
1. CITY OF HERCULES

1.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact

Robert Reber, Community Development Director
111 Civic Drive
Hercules, CA, 94549
510-799-8248
RReber@ci.hercules.ca.us

Alternate Point of Contact

Mike Roberts, Public Works Director/
City Engineer
111 Civic Drive
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510-799-8241
MikeRoberts@ci.hercules.ca.us

1.2 JURISDICTION PROFILE

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

- **Date of Incorporation**—December 15th, 1900
- **Current Population**—26,224 (California Department of Finance estimate as of May 1, 2019)
- **Population Growth**—1 percent annual increase according to the California Department of Finance
- **Location and Description**—The City is located in the western portion of Contra Costa County, one of the nine counties comprising the San Francisco Bay Area. Hercules has a total area of 19.98 square miles with 6.41 square miles of land and 13.57 square miles of water. The City is in the path of growth in the Bay Area - accessible by freeway to employment areas in West Contra Costa County, Northern Alameda County, and the Benicia area. There is a Bay Area Rapid Transit (BART) station in Richmond, nine miles south of Hercules, which provides West Contra Costa County with mass transit service to destinations along the industrial corridor between the cities of Richmond and Fremont and the City of San Francisco. The Union Pacific Railroad runs along the bayfront. The Burlington Northern Santa Fe Railway runs through the center of Hercules.

The City of Hercules is a planned community which is an extension of an urbanized area already served by major transportation and utility systems. The plan incorporates open space and conservation areas and provides for improved environmental design. The City has the governmental framework to provide its future residents with needed urban services.

- **Brief History**— The "Hercules Site" of the California Powder Works was established in 1879. Originally occupying a site in what is now Golden Gate Park in San Francisco, the company decided to find another location and selected a tract of land in San Pablo Bay which was a part of the former Spanish land grant called Rancho El Pinole. In about 1903, the DuPont company acquired the California Powder Works, and thereafter the plant comprised part of the E. I. DuPont de Nemours organization. In 1912, the Hercules Powder Company was incorporated (now known as Hercules Incorporated) and purchased the Hercules, California plant from the DuPont company together with other explosive materials manufacturing plants operated by the DuPont company in other states. The Hercules, California plant was the largest producer
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of TNT in World War I, supplying explosives to Great Britain, France, and Russia before the United States entered the war.

Several of the houses in the historic district were built prior to 1900, with the majority erected during World War I. In 1902, the Hercules Water Company was formed to supply water to the area between San Pablo and Rodeo. This company operated until 1953 when it became a part of East Bay Municipal Utility District. In 1975, construction of new housing began east of Interstate-80. This marked the beginning of new Hercules. In 1978, Hercules, Inc. sold the plant and ended almost a hundred years of activity in the City.

- **Climate**— Hercules has a mild Mediterranean climate like much of the Bay Area and Contra Costa County. The climate is mild with warm dry summers and cool wet winters. The average temperature from June to October is low 70s with temperatures from November to May ranging between the mid 40s to low 60s. The average annual rainfall is 23.35 inches, which is concentrated from November to March.
- **Governing Body Format**— The City of Hercules is a general law city and functions as a Council–Manager form of government. The City is governed by a council of five members elected at large. The City Council assumes responsibility for the adoption of this plan, and the City Manager will oversee its implementation.

1.3 PLANNING PROCESS

The City of Hercules began the planning process in July 2019 by forming a steering committee which met 7 times on a monthly basis from August 19, 2019 to February 17, 2020 to identify objectives, provide content, and support the development of a Local Hazard Mitigation Plan and update to the Safety Element of the City’s General Plan. The Steering Committee held a total of eight meetings, concluding with a virtual meeting on March 19, 2020.

Steering Committee Members:

- Interim Community Development Director Robert Reber
- Chief of Police William Imboden
- Rodeo-Hercules Fire District Chief Bryan Craig
- Hercules City Manager David Biggs
- Recreation Director Christopher Roke
- Public Works Director Mike Robert
- Finance Director Edwin Gato

In addition to meetings held with the Steering Committee, a public engagement and outreach process was developed to give members of the public the opportunity to contribute to the plans. On September 25, 2019, the City held a community workshop to kick off the Hazard Mitigation Plan and Safety Element update. The workshop was attended by twenty-two members of the general public in addition to the steering committee members, and representatives from Cal OES and the Bay Area Air Quality Management District. At the workshop, participants identified several areas of concern related to natural disaster resilience in the city:.

- Evacuation Routes—including concern about neighborhoods with one way in and out, evacuation of schools, senior housing, people with disabilities, and others with access and functional needs.
- Infrastructure Failure—overpasses, bridges, rail lines, roads, and underground utility lines.
- Duck Pond Park channel flooding.
- Train derailments or gas line explosion.

- Training and education for the public such as CERT training, flyers on preparing for emergency, training at schools.

The City also conducted a community survey to gauge the public’s understanding of citywide hazards, identify ways the City might educate the public on hazards, and guide the development of hazard policies and programs in the Local Hazard Mitigation Plan. The survey was open between October 1, 2019, and January 23, 2020, during which the City received 66 responses. The respondents were concerned with many natural and non-natural hazards in Hercules. Earthquake, wildfire, and severe weather were among the top natural hazard concerns, and non-natural hazards such as oil/gas spills, utility/power failure, active shooter, and hazardous material were among the top concerns for respondents. The survey results have been used to identify opportunities for community partners and the City of Hercules. A final public workshop was held on June 15 or 29, 2020 to obtain feedback on the draft Annex. Along with City of Hercules staff, partners including CalOES, and Contra Costa County Emergency Services presented and were available to answer questions.

1.4 DEVELOPMENT TRENDS

The City of Hercules has been recovering over the last few years from the housing market crash and great recession of 2008. The pace of development slowed considerably and then stopped completely from 2008 to 2013. In 2014 the City approved 43 single-family units, followed by 38 single-family units in 2016 but zero commercial or multi-units. This was a considerable decrease from development from 2000 to 2008 when 1,999 residential units were built in the City. There are currently about 8,436 housing units in Hercules, of which 65.9% are single-family detached. The median home value estimate is \$565,400 which is consistent with surrounding cities. Hercules is nearly built out with single-family, low-density housing but has worked to increase the development of multi-family units over the last several years.

The significantly better economy and increases in housing market values have led to an increase in development in the City. In 2008 the City of Hercules approved the Waterfront District Master Plan which planned for the Historic Town Center, Transit Village, and Hercules Point sub-district amendments. The Bayfront project is consistent with the Waterfront District Master Plan and the first phase of the development is under construction.

Table 1-1 summarizes development in the performance period 2012 - 2019 as required by the County and covered in the Annex.

Table 1-1. Recent and Expected Future Development Trends

Criterion	Response																																				
<p>Has your jurisdiction annexed any land since the development of the previous hazard mitigation plan?</p> <ul style="list-style-type: none"> If yes, give the estimated area annexed and estimated number of parcels or structures. 	<p>No</p> <p>N/A</p>																																				
<p>Is your jurisdiction expected to annex any areas during the performance period of this plan?</p>	No																																				
<p>Are any areas targeted for development or major redevelopment in the next five years?</p> <ul style="list-style-type: none"> If yes, please briefly describe 	<p>Yes</p> <ul style="list-style-type: none"> Bayfront—Phase I is completed. Phase II under construction. Phase III is in building plan check, and prepared to pull building permit. The full build-out will include: <ul style="list-style-type: none"> 1,526 multi-family residences (5% set aside for low income (60% of median income) affordable housing) 93,000 square feet of retail 35,000 square feet of office space Regional Intermodal Transportation Center, combining rail (Capitol Corridor), ferry (WETA), and bus (WestCAT) transit services. Sycamore Crossing (approved, construction anticipated to start early 2021): <ul style="list-style-type: none"> 120 multi-family residences 105-room hotel 29,500 sf of retail Hilltown—Entitlements approved as part of development agreement, with construction anticipated to start in 2021; full build-out to include: <ul style="list-style-type: none"> 598 residential units, consisting of 198 condominiums/apartments and 400 townhomes/motor court units (5% set aside for moderate-income housing) 4,200 square feet of retail 																																				
<p>How many building permits were issued in your jurisdiction since the development of the previous hazard mitigation plan?</p>	<table border="1"> <thead> <tr> <th></th> <th>2012</th> <th>2013</th> <th>2014</th> <th>2015</th> <th>2016</th> <th>2017</th> <th>2018</th> <th>2019</th> </tr> </thead> <tbody> <tr> <td>Single-Family</td> <td>0</td> <td>0</td> <td>43</td> <td>0</td> <td>38</td> <td>41</td> <td>56</td> <td>17</td> </tr> <tr> <td>Multi-Family</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>172</td> <td>232</td> </tr> <tr> <td>Other (commercial, mixed-use)</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>2</td> <td>3</td> </tr> </tbody> </table>		2012	2013	2014	2015	2016	2017	2018	2019	Single-Family	0	0	43	0	38	41	56	17	Multi-Family	0	0	0	0	0	0	172	232	Other (commercial, mixed-use)	0	0	0	0	0	0	2	3
	2012	2013	2014	2015	2016	2017	2018	2019																													
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Multi-Family	0	0	0	0	0	0	172	232																													
Other (commercial, mixed-use)	0	0	0	0	0	0	2	3																													
<p>Please provide the number of permits for each hazard area or provide a qualitative description of where development has occurred.</p>	<ul style="list-style-type: none"> Special Flood Hazard Areas: 0 Landslide: 0 High Liquefaction Areas: 0 Dam Failure Inundation Area: 0 Wildfire Risk Areas: 0 																																				

1.5 CAPABILITY ASSESSMENT

The City of Hercules has 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 1-2.
- Development and permitting capabilities are presented in Table 1-3.
- An assessment of fiscal capabilities is presented in Table 1-4.

