

1. UNINCORPORATED CONTRA COSTA COUNTY

1.1 HAZARD MITIGATION PLAN POINT OF CONTACT

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1.2 JURISDICTION PROFILE

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation**—1850
- **Current Population**—1,139,513 as of January 1, 2017 (California Department of Finance)
- **Population Growth**—Contra Costa County should continue to experience a steady rate of growth, with an estimated population increase of 27.6 percent by 2040.
- **Location and Description**—Contra Costa County is major metropolitan area east of San Francisco. The county has a total area of 802 square miles, of which 720 square miles is land and 82 square miles is water. It is bounded on the south and west by Alameda County; on the northwest by San Francisco Bay (San Francisco and Marin Counties); on the north by San Pablo Bay, the Carquinez Strait, and Suisun Bay (Solano and Sacramento Counties); and on the east by the San Joaquin River (San Joaquin County).
- **Brief History**—Contra Costa County was incorporated in 1850 as one of the original 27 counties of the state. The County's Spanish language name translates as "opposite coast," indicating its location opposite San Francisco on San Francisco Bay. The County originally encompassed the entire East Bay area. In 1853 the southern portion of the County was detached to form Alameda County. Coal was discovered near Pittsburg in the early 1850s. The Mount Diablo Coal Field was the most extensively mined coal deposit in California. From the 1860s to the beginning of the 20th century, it is estimated that 4 million tons of coal were extracted from the area. Railroads are also an important part of the County's history. In 1901, the Santa Fe Railroad, now BNSF Railway, selected Richmond for its western terminal. During the late 1800s and early 1900s, industry moved into the County: Union Oil constructed a refinery in Rodeo in 1896; a U.S. Steel mill opened in Pittsburg in 1910; Standard Oil, later to become Chevron, moved to Richmond; and Shell Oil built a refinery in Martinez. Great Western Electro-Chemical, which later became Dow, opened in Pittsburg in 1916. Contra Costa County played a significant role in World War II. Richmond was a major shipbuilding center, the U.S. Steel mill in Pittsburg produced casting for the shipyards, Camp Stoneman (Pittsburg) was a troop staging area from 1942 to 1957, wartime pilots trained at what is now Concord/Buchanan Field Airport, and Port Chicago was a major munitions depot. Saint Mary's College Pre-Flight School trained approximately 15,000 recruits in Moraga from June 1, 1942, until it was decommissioned on June 30, 1946. Many workers who migrated to the County to work in the shipyards remained after the war ended. Veterans who passed through the County during the war returned to become residents.

Farming has always been an important part of the County's history. Cattle ranching has been a part of the County's economy since the days of the Spanish land grants. Wheat has been grown in the County since the mid-1800s. However, a steady decline in world wheat prices led to a gradual transition from wheat to fields to vineyards and orchards. Prior to Prohibition, Martinez was home to many wineries, including Christian Brothers Wineries, which started crushing grapes for sacramental wine in Martinez in 1882. Today, the County is home to vineyards that produce award-winning wines. The total gross value of agriculture crops and products in 2015 was \$128,507,000. Several categories exceeded \$1 million in value (in decreasing order): cattle and calves, tomatoes, sweet corn, miscellaneous vegetables, grapes, rangeland, field corn, alfalfa, walnuts, miscellaneous field crops, cherries, peaches, apricots, and wheat. Today, the major industries are petroleum (Chevron being one of the largest employers in the County), chemical, bio-medical, healthcare services, banking, communication, transportation (shipping/rail/pipelines), retail services, higher education (several private colleges), and agriculture. Major employers in the County include the following governmental entities: Contra Costa County, three junior colleges (Diablo Valley, Contra Costa Community, Los Medanos), California State University East Bay, and the Contra Costa Regional Medical Center (one of eight remaining County hospitals in the state).

- **Climate**—In Contra Costa County, average rainfall ranges from 13.25 inches in Antioch (60 feet above sea level) to 23.84 inches at Mount Diablo Junction (2,170 feet above sea level). Martinez (40 feet above sea level) averages 19.32 inches. The average snowfall is 0 inches, except at higher elevations (Mount Diablo Junction averages 1.5 inches per year). The average number of days with precipitation ranges from 55 at Antioch to 66 at Mount Diablo, with Martinez averaging 63. The average number of sunny days (cloud cover less than 8/10) is 260. The average high temperature in July ranges from 71 at Richmond (20 feet above sea level) to 91 in Antioch. The average low in January ranges from 37 at Antioch to 43 at Richmond. The vast majority of rainfall occurs between October and May. Analysis of long-term precipitation records indicates that wetter and drier cycles lasting several years are common in the region. Severe, damaging rainstorms occur in the Bay Area at a frequency of about once every three years. The western United States periodically experiences two distinct weather patterns that can cause severe storms and heavy precipitation:
 - El Nino—A warm ocean current that typically appears around late December and lasts for several months, but may persist into May or June. The warm current influences storm patterns around the globe. As a result, these climate events commonly bring heavy rains and blustery storms and, in some locations, drought. During the past 40 years, nine El Nino events have affected the western coasts of North and South America.
 - Pineapple Express—A Pacific Ocean subtropical jet stream that brings warm moist air from Hawaii into the region. The combination of moisture-laden air, atmospheric dynamics and orographic enhancement that results as this air passes over the mountain ranges of the West Coast cause some of the region's most torrential rains.
- **Governing Body Format**—The Contra Costa County seat is located in Martinez. The County is governed by a five-member Board of Supervisors, each of whom is elected to represent a supervisorial district. In addition to the five Board members, six County department heads are voted into office via County-wide elections: Assessor, Auditor-Controller, Clerk-Recorder, District Attorney, Sheriff-Coroner, and Treasurer-Tax Collector. The Board of Supervisors assumes responsibility for the adoption of this plan; the Contra Costa County Office of Emergency Services will oversee its implementation.

1.3 DEVELOPMENT TRENDS

Table 1-1 presents growth projections for the County. Contra Costa should continue to experience a steady rate of growth, with an estimated population increase of 27.6 percent by 2040.

Table 1-1. Contra Costa County Growth Projections

	2010	2015	2020	2025	2030	2035	2040
Population							
Total County Population	1,049,025	1,085,700	1,123,500	1,172,600	1,224,400	1,280,300	1,338,400
Household Population	1,038,711	1,074,900	1,112,000	1,160,500	1,211,300	1,266,200	1,323,200
Households	375,364	387,870	400,800	416,220	432,430	448,090	464,150
Persons/household	2.77	2.77	2.77	2.79	2.80	2.83	2.85
Employed Residents	455,540	489,750	526,530	539,360	552,720	572,170	592,060
Employment							
Agriculture and Natural Resources	990	1,010	1,020	990	960	930	890
Construction	21,400	25,220	29,490	30,320	31,190	32,350	33,550
Manufacturing and Wholesale	27,980	28,780	29,600	30,040	30,520	31,140	31,840
Retail	44,440	45,270	46,120	46,230	46,290	46,560	46,820
Transportation and Utilities	8,850	9,440	10,060	10,150	10,240	10,400	10,560
Information	10,790	11,450	12,140	12,200	12,260	12,380	12,500
Financial and Leasing	27,270	31,320	35,970	36,220	36,440	37,130	37,790
Professional and Management Services	49,410	56,730	65,220	69,110	73,150	78,170	83,520
Health and Educational Services	52,680	58,780	65,750	69,520	73,510	78,400	83,600
Arts, Recreation, and Other Services	47,600	52,060	56,990	58,810	60,680	63,150	65,720
Government	53,510	54,550	55,450	56,470	57,490	59,030	60,600
Total	344,920	374,610	407,810	420,060	432,730	449,640	467,390

Sources: 2010 demographic data taken directly from the U.S. Census. 2010 employment data are derived from the *California County-Level Economic Forecast, 2011-2040*, California Department of Transportation; *Bay Area Job Growth to 2040: Projections and Analysis*, Center for Continuing Study of the American Economy; *1989-2009 National Establishment Times-Series (NETS) Database*, Walls & Associates using Dun and Bradstreet data; and labor force data from U.S. Bureau of Labor and Statistics and the U.S. Census Bureau's 2005-2009 American Community Survey.

As a primarily suburban county, Contra Costa's development pattern is sprawling, with single-family homes and low-intensity commercial uses being predominant. From 1990-2010, approximately 47 percent of the population growth in Contra Costa County occurred in the East County cities of Pittsburg, Antioch, Oakley, and Brentwood. Significant growth also occurred along the I-680 corridor in the cities of Danville and San Ramon. Most of this growth followed the traditional development pattern.

The Association of Bay Area Governments (ABAG) foresees continued population and job growth in the county through 2040. However, unlike in previous decades, most growth is projected to occur within 38 Priority Development Areas (PDAs) designated throughout the county. Growth in the PDAs is anticipated to consist primarily of transit-oriented multi-family residential or mixed uses. As only five PDAs are located in the unincorporated area, most growth is planned within the 19 incorporated cities in the county.

California law requires counties and cities to prepare and adopt a "general plan," a comprehensive long-range plan to guide community development. The general plan must contain seven state-mandated "elements" (land use, housing, circulation, safety, open space, conservation, and noise) and may contain additional elements as a jurisdiction sees fit. The general plan must comprise an integrated and internally consistent set of goals, policies, and implementation measures. County actions related to land use such as zoning, subdivisions, design review, and capital improvements, must be consistent with the plan. The Contra Costa County General Plan was originally adopted in 1990, with the last major update occurring in January 2005. Future growth and development in the unincorporated areas of the County will be managed as identified in the County General Plan.

Table 1-2 summarizes development trends in the performance period since development of the previous hazard mitigation plan and expected future development trends.

Table 1-2. Recent and Expected Future Development Trends

Criterion	Response					
Has your jurisdiction annexed any land since the development of the previous hazard mitigation plan?	No					
• If yes, give the estimated area annexed and estimated number of parcels or structures.	N/A					
Is your jurisdiction expected to annex any areas during the performance period of this plan?	No					
Are any areas targeted for development or major redevelopment in the next five years?	Yes					
• If yes, please briefly describe	Already-approved subdivisions consisting of several hundred homes in the Discovery Bay and Bethel Island areas may be constructed over the next five years. High-density multi-family development is expected to continue in the vicinity of the Pleasant Hill BART Station.					
How many building permits for new construction were issued in your jurisdiction since the development of the previous hazard mitigation plan?		2012	2013	2014	2015	2016
	Single-Family	343	428	432	632	494
	Multi-Family	0	0	0	12	13
	Other (commercial, mixed-use, etc.)	7	7	5	7	10
Please provide the number of permits for each hazard area or provide a qualitative description of where development has occurred.	<p>While development occurred throughout the unincorporated areas of the county during the performance period of this plan, the vast majority of new construction (over 2,100 permits) occurred in the communities of Discovery Bay (392 permits) and Alamo (83 permits), unincorporated pockets of the cities of Martinez (208 permits) and Danville (301 permits), and the Dougherty Valley area (1,146 permits), which was subsequently annexed into the City of San Ramon. In Discovery Bay, primary hazards of concern are flooding and liquefaction. In Alamo, Martinez, Danville, and San Ramon, the primary concerns are landslides and/or wildfires. All new development was consistent with applicable General Plan policies, the requirements of the zoning and building codes, and project-specific mitigation measures adopted for the purpose of reducing risk associated with natural hazards.</p> <p>Very little development occurred in unincorporated areas at risk from tsunami or dam failure.</p>					

1.4 CAPABILITY ASSESSMENT

Contra Costa County performed an inventory and analysis of existing capabilities, plans, programs and policies that enhance its ability to implement mitigation strategies. The introduction at the beginning of this volume of the hazard mitigation plan describes the components included in the capability assessment and their significance for hazard mitigation planning. This section summarizes the following findings of the assessment:

- An assessment of legal and regulatory capabilities is presented in Table 1-3.
- Development and permitting capabilities are presented in Table 1-4.
- An assessment of fiscal capabilities is presented in Table 1-5.
- An assessment of administrative and technical capabilities is presented in Table 1-6.
- An assessment of education and outreach capabilities is presented in Table 1-7.
- Information on National Flood Insurance Program (NFIP) compliance is presented in Table 1-8.
- Classifications under various community mitigation programs are presented in Table 1-9.
- The community's adaptive capacity for the impacts of climate change is presented in Table 1-10.

