affected by warnings to help them better track and analyze the event.

- **Statement** - A statement is either issued as a follow-up message to a warning, watch, or emergency, and may be updated, extended, or cancelled. It is also a follow-up message or notification of significant weather for which no type of advisory, watch, or warning exists.

Future Probability/Risk Assessment Conclusion

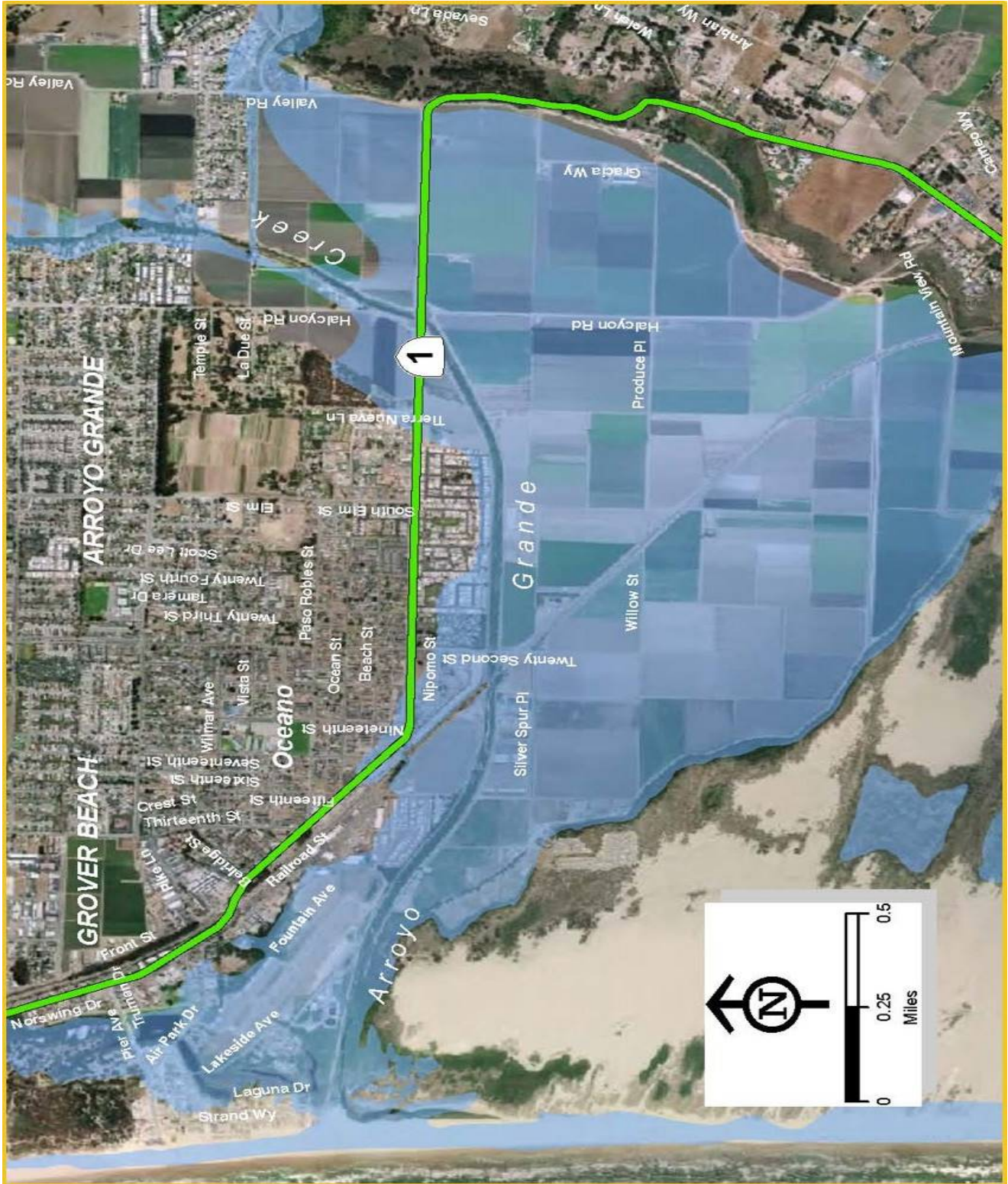
While it is impossible to predict future long-range weather patterns, it is certain that the location of the study area adjacent to the Pacific Ocean and surrounded by the mountains to the east will continue to have a significant exposure to major winter storms and flooding.

The vast majority of the study area is well drained being situated on gently sloping terrain with soils that allow for good drainage. Drainage problems in most of these gently sloped areas are a result of improper grading and are minor in nature. While the area is well drained, in that it is mostly located over sand, the presence of high groundwater levels minimize the ability of the soil to absorb much of the storm water runoff and nuisance flooding will occur.

Because a considerable amount of resources have already been expended toward resolving flood issues in these areas and because of the minimal threat to loss of life, flooding has been deemed a **MODERATE** severity risk. The study area has a significant history of flooding and therefore has received a **HIGH** probability rating.



January 2017-A portion of Highway 1 in Oceano is closed due to flooding.



OCEANO, CA 100-YEAR FLOOD PLAIN



➤ **HAZARD: TSUNAMI**

Severity: Medium	Probability: Low
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Hazard Definition

A tsunami is a wave, or a series of waves, caused by a displacement of the ocean floor, usually by movement along a fault. In deep ocean water, tsunamis may travel as fast as 600 miles per hour. As they approach the shore, waves may increase in size and can cause extensive damage to coastal structures.

Withdrawal of the sea may be a precursor to the arrival of the first wave. After the first wave appears, waves may continue to arrive at intervals for several hours. Intervals between successive waves may be similar. If the second wave appears 20 minutes after the first, it is likely that a third wave (if there is one) would arrive 20 minutes after the second. The first wave may not be the biggest. Yet the largest wave usually occurs within the first ten waves. The primary effects of these waves can be widespread destruction and damage to coastal structures and flooding of low lying areas. The height the sea level rises above mean high tide line is referred to as run-up.

History

While there is no recorded history of tsunami damage to the study area, tsunamis have caused considerable damage to neighboring communities located on the California Coast, including the City of Morro Bay which is located in San Luis Obispo County. A tsunami in 1964, following an earthquake in Alaska, killed 12 people in Crescent City and damaged piers and boats in Morro Bay as the bay emptied and filled every 15 minutes for over an hour.

On March 11, 2011, a 9.0 magnitude earthquake struck northern Japan. Nearly 12 hours later, approximately \$500,000 in damage was recorded to piers and docks in Morro Bay as a result of a tsunami from this earthquake. At the Center of Coastal Marine Science in Morro Bay (near the back of the bay), an oceanographer recorded a 6 foot surge, while fishermen and Coast Guard personnel estimated an 8-9 foot surge at the Coast Guard pier near the entrance to the harbor.



Tsunami History- San Luis Obispo County

Location of Damage	Incident Date	Intensity	Information
Morro Bay	1868	Unknown	Unknown
Cayucos	4/16/1877	Height: 3.6 meters	Unknown
Morro Bay	1878	Unknown	Unknown - Reportedly overtopped the sand spit in low areas
Pismo Beach	1927	Height: 1.8 meters	Unknown
Avila Beach	4/1/1946	Height: 1.3 meters Source magnitude: 7.3 Ms	Tsunami source location: Alaska Source event: E. Aleutian Islands Travel time: 5 hours 36 minutes
Morro Bay	4/1/1946	Height: 1.5 meters Source magnitude: 7.3 Ms	Tsunami source location: Alaska Source event: E. Aleutian Islands Travel time: 5 hours 36 minutes
Avila Beach	11/4/1952	Height: 1.4 meters Source magnitude: 8.2 Ms, 9 Mw	Tsunami source location: Russia Source event: Kamchatka Travel time: 8 hours 36 minutes
Pismo Beach	5/22/1960	Height: 1.4 meters Source Magnitude: 9.5 Mw	Tsunami source location: Chile Source event: Central Chile
Avila Beach and Morro Bay	3/28/1964	Height: 1.6 meters Source magnitude: 9.2 Mw	Tsunami source location: Alaska Source event: Gulf of Alaska. Travel time: 5 hours 10 minutes
Morro Bay	3/11/2011	Height: 2.4 Meters Source magnitude: 9.0 Mw	Tsunami source location: Japan Source event: Tōhoku earthquake Travel time: 10 hours 32 minutes



Hazard Potential

As noted in the above table, the historic record shows that significant tsunamis typically have been generated from distant earthquake sources. It has been estimated that the 100 and 500 year tsunami run-ups in the study area are based on far-field source generation locations (such as the Aleutian or Chile-Peru Trenches). Estimated tsunami run-up along the San Luis Obispo County coastline is approximately 9.5 feet to 24.2 feet for the 100 year and 500 year events, respectively. Those run-ups were calculated using astronomical high tides, and compare well with recorded tsunamis that have occurred in other locations along the California Coast. However, the worst case scenario would be if a tsunami occurred during a meteorological high tide (storm surge), which would add an estimated 14.5 feet (4.5 meters) to the run-up values calculated. In this worst case scenario, the estimated tsunami run-up for the 100 year and 500 year would be approximately elevation 24 and 39 feet above mean sea level, respectively.

The Davidson Seamount is located approximately 70 miles NW of Cambria, and is 4,101 feet beneath the Pacific Ocean's surface. This mount rises 7,480 feet up from the ocean floor and is 23 miles long and 7 miles wide. A sub-surface landslide on this or any other nearby undersea feature would not allow adequate time to notify/warn San Luis Obispo County coastal residents to evacuate. While very unlikely to occur, an undersea landslide here could be devastating to coastal areas of San Luis Obispo County.

The Tsunami Response Plan for San Luis Obispo County uses as its planning basis all those coastal communities, recreation and developed areas with an elevation of 50 feet above mean sea level. In general, much of the coast of the County is protected by wide beaches, coastal dune, or sea cliffs that provide protection for coastal developments. Areas most vulnerable to the tsunami hazard are developments or infra-structure near the mouths of streams that drain into the Pacific Ocean. In the District and immediate area this would include:

- Pismo Creek in Pismo Beach
- Meadow Creek and Arroyo Grande Creek in Oceano
- The Pier Avenue beach ramp in Grover Beach

Most of Oceano and Halcyon is protected from flooding by the Oceano Dunes. Arroyo Grande Creek breaches the dunes just outside the District's east boundary terminating at the Pacific Ocean. At its terminus the creek is very wide with a very shallow gradient. This would allow tsunami waves to travel upstream flooding adjoining creeks and flood control channels found within the low lying areas of the District. The worst case scenario would transpire if a tsunami occurred during a meteorological high tide combined with a storm surge which could add 14.5 feet to the wave height.



Specific at-risk locations within Oceano and Halcyon and immediate adjoining areas include the following:

- From Highway 1 (Pacific Boulevard or Front Street) to the ocean and south of Cienaga from 19th Street to Valley Road
- This would include the Oceano State Park Campground, Pismo State Beach, Oceano County Campground, Oceano Airport and the Oceano Dunes State Recreational Vehicle Park
- All farm land and areas around Oso Flaco Lake
- The wastewater treatment facilities of the South San Luis Obispo County Sanitation District which is located on Meadow Creek.