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

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Table 1-2. Legal and Regulatory Capability

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Codes, Ordinances, & Requirements				
Building Code	Yes	Yes	Yes	Yes
<i>Comment: Hercules Municipal Code Title 9 adopted the California Administrative Code, 2019 Edition, which is the technical codes of building regulations adopted 12/10/2019, Contra Costa Building Inspection Department serves under contract to implement the building code.</i>				
Zoning Code	Yes	No	Yes	Yes
<i>Comment: Hercules Municipal Code Title 13 is the City of Hercules Zoning Ordinance adopted 10/13/98 and codified into municipal code on 10/9/2018- The Zoning Ordinance is the primary tool for implementing the goals, objectives, policies, and standards of the Hercules General Plan.</i>				
Subdivisions	Yes	No	Yes	Yes
<i>Comment: Hercules Municipal Code Title 10, Chapter 2 adopted 1983 – To control and regulate the division of any real property within the City and such real property as may be annexed to the City, except such divisions of real property as are specifically excepted from the provisions of this Chapter.</i>				
Stormwater Management	Yes	No	Yes	Yes
<i>Comment: Hercules Municipal Code Title 5, Chapter 8 adopted 1/26/1996 updated in 2018- To protect and enhance the water quality in the City of Hercules’ watercourses pursuant to and consistent with the Porter-Cologne Water Quality Control Act and the Federal Clean Water Act.</i>				
Post-Disaster Recovery	No	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.- Authorizes the Director of the California Governor’s Office of Emergency Services (Cal OES) to administer a disaster assistance program that provides financial assistance from the state for costs incurred by local governments as a result of a disaster event.</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	No	Yes	No
<i>Comment: Hercules General Plan, Growth Management Element, Section 10 adopted 11-12-2013; Cal. Gov. Code §65300 et seq.- Establishes a comprehensive, long-range program that will match the demands for multi-modal transportation facilities and services generated by new development with plans, capital improvement programs, and development mitigation programs.</i>				
Site Plan Review	Yes	No	No	Yes
<i>Comment: Hercules Municipal Code Title 13 Chapter 42 adopted 10/9/2018 – To improve the general standards of orderly development of the City through design review of individual buildings, structures, and their environs.</i>				
Environmental Protection	Yes	Yes	Yes	Yes
<i>Comment: California Environmental Quality Act (CEQA) - Requires state and local government agencies to inform decision makers and the public about the potential environmental impacts of proposed projects, and to reduce those environmental impacts to the extent feasible.</i>				
Flood Damage Prevention	Yes	Yes	Yes	Yes
<i>Comment: The city participates and is in good standing with the National Flood Insurance Program, Hercules Municipal Code Title 10, Chapter 7 adopted 5/12/2009, Contra Costa Flood Control and Water Conservation District - To promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas by legally enforceable regulations applied uniformly throughout the community to all publicly and privately owned land within flood prone, mudslide or flood-related erosion areas.</i>				
Emergency Management	Yes	Yes	Yes	Yes

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Comment: Hercules Municipal Code Title 3, Chapter 1 Disasters and Emergencies adopted 1983, Threat Assessment / Emergency Action Plan 2008, City of Hercules Emergency Operations Plan 2014, Resolution NO. 06-102 adopted 7/25/2006 which accepted the National Incident Management Systems (NIMS) as part of the city's Standardized Organization Structure, and Cal. Gov. Code §8500 et seq.-				
Climate Change	Yes	Yes	Yes	Yes
Comment: General Plan: Safety Element; California Senate Bill 379 – To reduce the potential short-, and long-term unreasonable risk of death, injuries, and property damage, and economic and social dislocation resulting from the effects of hazards. SB 1000 approved 9/24/2016 amends SB 379 and requires cities and counties to identify their “disadvantaged communities” and include an Environmental Justice element in their General Plan if “disadvantaged communities” are present.				
Planning Documents				
General Plan	Yes	No	Yes	Yes
Is the plan compliant with Assembly Bill 2140? Yes				
Comment: Hercules General Plan approved 9/22/1998 will comply when the Safety Element is adopted in conjunction with the Local Hazard Mitigation Plan.				
Capital Improvement Plan	Yes	No	Yes	Yes
How often is the plan updated? CIP is updated every 5 years				
Comment: Hercules Capital Improvement Plan – The City’s spending plan is focused on achieving the overall Goals, Strategies, and Objectives set forth in the Strategic Plan. Projects include repairs to sewer and storm drain systems, pavement maintenance, new road construction, pedestrian improvements, traffic and park improvements, and other city construction projects.				
Floodplain or Watershed Plan	Yes	Yes	Yes	Yes
Comment: The city participates and is in good standing with the National Flood Insurance Program, Contra Costa County Flood Control and Water Conservation District, Refugio Creek Watershed Vision Plan adopted 2010				
Stormwater Plan	Yes	Yes	Yes	Yes
Comment: City is a member of the Contra Costa Clean Water Program, Stormwater Resource Plan, SB 790 Stormwater Resources Act effective January 1, 2010				
Urban Water Management Plan	No	Yes	No	Yes
Comment: East Bay Municipal Utility District provides water and wastewater services to the City of Hercules. EBMUD is required by the California Water Code to update and adopt an Urban Water Management Plan (UWMP) and submit a completed plan to the Department of Water Resources every five years. The current Urban Water Management Plan was adopted on 6/28/2016. In 2009 the city adopted the State’s model water efficient landscape ordinance, and is amicable to further collaboration in future.				
Habitat Conservation Plan	No	Yes	No	No
Comment: No local plan identified. California Department of Fish and Wildlife. U.S Fish and Wildlife Service.				
Economic Development Plan	Yes	No	No	No
Comment: Hercules General Plan, Economic Development Element, adopted 1-8-1991 – Provides the policy basis and conceptual framework for pursuing economic development in Hercules.				
Shoreline Management Plan	No	No	No	No
Comment: None identified				
Community Wildfire Protection Plan	No	Yes	No	Yes
Comment: Community Wildfire Protection Plan Contra Costa County Update 2014 Draft, Prepared by Diablo Fire Safe Council – A collaboratively developed plan that identifies wildland fire hazards, prioritizes ways to reduce those hazards, and recommends measures for homeowners and communities to reduce ignitability of structures. The Contra Costa County CWPP Update 2019 is currently in the review stage.				
Forest Management Plan	No	No	No	No
Comment: None identified				
Climate Action Plan	No	No	No	No

	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Comment: None identified – Contra Costa County Climate Action Plan includes unincorporated areas with the county. The City of Hercules does not have a Climate Action Plan.				
Comprehensive Emergency Management Plan	Yes	Yes	Yes	Yes
Comment: City of Hercules Emergency Operations Plan 2014 - Provides the community with effective preparation should an emergency occur. The City coordinates City facilities, assigning specific tasks to personnel, while specifying the policies and general procedures that are relative to emergency preparedness. The plan includes the City of Hercules into the S.E.M.S regulations as well as the County and Statewide Emergency Management System. The plan is updated as situations change.				
Threat & Hazard Identification & Risk Assessment (THIRA)	No	No	No	No
Comment: None identified				
Post-Disaster Recovery Plan	Yes	Yes	No	Yes
Comment: None identified				
Continuity of Operations Plan	No	No	No	No
Comment: None identified				
Public Health Plan	No	Yes	Yes	No
Comment: Contra Costa County Health Department has a comprehensive plan and overall responsibility for public health.				
Strategic Plan	Yes	No	No	Yes
Comment: Hercules Strategic Plan was initially adopted on 7/11/2017, updated on 5/8/2018 and reviewed on an annual basis. The Strategic Plan includes a SWOT Analysis (Strengths, Weaknesses, Opportunities, Threats) and a series of goals, strategies and objectives for the city.				

Table 1-3. Development and Permitting Capability

Criterion	Response
Does your jurisdiction issue development permits? • If no, who does? If yes, which department?	Yes Community Development Department
Does your jurisdiction have the ability to track permits by hazard area?	Yes, manually
Does your jurisdiction have a buildable lands inventory? • If yes, please briefly describe.	Yes The City of Hercules has a buildable land inventory as part of the Housing Element in the General Plan. There are currently 87.33 buildable acres with potential for 2,732 residential units that the city has identified. The buildable land is concentrated in the Bayfront and Hilltown areas of the city.
• If no, please quantitatively describe the level of buildout in the jurisdiction.	N/A

Table 1-4. Fiscal Capability

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

Table 1-5. Administrative and Technical Capability

Staff/Personnel Resource	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Community Development Department & Engineering and Public Works
Engineers or professionals trained in building or infrastructure construction practices	Yes	Engineering and Public Works
Planners or engineers with an understanding of natural hazards	Yes	Community Development Department & Engineering and Public Works
Staff with training in benefit/cost analysis	Yes	Finance & Human Resources
Surveyors	Yes	Contract as required
Personnel skilled or trained in GIS applications	Yes	Community Development Department & Engineering and Public Works
Scientist familiar with natural hazards in local area	Yes	Contract as required
Emergency Manager	Yes	City Manager, Emergency Services
Grant writers	Yes	Contract as required
Other	N/A	N/A

Table 1-6. 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 for content update. No for comprehensive modifications, can contract as needed
Do you have hazard mitigation information available on your website? • If yes, please briefly describe.	Yes Emergency Preparedness page on the website with links to emergency evacuation routes, state of readiness, preparing for emergencies, what to do during and after a disaster and other emergency resources.
Do you utilize social media for hazard mitigation education and outreach? • If yes, please briefly describe.	Yes Safety Element update and Hazard Mitigation Plan information has been distributed through Facebook pages of the Rodeo-Hercules Fire District and Hercules Police Department.
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, please briefly describe.	Yes Planning Commission, and City Council for hazard-related ordinances.
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, please briefly describe.	Yes CERT Training thru the Fire Department
Do you have any established warning systems for hazard events? • If yes, please briefly describe.	Yes Contra Costa County Community Warning System

Table 1-7. National Flood Insurance Program Compliance

Criterion	Response
What local department is responsible for floodplain management?	Engineering and Public Works
Who is your floodplain administrator? (department/position)	Mike Roberts, Public Works Director / City Engineer
Are any certified floodplain managers on staff in your jurisdiction?	No, A licensed civil engineer
What is the date that your flood damage prevention ordinance was last amended?	2009
Does your floodplain management program meet or exceed minimum requirements? • If exceeds, in what ways?	Meets minimum requirements N/A
When was the most recent Community Assistance Visit or Community Assistance Contact? Julia Gillespie, Floodplain Management Specialist Region IX 510-627-7248	September 2012
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? June 16, 2020 • 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.	No Pinole Creek needs to be re-mapped
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?	No N/A No
How many Flood Insurance policies are in force in your jurisdiction? ^a	16