Table 1-3. Legal and Regulatory Capability

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Codes, Ordinances, and Requirements				
Building Code	Yes	No	Yes	Yes
<i>Comment: County Ordinance Code Title 7 – Building Regulations (incorporates by reference and is based upon the 2016 California Building Code, 2016 California Residential Code, 2016 California Green Building Standards Code, and 2016 California Existing Building Code [all codified in California Code of Regulations, Title 24]); adopted October 25, 2016.</i>				
Zoning Code	Yes	No	Yes	Yes
<i>Comment: County Ordinance Code Title 8 – Zoning; originally adopted March 17, 1947; last updated July 11, 2017.</i>				
Subdivisions	Yes	No	No	Yes
<i>Comment: County Ordinance Code Title 9 – Subdivisions; originally adopted October 2, 1933; last updated 2015.</i>				
Stormwater Management	Yes	Yes	Yes	Yes
<i>Comment: County Ordinance Code Title 10 – Public Works and Flood Control; last updated in 2005.</i>				
Post-Disaster Recovery	Yes	Yes	Yes	Yes
<i>Comment: California Disaster Assistance Act Title 2, Division 1, Chapter 7.5; California Code of Regulations Title 19, Division 2, Article 1 State Public Assistance Program.</i>				
Real Estate Disclosure	No	Yes	Yes	No
<i>Comment: California State Civil Code 1102 requires full disclosure on natural hazard exposure of the sale/re-sale of any and all real property.</i>				
Growth Management	Yes	Yes	Yes	No
<i>Comment: County General Plan 2005–2020 includes a Growth Management Element; originally adopted in 1990; Cal. Gov. Code §65300 et seq.</i>				
Site Plan Review	Yes	No	No	Yes
<i>Comment: County Ordinance Code Titles 7, 8, 9, and 10, see previous entries</i>				
Environmental Protection	Yes	Yes	Yes	Yes
<i>Comment: California Environmental Quality Act (CEQA) and County CEQA Guidelines.</i>				
Flood Damage Prevention	Yes	No	Yes	Yes
<i>Comment: County Ordinance Code Titles 8 and 10; see the Hazard Mitigation Plan Jurisdictional Annex for the Contra Costa Flood Control and Water Conservation District.</i>				
Emergency Management	Yes	Yes	Yes	Yes
<i>Comment: County Ordinance Code Title 4 – Health and Safety, General Article 42-2.2; last updated in 2001.</i>				
Climate Change	Yes	No	Yes	Yes
<i>Comment: California Senate Bill 379</i>				
Planning Documents				
General Plan	Yes	No	Yes	Yes
<i>Is the plan compliant with Assembly Bill 2140? Yes</i>				
<i>Comment: The Safety Element was amended in June 2011 to incorporate the Local Hazard Mitigation Plan by reference.</i>				
Capital Improvement Plan	Yes	Yes	No	Yes
<i>How often is the plan updated? Every other year during the odd years.</i>				
<i>Comment: Contra Costa County Public Works Department-Capital Road Improvement and Preservation Program (CRIPP) Fiscal Year 2015/2016 to Fiscal Year 2021/2022; originally adopted by the Board of Supervisors on May 19, 1989.</i>				
Floodplain or Watershed Plan	Yes	No	Yes	Yes
<i>Comment: Managed by the Public Works Department/Flood Control & Water Conservation District</i>				
Stormwater Plan	Yes	No	Yes	Yes
<i>Comment: Managed by the Public Works Department/Flood Control & Water Conservation District. SB 790 Stormwater Resources Act effective January 1, 2010.</i>				
Urban Water Management Plan	No	Yes	Yes	No
<i>Comment: Responsibility rests with local water districts.</i>				
Habitat Conservation Plan	Yes	Yes	No	No
<i>Comment: East Contra Costa County Habitat Conservation Plan; adopted May 9, 2007.</i>				

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Economic Development Plan <i>Comment: No plan exists.</i>	Yes	No	No	No
Shoreline Management Plan <i>Comment: No local plan exists.</i>	No	No	No	No
Community Wildfire Protection Plan <i>Comment: Local fire districts/departments are responsible for implementation</i>	No	Yes	No	No
Forest Management Plan <i>Comment: No local plan exists.</i>	No	No	No	No
Climate Action Plan <i>Comment: Adopted by Board of Supervisors in December 2015</i>	Yes	No	No	Yes
Comprehensive Emergency Management Plan <i>Comment: Emergency Operations Plan (EOP), adopted by the Board of Supervisors in May 2015</i>	Yes	No	No	Yes
Threat & Hazard Identification & Risk Assessment (THIRA) <i>Comment: Last capability assessment review conducted April 12, 2017.</i>	Yes	Yes	Yes	Yes
Post-Disaster Recovery Plan <i>Comment: Plan to be developed in the future.</i>	Yes	Yes	No	No
Continuity of Operations Plan <i>Comment: Draft Template Completed 2017.</i>	Yes	Yes	No	No
Public Health Plan <i>Comment: Administered by County Health Services Department.</i>	Yes	Yes	Yes	No
Other: Debris Management Plan <i>Comment: Approved by FEMA in December 2016.</i>	Yes	Yes	Yes	No

Table 1-4. Development and Permitting Capability

Criterion	Response
Does your jurisdiction issue development permits? • If no, who does? If yes, which department?	Yes Department of Conservation and Development issues permits for grading and construction on private property. Public Works Department issues permits for construction on public property or in public rights-of-way.
Does your jurisdiction have the ability to track permits by hazard area?	No
Does your jurisdiction have a buildable lands inventory? • If yes, please briefly describe. • If no, please quantitatively describe the level of buildout in the jurisdiction.	No N/A The County does not maintain a list or database of buildable lands. By voter-approved initiative, no more than 35 percent of all land in the County, including land within the incorporated cities, can be developed with urban uses. Currently approximately 30 percent of the land has been developed with such uses.

Table 1-5. Fiscal Capability

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Unknown
Withhold Public Expenditures in Hazard-Prone Areas	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	Yes

Table 1-6. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Department of Conservation and Development and Public Works Department
Engineers or professionals trained in building or infrastructure construction practices	Yes	Department of Conservation and Development and Public Works Department
Planners or engineers with an understanding of natural hazards	Yes	Emergency Services Division/Office of Emergency Services- Senior Emergency Planners, Public Works Department- Engineers
Staff with training in benefit/cost analysis	Yes	Public Works Department
Surveyors	Yes	Public Works Department
Personnel skilled or trained in GIS applications	Yes	Department of Information Technology (DOIT), Public Works Department, and Department of Conservation and Development
Scientist familiar with natural hazards in local area	Yes	Flood Control and Water Conservation Control District- Hydrologist Department of Conservation and Development- Geologist
Emergency Manager	Yes	Emergency Services Division/Office of Emergency Services - OES Manager
Grant writers	Yes	Emergency Services Division/Office of Emergency Services - OES Manager, Public Works Department, Department of Conservation and Development, Health Services Department, Contra Costa Fire District
Other	Yes	Department of Conservation and Development and Public Works Department

Table 1-7. Education and Outreach Capability

Criterion	Response
Do you have a Public Information Officer or Communications Office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? • If yes, please briefly describe.	Yes Adopted Hazard Mitigation Plan information is available on the County website
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe.	Yes Utilize Facebook, Twitter, and NextDoor
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly describe.	No N/A
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe.	Yes Contra Costa Fire Districts participate in the Diablo Fire Safe Council planning and outreach efforts.
Do you have any established warning systems for hazard events? • If yes, please briefly describe.	Yes Community Warning System

Table 1-8. National Flood Insurance Program Compliance

Criterion	Response
What local department is responsible for floodplain management?	Public Works Department/Flood Control and Water Conservation District
Who is your floodplain administrator? (department/position)	Public Works Department/Flood Control and Water Conservation District-Assistant Chief Engineer & Floodplain/Watershed Manager
Are any certified floodplain managers on staff in your jurisdiction?	Yes
What is the date that your flood damage prevention ordinance was last amended?	2016
Does your floodplain management program meet or exceed minimum requirements? • If exceeds, in what ways?	Exceeds Requires freeboard, deed restrictions, grant deed of development rights for creek structure setbacks
When was the most recent Community Assistance Visit or Community Assistance Contact?	2014
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? • If so, please state what they are.	No N/A
Do your flood hazard maps adequately address the flood risk within your jurisdiction? • If no, please state why.	Yes N/A
Does your floodplain management staff need any assistance or training to support its floodplain management program? • If so, what type of assistance/training is needed?	No N/A
Does your jurisdiction participate in the Community Rating System (CRS)? • If yes, is your jurisdiction interested in improving CRS Classification? • Is your jurisdiction interested in joining the CRS program?	Yes No N/A

Criterion	Response
How many Flood Insurance policies are in force in your jurisdiction? ^a	1,793
• What is the insurance in force?	\$ 444,846,900
• What is the premium in force?	\$ 2,056,371
How many total loss claims have been filed in your jurisdiction? ^a	323
• How many claims were closed without payment/are still open?	158/2
• What were the total payments for losses?	\$ 1,871,843

a. According to FEMA statistics as of December 31, 2016

Table 1-9. Community Classifications

	Participating?	Classification	Date Classified
Community Rating System	Yes	6	05/01/2001
Building Code Effectiveness Grading Schedule	Yes	2	2016
Public Protection	N/A	N/A	N/A
Storm Ready	Yes	Current	2016
Firewise	No	N/A	N/A

Table 1-10. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating ^a
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts <i>Comments/Additional Information: None provided</i>	Low
Jurisdiction-level monitoring of climate change impacts <i>Comments/Additional Information: None provided</i>	Low
Technical resources to assess proposed strategies for feasibility and externalities <i>Comments/Additional Information: None provided</i>	Low
Jurisdiction-level capacity for development of greenhouse gas emissions inventory <i>Comments/Additional Information: Greenhouse gas inventory was completed in 2015.</i>	Medium
Capital planning and land use decisions informed by potential climate impacts <i>Comments/Additional Information: None provided</i>	Low
Participation in regional groups addressing climate risks <i>Comments/Additional Information: None provided</i>	Low
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes <i>Comments/Additional Information: None provided</i>	Low
Identified strategies for greenhouse gas mitigation efforts <i>Comments/Additional Information: Climate Action Plan was adopted in December 2015.</i>	Medium
Identified strategies for adaptation to impacts <i>Comments/Additional Information: Adapting to Rising Tides Program</i>	Low
Champions for climate action in local government departments <i>Comments/Additional Information: None provided</i>	Medium

Criterion	Jurisdiction Rating ^a
Political support for implementing climate change adaptation strategies <i>Comments/Additional Information: None provided</i>	Medium
Financial resources devoted to climate change adaptation <i>Comments/Additional Information: None provided</i>	Low
Local authority over sectors likely to be negatively impacted <i>Comments/Additional Information: As the agency with land use jurisdiction over the unincorporated areas, Contra Costa County has authority to impose reasonable requirements aimed at reducing risks associated with climate change. However, certain land uses, particularly those of a heavy industrial nature (i.e., refineries, chemical plants, ports) and/or located along the shoreline, often fall under the jurisdiction of one or more state or federal agencies.</i>	Low
Public Capacity	
Local residents knowledge of and understanding of climate risk <i>Comments/Additional Information: None provided</i>	Medium
Local residents support of adaptation efforts <i>Comments/Additional Information: None provided</i>	Low
Local residents' capacity to adapt to climate impacts <i>Comments/Additional Information: None provided</i>	Low
Local economy current capacity to adapt to climate impacts <i>Comments/Additional Information: None provided</i>	Low
Local ecosystems capacity to adapt to climate impacts <i>Comments/Additional Information: None provided</i>	Low

- a. High = The capacity exists and is in use; Medium = The capacity may exist, but is not used or could use some improvement; Low = Capacity does not exist or could use substantial improvement; Unsure= Not enough information is known to assign a rating.