The primary impacts of a tsunami event can be widespread destruction and damage to coastal structures and flooding of low lying area. Other effects include:

- **Effects on People and Housing**
There is a low probability that a tsunami event would cause significant property damage or loss of life within the District as most developed areas are well above the estimated run up elevation and a sophisticated warning system is in place.
- **Effects on Commercial and Industrial Structures**
There is a very limited amount of development in the tsunami inundation zones within the District. However neighboring Port San Luis and Morro Bay could be impacted in terms of property damage to piers, docks, floats, and to moored boats. The Diablo Canyon Power Plant is not considered to be at risk as it is located on a marine terrace 85 feet above the sea level. The cooling intakes and release structures for the plant, which are located at sea level, are protected by natural barriers and a concrete jetty.
- **Effects on Infrastructure**
A tsunami event can cause damage to roads, communication facilities, and other infrastructure.
- **Effects on Agriculture**
Effects on agriculture could be devastating if flooding of fields were to occur as a result of a tsunami traveling up and overbanking Arroyo Grande Creek.



Relationships to Other Hazards – Cascading Effects

Tsunami events can cause many cascading effects. Fire can break out as a result of damaged electrical equipment. Other problems and hazards associated with tsunami flooding include: utility disruptions, contamination of the water supply system, broken power lines lying on the ground, and communication system failures.

Plans and Programs in Place

A detailed Tsunami Response Plan for San Luis Obispo County is in place. The Plan addresses the coastal communities, recreation facilities and developed areas with an elevation of 50 feet or less above mean sea level.

The West Coast/Alaska Tsunami Warning Center in Palmer, Alaska is responsible for issuing tsunami information for California, Oregon, Washington, and British Columbia. Tsunami generating incidents around the Pacific can be detected, pinpointed and magnitude computed in from 2 to 12 minutes depending upon the distance from the warning center. Depending on the incident magnitude a “Watch,” “Advisory” or “Warning” will be transmitted to the Governor’s Office of Emergency Services and then distributed through the County’s Emergency Alerting System.

It should be noted that the California Coastal Commission has approved and permitted a 30 year plan to construct flood walls/berm to protect the South San Luis Obispo County Sanitation District Wastewater Treatment Facility located on Meadow Creek. This project will provide protection from both sea level rise and tsunami flooding at the low lying breaches at the Oceano Dunes.

Future Probability - Risk Assessment Conclusion

As delineated in the Risk Assessment above, there are a limited number of low lying areas in the District that could be impacted by a significant tsunami event. Historically, the study area has had minimal threat from tsunami activity. Thus, the probability of this future hazard event occurring is deemed **LOW**. The combination of an accurate tsunami warning system, which will provide time for evacuations, and the limited exposed area reduces the severity to some degree. However, given the fact that the community’s wastewater treatment facility is located within the tsunami inundation zone justifies a **MEDIUM** severity rating. *A San Luis Obispo County Tsunami Hazard inundation map is found at the end of this section.*



➤HAZARD: DROUGHT

Severity: Low	Probability: High
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Hazard Definition

A drought is an extended dry period where water availability falls below the statistical requirements for a region. Droughts are the product of natural water deficiency coupled with human water demand exceeding available supply. The precise definition of drought is made complex owing to political considerations, but there are generally three types of conditions that are referred to as drought:

Meteorological drought is brought about when there is a prolonged period with less than average precipitation.

Agricultural drought occurs when there is insufficient moisture for average crop or range production. This condition can arise, even in times of average precipitation, owing to soil conditions or agricultural techniques.

Hydrologic drought is brought about when the water reserves available in sources such as aquifers, lakes, and reservoirs fall below the statistical average. This condition can arise, even in times of average (or above average) precipitation, when increased usage of water diminishes the reserves.

When the word "drought" is used by the general public, the most often intended definition is meteorological drought. However, when the word is used by urban planners, it is more frequently in reference to hydrologic drought.



Lopez Lake, a critical water resource for the District during the drought of 2012-16



History

Droughts are a recurring feature of California's climate. In the last century, the most significant statewide droughts occurred in 1929-1934, 1976-1977, 1987-1992, and 2012-2016, and a less severe drought occurred in 2007-2009. The 2012-2016 drought was one of extreme proportions, with record-high temperatures and record-low levels of snowpack and precipitation. Fortunately, the District has not been impacted by these droughts.

Further information regarding these historical droughts is described below:

1929–1934

This drought occurred during the infamous Dust Bowl period of the 1920s and 1930s. As a result of this drought, the California Central Valley Project, which is a series of canals, aqueducts and pump stations, was constructed to deliver water from the northern half of the state to the San Joaquin Valley.

1976–77

1977 had been the driest year in California history to date. According to the *Los Angeles Times*, "Drought in the late 1970s spurred efforts at urban conservation and the state's Drought Emergency Water Bank was developed.

1986–1992

California endured one of its longest droughts ever, observed from late 1986 through late 1992. Drought worsened in 1988 as much of the United States also suffered from severe drought. In California, the six-year drought ended in late 1992 as a significant El Niño event in the Pacific Ocean remedied the situation.

2007–2009

This was the 12th worst drought period in California's history and the first drought for which a statewide proclamation of emergency was issued. The drought of 2007–2009 also saw greatly reduced water diversions from the state water project. The summer of 2007 saw some of the worst wildfires in Southern California history.

2011–2016

The period between late 2011 and 2016 was the driest in California history since record-keeping began. The drought led to Governor Jerry Brown instituting mandatory 25 percent water restrictions in June 2015. Many millions of California trees died from the drought – approximately 102 million, including 62 million in 2016 alone. It is estimated that throughout the State there was 2.7 billion dollars of lost farming revenue and the loss of some 18,000 jobs.



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By the end of 2016, 30% of California had emerged from the drought, mainly in the northern half of the state, while 40% of the state, (Santa Barbara, Ventura, Los Angeles, Orange, and San Diego Counties) remained at extreme or exceptional drought levels.

The winter of 2016–17 turned out to be the wettest on record in Northern California, surpassing the previous record set in 1982–83. Floodwaters caused severe damage to Oroville Dam in early February, prompting the temporary evacuation of nearly 200,000 people north of Sacramento. In response to the heavy precipitation, which flooded multiple rivers and filled most of the state's major reservoirs, Governor Brown declared an official end to the drought on April 7, 2017.

Hazard Potential

Periods of drought can have significant environmental, agricultural, health, economic and social consequences. Drought can also reduce water quality, because lower water flows reduce dilution of pollutants and increase contamination of remaining water sources. In the planning area, which contains agricultural interests of consequence, the impacts of drought are significant.

As noted in the Hazard Definition above, no simple, precise definition of drought exists. In general, a drought is an extreme event characterized by a prolonged period of abnormally low levels of precipitation that has adverse impacts on vegetation, animals, and people. A drought is a temporary phenomenon and as such, it is distinct from aridity, which is a climatic feature of a particular region. Droughts occur periodically in every climatic zone, although some areas are more drought-prone than others. Such is the case with the community of Oceano. Situated above a large ground water basin and served by a number of water projects the community has, to date, not been impacted by drought. Please refer to the Risk Assessment Conclusion section for more detail.

Impacts and Effects

Listed below is a short summary of some of the effects and impacts that typically occur during a drought:

- **Water Supply and Quality**

Drought negatively impacts both the quantity and quality of water supplies. While a reduction in water supply is generally a temporary phenomenon, it can be permanent in some instances. Land subsidence can be caused by pumping, resulting in a permanent loss of groundwater storage. Drought can also compromise water quality, such as by concentrating salts and other contaminants, reducing dissolved oxygen levels, and increasing water temperatures. Water quality problems can exacerbate water supply problems.



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- **Fish and Wildlife**

Political pressures increase diversions of water away from ecosystems. As water levels in streams, rivers, and lakes decline, fish and wildlife are at risk of dying, potentially causing regional extinctions. Dry vegetation combined with high temperatures and low humidity often increases the frequency and intensity of fires. The wildfire season may start earlier in the spring and extend later into the fall.
- **Energy**

Drought can strain the energy system. The generation of hydroelectricity at California dams may drop dramatically from average levels because it varies directly with streamflow. As the source of electricity production shifts to the more expensive fossil fuel (e.g., natural gas), electricity prices will likely increase. Additionally, high temperatures associated with drought may increase energy demand for cooling and air-conditioning systems.
- **Agriculture**

Some farmers and water districts with “junior” water rights have seen water allocations from state and federal irrigation projects severely cut. Some growers with “senior” water rights have seen only modest shortages, if any. Farmers facing a water shortage may seek temporary water transfers from other users, increase groundwater pumping, change the types of crops they grow, deficit irrigate, or leave some lands fallow.
- **Rural Communities**

Rural communities are often dependent on a single water source, usually groundwater. As groundwater levels drop, community and individual wells may go dry. Declining water supplies and ongoing water quality problems force communities to switch to bottled water, dig deeper wells, and truck in water to refill holding tanks. These actions can impose local economic hardships on those living in rural areas, many of whom are among the state’s most disadvantaged communities.
- **Revenue Losses**

For most water utilities, fixed costs (e.g., debt service on past water system investments) are relatively high and variable costs (e.g., energy and chemical costs) are relatively low. Reducing water use cuts variable costs but has no impact on fixed costs (at least in the short term). As water use declines, revenue from the sale of water also declines and may not be sufficient to recover the fixed costs. In response, water utilities may enact drought surcharges or draw from reserves. While surcharges increase the water rate (i.e., the price per gallon), those using less water may actually see their bills go down. Furthermore, conservation lessens the impact of the drought on water bills by avoiding the purchase of more expensive water supplies.



- **Behavioral Health**

Drought can impact behavioral health as a result of direct financial stress and general economic downturn. Additionally, some of the more common stress-relieving activities such as exercise and other outdoor activities may be impacted or less enjoyable as a result of drought. The combination of increased financial stress and impaired ability to relieve stress can result in the following behavioral health issues including depression, anxiety, suicide, and substance abuse.

Source: USGS - California Water Science Center

Relationships to Other Hazards-Cascading Events

Over pumping of groundwater basins due to drought conditions can result in land subsidence. As a result of drought, dry vegetation combined with high temperatures and low humidity often increases the frequency and intensity of fires. The wildfire season may now start earlier in the spring and extend later into the fall.

Plans and Programs in Place

Urban water utilities throughout the State of California have rolled out a wide range of voluntary and mandatory water conservation programs. These include education programs, incentives to purchase more water-efficient appliances and plant water-efficient gardens, and restrictions on discretionary water uses, such as watering lawns. As a result, statewide urban water use has declined by nearly 25% from 2013 levels.

When the Governor declared the drought emergency in January 2014, he provided direction to state agencies on several issues and called on all Californians to reduce water use by 25%. Subsequently, as the drought persisted, the State Water Board established mandates throughout California.

In October 2014, the Oceano Community Services District Board adopted Resolution 2014-15 in accordance with the State Water Board's requirements, which primarily establishes restrictions on outdoor water use. This action was taken not based on a true need but more in support of the neighboring communities who were being impacted by the drought.