Criterion	Response
<ul style="list-style-type: none"> What is the insurance in force? What is the average premium in force? 	\$6,963,000 \$435
How many total loss claims have been filed in your jurisdiction? ^a <ul style="list-style-type: none"> How many claims were closed without payment/are still open? What were the total payments for losses? 	None N/A N/A

a. According to FEMA statistics as of June 16, 2020

Table 1-8. Community Classifications

	Participating?	Classification	Date Classified
Community Rating System	No	N/A	N/A
Building Code Effectiveness Grading Schedule	No	N/A	N/A
Public Protection	No	N/A	N/A
Storm Ready	No	N/A	N/A
Firewise	No	N/A	N/A

Table 1-9. Adaptive Capacity for Climate Change

Criterion	Jurisdiction Rating
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: GHG emissions inventory has not been done.</i>	Low
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: ART- Adapting to Rising Tides: Contra Costa County Assessment and Adaption Project March 2017</i>	Medium
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: None provided</i>	Low
Identified strategies for adaptation to impacts <i>Comments/Additional Information: None provided</i>	Low
Champions for climate action in local government departments <i>Comments/Additional Information: None provided</i>	Low
Political support for implementing climate change adaptation strategies <i>Comments/Additional Information: None provided</i>	Low
Financial resources devoted to climate change adaptation <i>Comments/Additional Information: None provided</i>	Low

Criterion	Jurisdiction Rating
Local authority over sectors likely to be negative impacted <i>Comments/Additional Information: Authority over development in Bayfront and Hercules Point</i>	Medium
Public Capacity	
Local residents knowledge of and understanding of climate risk <i>Comments/Additional Information: None provided</i>	Low
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: Refugio Creek Watershed Vision Plan</i>	Medium

1.6 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.

1.6.1 Existing Integration

In the performance period since adoption of the previous hazard mitigation plan, City of Hercules 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:

- **City of Hercules General Plan** – The Safety Element of the General Plan contains information on general hazard, risk reduction, and avoidance strategies, climate change vulnerability and measures to address those vulnerabilities, emergency response priorities, and comprehensive hazard mitigation to minimize disruption and expedite recovery following disasters.
- **Circulation Element** – The Circulation Element of the City of Hercules General Plan contains evacuation routes and shelters in the city. The element also acknowledges the challenges for emergency access in the city including limited routes in and out of Hercules, and almost all of the evacuation routes are dependent on structures including bridges, railroad under crossings, and freeway structures and would be vulnerable to closure in case of structural failure.
- **City of Hercules Municipal Code** – Municipal Code Title 10 Chapter 7 contains methods of reducing flood losses. Title 3 Chapter 1 creates a Disaster Council with the responsibility to develop the Emergency Plan which shall provide for the effective mobilization of all of the resources of this City, both public and private, to meet any condition constituting a local emergency, state of emergency, or state of war emergency; and shall provide for the organization, powers and duties, services, and staff of the emergency organization.
- **California Environmental Quality Act (CEQA)** – The City Hercules enforces the requirements of CEQA which requires identifying and mitigating for natural hazards.
- **Zoning Code** – The City of Hercules has a special flood hazard area overlay district in the Zoning Ordinance.

- **City of Hercules Emergency Operations Plan 2014**– The Emergency Operations Plan addresses the City of Hercules’s planned response to extraordinary emergency situations associated with natural, technological, non-natural or any other type of emergency. The Emergency Operations Plan establishes a Recovery Planning Unit to address the post-disaster recovery.

Resources listed in Section 1.7 were used to provide information for this annex on hazard events and local capabilities within the jurisdiction.

1.6.2 Opportunities for Future Integration

As this hazard mitigation plan is implemented, City of Hercules will use information from the plan and 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, and progress on these actions will be reported through the progress reporting process described in Volume 1 of the Contra Costa County multijurisdictional local hazard mitigation plan. New opportunities for integration also will be identified as part of the annual progress report. 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:

- **General Plan**- Updates to the General Plan will consider the LHMP and associated maps for inclusion into all future elements.
- **Climate Action Plan** – The City of Hercules does not have a Climate Action 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.
- **Municipal Code**—Title 10 Land Use and Title 13 Zoning Ordinance restrict developments in flood hazard areas identified by FEMA. Portions of the LHMP plan and associated maps will be considered for inclusion into future updates.
- **City of Hercules Emergency Operations Plan, 2014** – The LHMP will be considered in future updates to the EOP.
- **Hercules Strategic Plan 2017**- The Strategic Plan may take into consideration hazard mitigation potential as a means of evaluating project prioritization.
- **Urban Water Management Plan** – The city has been collaborating with East Bay Municipal Utility District’s Urban Water Management Plan and is willing to collaborate with future actions.

1.7 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 1-10 lists past occurrences of natural hazards for which specific damage was recorded in City of Hercules. Other hazard events that broadly affected the entire planning area, including City of Hercules, are listed in the risk assessments in Volume 1 of this hazard mitigation plan.

Table 1-10. Past Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Damage Assessment
Landslide – Carson Street	N/A	2000	No estimates available, damage was limited to two residential structures.
Landslide – Carson Street	N/A	2006	No estimates available, damage was limited to two residential structures.
Loma Prieta (Earthquake)	DR-845	October 17, 1989	\$25 million in the County A few buildings in the City of Hercules experienced some structural damage.
Flooding of Refugio Creek	N/A	1983	No estimates available

1.8 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: None identified
- Number of FEMA-identified Severe-Repetitive-Loss Properties: None identified
- Number of Repetitive-Loss Properties or Severe-Repetitive-Loss Properties that have been mitigated: None identified

Other noted vulnerabilities include the following:

- Discrepancies between FEMA’s printed and digital Flood Insurance Rate Maps.
- Discrepancies between CAL Fire Wildfire Severity Zone maps and Association of Bay Area Governments Resilience Program maps.
- Limited available funding sources or funding shortfalls may affect the completion of projects or continuation of programs aimed at mitigating hazards.
- Major transportation corridors and rail lines are vulnerable to disruption, particularly from earthquake hazard.
- The City of Hercules has developed detailed evacuation routes, alternate routes and shelters but needs to better educate residents before an emergency.

1.9 HAZARD RISK RANKING

Table 1-11 presents a local ranking for City of Hercules 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 1-11. Hazard Risk Ranking

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Earthquake ^b	54	High
1	Landslide ^e	54	High
1	Severe-weather	30	High
2	Wildfire ^f	20	Medium
2	Sea-level rise ^d	12	Low
3	Flood ^c	9	Low
4	Drought	9	Low
5	Dam and levee failure ^a	6	Low
6	Tsunami	0	None

- a. 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.
- b. Haywired M7.05 event was used to assign probability and impacts
- c. 1-percent annual chance event was used to assign probability and impacts
- d. 2100 upper range estimates and extreme tide are used to assign probability and impacts
- e. Very High and High severity zones were used to assign probability and impacts
- f. There is no mapped risk within the jurisdiction; however, this score was revised up due to neighborhoods in the eastern portion of the city being adjacent to High Severity Zones in Local Responsibility areas and the increase of wildfire activity due to climate change.

1.10 STATUS OF PREVIOUS PLAN ACTIONS

Table 1-12 Not applicable the City of Hercules did not participate in the previous version of Contra Costa County’s LHMP.

1.11 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 1-13 lists the actions that make up the City of Hercules hazard mitigation action plan. Table 1-14 identifies the priority for each action. Table 1-15 summarizes the mitigation actions by hazard of concern and mitigation type.

Table 1-13. Hazard Mitigation Action Plan Matrix

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
Existing	Earthquake, Landslide, Severe Weather, Wildfire, Sea-level rise Flood, Drought, Dam Failure, Tsunami	1, 4, 7, 11, 12, 14, 15, 17	Community Development Department	High	HMGP, PDM.FMA	Long-term

H-1 — Where appropriate, support retrofitting or relocation of structures in hazard prone areas to protect structures from future damage focusing on repetitive loss and sever repetitive loss properties.

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
H-2 — Integrate the hazard mitigation plan into other plans, ordinances, and programs that dictate land use decisions in the community, including the General Plan, and Zoning Ordinance.						
New and Existing	Earthquake, Landslide, Severe Weather, Wildfire, Sea-level rise Flood, Drought, Dam Failure, Tsunami	1, 3, 4, 5, 7, 11, 12, 14, 17, 18	Community Development Department	Medium	Staff Time, department funds	Ongoing
H-3 — Actively participate in the plan maintenance protocols outlined in Volume 1 of this Hazard Mitigation Plan						
New and Existing	Earthquake, Landslide, Severe Weather, Wildfire, Sea-level rise Flood, Drought, Dam Failure, Tsunami	3, 8,16	Community Development Department	Low	Staff time, General funds	Ongoing
H-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, Dam and Levee failure	3, 5, 6, 9, 10, 11, 15	Public Works	Low	Staff Time, General Funds	Ongoing
H-5 — Dredge Refugio Lake & Replace Aerator Fountains –The fountains aerate the water, reducing algae and dredging will restore the lake to its original depth, as part of the City’s storm water program.						
Existing	Flood	1, 2,10,17	Public Works	\$392,000	LLAD Zone 10	Short-term
H-6 — Develop and implement a program to capture perishable data after significant events (e.g. high water marks, preliminary damage estimates, damage photos) to support future mitigation efforts including the implementation and maintenance of the hazard mitigation plan.						
Existing	Earthquake, Landslide, Severe Weather, Wildfire, Sea-level rise Flood, Drought, Dam Failure, Tsunami	6,8,18	Community Development Department	Low	Staff Time, General Funds	Short-term
H-7 — Support the County-wide initiatives identified in Volume I of the hazard mitigation plan.						
New and Existing	Earthquake, Landslide, Severe Weather, Wildfire, Sea-level rise Flood, Drought, Dam Failure, Tsunami	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18	Community Development Department	Low	Staff Time, General Funds	Short-term
H-8 — Explore participating in community readiness programs such as Firewise, Read Set Go, and StormReady.						
New and Existing	Dam Failure, Flood, Severe Weather, Wildfire	3, 6, 9,17	Public Works	Low	Staff Time, Grant	Short-term

H-9 — Partner with Rodeo-Hercules Fire District to form a Community Emergency Response Team (CERT).