1.5 INTEGRATION WITH OTHER PLANNING INITIATIVES

The information on hazards, risk, vulnerability and mitigation contained in this hazard mitigation plan is based on the best available data. Plan integration is the incorporation of this information into other relevant planning mechanisms, such as general planning and capital facilities planning. It includes the integration of natural hazard information and mitigation policies, principles and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved through the involvement of key staff and community officials in collaboratively planning for hazard mitigation.

1.5.1 Existing Integration

In the performance period since adoption of the previous hazard mitigation plan, Contra Costa County made progress on integrating hazard mitigation goals, objectives, and actions into other planning initiatives. The following plans and programs currently integrate components of the hazard mitigation strategy:

- **Capital Improvement Plan**—The capital improvement plan includes projects that can help mitigate potential hazards. The County will strive to ensure consistency between the hazard mitigation plan and the current and future capital improvement plan. The hazard mitigation plan may identify new possible funding sources for capital improvement projects and may result in modifications to proposed projects based on results of the risk assessment.
- **Building Code**—The County's adoption of the 2016 California Building Code incorporated local modifications addressing seismic and fire hazards.

- **General Plan 2020**—The County General Plan includes a Safety Element to protect the community from unreasonable risk by establishing policies and actions to avoid or minimize the following hazards:
 - Geologic and seismic hazards
 - Fire hazards
 - Hazardous materials
 - Flooding
- **Climate Action Plan**—The County’s Climate Action Plan includes projects for reducing greenhouse gas emissions.
- **County Debris Management Plan**—The County of Contra Costa Disaster Debris Management Plan (DDMP) provides a comprehensive framework for management of debris following a disaster for all debris-generating hazards. It addresses the roles and responsibilities of government organizations as well as private firms and non-governmental organizations that might have a role in debris operation.

Resources listed in Section 1.11 were used to provide information for this annex on hazard events and local capabilities within the jurisdiction.

1.5.2 Opportunities for Future Integration

As this hazard mitigation plan is implemented, Contra Costa County will use information from the plan as the best available science and data on natural hazards. The capability assessment presented in this annex identifies codes, plans, and programs that provide opportunities for integration. The area-wide and local action plans developed for this hazard mitigation plan in actions related to plan integration. The capability assessment identified the following plans and programs that do not currently integrate goals or recommendations of the hazard mitigation plan but provide opportunities to do so in the future:

- **Flood Control Capital Improvement Plan**—Capital improvement project proposals may take into consideration hazard mitigation potential as a means of evaluating project prioritization.
- **Capital Road Improvement and Preservation Plan**—Capital improvement project proposals may take into consideration hazard mitigation potential as a means of evaluating project prioritization.
- **County General Plan**—The County is conducting a comprehensive update to its General Plan. The opportunity to incorporate additional hazard mitigation and abatement measures will be contemplated for inclusion into the updated General Plan.
- **County Emergency Operations Plan (EOP)**—The County EOP establishes the emergency organization, assigns tasks, specifies policies and general procedures, and provides for coordination of planning efforts of the various emergency staff and service elements utilizing Standardized Emergency Management System (SEMS). The EOP and the hazard mitigation plan are currently integrated and will continue to be integrated as appropriate. **Post-Disaster Recovery Plan**—The County does not have a recovery plan and intends to develop one as a mitigation planning action during the next five years. The plan will build on the mitigation goals and objectives identified in the mitigation plan.

1.6 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 1-11 lists past occurrences of natural hazards for which specific damage was recorded in unincorporated Contra Costa County. Other hazard events that broadly affected the entire planning area, including unincorporated Contra Costa County, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 1-11. Past Natural Hazard Events

Type of Event	Disaster #	Date	Damage Assessment
Flooding	DR-4308	2/1/2017-2/23/2017	\$7,000,000
Flooding	DR-4305	1/18/2017-1/23/2017	\$250,000
Flooding	DR-4301	1/3/2017-1/12/2017	\$7,800,000
Moraga Sinkhole	14767	3/13/2016	-
Drought	SBA #14122	9/17/2014	-
Drought	USDA S #3743	1/1/2014	-
Cherry Crop	-	11/1/2013-5/31/2014, 8/19/2014	\$3,200,000
Morgan Territory Fire	-	9/8/2013-9/14/2013	-
Agriculture	-	8/5/2013	-
Agricultural Drought	USDA S #3558 SBA 13693	6/4/2013-7/29/2013	\$500,000
Drought	-	2012-2016 (2014)	-
Marsh Creek Road Sinkhole	-	12/18/2012	-
Lafayette Winter Storm	-	2012	-
Agricultural Drought	-	Fall 2011	-
Excessive Rain	USDA #3159 SBA #12829	5/1/2011-6/28/2011	-
Winter Storms	-	2011	-
Agricultural Freeze	USDA #3109 SBA #12488	11/25/2010-11/26/2010	\$500,000
Salmon Fishery	12513	4/10/2010-9/30/2010	-
Drought	-	2007-2009	Conditions resulted in \$3.6 million loss of forage value and \$1.3 million cattle production
Landslide	-	4/6/2006	\$5,500,000 Property
Flooding	-	12/31/2005–1/1/2006	\$22,000,000 Property/\$8,710,359 Crop
Drought	-	3/2004	Rangeland forage: \$6,564,946; dryland hay: \$72,425
Wind	-	12/31/2002	\$120,000 Property
Wind	-	11/7/2002	\$200,000 Property
Drought	-	9/2002	Reduced rangeland due to drought estimated loss \$1,114,296
Severe Weather	-	7/10/2002	\$25,000 Property
Wind	-	11/24/2001	\$700,000 Property
Wind (High Wind)	-	12/18/2000	\$550,000 Property
Flooding (Flash Flood)	-	02/14/2000	\$100,000 Property
Wind (High Wind)	-	12/21/1999	\$62,500 Property
Wind (High Wind)	-	2/9/1999	\$200,000 Property
Wind (High Wind)	-	12/16/1998	\$25,000 Property
Tornado	-	12/5/1998	\$200,000 Property
Tornado	-	02/19/1998	\$50,000 Property
Landslide (El Nino)	-	1/1/1997	\$27,000,000 Property
Severe Weather	-	12/9/1995	\$6,000,000 Property/\$500,000 Crop Damage
Severe Weather	-	2/21/1994	\$128,000 Property
Severe Weather	-	12/11/1993	\$344,828 Property
Wind (High Wind)	-	11/14/1993	\$62,500 Property
Wind (High Wind)	-	2/19/1993	\$50,000 Property

Type of Event	Disaster #	Date	Damage Assessment
Flooding (Flash Flood)	-	1/20/1993	\$12,500 Property
Flooding (Flash Flood)	-	1/13/1993	\$5,555,556 Property/Crops
Severe Weather	-	1/10/1993	\$8,333,333 Property
Flooding/Severe Weather	-	12/11/1992	\$131,579 Property
Severe Weather	-	12/7/1992	\$1525 Property
Flooding-Severe Weather	-	02/14/1992	\$9,090.91 Property
Flooding-Severe Weather	-	02/11/1992	\$11,627.91 Property
Severe Weather	-	02/09/1992	\$89,286
Severe Weather	-	12/20/1990	\$86,206 Property/Crops
Flooding (Flash Flood)	-	5/28/1990	\$500,000 Property
Earthquake (Loma Prieta)	-	10/17/1989	\$25,000.000
Wind	-	12/14/1988	\$50,000 Property
Drought	-	1987-1992	
Flooding (Flash Flood)	-	2/17/1986	\$5,000,000 Property
Levee Failure, High Winds, High Tides, Floods, Storm, Wind Driven Water	-	12/9/1983	Public-\$7,240,785; private- \$2,669 million; agriculture \$1 million
Severe Weather	-	12/3/1983	\$312,500 Property
Flood-Severe Weather	-	1/25/1983	\$384,165 Property
Wind	-	12/22/1982	\$1,041,666 Property
Flooding	-	3/30/1982	\$166,667 Property
Flood-Severe Weather	-	1/3/1982	\$7,142,857 Property
Delta Levee Break Holland & Webb Levee breaks	-	1/23/1980	Public-\$11,158,700; private-\$1,479,500; agriculture-\$3,887,195; Total-\$17,388,013
Drought	-	2/13/1976	Damage Statewide \$888.5 million
Eucalyptus Tree Freeze	-	4/4/1973	Federal Disaster 2 Counties Contra County & Alameda- removal of approximately \$2 million dead trees \$8-10 million
Flood-Severe Storm/Thunder	-	1/16/1973	\$86,206 Property
Flood-Severe Storm/Thunder	-	1/18/1969	\$862,068 Property

Notes: In 1973, 1982, and 1986, one or more Delta island levees failed or were overtopped, including summertime breaks that did not occur at time of high storm runoff. Some islands in the Delta have flooded two or three times since 1980.

Sources: *Spatial Hazard Events and Losses Database for the United States (SHELDUS)*; *Cal EMA Disasters 1950 – 1999*; *OES files*

1.7 JURISDICTION-SPECIFIC VULNERABILITIES

Volume 1 of this hazard mitigation plan provides complete risk assessments for each identified hazard of concern. This section provides information on a few key vulnerabilities for the jurisdiction.

Repetitive loss records are as follows:

- Number of FEMA-identified Repetitive-Loss Properties: 12
- Number of FEMA-identified Severe-Repetitive-Loss Properties: 0
- Number of Repetitive-Loss Properties or Severe-Repetitive-Loss Properties that have been mitigated: 1

Other noted vulnerabilities include the following:

- Discrepancies between FEMA’s printed and digital Flood Insurance Rate Maps.
- Low community understanding of risks associated with hazards.
- Throughout the County there is a general risk related to creek bank erosion.
- Limited available funding sources or funding shortfalls may affect the completion of projects or continuation of programs aimed at mitigating hazards.
- Facilities approaching their end of useful life may begin to fail due to age, limiting their ability to mitigate hazards.
- Completion and implementation of County facility upgrades in a timely manner may limit their ability to mitigate hazards.
- Some unincorporated communities, such as Canyon and Morgan Territory, have limited ingress and egress routes that may present access issues during and after a hazard event.
- There are a number of facilities in the County that store and utilize extremely hazardous materials, such as the Nuclear Reactor facility in San Ramon. Secondary impacts associated with the release of these materials may complicate response and recovery efforts during and after an event.
- Major transportation corridors and rail lines are vulnerable to disruption, particularly from the earthquake hazard.
- Additional consideration needs to be given to venues for mass gathering, such as concert venues, given the implications for emergency response agencies, should a large event occur at the same time as a scheduled event.

1.8 HAZARD RISK RANKING

Table 1-12 presents a local ranking for unincorporated Contra Costa County of all hazards of concern for which Volume 1 of this hazard mitigation plan provides complete risk assessments. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in Volume 1, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property and the economy.