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Future Probability - Risk Assessment Conclusion

While San Luis Obispo County has a well-documented history of being impacted by drought, the District has not suffered significantly. A number of factors mitigate the impacts of drought on the District. They include:

- The District has invested significant resources in a variety of water projects that provide three water sources for the District: Lopez Lake, the State Water Project, and ground water wells in the Arroyo Grande Basin.
- Although the Santa Maria Groundwater Basin, underlying the District, is an adjudicated basin and subject to the courts continuing jurisdiction, the District's pumping rights that were established in the court-approved stipulations and judgment of 900 acre feet per year, exceed the District's total annual demand.

Given these considerations, the severity for drought within the District is rated as **Low**. There is no doubt that this short term phenomenon will occur again therefore the probability is rated as **HIGH**.

U.S. Drought Monitor California

August 16, 2016

(Released Thursday, Aug. 18, 2016)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	83.59	59.02	42.80	21.04
Last Week 8/9/2016	0.00	100.00	83.59	59.02	42.80	21.04
3 Months Ago 5/17/2016	5.50	94.50	86.39	63.57	42.99	21.04
Start of Calendar Year 12/29/2015	0.00	100.00	97.33	87.55	69.07	44.84
Start of Water Year 9/29/2015	0.14	99.86	97.33	92.36	71.08	46.00
One Year Ago 8/18/2015	0.14	99.86	97.35	92.36	71.08	46.00

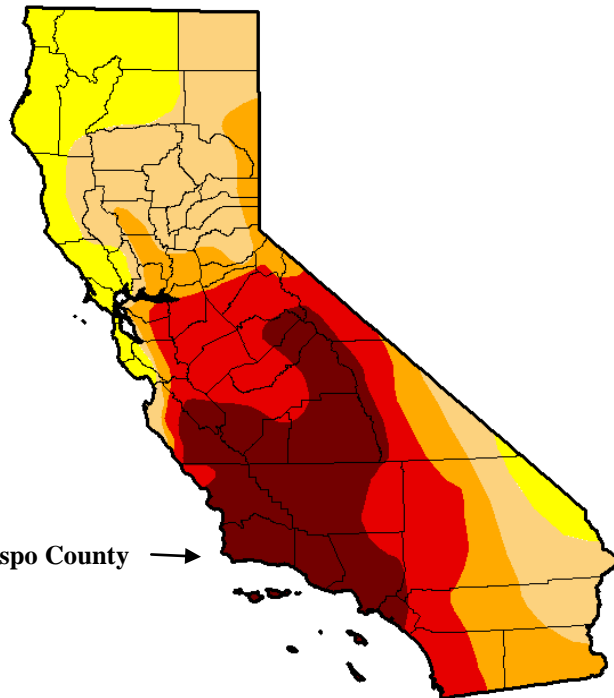
Intensity

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

David Miskus
NOAA/NWS/NCEP/CPC



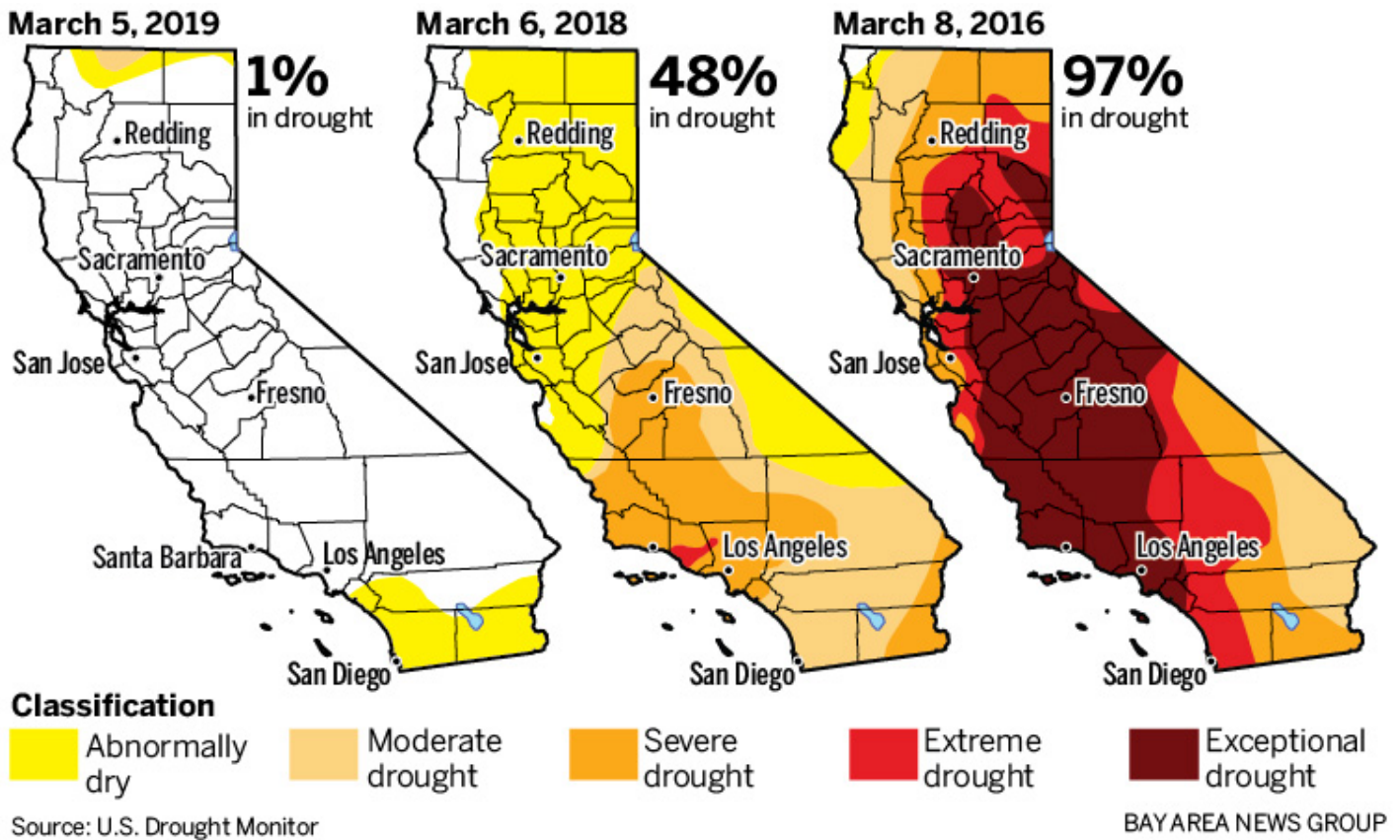
San Luis Obispo County →



<http://droughtmonitor.unl.edu/>



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As the above maps demonstrate, 97 percent of California’s land was in a drought in March of 2016, much of it in extreme drought status. The historic drought that plagued California for five years ended in 2017 after extremely heavy rainfall enabling every major city in California to drop the mandatory water restrictions and penalties that marked much of the previous five years. Unfortunately, an extended dry period followed returning water restrictions to many California communities.



➤ **HAZARD: EXTREME WEATHER**

Severity: Medium	Probability: High
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Hazard Definition

Extreme weather is defined as unusual, severe, or unseasonal weather. It can be considered weather at the extremes of the historical distribution or the range that has been experienced in the past. Adverse or extreme weather occurs only 5% or less of the time. It may take the form of isolated events, such as storms, or may occur over longer periods of time, such as heat waves, cold snaps, or drought.

A storm is defined as any disturbed state of the earth’s atmosphere affecting its surface. It may be marked by strong wind, hail, thunder and/or lightning, heavy precipitation in the form of snow or rain, heavy freezing rain, strong winds (windstorm), or wind transporting some substance through the atmosphere as in a dust storm, blizzard, sand storm, etc. Storms generally lead to negative impacts to lives and property such as storm surge, coastal erosion, heavy rain or snow (causing flooding or road impassibility), lightning, wildfires, and vertical wind shear.

A more thorough discussion of these types of events follows:

Wind-Wind Storms

Resulting from air movement from areas of high pressure to those of low pressure, wind can occur at any time of the year and can vary in strength and duration. Wind related events can be quite destructive.

Heavy Snow Fall

Heavy snow fall will, on very rare occasions, occur in the higher elevations of the Santa Lucia range directly to the north and east of the District. In the lower elevations of the study area heavy snow fall does not occur.

Thunderstorm

A thunderstorm, also known as an electrical storm, lightning storm, or thundershower is weather characterized by the presence of lightning and its acoustic effect on the earth's atmosphere. Thunderstorms are usually accompanied by strong winds, heavy rain and



sometimes snow, sleet, hail, or no precipitation at all. Those which cause hail to fall are known as hailstorms.

Hailstorms

Hail is precipitation in the form of balls or irregular lumps, always produced by convective clouds, nearly always cumulonimbus. They can vary from pea size all the way up to that of a grapefruit in rare circumstances. Hailstones generally form in thunderstorms between currents of rising air called the updrafts and the current of air descending toward the ground, called the downdraft. Large hailstones indicate strong updrafts in the thunderstorm. The larger the hail, the stronger the updraft needed to hold it aloft in the storm.

Freeze

A freeze refers to a particularly cold spell of weather where the temperature drops below 32 degrees. Freezing conditions, especially in the spring, can cause damage to crops and ornamentals and cause considerable discomfort to area residents.

Extreme Heat

Often referred to as a “heat wave” or “heat storm”, it is typically defined as a series of days, three or more, where weather conditions combine resulting in day time temperatures considerably higher than the norm. When combined with high humidity, living conditions can become quite uncomfortable.



History

Oceano, Halcyon and neighboring communities have a history of adverse or extreme weather events:

Extreme Weather Event History

LOCATION	Date of Event	Damage Reported	Incident Description
San Luis Obispo County	1997 to Present: >20 Events Occurred	Unknown Values	Heavy Surf- 1998 event: An extended heavy surf event produced by a series of Pacific storms, battered coastal areas of Central and Southern California. Along the coast of San Luis Obispo, waves as high as 25 feet were reported. Elsewhere, coastal areas reported 12 to 15 foot waves producing some degree of damage. In Port San Luis, widespread shoreline erosion was reported.
City of San Luis Obispo	5/5/1988	4 homes damaged	Tornado-A small tornado developed over the City of San Luis Obispo. The tornado knocked out power to several hundred homes. Four homes were damaged, including one struck by a falling cypress tree.
Countywide	12/21/1998 - 12/24/1998	\$5.4 million crop damage	Freeze- An unseasonable cold air mass produced a three night period of sub-freezing temperatures across Central and Southern California. Agricultural interests suffered heavy crop losses.
San Luis Obispo County	12/17/2000 - 12/18/2000	Moderate	High Wind-Gusty offshore winds buffeted the coastal section of SLO County. In the City of SLO, the winds blew out the windows in an unoccupied mobile home and destroyed part of a car port. In Nipomo, winds of 35 mph with gusts up to 55 mph were reported. The strong winds produced widespread power outages.
San Luis Obispo County	3/04/2001 - 3/06/2001	Significant - Values Unknown	High Wind-A powerful and slow-moving storm brought heavy rain, strong winds and snow to Central and Southern California. Across SLO County, rainfall totals ranged from 2 to 6 inches over coastal/valley areas and 6 to 13 inches in the mountains producing extensive flooding. In Oceano, the Arroyo Grande

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			Creek overflowed destroying numerous crops and damaging one home. In Arroyo Grande, flooding along Corbett Creek damaged four homes and five Arroyo Grande High School classrooms.
Oceano	2/02/2004	None	Tornado-A waterspout, developed offshore of the Oceano Dunes and came onshore as a weak tornado.
Cambria	01/02/2006	Significant – Values Unknown	Wind/Rain-Cambria experienced a significant wind and rain event which caused damage to over 60 homes and businesses. Several people were injured. First responders were unable to access many areas of Cambria due to downed power lines, utilities, tress and other debris. Several large areas of Cambria were without power for 5-9 days.
Halcyon	02/17/17	Significant Tree Damage	Wind storm resulted in the downing of 50 large eucalyptus, cypress and pine trees in the village of Halcyon.