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
Existing	Earthquake, Landslide, Severe Weather, Wildfire, Sea-level rise Flood, Drought, Dam Failure, Tsunami	2, 3, 6, 13, 16	Emergency Management	Low	Rodeo-Hercules Fire District, Staff Time, Grant	Short-term
H-10 — Maintain an accessible online GIS portal to store and share the multi-agency maps and data developed throughout the LHMP process.						
New and Existing	Earthquake, Landslide, Severe Weather, Wildfire, Sea-level rise Flood, Drought, Dam Failure, Tsunami	3, 5, 6	Community Development Department	Low	Staff Time, General Funds	Ongoing
H-11 — Continue pursuing funding to Restore Chelsea Wetlands- The goal is to restore Chelsea Wetlands to its original tidal wetland state to reduce flooding and improve wildlife habitat.						
Existing	Flood	17,18	Community Development Department	High	Grant administered by Ducks Unlimited	Long-term
H-12 — Consider developing a Climate Action Plan to incorporate relevant research, and maps which might impact hazard planning and policy setting in the City of Hercules.						
New and Existing	Earthquake, Landslide, Severe Weather, Wildfire, Sea-level rise Flood, Drought, Dam Failure, Tsunami	3, 6, 12, 16, 17, 18	Community Development Department	Medium	Staff time for investigation of grant options.	Short-term
H-13 — Partner with the community, non-profits, Police Department, and the Fire District to conduct community trainings on emergency preparedness, and response including evacuation routes and shelters.						
Existing	Earthquake, Landslide, Severe Weather, Wildfire, Sea-level rise Flood, Drought, Dam Failure, Tsunami	2, 3, 6, 16,	Emergency Management	Medium	Staff Time, General Funds	Ongoing
H-14 — Review the Adapting to Rising Tides policy and program recommendations when updating the Housing Element, and completing the next Capital Improvement Program.						
New and Existing	Flooding, Sea-level rise	1, 4, 5, 6, 8, 10,11, 16	Community Development Department	Low	Staff time, General Funds	Ongoing
H-15 — Install Green Infrastructure where feasible throughout the City in order to promote climate resiliency through the reduction of urban heat, recharging the aquifer, and reducing runoff to the floodplain.						
New and Existing	Severe Weather, Drought, Flood	1, 4, 7, 10, 12, 13, 15, 17	Public Works	High	HMGP, General Funds	Long-term
H-16 — Adopt and enforce updated building code provisions to reduce damage risk from natural hazard.						

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
New and Existing	Earthquake, Landslide, Severe Weather, Wildfire, Sea-level rise Flood, Drought, Dam Failure, Tsunami	1, 7, 11,	Community Development Department	Low	Staff Time, General Funds	Short-term

H-17 — Partner with the Contra Costa County Department of Conservation and Development, and surrounding municipalities on grant opportunities for climate resiliency efforts.

New and Existing	Earthquake, Landslide, Severe Weather, Wildfire, Sea-level rise Flood, Drought, Dam Failure, Tsunami	1, 2, 3, 4, 8, 10, 13, 15, 15, 17, 18	Community Development Department	Low	Staff Time, General Funds	Long-term
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H-18 — Require development proposed in landslide mapped area to provide a geo-technical analysis to ensure site is build-able; and any construction requirements.

New	Landslide	1, 4, 5, 6, 7, 11, 12,	Public Works	Low	Staff Time, General Funds	Ongoing
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Note: * = Identified lead agency

Table 1-14. 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
H-1	8	High	High	Yes	Yes	No	Medium	High
H-2	10	Medium	Medium	Yes	No	Yes	High	Low
H-3	3	Low	Low	Yes	No	Yes	High	Low
H-4	7	Medium	Low	Yes	No	Yes	High	Low
H-5	4	Medium	\$392,000	Yes	No	Yes	Medium	Low
H-6	3	Low	Low	Yes	No	Yes	Low	Low
H-7	18	Medium	Low	Yes	No	Yes	High	Low
H-8	4	Medium	Low	Yes	No	Yes	Medium	Low
H-9	5	Low	Low	Yes	No	Yes	Medium	Low
H-10	3	Low	Low	Yes	Yes	No	Low	High
H-11	2	Medium	High	Yes	No	Yes	Medium	Low
H-12	6	Medium	Medium	Yes	Yes	No	Low	High
H-13	4	High	Medium	Yes	Yes	Yes	High	Medium
H-14	8	Low	Low	Yes	No	Yes	High	Low
H-15	8	High	High	Yes	Yes	No	Medium	High
H-16	3	High	Low	Yes	No	Yes	High	Low
H-17	11	Medium	Low	Yes	Yes	No	Medium	Medium
H-18	7	Low	Low	Yes	No	Yes	Low	Low

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

Table 1-15. 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
Dam and Levee failure	H1, H2, H3, H4, H7, H10, H16, H17	H1, H2, H3, H4, H7, H8, H16	H2, H3, H4, H6, H7, H8, H9, H10, H13	H2, H3, H7, H8, H12, H17	H2, H7, H9, H13	H1, H2, H3, H16	H1, H2, H3, H6, H7, H9, H12, H17	H1, H2, H3, H4, H6, H7, H9, H10, H12, H13, H17
Drought	H1, H2, H3, H7, H10, H15, H16, H17	H1, H2, H3, H7, H15, H16	H2, H3, H6, H7, H9, H10, H13	H2, H3, H7, H12, H15, H17	H2, H7, H9, H13	H1, H2, H3, H15, H16	H1, H2, H3, H6, H7, H9, H12, H15, H17	H1, H2, H3, H6, H7, H9, H10, H12, H13, H17
Earthquake	H1, H2, H3, H7, H10, H16, H17	H1, H2, H3, H7, H16	H2, H3, H6, H7, H9, H10, H13	H2, H3, H7, H12, H17	H2, H7, H9, H13	H1, H2, H3, H16	H1, H2, H3, H6, H7, H9, H12, H17	H1, H2, H3, H6, H7, H9, H10, H12, H13, H17

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
Flood	H1, H2, H3, H4, H5, H7, H10, H11, H14, H15, H16, H17	H1, H2, H3, H4, H7, H15, H8, H11, H14, H16	H2, H3, H4, H6, H7, H9, H10, H13	H2, H3, H5, H7, H11, H12, H15, H17	H2, H7, H9, H13	H1, H2, H3, H5, H15, H16	H1, H2, H3, H6, H7, H9, H11, H12, H14, H15, H17	H1, H2, H3, H4, H6, H7, H9, H10, H12, H13, H14, H17
Landslide	H1, H2, H3, H7, H10, H16, H17, H18	H1, H2, H3, H7, H16, H18	H2, H3, H6, H7, H9, H10, H13	H2, H3, H7, H12, H17	H2, H7, H9, H13	H1, H2, H3, H16	H1, H2, H3, H6, H7, H9, H12, H17	H1, H2, H3, H6, H7, H9, H10, H12, H13, H17
Severe weather	H1, H2, H3, H7, H10, H15, H16, H17	H1, H2, H3, H7, H8, H15, H16	H2, H3, H6, H7, H8, H9, H10, H13	H2, H3, H7, H8, H12, H15, H17	H2, H7, H8, H9, H13	H1, H2, H3, H15, H16	H1, H2, H3, H6, H7, H9, H12, H15, H17	H1, H2, H3, H6, H7, H9, H10, H12, H13, H17
Tsunami	H1, H2, H3, H7, H10, H16, H17	H1, H2, H3, H7, H16	H2, H3, H6, H7, H9, H10, H13	H2, H3, H7, H12, H17	H2, H7, H9, H13	H1, H2, H3, H16	H1, H2, H3, H6, H7, H9, H12, H17	H1, H2, H3, H6, H7, H9, H10, H12, H13, H17
Wildfire	H1, H2, H3, H7, H10, H16, H17	H1, H2, H3, H7, H8, H16	H2, H3, H6, H7, H8, H9, H10, H13	H2, H3, H7, H8, H12, H17	H2, H7, H9, H13	H1, H2, H3, H16	H1, H2, H3, H6, H7, H9, H12, H17	H1, H2, H3, H6, H7, H9, H10, H12, H13, H17

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

1.12 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 Hazard Mitigation Plan** – The county multijurisdictional local hazard mitigation plan was reviewed to identify county wide goals and polices.
- **City of Hercules Municipal Code** – The municipal code was reviewed for the full capability assessment and for identifying opportunities for action plan integration.
- **City of Hercules General Plan** – The general plan was reviewed to see where hazard mitigation strategies were currently being integrated and where they could be integrated in the future.
- **City of Hercules Emergency Operations Plan 2014**– The Emergency Operations Plan was reviewed to identify the level of preparedness to an extraordinary emergency situation associated with natural disasters.
- **City of Hercules Threat Assessment / Emergency Action Plan 2008**- As part of the Emergency Operations Plan the City of Hercules underwent a threat assessment which provided information regarding potential hazards and threats to the city.
- **City of Hercules Budget Plan 2017**- The budget plan allocates resources to enhance the community and provide services in a thoughtful and sustainable way.
- **Technical Reports and Information** – The following outside resources and references were reviewed:

- **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.
- **Community Wildfire Protection Plan Contra Costa County** - Provided an analysis of wildfire hazards and risk in the wildland-urban interface (WUI) in Contra Costa County.
- **FEMA Local Mitigation Planning Handbook**- Provided guidance in developing the Local Hazard Mitigation Plan.