Table 1-12. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Earthquake ^b	54	High
2	Landslide ^e	48	High
3	Wildfire ^e	39	High
4	Severe weather	30	Medium
5	Dam and levee failure ^a	18	Medium
5	Flood ^c	18	Medium
6	Sea level rise ^d	12	Low
7	Drought	9	Low
8	Tsunami	6	Low

- Based on the level of detail conducted in the risk assessment, the risk ranking for this hazard is focused solely on dam failure impacts. See Chapter 6.4 of Volume 1 for combined dam inundation list on which this assessment is based.
- “HayWired” M7.05 event was used to assign probability and impacts
- 1-percent annual chance event was used to assign probability and impacts
- 2100 upper range estimates and extreme tide are used to assign probability and impacts
- Very High and High Severity Zones were used to assign probability and impacts

1.9 STATUS OF PREVIOUS PLAN ACTIONS

Table 1-13 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 1-13. Status of Previous Plan Actions				
Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
CCC-1—Support County-wide initiatives identified in Volume 1. <i>Comment: Supported throughout the performance period of the plan</i>	X			
CCC-2—Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Volume 1. <i>Comment:</i>			X	CCC-3
CCC-3—Continue to maintain compliance and good standing under the National Flood Insurance Program. <i>Comment: Ongoing</i>	X		X	CCC-4
CCC-4—Continue to maintain/enhance the County's classification under the Community Rating System. <i>Comment: Ongoing</i>	X		X	CCC-5
CCC-5—Integrate Local Hazard Mitigation Plan into the Safety Element of the General Plan. <i>Comment: The Safety Element was amended in June 2011 to incorporate the Local Hazard Mitigation Plan by reference.</i>	X		X	CCC-2
CCC-6—Upgrade Emergency Operations Center (EOC) HVAC. <i>Comment: Completed 2013</i>	X			
CCC-7—Develop and Conduct a Multi-Hazard Seasonal Public Awareness Program to Include Exercises. <i>Comment: Action unclear</i>		X		
CCC-8—Annually Provide California State Training Institute (CSTI) "Earthquake" Class to Essential County Personnel. <i>Comment: Ongoing</i>	X		X	CCC-6
CCC-9—Support Mass Care and Shelter Drills conducted by Red Cross, which involve both County Employees, Non-Government Agencies, CERT volunteers, and the public. <i>Comment: Ongoing</i>	X		X	CCC-7
CCC-10—County participates in annual statewide emergency planning exercises. <i>Comment: Ongoing</i>	X		X	CCC-8
CCC-11—FCC P-25 East Bay Regional Communications System (Alameda & Contra Costa County- At built out, the East Bay Regional Communications System will be a 36-site, 2 county P-25 compliant communication system designed to provide fully interoperable communications to all public agencies within Alameda and Contra Costa counties. Refer to website www.ebrcsa.org for complete project description. <i>Comment: Roll out over two year period 2012-2013, went live</i>	X		X	CCC-9
CCC-12—Update existing network in the EOC to support full activation to include Wi-Fi. <i>Comment: Completed 2015</i>	X			

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
CCC-13—Retrofit antenna mast to support the addition of additional antennas, and protect from impacts from seismic and severe weather hazards. <i>Comment: Action unclear</i>		X		
CCC-14—Continue to maintain and develop the existing County-wide Community Warning System (CWS) by identifying and implementing new technology as it becomes available. <i>Comment: Ongoing</i>	X		X	CCC-10
CCC-15—Community Warning System to continue outreach for their “Cell Phone Alert” program which allows individuals to register their cell phones with the CWS and to be notified via cell phone during an emergency incident in their geographic location. <i>Comment: Ongoing</i>	X		X	CCC-11
CCC-16—Update/enhance existing flood hazard mapping to better reflect current conditions. <i>Comment: Ongoing</i>	X		X	CCC-12
CCC-17—Canal Road Bridge Replacement. <i>Comment: Construction to begin Summer 2017</i>			X	CCC-13
CCC-18—Marsh Creek Road Bridge over Marsh Creek. <i>Comment: Construction to begin Summer 2019</i>			X	CCC-14
CCC-19—Bethel Island Road retrofit-widen to four lane arterial standard from East Cypress Road to Gateway Road including realignment of curve, Road elevation, and construction of new bridge. <i>Comment: Completed in 2012</i>	X			
CCC-20—Center Avenue (Pacheco Boulevard to Blackwood Drive) Relocate Fire Station, widen bridge, and construct 2 additional lanes (4 lanes total). <i>Comment: On Capital Road Improvement and Preservation Plan (CRIPP)</i>			X	CCC-16
CCC-21—Boulevard Way at Las Trampas Creek Scour Repair - Bridge on Boulevard Way crossing Las Trampas Creek - Repair of the scouring is needed to maintain the bridge’s structural integrity. <i>Comment: Construction anticipated for 2017/2018</i>			X	CCC-17
CCC-22—Retrofit Marsh Drive Bridge over Walnut Creek. <i>Comment: Construction anticipated for 2022</i>			X	CCC-18
CCC-23—Orwood Road Bridge Replacement - the existing bridge is approaching the end of its useful life and is not designed to for earthquake loading. Project # 0662-6R4076 <i>Comment: Completed 2017</i>	X			
CCC-24—Pomo Street Arch Culvert Repair. <i>Comment: Completed 2011</i>	X			
CCC-25—San Pablo Avenue Bridge over Rodeo Creek - bridge replacement. <i>Comment: Completed 2015</i>	X			
CCC-26—Update of four Dam Emergency Plans (EAP): Deer Creek, Dry Creek, Marsh Creek, and Pine Creek. <i>Comment: Completed 2016</i>	X			

Action Item	Completed	Removed; No Longer Feasible	Carried Over to Plan Update	
			Check if Yes	Enter Action #
CCC-27—Adoption of Fire and Resource Assessment Program (FRAP) Maps - Very High Fire Hazard Severity Zone Maps developed by Cal Fire. <i>Comment: Contra Costa Fire Protection District is the responsible agency.</i>		X		
CCC-28—Enhance/Improve County Ordinance Code language and enforcement including: County Building Codes to Increase Compliance with SB 1369 Defensible Space and Other Fire Safe Requirements in the Unincorporated County. <i>Comment:</i>			X	CCC-23
CCC-29—Improve, expand and develop new programs that increase awareness of and reduce risk to wildfires including: Support Fire District Chipper Program. <i>Comment: Diablo Fire Safe Council is the responsible agency.</i>		X		
CCC-30—Implementation of projects listed in the Community Wildfire Protection Plan (CWFPP). <i>Comment: None of the listed projects are under Contra Costa County's authority to implement.</i>		X		
CCC-31—Participate in Annual Multi-Agency Wildland Fire Drill <i>Comment: Local fire districts participate, not the County.</i>		X		
CCC-32—Continue and Maintain Noxious Weed Eradication Program - Department of Agriculture & California Department of Forestry. <i>Comment: Action unclear</i>		X		
CCC-33—Participate in the bi-annual CAER Group Coastal Region Hazardous Materials Response Organization (CHMRO) Hazardous Materials Transportation Conference 2011. <i>Comment: Completed 2011</i>	X			
CCC-34—Address deferred maintenance of County owned facilities as identified in the 2007 "Contra Costa County Facility Condition Analysis (FCA)." The FCA project included the inspection of 93 buildings, totaling over 2,900,000 square feet. Facilities inspected fall into critical infrastructure/key resources categories. <i>Comment:</i>			X	CCC-24
CCC-35—Where appropriate, support retrofitting, purchase, or relocation of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. <i>Comment:</i>			X	CCC-1
CCC-36— Sponsor the formation and training of Community Emergency Response Teams (CERT) training through partnerships with local businesses. <i>Comment: This action is not feasible with currently available resources.</i>		X		
CCC-37— Better inform residents of comprehensive mitigation activities, for all hazards of concern including elevation of appliances above expected flood levels, use of fire-resistant roofing and defensible space in high wildfire threat and wildfire-urban-interface areas, structural retrofitting techniques for older homes, and use of intelligent grading practices through workshops, publications, and media announcements and events. <i>Comment:</i>			X	CCC-25

1.10 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 1-14 lists the actions that make up the Unincorporated Contra Costa County hazard mitigation action plan. Table 1-15 identifies the priority for each action. Table 1-16 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 1-14. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency ^a	Estimated Cost	Sources of Funding	Timeline
CCC-1—Where appropriate, support retrofitting or relocation of structures in high hazard areas, prioritizing structures that have experienced repetitive losses.						
Existing	All Hazards	1, 4, 7, 9, 12, 14, 15, 17	Public Works	High	HMGP, PDM, FMA	Short-term
CCC-2—Integrate the hazard mitigation plan into other plans, ordinances, and programs that dictate land use decisions in the community, including the County General Plan, County Zoning Ordinance, and County Capital Road Improvement and Preservation Plan.						
New and Existing	All Hazards	1, 3, 4, 5, 7, 11, 12, 14, 17, 18	Conservation and Development*, Public Works	Low	Staff time/department funds	Ongoing
CCC-3—Actively support and participate in implementation, monitoring, maintenance, and updating of this Plan, as outlined and defined in Volume 1.						
New and Existing	All Hazards	3, 8, 16	OES	Low	Staff time, HMGP	Short-term
CCC-4—Continue to maintain good standing and compliance under the NFIP through implementation of floodplain management programs that, at a minimum, meet the NFIP requirements:						
<ul style="list-style-type: none"> Enforce the flood damage prevention ordinance. Participate in floodplain identification and mapping updates. Provide public assistance/information on floodplain requirements and impacts. 						
New and Existing	Flood	3, 5, 6, 9, 10, 11, 15	Public Works/Flood Control District	Low	Staff time/department funds	Ongoing
CCC-5—Continue to maintain/enhance the County's classification under the Community Rating System.						
New and Existing	Flood	3, 4, 5, 7, 9	Public Works/Flood Control District	Low	General Fund	Ongoing
CCC-6—Annually Provide California State Training Institute (CSTI) "Earthquake" Class to Essential County Personnel.						
N/A	Earthquake	2, 6, 13	OES	Low; \$50,000	EMPG, SHSGP	Ongoing
CCC-7—Support Mass Care and Shelter Drills conducted by Red Cross, which involve County Employees, Non-Government Agencies, CERT volunteers, and the public.						
N/A	All Hazards	2, 3	Red Cross* and City*, OES	Medium; \$50,000	Staff Time, General Funds	Ongoing
CCC-8—Continue to participate in annual statewide emergency planning exercises.						
N/A	All Hazards	2, 6, 13	OES	Low; \$50,000	UASI, CDPH	Ongoing
CCC-9—FCC P-25 phase 2 compliance East Bay Regional Communications System (Alameda & Contra Costa Counties - at built out, the East Bay Regional Communications System will be a 36-site, two county, P-25 compliant communication system designed to provide fully interoperable communications to all public agencies within Alameda and Contra Costa Counties. (Refer to website www.ebrcsa.org for complete project description).						
New and Existing	All Hazards	1, 2	JPA*, Sherriff's Office IT	High; \$9 Million	Multiple Federal Grants	Ongoing
CCC-10—Continue to maintain and develop the existing County-wide Community Warning System (CWS) by identifying and implementing new technology as it becomes available.						
New and Existing	All Hazards	2, 3	OES	Low	CUPA Fees	Ongoing