Hazard Potential

These events can have significant impacts on the health and safety of the population and cause major property and infrastructure damage. Listed below are the primary dangers associated with these occurrences:

- Threat to life and danger to public health
- Damage/loss of personal property or crops and livestock
- Utility failures
- Interruption of the transportation network
- Interruption of communication systems

More specific impacts and effects for the various events are outlined below:



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Wind Storms and Thunderstorms

The typical wind in the planning area flows from the ocean in a northwest direction and will range from 10–25 MPH and is most prevalent in the spring. Winter storms, coming off the ocean, will generate higher wind speeds. The typical flow is from the south as the storm approaches, rotating to the north as the storm makes landfall. These winds are erratic; gusts of 35 MPH are common with rare gusts to 55 MPH being recorded. Large pressure gradient wind flows (i.e. Sundowner or Santa Anna winds) do occur in the planning area. An occasional offshore flow with wind speeds of 10-15 MPH will occur in the fall months.

Throughout the entire community, eucalyptus and cypress trees have been planted as wind breaks. There are no forested areas and naturally occurring trees are rarely found. Falling trees and branches can result in considerable property destruction, communication/power line damage, and block transportation corridors. This situation has recently been exacerbated by the disease/drought infested trees.

Occasionally, summer thunderstorms (lightning) will occur in the Santa Lucia Mountain range well to the north of the District. Thunder and lightning will be seen and heard in the distance. Rarely, wildfires in the mountains may be the result of these storms.

Coastal Erosion/Winter Storms

These storms may have hurricane-force winds and cause damage similar to that of a hurricane. However, they are not classified as such because they don't originate in the tropics. Coastal storms normally do most of their damage on the coast, in the form of beach erosion and flooding due to heavy rainfall. The winds originate from low-pressure systems offshore and circulate counterclockwise around the low pressure system. When the low pressure system stops moving, its winds combine with those of the high pressure system to blow in one direction over a long period of time, which may create massive waves. The duration of such a storm coupled with the height of the tide can be the most significant measure of its destructiveness.

As these storms move to the east, across the ocean front communities, they typically lose intensity as the coastal range behind Arroyo Grande causes the moist air to elevate, condense, and fall out. Arroyo Grande Creek, which flows through the community of Oceano, originates in this range and has caused significant flooding events to this area. High tides can further increase flooding potential.

The coastal areas of the south San Luis Obispo County, specifically Pismo Beach and the Oceano Dunes, are primarily characterized by wide sandy beaches backed by low bluffs in Pismo and tall sand dunes in Oceano. This section of coastline is subject to moderate to heavy wave action mostly from northerly swells, however the wide sandy beaches absorb and dissipate the wave energy with no history of significant coastal damage to the naturally occurring features. The Pismo Beach Pier, not a natural feature, has been damaged in past



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storms. Winter storm wave heights of 15-20 feet are routine with the very occasional wave height of 25 feet.

Hailstorms

Significant amounts of damage to property, notably to automobiles, skylights, and glass-roofed structures, can occur from hailstorms. The damage to landscape, vegetation and crops can also be severe. Fortunately, hail very rarely kills anyone. However, each year dozens of people are injured when they are unable to find adequate shelter. Hailstorms could occur anywhere within the District, however hailstorms of significance are very rare occurrences in the planning area. When they do occur, hail stones size is in the ¼ to ½ inch range. Damage of consequence is not recorded.

Freeze and Heavy Snowfall

The proximity of the Pacific Ocean to the District moderates both the high and low temperatures in the area. Snowfall within the confines of the District does not occur. The average low temperature in January for Oceano is 43 degrees. On rare occasions (1-2 times/year), freezing temperatures may occur at night and in the early morning. Daytime temperatures below freezing do not occur. These “cold spells” typically last 2-3 days before temperatures return to normal. Damage to crops is very rare but when it occurs can be quite costly.

Extreme Heat

In the United States, heat waves are the most lethal type of weather phenomenon. Between 1992 and 2001, deaths from excessive heat in the United States numbered 2,190, compared with 880 deaths from floods and 150 from hurricanes. Situated on the coast, the community rarely experiences extremely high temperatures of long duration. However, the public health risks from extended exposure to higher than normal temperatures include hyperthermia, rashes, edema, dehydration, and heat cramps, to name a few.

The proximity of the Pacific Ocean to the District moderates both the high and low temperatures in the area. Sperling's comfort index for Oceano, California is an 84 out of 100, where a higher score indicates a more comfortable year-around climate. The U.S. average for the comfort index is 54. This index is based on the total number of days annually within the comfort range of 70-80 degrees, with a penalty applied for any days with excessive humidity. Oceano has approximately 185 sunny days each year with a July average high of 70 degrees. Temperatures in the 90 degree range are extremely rare and not previously recorded for the study area; therefore impacts from extreme heat are non-existent.



Relationships to Other Hazards-Cascading Events

Extreme Weather events can cause many cascading effects. Fire can break out as a result of damaged electrical equipment. Other problems and hazards associated with flooding and inclement weather include: utility disruptions, broken power lines lying on the ground, and communication system failures.

High winds often accompany winter storms and may cause significant damage to structures in the District by blowing down trees that have been killed or damaged by drought and disease or infestation. The eucalyptus and cypress trees found along Highway 1, the railroad right-of-way, and in scattered locations throughout the community present a moderate threat.

Plans and Programs in Place

The San Luis Obispo County Office of Emergency Services (OES) and the Five Cities Fire Authority, in coordination with local, state, and federal emergency response organizations, continually work to better prepare the residents for the impact of these types of emergency events.

First responder agencies, both law enforcement and fire, routinely train on handling the cascading effects that can result from events of this nature. The local chapter of the American Red Cross is prepared to assist citizens in shelter welfare issues.

The SLO Planning and Building Department stipulates and enforces codes and ordinances that ensure that buildings are constructed to prevent damage from extreme wind and weather events.

The National Weather Service uses a number of methods to get weather statements out to the general population. Examples include the Emergency Alert System, NOAA Weather Radio All Hazards (NWR), and newer smart phone Wireless Emergency Alerts (WEA). For certain significant adverse weather events, the County could potentially use the reverse 9-1-1 system. Early Warning System sirens are located throughout the Diablo Canyon Emergency Planning Zone Area.

Due to the unique and consistent weather patterns in the area, the National Weather Service (NWS) has broken the County into three weather forecast zones: San Luis Obispo County Central Coast, San Luis Obispo County Interior Valleys, and San Luis Obispo County Mountains. The NWS uses a multi-tier system of weather statements to notify the public of threatening weather conditions specific to these areas. These statements are used in conjunction with specific weather phenomena to convey different levels of risk. In order of increasing risk, these statements are:



Weather Related Terminology

- **Outlook** - A Hazardous Weather Outlook is issued daily to indicate that a hazardous weather or hydrologic event may occur in the next several days. The outlook will include information about potential severe thunderstorms, heavy rain or flooding, winter weather, extremes of heat or cold, etc., that may develop over the next seven days with an emphasis on the first 24 hours of the forecast. It is intended to provide information to those who need considerable lead time to prepare for the event.
- **Advisory** - An advisory is issued when a hazardous weather or hydrologic event is occurring, imminent, or likely. Advisories are for "less serious" conditions than warnings that may cause significant inconvenience, and if caution is not exercised could lead to situations that may threaten life or property. NWS may activate weather spotters in areas affected by advisories to help them better track and analyze the event.
- **Watch** - A watch is used when the risk of a hazardous weather or hydrologic event has increased significantly, but its occurrence, location, or timing is still uncertain. It is intended to provide enough lead time so those who need to set their plans in motion can do so. A watch means that hazardous weather is possible. People should have a plan of action in case a storm threatens and they should listen for later information and possible warnings especially when planning travel or outdoor activities. NWS may activate weather spotters in areas affected by watches to help them better track and analyze the event.
- **Warning** - A warning is issued when a hazardous weather or hydrologic event is occurring, imminent, or likely. A warning means weather conditions pose a threat to life or property. People in the path of the storm need to take protective action. NWS may activate weather spotters in areas affected by warnings to help them better track and analyze the event.
- **Statement** - A statement is either issued as a follow-up message to a warning, watch, or emergency, that may update, extend, or cancel the message it is following up or a notification of significant weather for which no type of advisory, watch, or warning exists.



Future Probability/Risk Assessment Conclusion

The planning area has a history of extreme weather, mostly winter storm related. These events can have significant impacts on the health and safety of the population and cause major property and infrastructure damage. These types of events include: winter storms, wind events, thunderstorms, and hailstorms. Given the wide range of exposure to a variety of extreme weather events, the significant past history indicates a high probability of these types of events reoccurring in the future. These events are typically short in duration.

Given the past history of both occurrence and damage, and based on the wide range of potential events, this section is rated as **Medium** in severity and **High** in probability.



VI. VULNERABILITY ASSESSMENT

A. DMA 2000 Requirements

DMA Requirement §201.6(c)(2)(ii):	The risk assessment shall include a description of the jurisdiction’s vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community.
DMA Requirement §201.6(c)(2)(ii)(A):	The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas.
DMA Requirement §201.6(c)(2)(ii)(B):	The plan should describe vulnerability in terms of an estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(i)(A) of this section and a description of the methodology used to prepare the estimate.
DMA Requirement §201.6(c)(2)(ii)(C):	[The plan should describe vulnerability in terms of] providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land decisions.
DMA Requirement §201.6(c)(2)(iii):	For multi-jurisdictional plans, the risk assessment must assess each jurisdiction’s risks where they vary from the risks facing the entire planning area.