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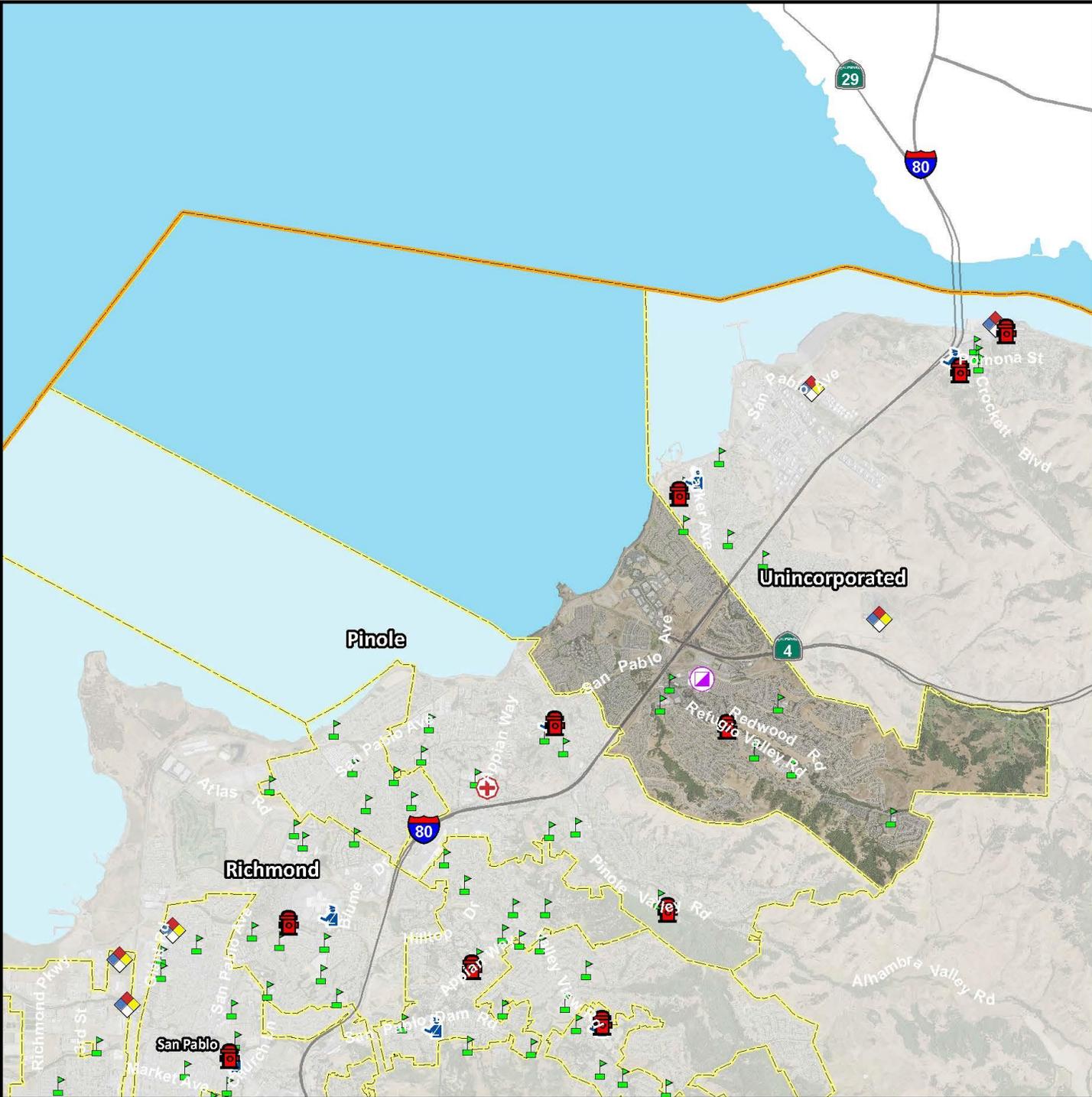
The City of Hercules

Critical Facilities

-  Emergency Operations Centers (Government)
-  Fire Stations (Protective Functions)
-  Hazardous Materials
-  Medical Facilities
-  Police Stations (Protective Functions)
-  Schools & Educational Facilities
-  Contra Costa County Boundary
-  City Boundaries

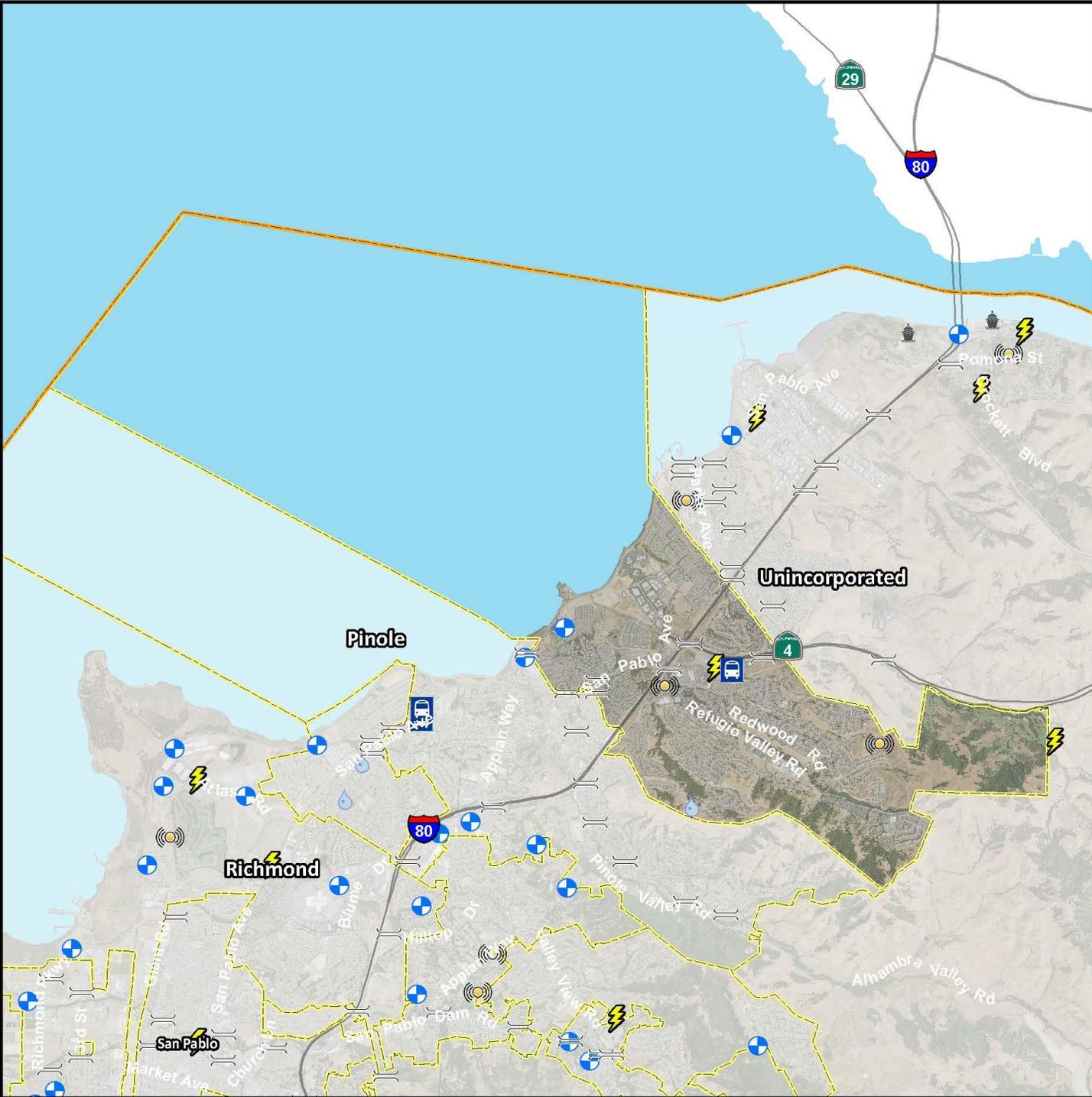


Map Data Sources: Contra Costa County, CalTrans, Hazus 3.2, EPA, USDA



The City of Hercules

Critical Infrastructure

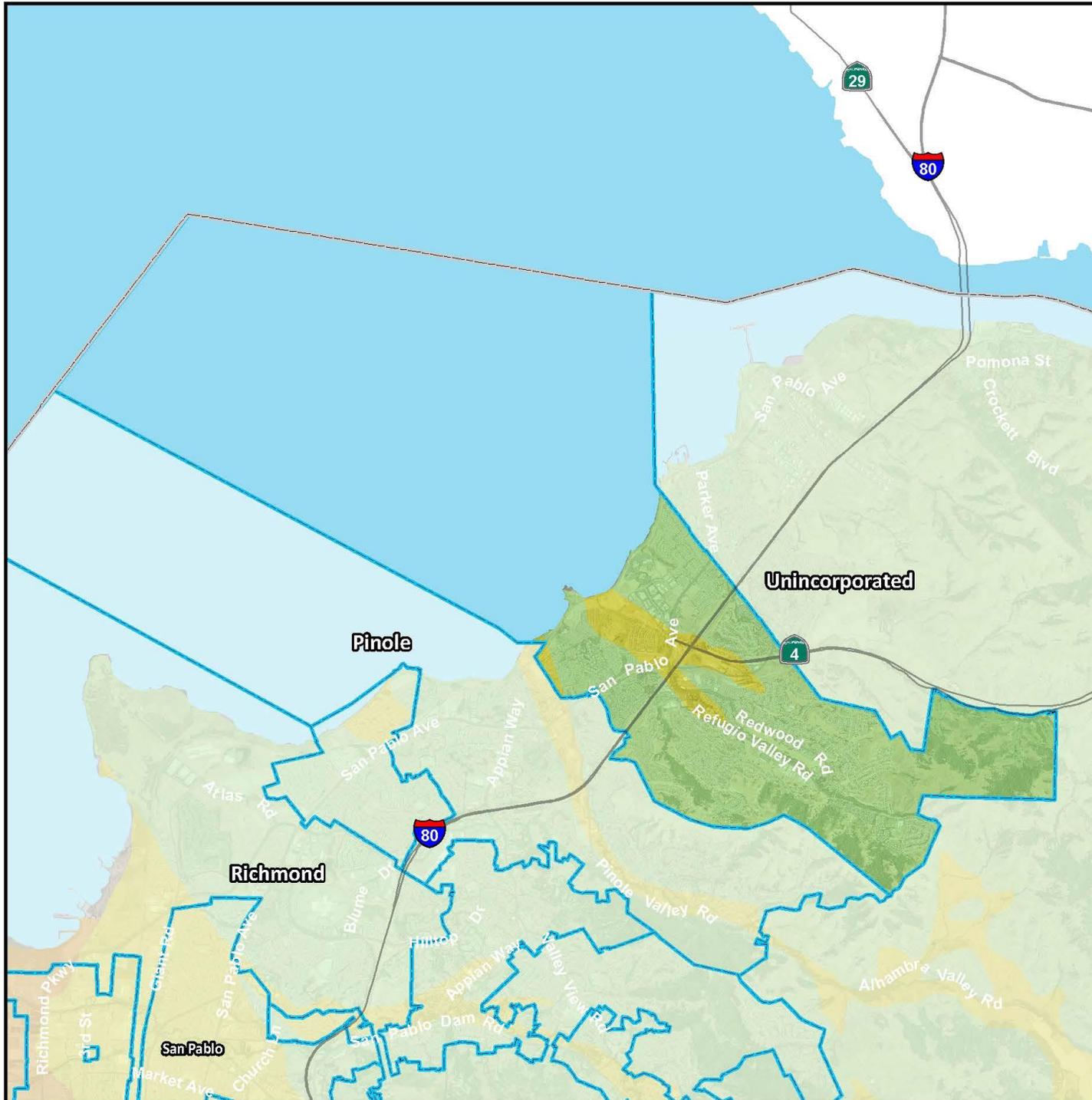


- Airports (Other Critical Functions)
- Bus Facilities (Other Infrastructure)
- Communication Facilities
- Electric Power Facilities
- Highway Bridges
- Highway Tunnels (Other Infrastructure)
- Light Rail (Other Infrastructure)
- Natural Gas (Other Infrastructure)
- Port Facilities (Other Critical Functions)
- Water Supply Facilities
- Rail Facilities (Other Infrastructure)
- Wastewater Facilities
- Contra Costa County Boundary
- City Boundaries