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency ^a	Estimated Cost	Sources of Funding	Timeline
CCC-11—Community Warning System will continue to educate and outreach on all registration tools (cell phones, social media, sirens, etc.).						
Existing	All Hazards	2, 3	OES	Low	CUPA Fees	Ongoing
CCC-12—Update/enhance existing flood hazard mapping to better reflect current conditions.						
Existing	Flood	3, 6, 12, 16	Public Works/Flood Control District	Medium	FEMA/Public Works Floodplain Determination Fees; FEMA Risk-MAP program	Short-term; Ongoing
CCC-13—Canal Road Bridge Replacement (Bridge No. 28C0376) – The existing bridge is approaching the end of its useful life.						
Existing	Flood/Earthquake	1, 7, 15	Public Works	\$3 Million Medium	HBP, Prop 111 Gas Tax	Short-term
CCC-14—Marsh Creek Road Bridge over Marsh Creek (Bridge No. 28C141) – The existing bridge is approaching the end of its useful life.						
Existing	Flood/Earthquake	1, 7, 15	Public Works	\$5 Million Medium	HBP, Prop 111 Gas Tax	Short-term; Anticipated completion date 2019
CCC-15—Byron Highway Bridge Replacement over California Aqueduct (Bridge No. 28C0121) – The existing bridge is approaching the end of its useful life.						
Existing	Flood/Earthquake	1, 7, 15	Public Works	\$15 Million, High	DWR, HBP, Prop 111 Gas Tax	Short-term; Anticipated completion date 2020
CCC-16—Center Avenue and Pacheco Boulevard Intersection Improvements – Relocate fire station, widen bridge, and construct intersection improvements.						
Existing	Flood/Earthquake	1, 7, 15	Public Works	\$7.6 Million, High	FEMA Hazard Mitigation Grant funding for FS relocation. Pacheco Area of Benefit Funds and Prop 111 Gas Tax for road work	Long-term; Depends on funding
CCC-17—Boulevard Way at Las Trampas Creek Scour Repair- Bridge on Boulevard Way crossing Las Trampas Creek- Repair of the scouring is needed to maintain the bridge's structural integrity.						
Existing	Flood/Earthquake	1, 7, 15	Public Works	\$500,000, Medium	HBP, Prop 111 Gas Tax	Short-term; 2017/2018
CCC-18—Retrofit Marsh Drive Bridge over Walnut Creek (Bridge No. 28C0442) – The existing bridge is approaching the end of its useful life.						
Existing	Flood/Earthquake	1, 7, 15	Public Works	\$8 Million, High	HBP, Prop 111 Gas Tax	Short-term; Anticipated completion date 2022
CCC-19—Marsh Creek Road Bridge over Marsh Creek (Bridge No. 28C143) – The existing bridge is approaching the end of its useful life.						
Existing	Flood/Earthquake	1, 7, 15	Public Works	\$4 Million Medium	HBP, Prop 111 Gas Tax	Short-term; Anticipated completion date 2020

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency ^a	Estimated Cost	Sources of Funding	Timeline
CCC-20—Marsh Creek Road Bridge over Marsh Creek (Bridge No. 28C145) – The existing bridge is approaching the end of its useful life.						
Existing	Flood/ Earthquake	1, 7, 15	Public Works	\$4 Million Medium	HBP, Prop 111 Gas Tax	Short-term; Anticipated completion date 2020
CCC-21—Del Monte Drive Bridge Replacement (Bridge No. 28C0207) – The existing bridge is approaching the end of its useful life.						
Existing	Flood/ Earthquake	1, 7, 15	Public Works	\$4 Million Medium	HBP, Prop 111 Gas Tax	Long-term; Depends on funding
CCC-22—Pacific Avenue Bridge Replacement (Bridge No. 28C0379) – The existing bridge is approaching the end of its useful life.						
Existing	Flood/ Earthquake	1, 7, 15	Public Works	\$4 Million Medium	HBP, Prop 111 Gas Tax	Long-term; Depends on funding
CCC-23—Enhance/Improve County Ordinance Code language and enforcement including: County Building Codes to Increase Compliance with SB 1369 Defensible Space and Other Fire Safe Requirements in the Unincorporated County.						
New	Wildfire	5, 7, 11, 12	Conservation and Development	\$20,000 Low	Staff time/department funds	Long-term, Unknown; depends on FRAP map adoption
CCC-24—Address deferred maintenance of County owned facilities as identified in the 2007 “Contra Costa County Facility Condition Analysis (FCA).” The FCA project included the inspection of 93 buildings, totaling over 2,900,000 square feet. Facilities inspected fall into critical infrastructure/key resources categories.						
Existing	All Hazards	3, 7, 15	Public Works	\$251 Million High	Grants and General Funds when they become available	Long-term; depends on funding
CCC-25—Through publications and social media, better inform residents of comprehensive mitigation strategies for all hazards of concern, including but not limited to, elevating appliances above expected flood levels, using fire-resistant roofing and defensible space in high wildfire threat and wildfire-urban interface areas, structural retrofitting techniques for older homes, and using intelligent grading techniques.						
New	All Hazards	3, 5, 7	Conservation and Development	Low	Staff time/department funds	Short-term; Ongoing
CCC-26—Construct new EOC and obtain Leadership in Energy and Environmental Design (LEED) certification.						
New	All Hazards	1, 2, 18	Sheriff's Office	Low	Capital budget	Short-term; 2018/2019
CCC-27—Hazardous Materials Emergency Program (HMEP) Adapting to Rising Tides shoreline data overlay hazardous materials rail transportation data to look at the impact that disruption from flooding/sea level rise could or would cause to Contra Costa County.						
Existing	Flood	1, 6, 18	HazMat Division, Health Department	High	HMGP	Short-term

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Responsible Agency ^a	Estimated Cost	Sources of Funding	Timeline
CCC-28—Review and revise, as necessary, General Plan Safety Element policies and maps related to landslide hazards based on information contained in Seismic Hazard Zone (SHZ) Reports prepared by the California Department of Conservation.						
New	Landslide	5, 6, 7, 12, 14	Conservation and Development	Low	Staff time/department funds	Long-term; Unknown; depends on state's completion of SHZ Reports
CCC-29—Implement the North Richmond Watershed Connections Project that includes a suite of multiple-benefit urban greening projects to improve water quality and enhance the health of San Pablo and Wildcat Creeks and their watersheds, while expanding the urban forest and reducing heat islands, and providing Green Infrastructure.						
New	Flood	1, 3, 10, 14, 17	Public Works	\$900,000 Medium	State Coastal Conservancy Urban Greening Grant	Short-term; Early 2018 to 2020
CCC-30—North Richmond Stormwater Pump Station Retrofit.						
Existing	Flood	1, 10	Public Works/Flood Control District	Low	Flood Control District/County Funds	Short-term

a. Where multiple responsible agencies are listed, an asterisk (*) identifies the lead agency.

Table 1-15. Mitigation Action Priority

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/Budgets?	Implementation Priority ^a	Grant Pursuit Priority ^a
CCC-1	8	High	High	Yes	Yes	No	Medium	High
CCC-2	9	Medium	Low	Yes	No	Yes	High	Low
CCC-3	3	Low	Low	Yes	No	Yes	High	Low
CCC-4	7	Medium	Low	Yes	No	Yes	High	Low
CCC-5	5	Low	Low	Yes	No	Yes	High	Low
CCC-6	3	High	Low	Yes	Yes	Yes	Medium	High
CCC-7	2	High	Medium	Yes	No	No	Medium	Low
CCC-8	3	High	Low	Yes	Yes	Yes	Medium ^b	Medium
CCC-9	2	High	High	Yes	Yes	Yes	High	High
CCC-10	2	Medium	Low	Yes	No	Yes	High	Low
CCC-11	2	High	Low	Yes	No	Yes	High	Low
CCC-12	4	Medium	Medium	Yes	Yes	No	Medium	Medium
CCC-13	3	High	Medium	Yes	Yes	No	Medium	High
CCC-14	3	High	Medium	Yes	Yes	No	Medium	High
CCC-15	3	High	High	Yes	Yes	No	Medium	High
CCC-16	3	High	High	Yes	Yes	No	Medium	High
CCC-17	3	High	Medium	Yes	Yes	Yes	High	High
CCC-18	3	High	High	Yes	Yes	No	Medium	High
CCC-19	3	High	Medium	Yes	Yes	No	Medium	High
CCC-20	3	High	Medium	Yes	Yes	No	Medium	High

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/Budgets?	Implementation Priority ^a	Grant Pursuit Priority ^a
CCC-21	3	High	Medium	Yes	Yes	No	Medium	High
CCC-22	3	High	Medium	Yes	Yes	No	Medium	High
CCC-23	4	Medium	Low	Yes	No	Yes	High	Low
CCC-24	3	High	High	Yes	Yes	No	Medium	Medium
CCC-25	3	Medium	Low	Yes	No	Yes	High	Low
CCC-26	3	Medium	Low	Yes	No	Yes	High	Low
CCC-27	3	Medium	High	Yes	Yes	No	Medium	High
CCC-28	5	Medium	Low	Yes	No	Yes	High	Low
CCC-29	5	Medium	Medium	Yes	Yes	Yes	Medium	Medium
CCC-30	2	Medium	Low	Yes	Yes	Yes	Medium	High

a. See the introduction to this volume for explanation of priorities.

b. Several drills are held throughout the year and are attended as staff resources are available.

Table 1-16. Analysis of Mitigation Actions

Hazard Type	Action Addressing Hazard, by Mitigation Type ^a							
	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
All hazards	CCC-2 CCC-25	CCC-2 CCC-25	CCC-2, CCC-9, CCC-10, CCC-11 CCC-25	CCC-2	CCC-2, CCC-8, CCC-9, CCC-10	CCC-2	CCC-2 CCC-25	CCC-2, CCC-7, CCC-9, CCC-10 CCC-25
Dam and levee failure								
Drought								
Earthquake		CCC-13 CCC-14 CCC-15 CCC-16 CCC-17 CCC-18 CCC-19 CCC-20 CCC-21 CCC-22			CCC-6	CCC-13 CCC-14 CCC-15 CCC-16 CCC-17 CCC-18 CCC-19 CCC-20 CCC-21 CCC-22		
Flood	CCC-5 CCC-12 CCC-29	CCC-5 CCC-13 CCC-14 CCC-15 CCC-16 CCC-17 CCC-18 CCC-19 CCC-20 CCC-21 CCC-22	CCC-5 CCC-12	CCC-5 CCC-29	CCC-5	CCC-13 CCC-14 CCC-15 CCC-16 CCC-17 CCC-18 CCC-19 CCC-20 CCC-21 CCC-22 CCC-29	CCC-29 CCC-30	CCC-30
Landslide	CCC-28	CCC-28						
Severe weather								
Tsunami								
Wildfire	CCC-23	CCC-23						CCC-23

a. See the introduction to this volume for explanation of mitigation types.





1.11 REVIEW AND INCORPORATION OF RESOURCES FOR THIS ANNEX

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for this annex.

- **Contra Costa County General Plan**—The General Plan was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **Contra Costa County Ordinance Code**—The ordinance code was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **Contra Costa County Floodplain Management Ordinance**—The Floodplain Management Ordinance was reviewed for compliance with the National Flood Insurance Program.
- **Contra Costa County Capital Road Improvement and Preservation Plan (CRIPP)**—The CRIPP was reviewed for identifying projects that address hazards.
- **Hazard Mitigation Plan Annex Development Tool-kit**—The tool-kit was used to support the development of this annex including past hazard events, noted vulnerabilities, risk ranking and action development.