B. Summary of Community’s Vulnerability

As outlined above, given the past history, the current conditions, and the overall life and property threat to the District, the Hazard Mitigation Planning Group has deemed the probability and severity of each hazard as follows:



Oceano Community Services District	Earth-quake	Extreme Weather	Drought	Flood	Tsunami
Probability	H	H	H	H	L
Severity	H	M	L	M	M

L = Low, M= Medium, H = High

The vulnerability assessment is a summary of the hazard’s impact to the community’s vulnerable structures. Community assets and development trends will be identified and assessed with respect to the developed hazard profiles to ascertain the potential amount of damage that could ensue from each identified hazard. This section will include: 1) A description of the critical buildings and infrastructure within the study areas including future building and land use decisions. 2) A general description of the extent of each hazard’s impacts to these vulnerable structures, 3) An estimate of the potential dollar losses to vulnerable structures, and 4) Vulnerable populations within the jurisdiction.

C. Critical Facilities and Infrastructure

Critical facilities and infrastructure are those systems within each community whose incapacity or destruction would have a debilitating effect on the community’s ability to recover subsequent to a major disaster. The following critical facility and infrastructure are categorized as follows:

1. **Emergency Services** for the health and welfare of the whole population (e.g., hospitals, police, fire stations, emergency operations centers, evacuation shelters, schools).
2. **Lifeline Utility Systems** such as potable water, wastewater, oil, natural gas, electric power and communications systems.
3. **Transportation Systems** including railways, highways, waterways, airways and city streets to enable effective movement of services, goods and people.
4. **High Potential Loss Facilities** such as power plants, dams and levees.



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Non-Critical Facilities

For the purpose of this plan, properties such as recreational facilities, parks, libraries, religious facilities, and historical buildings will be classified as non-critical facilities. Although their relevance to the District and its residents is undeniably significant, they are not classified as 'critical facilities' per the definition set in Executive Order 13010 (Critical Infrastructure Protection 1996).

Residential Facilities

Although personal residences are not by the above definition considered to be critical facilities, their relevance to these communities and its citizens is unquestionable. For that reason, they have been included in the District's vulnerability assessment.

Vulnerable Populations

Vulnerable populations reside within the Oceano Community Services District including the elderly, physically and mentally disabled, homeless, carless, and limited English speakers. Given the District's close proximity to the Diablo Canyon Nuclear Power Plant, a detailed special needs population list/inventory is completed each year and is immediately available to all first responders. A number of non-profit organizations and services assist these populations on a daily basis. Specific examples include Meals on Wheels, Five Cities Homeless Coalition, and the Oceano Boys & Girls Club. The county has a well-organized VOAD group which will act as an advocate for these vulnerable individuals during an emergency within the District.



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D. Jurisdictional Assets at Risk to Applicable Hazard

Assets at risk include: Buildings, Critical Facilities, Infrastructure, Private Property and Areas (Residential, Environmental, Historical and Economic)

Critical Facilities and Infrastructure	Oceano Address	Building and Content Value	Earthquake	Extreme Weather	Tsunami	Drought	Flood
Administration Building	1655 Front Street	\$500,000/300,00	X	X			
Sheriff Sub Station	1681 Front Street	\$1,500,000/1,000,000	X	X			
Fire Station	1655 Front Street	\$500,000/150,000	X	X			
Chlorinator Shed	1687 Front Street	\$5,000	X	X			
Warehouse	1935 Wilmar Street	\$200,000/90,000	X	X			
Shop/Field Office	1935 Wilmar Street	\$125,000/100,000	X	X			
Water Tank (Large)	1935 Wilmar Street	\$1,000,000	X				
Water Tank (Small)	1935 Wilmar Street	\$300,000	X				
Well # 4 (350 Feet)	1981 Wilmar Street	\$275,000				X	
Well # 6 (620 Feet)	1981 Wilmar Street	\$350,000				X	
Well # 7 (175 Feet)	1687 Front Street	\$200,000			X	X	X
Well # 8 (525 Feet)	1650 Front Street	\$250,000			X	X	X
Sewer Booster Station	1935 Wilmar Street	\$100,000	X				
Sewer Lift Station	555 Pier Street	\$400,000	X		X		X
Surge Tank	1935 Wilmar Street	\$15,000	X				

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23 Miles Water Service Lines	District	\$3,800,000	X				
18 Miles Wastewater Lines	District	\$2,000,000	X				
260 Fire Hydrants	District	\$1,300,000	X				
Residential Facilities: Approximately 3500 Housing Units	District	\$1,774,500 (\$338/sq. ft x average 1500 sq.ft.)	X	X		X	
Total Values		\$16,234,500					

E. Methodology Used

To determine the number of critical structures and infrastructure at risk, a combination of field surveys, aerial photos, GIS maps, and Google Earth software was used. The methodology used in preparing the Vulnerability Estimate consisted of determining the value of critical buildings and facilities from insurance property schedules. Critical infrastructure values were established by using actual replacement costs which were determined by recent comparable replacement projects.

F. Loss Estimations

Dollar losses to buildings and infrastructure vary depending upon the natural hazard occurring and the severity of the hazard. In general, earthquakes can extensively damage a wide area therefore critical structure and infrastructure losses should be estimated at a 100% value. Destruction from flooding takes place in specific areas and the damage is historically less severe than that of an earthquake. Thus, the estimated loss as a result of flooding should be calculated at the 50% level. Damage resulting from tsunamis should be calculated at 100% of structural value for those properties located within inundation areas. Extreme weather could impact any portion of the jurisdiction. Historical data indicates that these events are extremely localized and a 10% loss of the value of the structure damaged should be anticipated.

G. Development Trend Analysis

While the population of both San Luis Obispo County and the District is expected to grow moderately in the next five years, there are Land Use policies and elements within the County General Plan to help assure orderly development.



In addition, the Local Agency Formation Commission (LAFCO) is tasked with the mission to provide an orderly pattern of growth that reconciles the varied needs of the County. One of the fundamental principles of LAFCO is to ensure the establishment of an appropriate and logical municipal government structure for the distribution of efficient and appropriate public services. LAFCO Land Use objectives include:

- The discouragement of urban sprawl
- Preservation of the physical and economic integrity of agricultural lands
- Preservation of open space within urban development patterns
- Orderly formation and development of agencies by shaping local agency boundaries
- The minimization of agencies providing services to a given area
- Utilization of Spheres of Influence to guide future development of agency boundaries

All building and development activities occurring within the District are guided and permitted through the SLO County Planning Department with advice from the Oceano Advisory Committee. The District has no authority over planning and development, however the Oceano Advisory Committee (OAC) regularly meets and reports to the County Planning Commission on matters of planning and building for the community of Oceano exclusively. The entire area of the District, with the exception of creeks, small lakes and marshes, is developed in one form or another. Residential in-fill projects will continue to occur throughout the District and will consist primarily of planned single unit developments and a limited number of multi-family residential projects. Commercial development will also consist of infill or the redevelopment of existing parcels.

There are three sizable portions of land that are in high value agricultural production found within the District. Two are located within the Halcyon Historical District (Pike/Elm and S. Halcyon/Highway 1 areas) and are owned by the Temple of the People Theosophical religious group. These three large parcels could potentially be converted to commercial or residential use. However, they have a very high quality soil and are valued for their agricultural profitability. The two parcels found within the Halcyon Historical District would face even stricter land use planning scrutiny.

The District and the Five Cities Fire Authority have the capability to serve the needs of future development as it occurs.



VII. CAPABILITY ASSESSMENT

A. Overview

In developing the Capability Assessment, it is important to remember that a number of agencies will be involved in carrying out the identified mitigation measures. An important component of the mitigation strategy is an understanding of the resources available to the County, the District, and the Five Cities Fire Authority in order to mitigate the effects of each of the identified hazards. The Capability Assessment begins with a review of legal and regulatory capabilities, including ordinances, codes, and plans used to facilitate hazard mitigation activities. This assessment also describes the administrative and technical capability available to the jurisdictions. The third component of the Capability Assessment is each agency's ability to manage the funding required to implement mitigation strategies. This is followed by a discussion of the community's general willingness to implement mitigation measures. The final part of the Capability Assessment is a review of the physical assets available to respond to the emergency needs of the community.

B. Legal and Regulatory

California Special Districts are state agencies created for the local performance of a specific governmental or proprietary function, unlike cities and counties that perform a wide variety of functions for their citizenry. Special districts provide services and facilities within a defined boundary and are governed by a board.

The County and the District have the applicable building codes, zoning ordinances, subdivision regulations, Capital Improvement Plans, and other regulatory development guidelines which enable it to implement hazard mitigation activities and prevent repetitive losses within the District. The County of San Luis Obispo is a participant in the National Flood Insurance Program (NFIP). The NFIP delineates flood areas (100 and 500 year maps) and outlines how and where structures may be built in those areas.

California state law requires each city and county to adopt a general plan "for the physical development of the county or city, and any land outside its boundaries which bears relation to its planning" (Section 65300 of the California Government Code).

General plans in California are required to have seven mandatory elements, and the SLO County General Plan includes those seven plus several other optional elements for a total of eleven including: Land Use Coastal, Land Use Inland, Circulation, Housing, Conservation and Open Space, Noise, Safety, Parks and Recreation, Economic Development, Agricultural, and Off-Shore Energy.



Legal Authority

Local governments in California have a wide range of tools available to them for implementing mitigation programs, policies and actions. A hazard mitigation program can utilize any or all of the government powers granted by the State of California, which include:

- **General Police Power**

The general police power of the County is typically enacted and enforced with ordinances which define, prohibit, regulate or abate acts, omissions, or conditions detrimental to the health, safety, and welfare of the people, and to define and abate nuisances, including public health nuisances.

Since hazard mitigation can be included under the police power as protection of public health, safety and welfare, towns, cities and counties may include requirements for hazard mitigation in local ordinances. Local governments may also use their ordinance making power to abate “nuisances,” which could include any activity or condition making people or property more vulnerable to a hazard.

- **Building Codes and Inspection**

Construction within the County must meet the standards of the California Building Code. The County’s Planning and Building Department reviews proposed subdivisions and building plans, and conducts site inspections to ensure applicable codes are followed. Additionally, the FCFA reviews projects for enforcement of the California Fire Code.

- **Land Use Regulations**

Land use regulatory powers include planning, enacting and enforcing zoning ordinances, floodplain ordinances, and land division controls. San Luis Obispo County government controls the amount, timing, density, quality and location of new development in order to reduce a community’s vulnerability to naturally occurring hazards. Thus, unsafe development in hazard prone areas can be prevented through local planning, zoning and development review by the Planning and Building Department.

- **Acquisition/Eminent Domain**

California legislation empowers cities, towns and counties to acquire property for public purpose by gift, grant, devise, bequest, exchange, purchase, lease or eminent domain. The County can and has used acquisition as a tool for pursuing local mitigation goals. This reduces or eliminates the possibility of unsafe development occurring.



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- **Taxation**

California law gives local government the power to levy taxes and special assessments. The power of taxation extends beyond merely the collection of revenue, and can have a profound impact on the pattern of development in the community. California does not allow cities or counties to increase tax rates beyond the base rate, except with voter approval. A community can pursue voter approval of a bond or similar mechanism to increase the property tax to be used for a specific purpose. Often used for schools, the increase could be used for a fuel break program or other hazard reduction program. While voter approval of such measures is difficult to obtain it is not impossible.

- **Spending/Budget**

Local governments have the power to make expenditures in the public interest. Hazard mitigation principles can be made a routine part of all spending decisions made by the local government, including the adoption of budgets and a Capital Improvement Plan (CIP).