Map Data Sources: Contra Costa County, CalTrans, Hazus 3.2, EPA, USDA

The City of Hercules National Earthquake Hazard Reduction Program (NEHRP) Soil Class



Contra Costa County Boundary

City Boundaries

Water Bodies

NEHRP Site Class / Soil Profile

B / Rock

C / Very Dense Soil - Soft Rock

D / Stiff Soil

E / Soft Soil

No Soil Data Available



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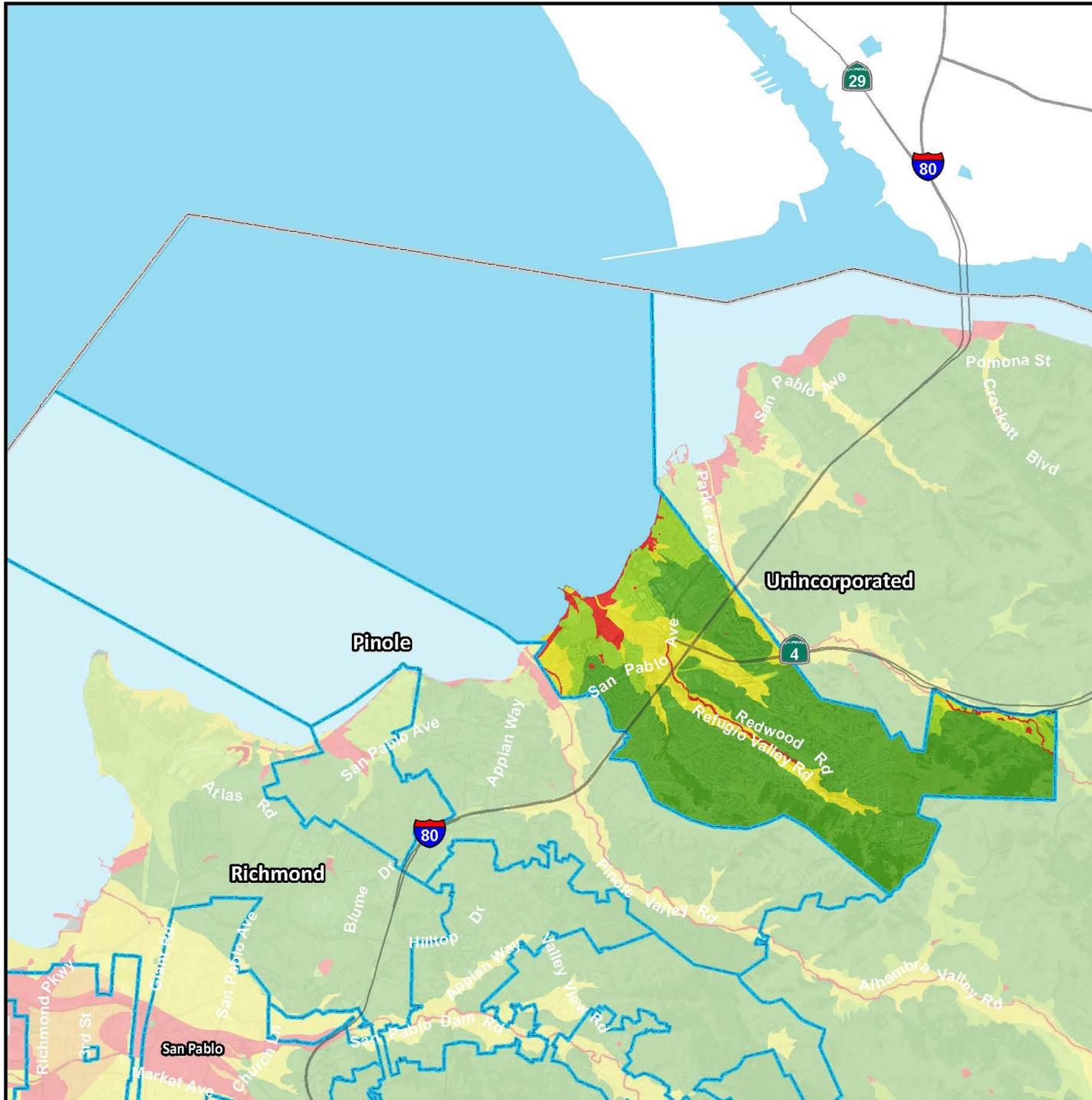


Map Data Sources: Contra Costa County,
Caltrans, California Department of
Conservation, USDA

The City of Hercules

Liquefaction Susceptibility

-  Contra Costa County Boundary
-  City Boundaries
-  Water Bodies
- Susceptibility to Liquefaction**
-  Very Low
-  Low
-  Medium
-  High
-  Very High
-  No Liquefaction Data Available



Miles



Map Data Sources: Contra Costa County, Caltrans, California Geological Survey, USDA, USGS

The City of Hercules

Landslide Susceptibility Zones

 Contra Costa County Boundary

 City Boundaries

 Water Bodies

Type

 Low

 Moderate

 High

 Very High / Existing

 Data Not Available

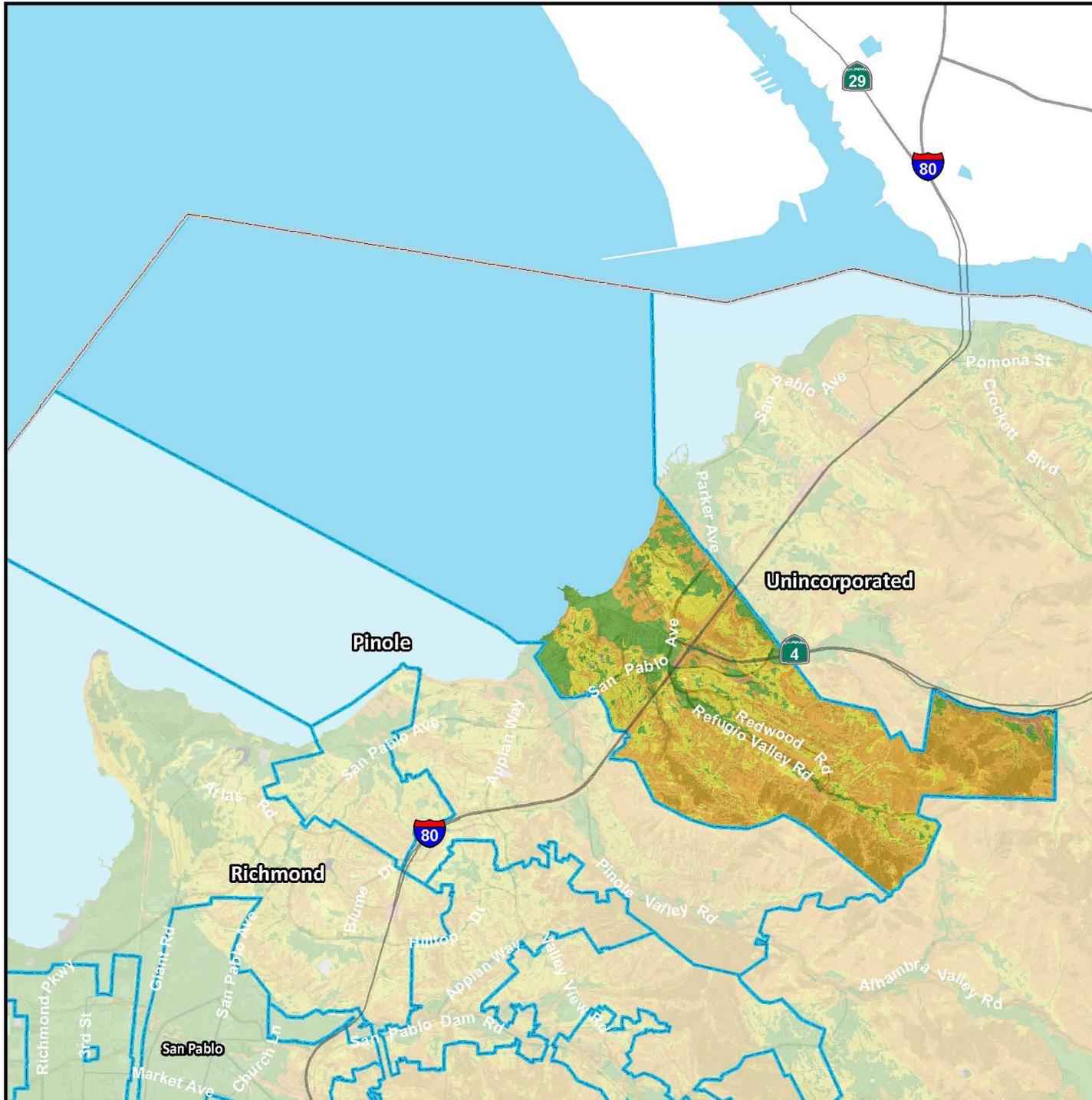
Source dataset created by Wills C.J., Perez, F., Gutierrez, C., 2011, Susceptibility to deep-seated landslides in California: California Geological Survey Map Sheet 58



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Map Data Sources: Contra Costa County, Caltrans, California Geological Survey, USDA, USGS