Rodeo / Crockett Unincorporated Area

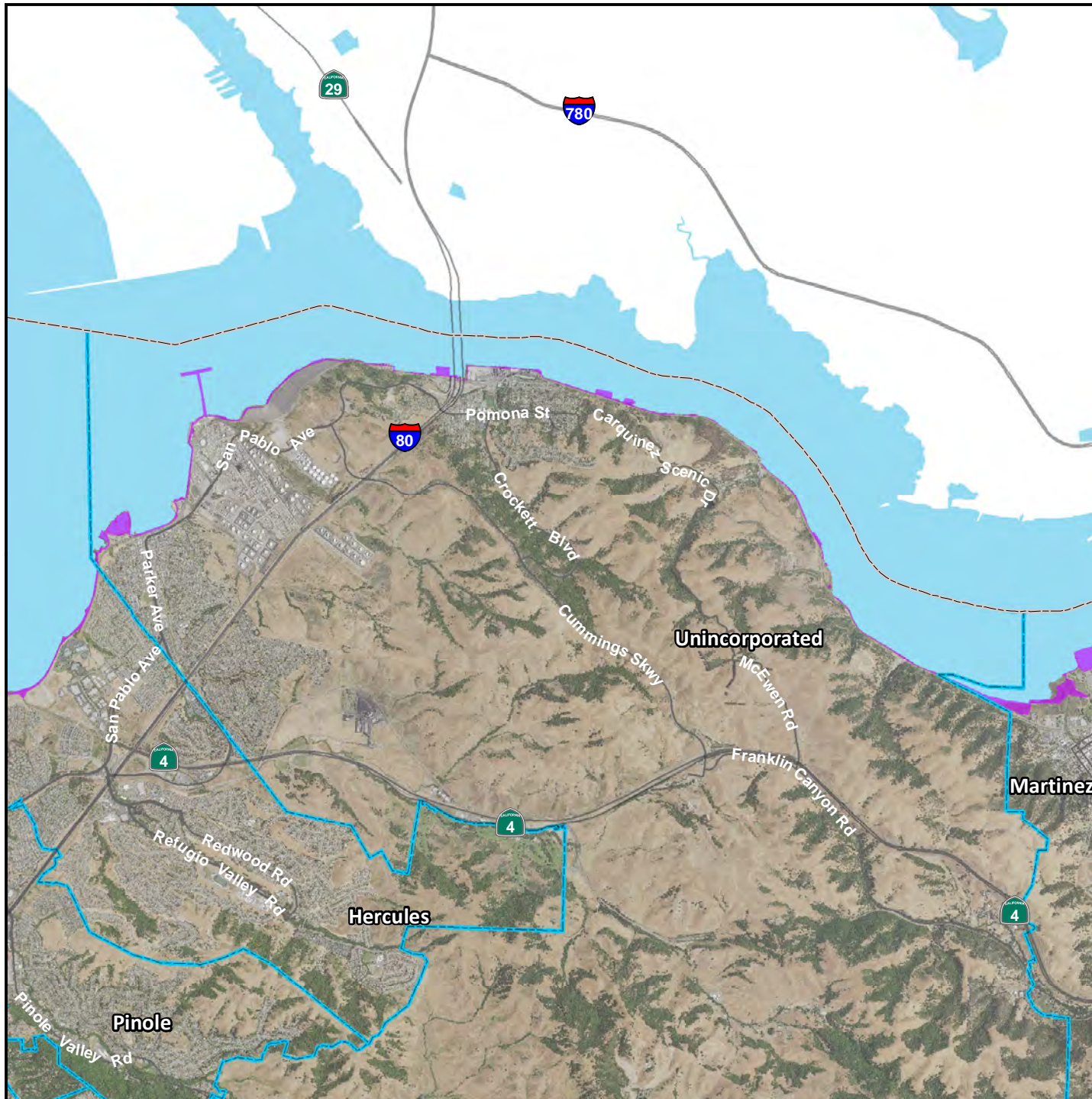
Tsunami Inundation Zones

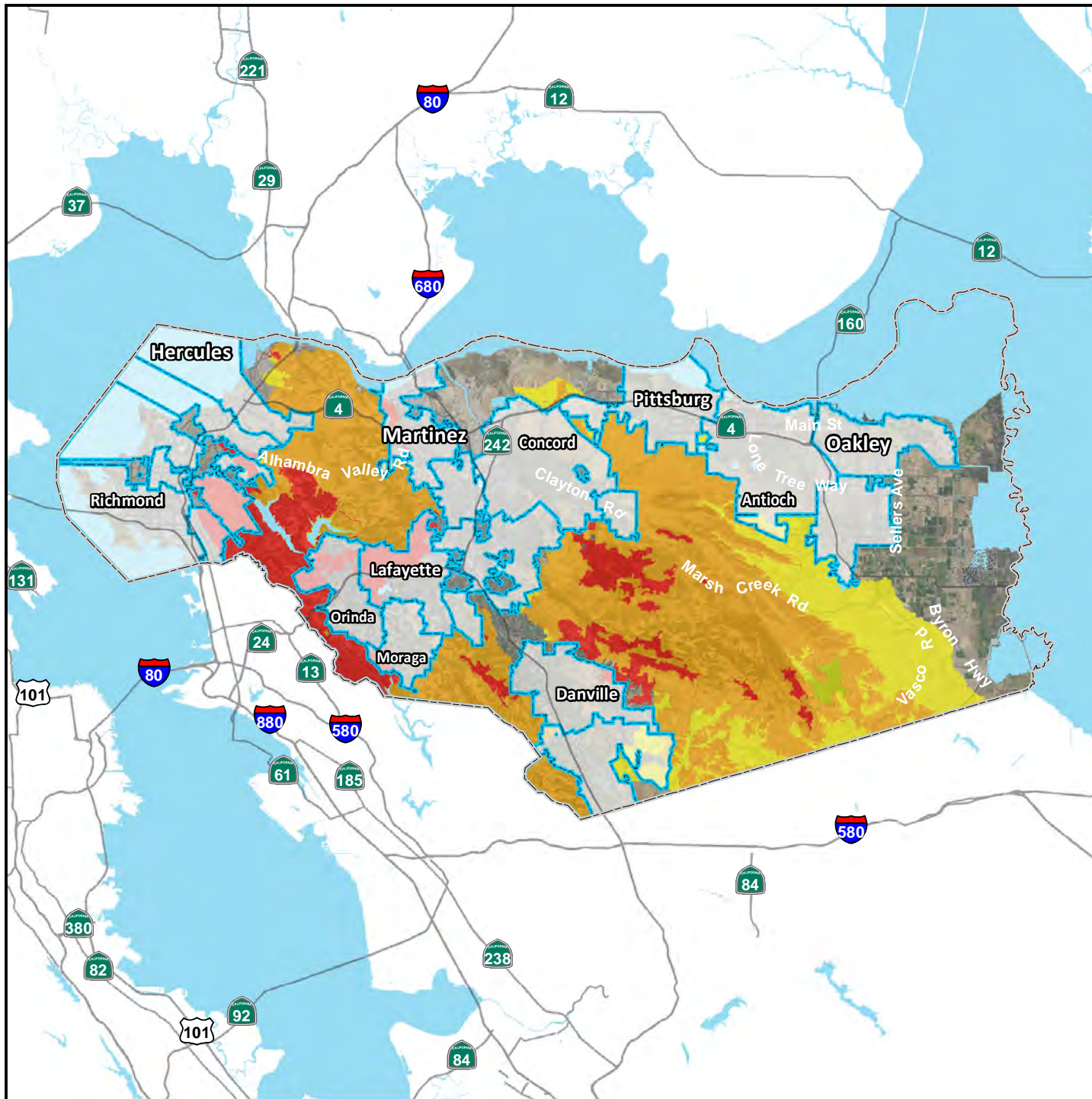
-  Tsunami Evacuation Planning Scenario
-  Contra Costa County Boundary
-  City Boundaries
-  Water Bodies

This tsunami inundation map was prepared to assist cities and counties in identifying their tsunami hazard. It is intended for local jurisdictional, coastal evacuation planning uses only.






Map Data Sources: Contra Costa County,
Caltrans, ABAG, USDA, USGS








Unincorporated

Wildfire Severity Zones

-  Contra Costa County Boundary
-  City Boundaries
-  Water Bodies

Wildfire Severity Zone





-  Moderate
-  High
-  Very High



Map Data Sources: Contra Costa County,
Caltrans, CalFIRE, USDA

Vine Hill / Bay Point Unincorporated Area

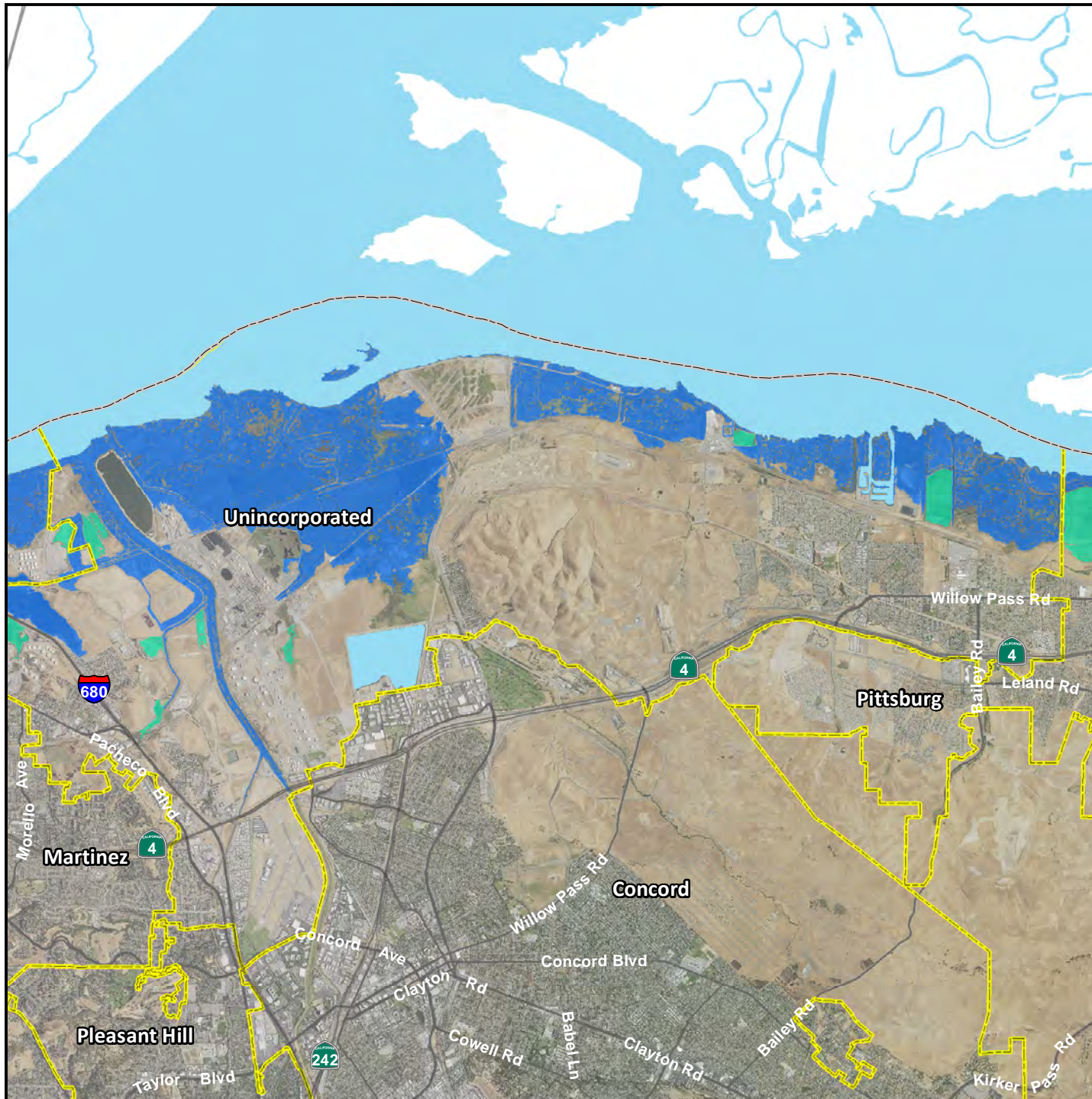
Sea Level Rise - Mean Higher High
Water Scenario Inundation Zones

-  12" Mean Higher High Water Scenario
-  Low Lying Areas
-  Contra Costa County Boundary
-  City Boundaries

The inundation maps and the associated analyses are intended as planning level tools to illustrate the potential for inundation and coastal flooding under future SLR scenarios and (they) do not represent the exact location or depth of flooding or shoreline overtopping. The maps are based on model outputs and do not account for all of the complex and dynamic Bay processes or future conditions such as erosion, subsidence, future construction or shoreline protection upgrades, or other changes to San Francisco Bay or the region that may occur in response to SLR. For more context about the maps and analyses, including a description of the data and methods used, please see Adapting to Rising Tides: Transportation Vulnerability and Risk Assessment Pilot Project, Technical Report, November 2011.