A CIP is a schedule for the provision of municipal or county services over a specified period of time. Capital programming, by itself, can be used as a growth management technique, with a view to hazard mitigation. By tentatively committing itself to a timetable for the provision of capital to extend services, a community can control growth to some extent, especially in areas where the provision of on-site sewage disposal and water supply are unusually expensive.

In addition to formulating a timetable for the provision of services, a local community can regulate the extension of and access to services. A CIP that is coordinated with extension and access policies can provide a significant degree of control over the location and timing of growth. These tools can also influence the cost of growth. If the CIP is effective in directing growth away from environmentally sensitive or high hazard areas, for example, it can reduce environmental costs.

C. Administrative and Technical

Both the County and the Oceano Community Services District have experienced and competent administrative and technical staff in place to expedite the mitigation actions identified. They possess technical expertise in the areas of planning, engineering, floodplain management, Geographic Information Systems (GIS), and both emergency and general management authority. Additionally, professional contractors with technical and administrative resources are available to assist the staff in implementing the hazard mitigation goals.



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D. Financial

In order to achieve the goals and objectives of the Mitigation Strategy, one or more of the following funding sources will be utilized: federal and state entitlements and grants, general fund, sales and property taxes, infrastructure user fees, impact fees, and new development impact fees. All the agencies involved have the necessary budgetary tools and practices in place to facilitate handling appropriate funds. However, local funding sources are currently very limited.

E. Political Will of Community

The Oceano community is comprised of residents, business owners and other key stakeholders with a vested interest in making their community safer from natural hazards. Local residents are knowledgeable about the natural hazards that have impacted their community in the past and are familiar with the natural hazards that could potentially impact their community and the concept of mitigation. For this reason, the community fully supports hazard mitigation strategies and is open to implementing changes that will make this district and its residents safer.

F. Physical Assets

Water and Wastewater

Readily available physical resources from the District's Water and Wastewater Departments include the following:

- 1 Vactor/Pump Unit
- 1 Ford F-550 Dump Truck
- 1 Ford F-150 Pickup Truck
- 2 Chevy 2500 Utility Trucks w/cranes
- 1 John Deere Tractor
- 1 John Deere Backhoe
- 1 Ingersoll-Rand Compressor
- 1 MQ Power Generator



Fire Service

Fire protection and emergency medical services are provided by the Five Cities Fire Authority, which is comprised of the Oceano CSD, and the Cities of Arroyo Grande, and Grover Beach. The population served is approximately 37,000 people over a 10 square mile area. There are three fire stations, with one located at 1655 Front Street in Oceano. The FCFA responded to 3,838 calls for service in 2017 with an average response time of six minutes.

Apparatus:

- Type I (Structural) Engines: 4
- Type II USAR/BSU: 1
- Type III (Wildland) Engines: 1
- Staff/Fleet Vehicles: 3
- Truck (100' Platform): 1
- Command Vehicles: 3
- Type VI Patrol: 1
- State OES Engine: 1

G. Ability to Expand/Implement Mitigation Strategies

The OCSD has very limited capability to improve existing policies and programs as a result of the small size of the jurisdiction along with budgetary constraints. These financial limitations will also prevent increasing current staffing levels and purchasing additional resources. That said, given the District's emphasis on protecting its small community, resources have been set aside as described below for the implementation of designated mitigation actions.



VIII. MITIGATION STRATEGY

A. DMA 2000 Requirements

DMA Requirement §201.6(c)(3)(i):	The hazard mitigation strategy shall include a description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.
DMA Requirement §201.6(c)(3)(ii):	The mitigation strategy shall include a section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.

B. 2019 Goals, Objectives and Mitigation Actions for Oceano Community Services District

Goal 1	Promote understanding and support for hazard mitigation by key stakeholders and the public within the Community of Oceano.
Objective 1	Educate key stakeholders and the public to increase awareness of hazards including earthquake, wind, winter storms, hail, freeze, heat, drought, tsunami and flood events and opportunities for mitigating hazards.
Mitigation Action 1.A	Through newsletters, speaking engagements and other public contacts, continue to educate the general public and key stakeholders on the District’s issues, responsibilities, and current efforts and successes in the area of disaster preparedness.
Mitigation Action 1.B	Utilize the District’s website to inform the public of hazard mitigation efforts, disaster preparedness messages, and emergency situation information.



Goal 2	Ensure that future development is protected from natural disasters including earthquakes, wind, winter storms, hail, freeze, heat, drought, tsunamis and flooding.
Objective 2	Work with County Planning staff to limit new development in hazardous areas. Build to standards that will prevent or reduce damage from naturally occurring events.
Mitigation Action 2.A	Educate the Oceano Advisory Committee (OAC) members and elected OCSD BOD members on the importance of keeping current on trends and developments in disaster preparedness.
Mitigation Action 2.B	Encourage OAC members to attend local seminars and lectures on naturally occurring hazards so that they may better understand and assist County Planning staff as they process future development.
Mitigation Action 2.C	In order to better protect life and property, continue to accumulate from the county accurate and comprehensive series of maps and data sets that pertain to the District’s earthquake, tsunami and flood threats.
Goal 3	Build and support local capacity and commitment to minimize the District’s vulnerability to potential naturally occurring hazards.
Objective 3.1	Improve existing capabilities of the OCSD staff to manage emergency situations.
Objective 3.2	Enhance the safety of OCSD residents and staff.
Objective 3.3	Improve the District’s communication systems so that in the event of a major emergency it will continue to operate effectively (redundancy and standby power).
Objective 3.4	Improve the District’s auxiliary power systems so that in the event of a major power failure all systems will continue to operate effectively (redundancy and standby power).

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Mitigation Action 3.1A	Develop a Continuity of Operations Plan (COOP) for the District and train all essential staff on their roles and responsibilities as delineated in the Plan.
Mitigation Action 3.1B	Update the existing Emergency Operations Plans and supporting documents to ensure coordination with the County Emergency Operations Center (EOC), Emergency Response Plans and SOP's.
Mitigation Action 3.1C	Train all District department managers and key staff members on their roles and responsibilities in emergency management and the District DOC as outlined in independent study courses FEMA/National Incident Management System - ICS 100, 700, and 800.
Mitigation Action 3.1D	Working with SLO County OES, increase participation by District staff members in disaster drills put on by the County.
Mitigation Action 3.1E	Send one District management employee to the California Specialized Training Institute (CSTI) Public Information Officer Course.
Mitigation Action 3.1F	Support the efforts of the FCFA in the implementation of the Five Year Strategic Plan.
Mitigation Action 3.2A	In order to ensure that employees are available to assist during a major emergency, have all OCSD departments adopt a Family Support Plan. (Note: A model plan is available through SLO County OES.)
Mitigation Action 3.2B	Make improvements to wastewater collection systems by replacing or relining collection pipes so as to reduce sewer overflows and limit inflow and infiltration subsequently reducing the public health threat.
Mitigation Action 3.2C	Train staff on the proper techniques for containing sewer system overflows (SSO Protocols).



Mitigation Action 3.3A	Work with the South County ARES/RACES group in developing a Communications Master Plan for re-establishing District’s radio communications systems.
Mitigation Action 3.3B	Utilize the South County ARES/RACES group expertise, obtain and install a base station radio, mobile radios, and a standby power source to facilitate communications throughout the District as outlined in the Communications Master Plan.
Mitigation Action 3.4A	Develop a plan to provide standby power to the following essential service systems/functions: water well #8, the Administration Building, and the Sheriff’s Substation.
Mitigation Action 3.4B	Collaborate with the Sheriff’s office on funding sources for a standby power system for the substation and the administration building.
Mitigation Action 3.4C	Work with PG&E and County OES to explore potential funding sources for an auxiliary power source for water well # 8.
Goal 4	Minimize the level of damage and losses to people, existing and future critical facilities and infrastructure due to flooding.
Objective 4.1	Enhance the ability of community assets, particularly critical facilities, located in the 100-year floodplain to handle existing and projected flood levels.
Mitigation Action 4.1A	Support the efforts of the county in maintaining compliance with the National Flood Insurance Program (NFIP) requirements.
Mitigation Action 4.1B	Through the Development Review process (OAC), ensure the County restricts construction of essential service facilities in the 100-year flood plain.
Mitigation Action 4.1C	Continue to work cooperatively with the county, state, and federal flood related agencies for funding improvements through grant and agency programs.



Mitigation Action 4.1D	Support the County’s efforts to improve the drainage from the Front Street/Hwy. 1 flooding areas through a combination of vegetation management and storm drain improvements along Hwy. 1, moving the water to the Arroyo Grande Creek.
Mitigation Action 4.1E	Relocate the District’s water and sewer lines that will be impacted by the Front Street/Hwy. 1 storm drain project.
Mitigation Action 4.1F	Support the efforts of the County and the Flood Control District in upgrading the Arroyo Grande Creek levee on both the north and south sides through a combination of vegetation and sediment management and raising both the north and south sides of the levee in a number of places.
Goal 5	Minimize the level of damage and losses to people, existing and future critical facilities and infrastructure due to earthquakes.
Objective 5.1	Continue public education efforts so as to better prepare the citizens of the District from the effects of a significant earthquake event.
Objective 5.2	Enhance the ability of community assets, particularly critical facilities, to survive the impacts of a significant earthquake.
Objective 5.3	Enhance the ability of OCSD administration and FCFA first responders to manage the impacts of a significant earthquake.
Mitigation Action 5.1	Working with SLO County OES, increase the public’s awareness and participation in earthquake preparedness activities such as the annual Great California Shake-Out drill.
Mitigation Action 5.2A	Continue replacing the water lines that are most vulnerable to an earthquake as delineated in the Cannon study.
Mitigation Action 5.2B	As delineated in the RRM Facilities Study, develop a replacement schedule for buildings found to be vulnerable to an earthquake.



Mitigation Action 5.3A	Support the FCFA efforts to train fire department staff in the California State Fire Marshal’s Rescue System 1 and 2 programs.
Mitigation Action 5.3B	Send one District management employee to the California Specialized Training Institute (CSTI) Introduction to Earthquake Management Course.
Goal 6	Limit risk to, and impacts from hazardous materials spills, sewage spills, intentional discharges, illegal disposals, transportation accidents, or system failures.
Objective 6.1	Support the efforts of the county in the continuing efforts to manage the use, sale, distribution and disposal of hazardous materials in the District.
Objective 6.2	Improve emergency response efforts in the control and clean-up of accidental spills and releases of both hazardous materials and sewage spills.
Mitigation Action 6.1A	Educate community members on the impacts associated with disposing of household hazardous materials on the wastewater system and provide advice on proper storage and disposal techniques.
Mitigation Action 6.1B	Continue efforts to educate applicable employees on the handling, use, storage and disposal of hazardous materials utilized in the workplace.
Mitigation Action 6.2	Support the FCFA in training 2 first responders to the Hazardous Materials Technician Level (CSTI)
Goal 7	Minimize the level of damage and losses to people, existing and future critical facilities and infrastructure due to a tsunami event.
Objective 7.1	Assist County OES in continuing their public education efforts to better prepare the citizens and visitors of the District from the effects of a significant tsunami event.
Objective 7.2	Enhance the ability of community assets, particularly critical facilities, to survive the impacts of a significant tsunami event.