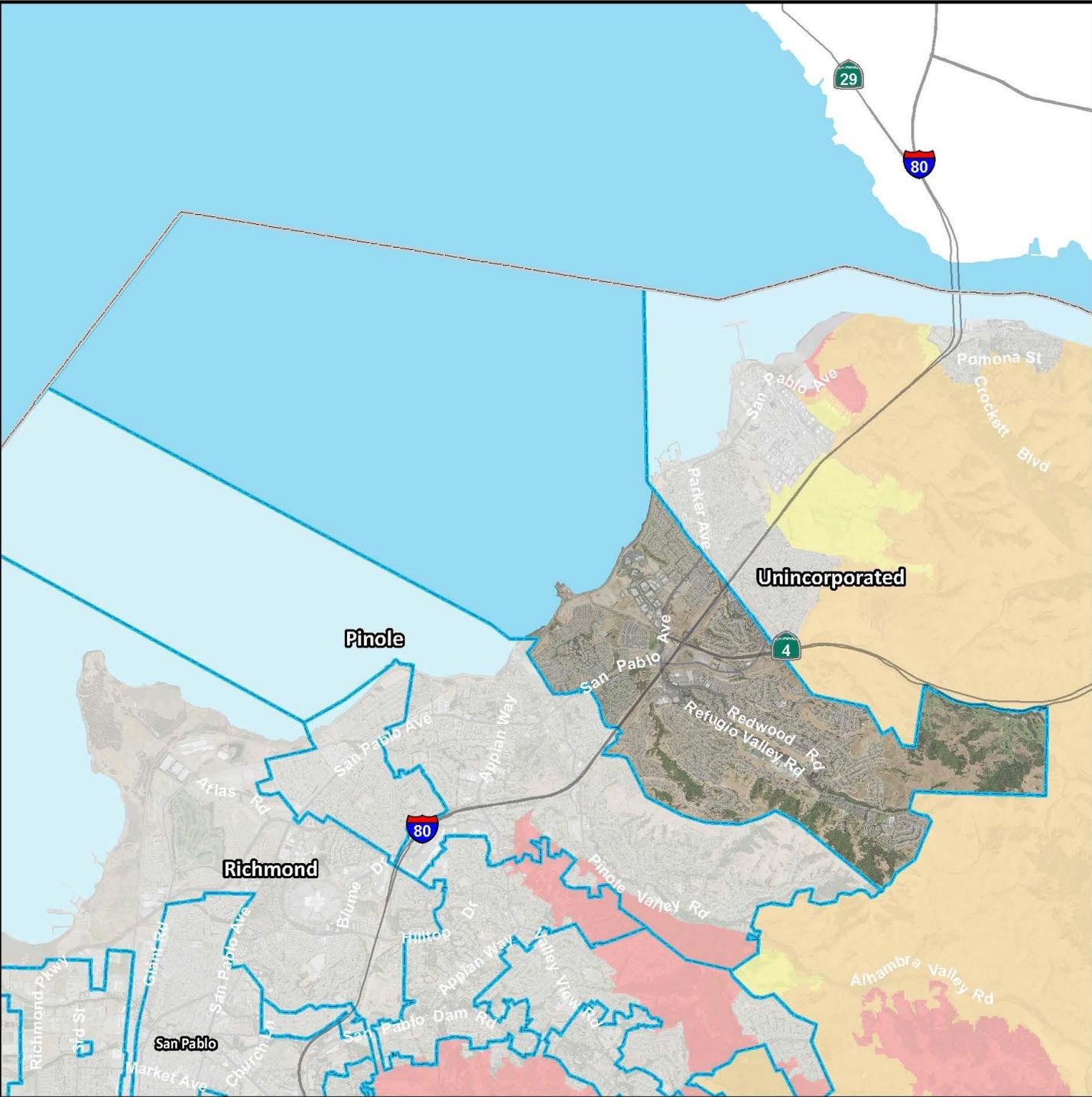
The City of Hercules

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

The City of Hercules

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

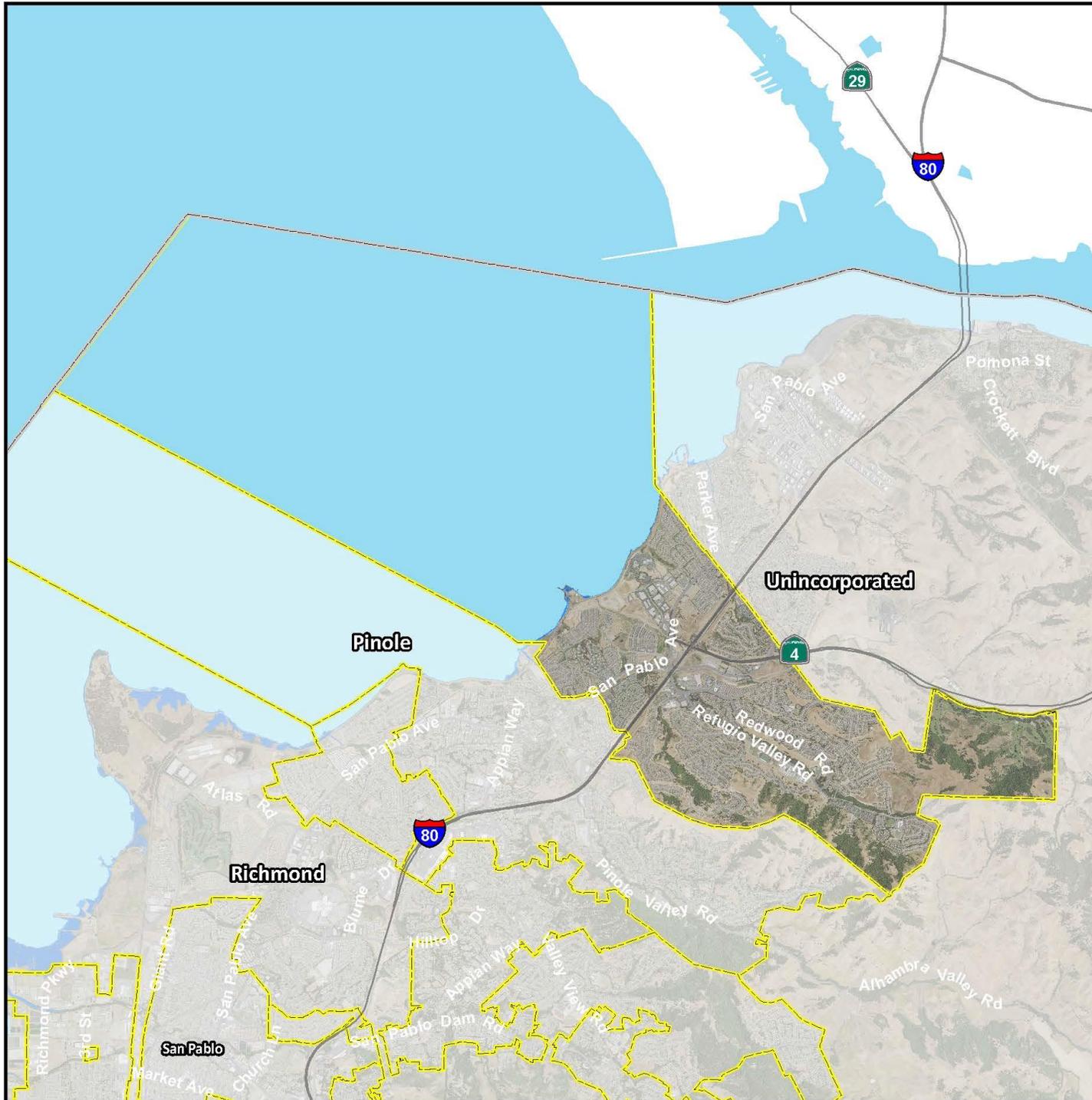
The inundation maps and the associated analyses are intended as planning level tools to illustrate the potential for inundation and coastal flooding under future SLR scenarios and (they) do not represent the exact location or depth of flooding or shoreline overtopping. The maps are based on model outputs 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.



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Map Data Sources: Contra Costa County, Caltrans, SFB CDC, USDA, USGS



The City of Hercules

Sea Level Rise - Mean Higher High Water Scenario Inundation Zones

-  12" Mean Higher High Water Plus 100-Year Extreme Tide
-  Low Lying Areas
-  Contra Costa County Boundary
-  City Boundaries