Map Data Sources: Contra Costa County,
Caltrans, SFBCDC, USDA, USGS



Vine Hill / Bay Point Unincorporated Area

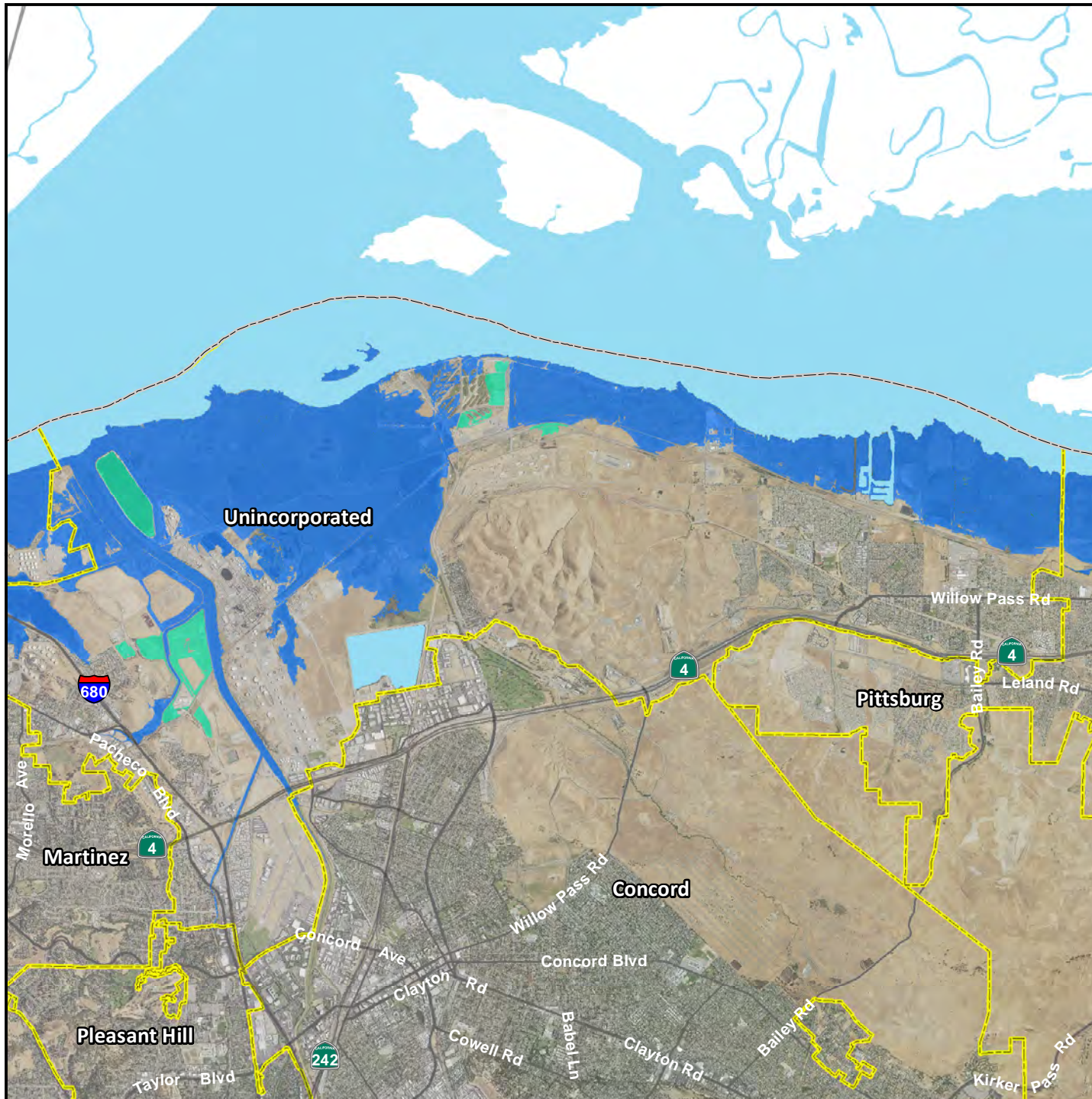
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Plus 100-Year Extreme Tide
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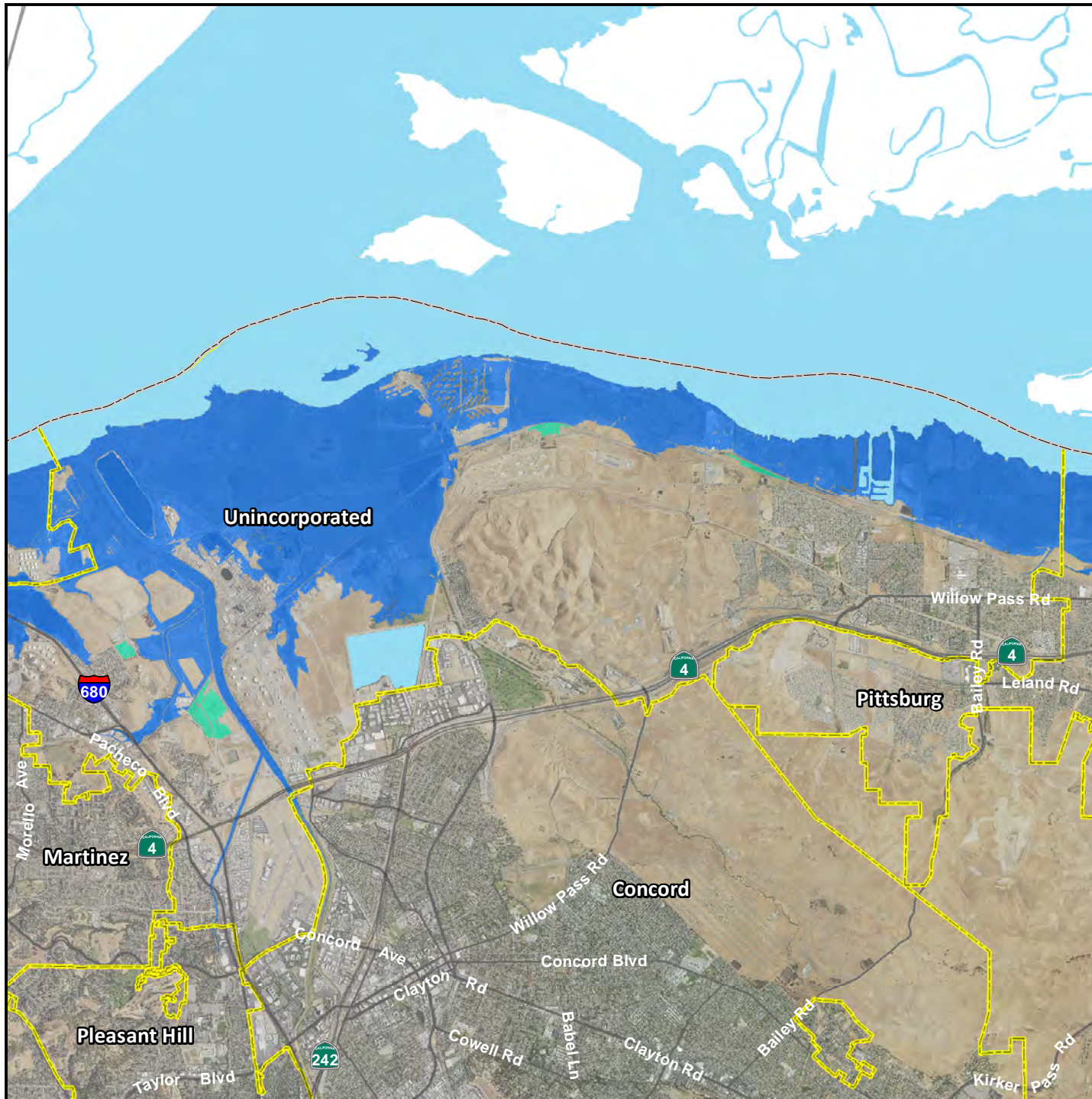
Sea Level Rise - Mean Higher High
Water Scenario Inundation Zones

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Vine Hill / Bay Point Unincorporated Area

Sea Level Rise - Mean Higher High
Water Scenario Inundation Zones

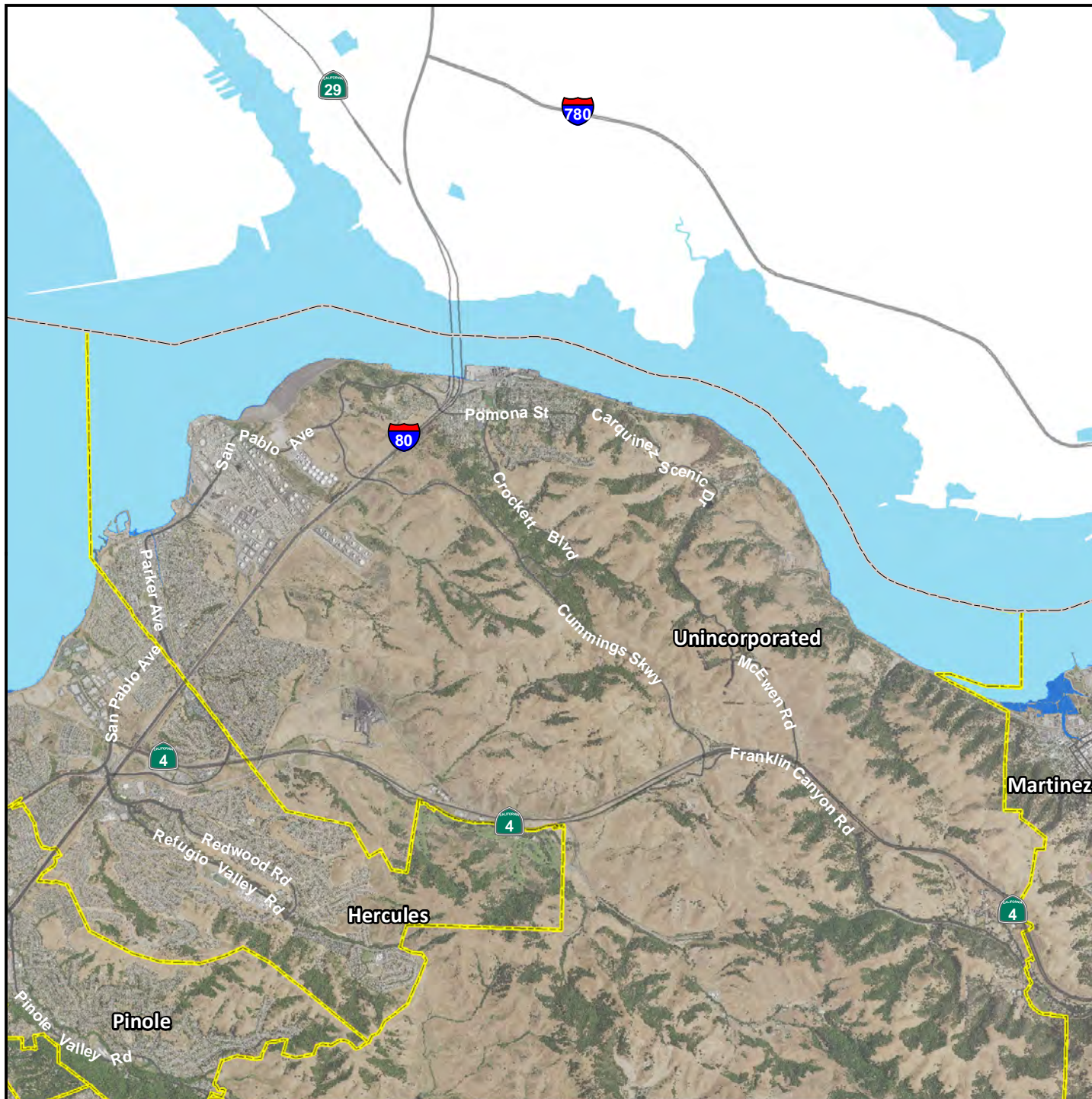
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Rodeo / Crockett Unincorporated Area