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Mitigation Action 7.1	Continue working with County OES in the distribution of the existing tsunami public education pamphlet/map to the visitors and residents in the Tsunami inundation zone.
Mitigation Action 7.2	Work with County OES and the California Coastal Commission to post evacuation route signage along Pier Street, and in the Airport and Oceano Campground areas.



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C. How Mitigation Goals Address Existing and New Buildings and Infrastructure

The following tables demonstrate how the proposed mitigation actions take into account both existing and future buildings and infrastructure.

Existing Buildings and Infrastructure:

MITIGATION GOALS	EXISTING BUILDINGS AND INFRASTRUCTURE					
	Electrical and Power Infrastructure	Water and Wastewater Management	Communication Facilities	Critical Roads and Bridges	Essential Service Facilities	Public Structures
Goal 1-General Mitigation: Promote understanding of hazard mitigation	X	X	X	X	X	X
Goal 2-General Mitigation: Protect future development.	X	X	X	X	X	X
Goal 3-General Mitigation: Build local capacity and commitment.	X	X	X	X	X	X
Goal 4-Flood: Minimize damage due to flooding.	X	X		X	X	X
Goal 5-Earthquake: Minimize the level of damage and losses to due to geological events.	X	X	X	X	X	X

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Goal 6 – Hazardous Materials: Limit risk from hazardous materials spills.		X				
Goal 7- Tsunami: Minimize damage and loss of life from a tsunami event.	X	X		X	X	X

Future Buildings and Infrastructure:

MITIGATION GOALS	FUTURE PROJECTS / BUILDINGS AND INFRASTRUCTURE					
	Residential Subdivisions	Various mixed use projects (residential and commercial)	Ag Clusters (residential, open space, and Ag uses)	Commercial and Industrial Projects	Essential Service Facilities	Public Structures
Goal 1-General Mitigation: Promote understanding of hazard mitigation	X	X	X	X	X	X
Goal 2-General Mitigation: Protect future development.	X	X	X	X	X	X

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Goal 3-General Mitigation: Build local capacity and commitment.	X	X	X	X	X	X
Goal 4-Flood: Minimize damage due to flooding.	X	X	X	X	X	X
Goal 5-Earthquake: Minimize the level of damage and losses to due to geological events.	X	X	X	X	X	X
Goal 6 –Hazardous Materials: Limit risk from hazardous materials spills.	X	X	X	X	X	X
Goal 7-Tsunami: Minimize damage and loss of life from a tsunami event.	X	X	X	X	X	X



IX. MITIGATION ACTION IMPLEMENTATION

A. DMA 2000 Requirements

DMA Requirement §201.6(c)(3)(iii):	The mitigation strategy section shall include an action plan describing how the actions identified in section (c)(3)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.
DMA Requirement §201.6(c)(3)(iv):	For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.
DMA Requirement §201.6(c)(4)(i):	The plan maintenance process shall include a section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.
DMA Requirement §201.6(c)(4)(ii):	The plan shall include a process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.
DMA Requirement §201.6(c)(4)(iii):	The plan maintenance process shall include a discussion on how the community will continue public participation in the plan maintenance process.

B. Prioritization of Mitigation Actions

Each mitigation action was prioritized based on:

- The probability of the threat occurring
- The effectiveness of the mitigation action. To determine this, the contractors examined each mitigation action’s effectiveness in protecting lives, preventing injury, preserving property, eliminating or reducing damage to critical facilities, residences and infrastructure.



- The practicality of carrying out the mitigation action within the jurisdiction. To determine this, the following factors were considered: technical and administrative capabilities, financial resources, environmental impact, the impact on the District, social acceptance, political support, and mitigation strategies that reflect community objectives.

This gave rise to the development of an overall relative risk value that resulted in ratings of **HIGH**, **MEDIUM** and **LOW** for each of the mitigation actions. The resultant prioritization was presented to key stakeholders and lengthy discussions were held to ensure that the results were indeed applicable to the priorities and capabilities of the District.

Mitigation Action Prioritization Worksheet

Mitigation Action	Hazard Risk Minimal=1 Moderate=2 High=3	Mitigation Action Effectiveness Minimal=1 Moderate=2 High=3	Mitigation Action Practicality Minimal=1 Moderate=2 High=3	Cost Benefit Analysis Minimal=1 Moderate=2 High=3	Total	Overall Ranking
1.A	2	3	2	2	9	Medium
1.B	2	3	2	2	9	Medium
2.A	2	3	2	2	9	Medium
2.B	2	3	2	2	9	Medium
2.C	1	1	2	2	6	Low
3.1A	2	3	3	3	11	High
3.1B	2	3	3	3	11	High
3.1C	2	2	2	3	9	Medium
3.1D	2	3	2	3	10	High
3.1E	2	2	3	3	10	High
3.1F	3	2	2	2	9	Medium
3.2A	1	1	2	2	6	Low
3.2B	2	3	3	2	10	High

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3.2C	2	3	3	2	10	Medium
3.3A	1	1	2	2	6	Low
3.3B	1	2	2	2	7	Medium
3.4A	2	2	2	2	8	Medium
3.4B	3	2	2	2	9	Medium
3.4C	3	2	2	2	9	Medium
4.1A	1	1	1	2	5	Low
4.1B	2	2	1	2	6	Low
4.1C	2	3	3	3	11	High
4.1D	3	3	2	3	11	High
4.1E	3	3	3	2	11	High
4.1F	2	3	2	3	10	High
5.1	2	2	3	2	9	Medium
5.2A	2	3	3	2	10	High
5.2B	3	2	3	3	10	High
5.3A	1	2	2	1	6	Low
5.3B	2	2	3	3	10	Medium
6.1A	1	2	2	1	6	Low
6.1B	2	2	3	3	10	Medium
6.2	1	1	2	1	5	Low
7.1	1	2	2	3	8	Medium
7.2	1	2	1	2	5	Low

Priority Ranking Values:

4 – 6 = Low

7 – 9 = Medium

10 – 12 = High



C. Action Plan

The following Action Plan was presented to the District, the Hazard Mitigation Planning Group, the general public and the OCSD Board of Directors. The Action Plan delineates what agency is responsible for carrying out each mitigation action, how it will be funded and a target completion date to ensure that the newly constructed plan is implemented and remains an active and relevant document. Actual implementation may be dependent upon funding availability.

ACTION PLAN FOR 2019 MITIGATION ACTIONS

MITIGATION ACTION		IMPLEMENTATION STRATEGY			
ID	DESCRIPTION	RESPONSIBLE DEPARTMENT	FUNDING SOURCES	COMPLETION DATE	PRIORITY
1.A	Educate public and Stakeholders about opportunities for mitigating hazards	ALL (All indicates all OCSD Board Members and Staff)	Administration and General Fund	Ongoing	Medium
1.B	Educate staff on current disaster preparedness developments	ALL	Administration and General Fund	Ongoing	Medium
2.A	Educate OAC and OCSD-BOD on trends and developments	Administration, Oceano Advisory Committee, and Board of Directors	Administration and General Fund	Ongoing	Medium
2.B	Educate OAC on hazard profiles and development review process	Administration, Oceano Advisory Committee, and Board of Directors	None Required	Ongoing	Medium
2.C	Compile Maps/Data Sets on Hazards	Utility Systems Supervisor	None Required	01/01/2019	Low

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3.1A	Continuity of Operations Plan	OCSD Administration	None Required	07/01/2019	High
3.1B	Update Emergency Plan	Utility Systems Supervisor	None Required	07/01/2019	High
3.1C	Training – NIMS and ICS	ALL	None Required	Yearly	Medium
3.1D	Attend Disaster Drills	ALL	None Required	Yearly	High
3.1E	PIO Training (CSTI)	Administration	Grant	07/01/20	High
3.1F	FCFA 5 year Strategic Plan	OCSD BOD and Administration	None Required	Ongoing	Medium
3.2A	Family Support Plan	OCSD Administration	None Required	07/01/2019	Low
3.2B	Wastewater Pipe Repair	Utility Systems Supervisor	Sewer Fund	Ongoing	High
3.2C	Train Staff – SSO Protocols	Utility Systems Supervisor	Sewer Fund	Ongoing	Medium
3.3A	Communications Master Plan	OCSD Admin.	None Required	09/01/2019	Low
3.3B	Radio System Improvements	OCSD Admin.	None Required / Equipment Fund	09/01/2020	Medium
3.4A	Study Standby Power Systems	OCSD Admin.	None Required	10/01/2019	Medium
3.4B	Power Sheriff/Admin Building	OCSD Admin.	Grant/General Fund	10/01/2021	Medium
3.4C	Power Well # 8	Utility Systems Supervisor	Grant/Water Fund	10/01/2020	Medium

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4.1A	National Flood Insurance Program	SLO County Planning Staff and OCSD admin.	None Required	Ongoing	Low
4.1B	Flood Zone Development Restrictions	OCSD Administration, Oceano Advisory Committee, and Board of Directors	None Required	Ongoing	Low
4.1C	Funding Flood Improvements	SLO County Public Works Staff	Grants and Flood Control District Funds	Ongoing	High
4.1D	Hwy. 1 Flood Project	SLO County Public Works Staff	None Required	Ongoing	High
4.1E	Hwy. 1 Infrastructure-Utility Relocation	OCSD BOD, Admin and Utility Systems Supervisor	Water/Sewer Funds	07/01/2019	High
4.1F	Levee Maintenance	SLO County Public Works	Grants and Flood Control District Funds	04/01/2019	High
5.1	Earthquake Drill	ALL	None Required	04/01/2020	Medium
5.2A	Pipe Repair/Replace	OCSD Admin and Utility Systems Supervisor	Water/Wastewater funds/Grants and loans	Ongoing	High
5.2B	Facilities Replacement	OCSD Admin and Utility Systems Supervisor	Water/Wastewater funds/Grants and loans	Ongoing	High
5.3A	FCFA Rescue Training	Five Cities Fire Authority/Board of Directors	None Required	Yearly	Low

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5.3B	Earthquake Management (CSTI)	All	Grant/General Fund	Yearly	Medium
6.1A	Educate – Hazardous Materials	Five Cities Fire Authority/OCSD Board of Directors	None Required	07/01/2019	Low
6.1B	Hazardous Materials Handling	Water and Wastewater Staff	None Required	01/01/2019	Medium
6.2	FCFA Hazardous Materials Training	Five Cities Fire Authority and OCSD Board of Directors	None Required	Yearly	Low
7.1	Educate -Tsunami Plan	OCSD Admin.	None Required	Ongoing	Medium
7.2	Evacuation Route	OCSD Admin.	None Required	07/01/2020	Low

D. Implementation Through Existing Plans and Programs

The Oceano Community Services District adheres to comprehensive land use planning and building codes provided by San Luis Obispo County Planning Department to guide and control development within the District. This Hazard Mitigation Plan will be made available to all those responsible for the County’s General Plan development mechanisms to ensure that consistency is maintained. The Oceano Advisory Committee reports directly to the County Planning Department on matters relating to building and development. Both the Oceano Advisory Committee and County Planning Department members were involved in the construction of this plan.

The District has a number of policies and procedures, purchasing guidelines, and capital improvement procedures currently in place. The Mitigation Actions outlined in this Plan will be incorporated into those documents under the direction of the OCSD General Manager.

Mitigation Actions have been assigned to a number of specific individuals, departments and County jurisdictions. These individual actions will fall under the general administrative oversight of the governing body. Should technical expertise not be available to these individuals or departments, the County Office of Emergency Services is committed to, when possible, coordinating the resources of the County to assist with implementation of the



mitigation actions within the jurisdiction. The general administrative oversight of this Hazard Mitigation Plan rests with the Oceano Community Services District General Manager.

E. Continued Public Involvement

DMA Requirement §201.6(d)(3): A local jurisdiction must review and revise its plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit if for approval within 5 years in order to continue to be eligible for mitigation project grant funding.

The Oceano Community Services District recognizes the importance of involving the public in the ongoing Hazard Mitigation Plan review and updating process. Resultantly, the following actions have been taken:

- The District website has been posting the plan and updating the postings as changes are implemented. Their website has let the public know that the Plan is available for general public viewing and comment.
- A hard copy is available at the OCSD office for public viewing as requested.

F. Plan Monitoring, Evaluating and Updating

The mitigation plan must reflect current conditions in order to continue to be an effective representation of the Oceano Community Services District's overall strategy for reducing its risks from natural hazards. Monitoring and evaluating the plan will occur annually during the District's yearly budget review process each Spring to make certain that the goals and objectives for the community are current and mitigation activities are being budgeted and fully implemented.

To ensure that regular review and update of this Hazard Mitigation Plan occurs on an annual basis, the following actions will be taken:

- The Oceano Community Services District General Manager will in his annual report to the OCSD Board of Directors (CCSD), include an update on the goals and objectives of the plan.
- Following input from board members, the OCSD General Manager will communicate his findings to the Hazard Mitigation Planning Group. In this manner,



the Board, the General Manager, and Planning Group members can ensure that the plan components are up-to-date and meet current realities.

The Planning Group will provide the foundation for ongoing mitigation within the community through engagement and accountability in the plan's progress. They will annually monitor and review each goal and objective to evaluate its:

- Relevance to current and evolving situations within the District
- Consistency with changes in local, state and federal policy

Under the direction of the OCSD General Manager, the Planning group will make certain that the mitigation goals are being implemented in accordance with the Plan and also review the risk assessment component of the plan to ascertain if the information needs to be updated or modified. They will report on the:

- Current status of their mitigation actions
- How coordination efforts are proceeding
- Implementation processes that worked well
- Any difficulties encountered
- Any strategies in need of revision

If the plan review leads the Hazard Mitigation Planning Group to determine that modifications are necessary, then the OCSD General Manager will initiate a plan amendment.



Attachment A: Definition of Terms/Acronyms

DEFINITION OF TERMS

Asset

Any natural or human-caused feature that has value, including, but not limited to people; buildings; infrastructure like bridges, roads, and sewer and water systems; lifelines like electricity and communication resources; or environmental, cultural, or recreational features like parks, dunes, wetlands, or landmarks.

Critical Facilities

Facilities that are critical to the health and welfare of the population and that are especially important following hazard events. Critical facilities include, but are not limited to, shelters, police and fire stations, and hospitals.

Disaster Mitigation Act of 2000

A law signed by the President on October 30, 2000 that encourages and rewards local and state pre-disaster planning, promotes sustainability as a strategy for disaster resistance, and is intended to integrate state and local planning with the aim of strengthening statewide mitigation planning.

Emergency Response Plan

A document that contains information on the actions that may be taken by a governmental jurisdiction to protect people and property before, during, and after a disaster.

Federal Emergency Management Agency (FEMA)

Part of the Department of Homeland Security's Emergency and Response Directorate, FEMA was created to provide a single point of accountability for all Federal activities related to disaster mitigation and emergency preparedness, response and recovery.

Flood Insurance Rate Map (FIRM)

Map of a community, prepared by FEMA, that shows the special flood hazard areas and the risk premium zones applicable to the community.

Frequency

A measure of how often events of a particular magnitude are expected to occur. Frequency describes how often a hazard of a specific magnitude, duration, and/or extent typically occurs, on average.

Geographic Information Systems (GIS)

A computer software application that relates physical features on the earth to a database to be used for mapping and analysis.



Hazard Event

A specific occurrence of a particular type of hazard.

Hazard Mitigation

Cost effective measures taken to reduce or eliminate long-term risk associated with hazards and their effects.

Hazard Profile

A description of the physical characteristics of hazards and a determination of various descriptors including magnitude, duration, frequency, probability, and extent.

HAZUS

A GIS-based nationally standardized earthquake loss estimation tool developed by FEMA.

Mitigate

To cause to become less harsh or hostile; to make less severe or painful. Mitigation activities are actions taken to eliminate or reduce the probability of the event, or reduce its severity of consequences, either prior to or following a disaster/emergency.

100-Hundred Year Floodplain

Also referred to as the Base Flood Elevation (BFE) and Special Flood Hazard Area (SFHA). An area within a floodplain having a 1 percent or greater chance of flood occurrence in any given year.

Repetitive Loss Property

A property that is currently insured for which two or more National Flood Insurance Program losses (occurring more than ten days apart) of at least \$1000 each have been paid within any 10-year period since 1978.

Richter Magnitude Scale

A logarithmic scale devised by seismologist C.F. Richter in 1935 to express the total amount of energy released by an earthquake. While the scale has no upper limit, values are typically between 1 and 9, and each increase of 1 represents a 32-fold increase in released energy.

Risk

The estimated impact that a hazard would have on people, services, facilities, and structures in a community; the likelihood of a hazard event resulting in an adverse condition that causes injury or damage. Risk is often expressed in relative terms such as a high, moderate, or low likelihood of sustaining damage beyond a particular threshold due to a specific type of hazard event. It also can be expressed in terms of potential monetary losses associated with the intensity of the hazard.



Vulnerability

Describes how exposed or susceptible to damage an asset is. Vulnerability depends on an asset's construction, contents, and the economic value of its functions. Like indirect damages, the vulnerability of one element of the community is often related to the vulnerability of another. For example, many businesses depend on uninterrupted electrical power—if an electric substation is flooded, it will affect not only the substation itself, but a number of businesses as well. Often, indirect effects can be much more widespread and damaging than direct effects.

Vulnerability Analysis

The extent of injury and damage that may result from a hazard event of a given intensity in a given area. The vulnerability analysis should address impacts of hazard events on the existing and future built environment.

Vulnerable Populations

Any segment of the population that is more vulnerable to the effects of hazards because of things such as lack of mobility, sensitivity to environmental factors, or physical abilities. These populations can include, but are not limited to, senior citizens and school children.



Acronym	Definition
CGS	California Geological Survey
Cal EPA	California Environmental Protection Agency
Caltrans	California Department of Transportation
CAL Fire	California Department of Forestry and Fire Protection
CDF	California Department of Forestry and Fire Protection
CDHS	California Department of Health Services
CFR	Code of Federal Regulations
CGS	California Geological Survey
CISN	California Integrated Seismic Network
CSSC	California Seismic Safety Commission
DFG	State Department of Fish and Game
DHS	Department of Homeland Security
DWR	Department of Water Resources
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FMA	Flood Mitigation Assistance
FMP	Floodplain Management Plan
FRAP	Fire and Resource Assessment Program
GIS	Geographic Information System
HMGP	Hazard Mitigation Grant Program
LHMP	Local Hazard Mitigation Plan
NFIP	National Flood Insurance Program
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Services
OES	Governor's Office of Emergency Services
SEMS	Standardized Emergency Management System
SFHA	Special Flood Hazard Area
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey



Attachment B: Notice to Neighboring, Local and Regional Agencies

The following notices were sent to the City of Arroyo Grande, the City of Grover Beach, the City of Pismo Beach, San Luis Obispo County Office of Emergency Services and Port San Luis Harbor District.

Category Five Professional Consultants, Inc.



June 4, 2018

Dear Neighboring Community:

The Oceano Community Services District will be constructing a Local Hazard Mitigation Plan in order to uncover effective ways to reduce the jurisdiction's vulnerability to naturally occurring hazards. A Hazard Mitigation Planning Group has been formed comprised of community stakeholders. We will be holding a kick-off meeting on Thursday, June 7th at the Oceano Community Services District Office at 1655 Front Street in Oceano. We invite you to attend this meeting and participate in this process.

For more information and comments please contact the District's consultant for the project, Bob Neumann at 805-441-5469 or via email at bob@cafive.com.

Thank You,

Robert F Neumann and Sheri Eibschutz
Category Five Professional Consultants, Inc

Category Five Professional Consultants, Inc.
Post Office Box 13736
San Luis Obispo, CA 93406
E-mail: bob@cafive.com, sheri@cafive.com
Phone: 805.441.5469
www.cafive.com



Attachment C: Public Forum Notice

Category Five Professional Consultants, Inc.



October 24, 2018

Dear Neighboring Community:

The Local Hazard Mitigation Plan recently constructed for the Oceano Community Services District will be presented to the general public and neighboring jurisdictions at an Oceano Community Outreach event held on November 17, 2018 at the Oceano Community Center located at 1425 19th Street in Oceano. From 11:20 to 11:50 a.m., the Plan will be presented to the general public. Category Five Professional Consultants will describe how the plan was put together, what it entails, in addition to providing a detailed description of the mitigation goals and actions that are being proposed for this community. From 12:00 to 1:00 p.m., the public will have an opportunity to ask questions and comment on the plan.

We invite you to attend this community outreach event and provide us with your feedback.

Thank You,

Robert F Neumann and Sheri Eibschutz
Category Five Professional Consultants, Inc.

Category Five Professional Consultants, Inc.
Post Office Box 13736
San Luis Obispo, CA 93406
E-mail: bob@cafive.com, sheri@cafive.com
Phone: 805.441.5469
www.cafive.com



Attachment D: Public Forum Community Notice



Sponsors: The Oceano Community Services District, the County of San Luis Obispo and many local government and non-profit agencies who serve Oceano.

The Event: Community members will have the opportunity to meet with the representatives, learn about, discuss and provide feedback regarding current efforts in Oceano:

<i>Water</i> Reliability & Reclaimed Water	<i>Energy</i> Efficiency, Solar & New Electric Rates	<i>Infrastructure</i> Drainage & replacing leaky pipes	<i>Planning</i> Hazard Mitigation & Development
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When: Saturday, November 17, 2018 | 10 AM- 1 PM

Where: Oceano Community Center - 1425 19th St., Oceano

Our lead organizers, presenters and supporters include...



Additional participants include...

Coastal San Luis RCD | CAPSLO | Sun Work | PG&E | One Cool Earth
Oceano Beach Community Association | Habitat for Humanity