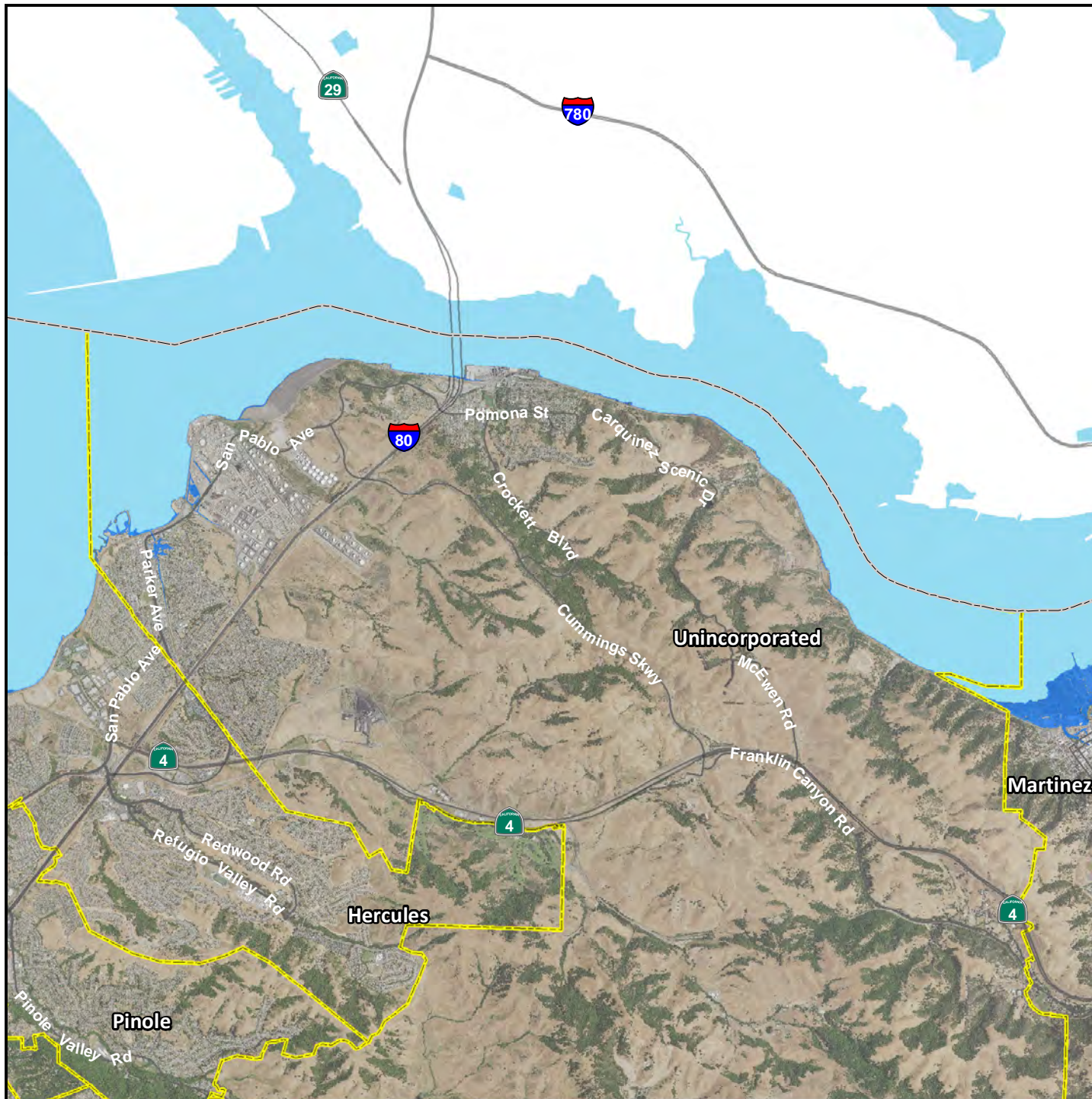
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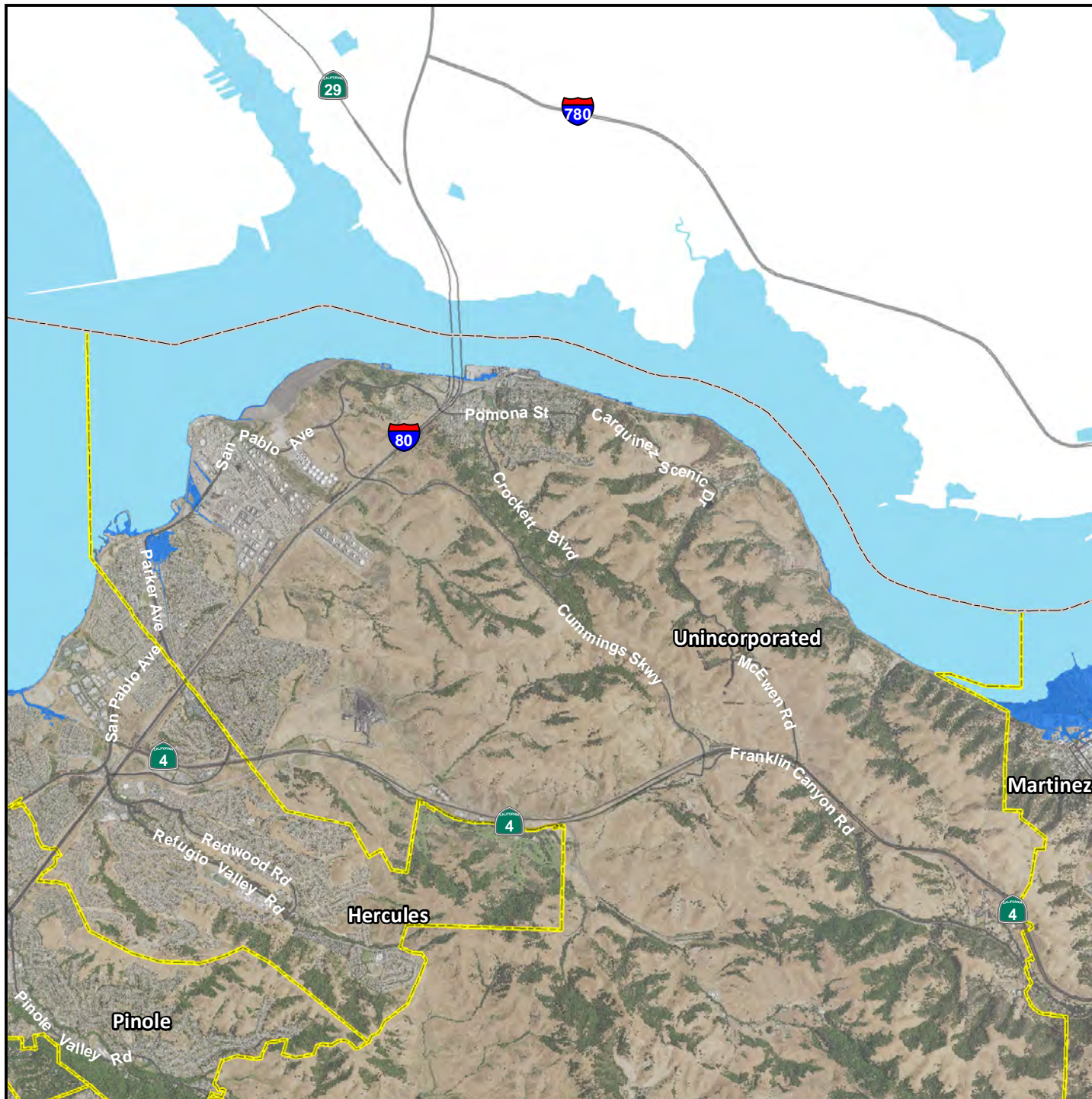
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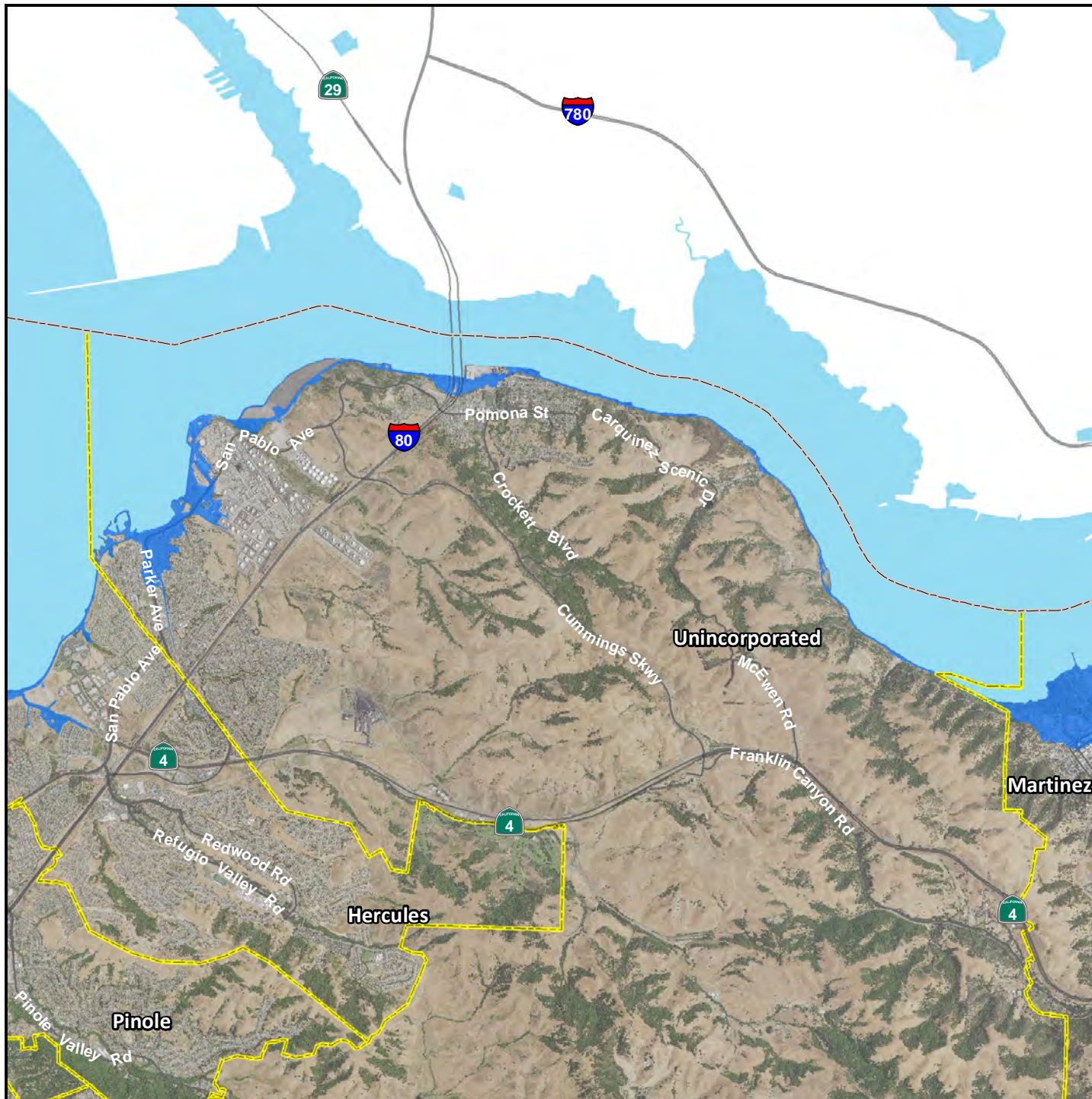
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