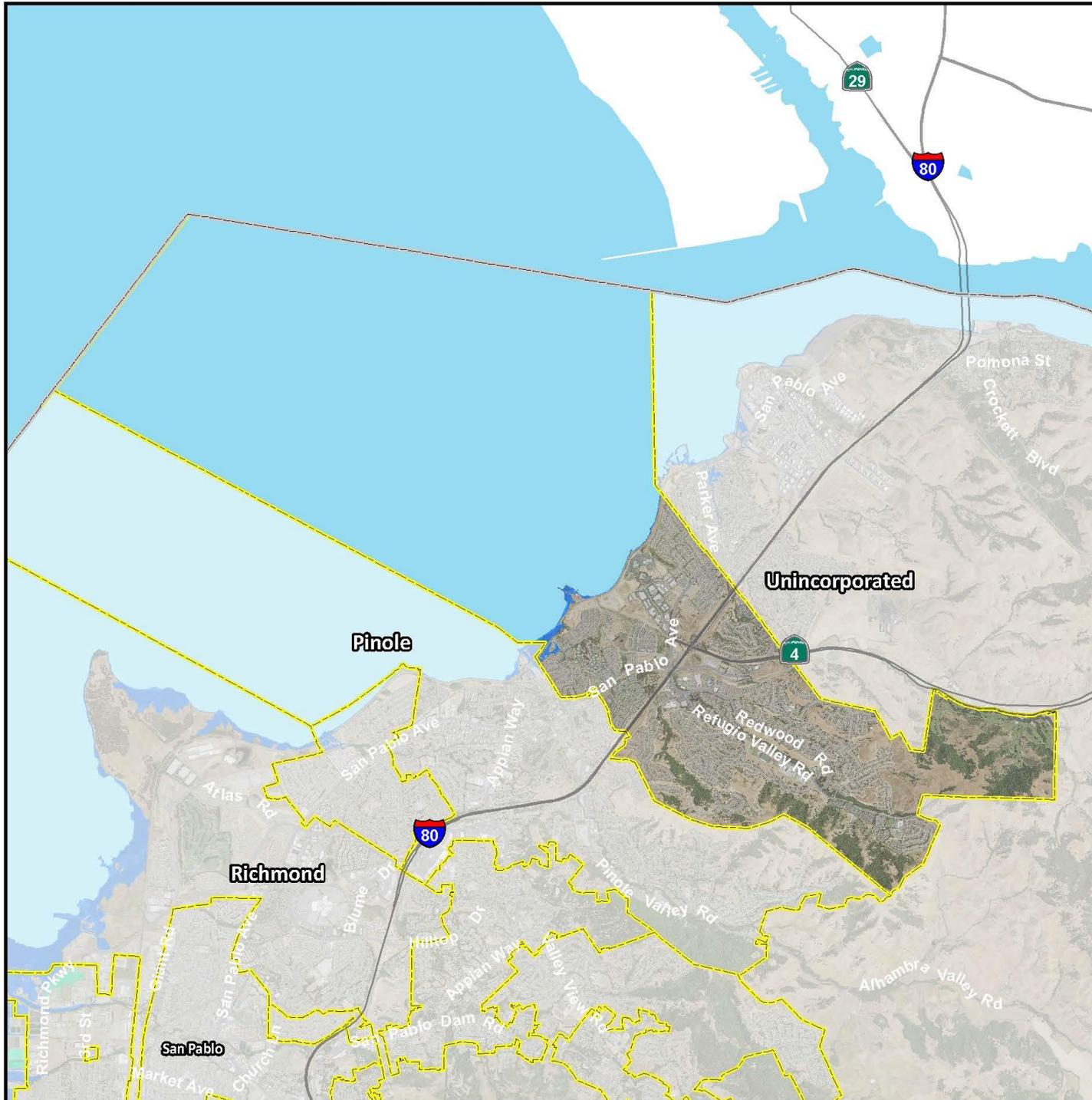
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Map Data Sources: Contra Costa County, Caltrans, SFB CDC, USDA, USGS



The City of Hercules

Sea Level Rise - Mean Higher High Water Scenario Inundation Zones

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

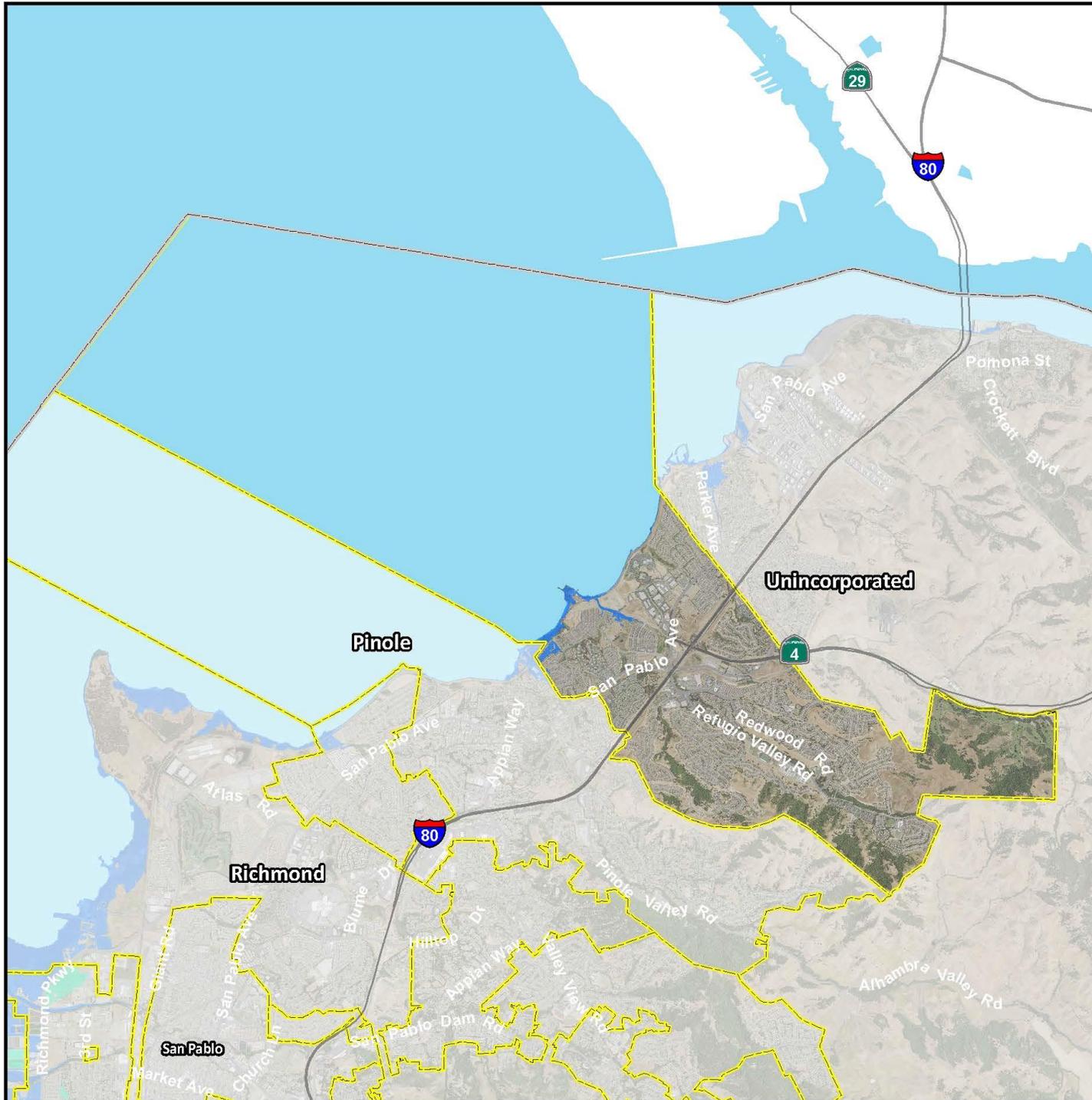
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Map Data Sources: Contra Costa County, Caltrans, SFB CDC, USDA, USGS



The City of Hercules

Sea Level Rise - Mean Higher High Water Scenario Inundation Zones

-  66" Mean Higher High Water Plus 100-Year Extreme Tide
-  Low Lying Areas
-  Contra Costa County Boundary
-  City Boundaries

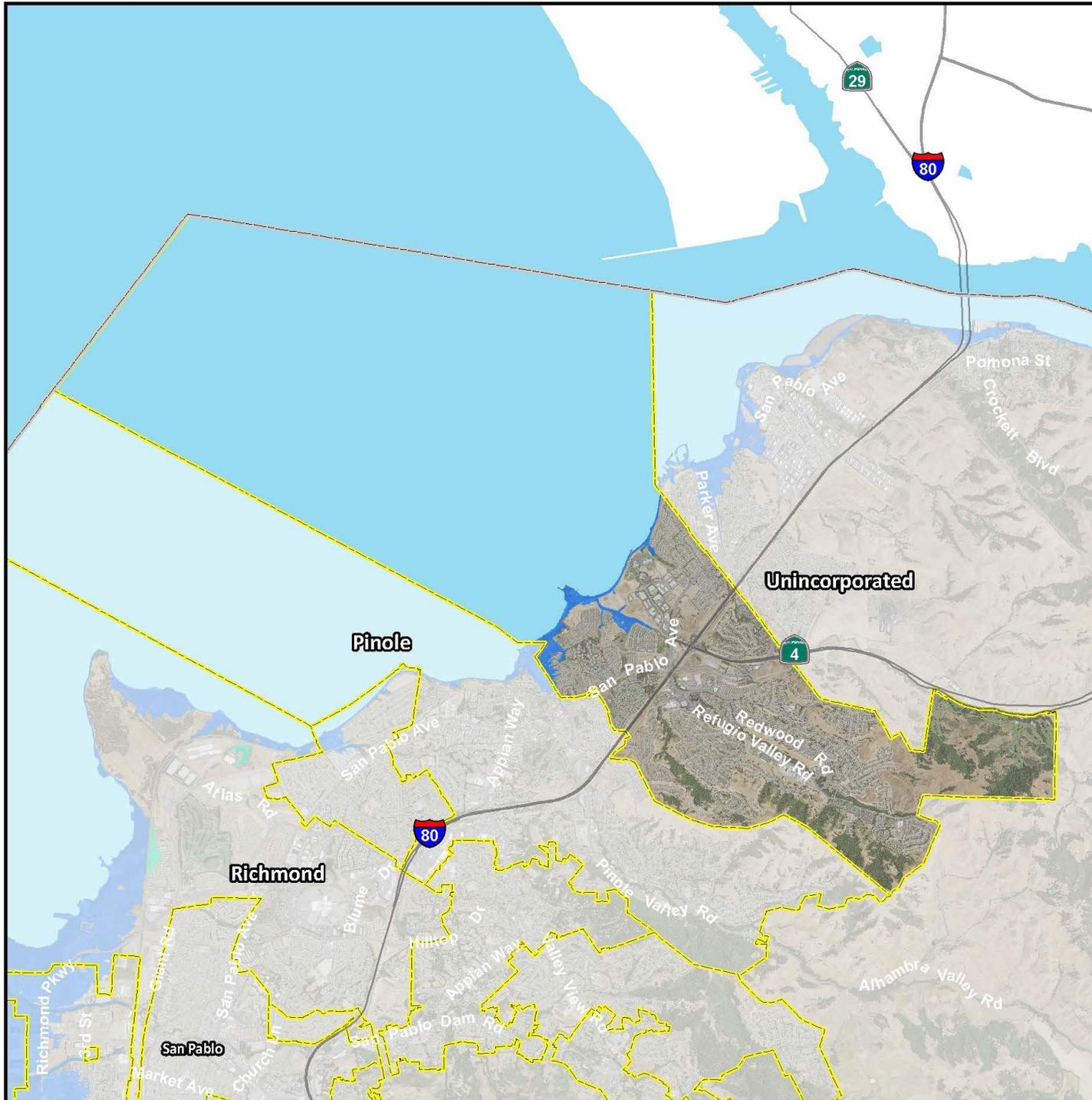
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Map Data Sources: Contra Costa County, Caltrans, SFBCCDC, USDA, USGS

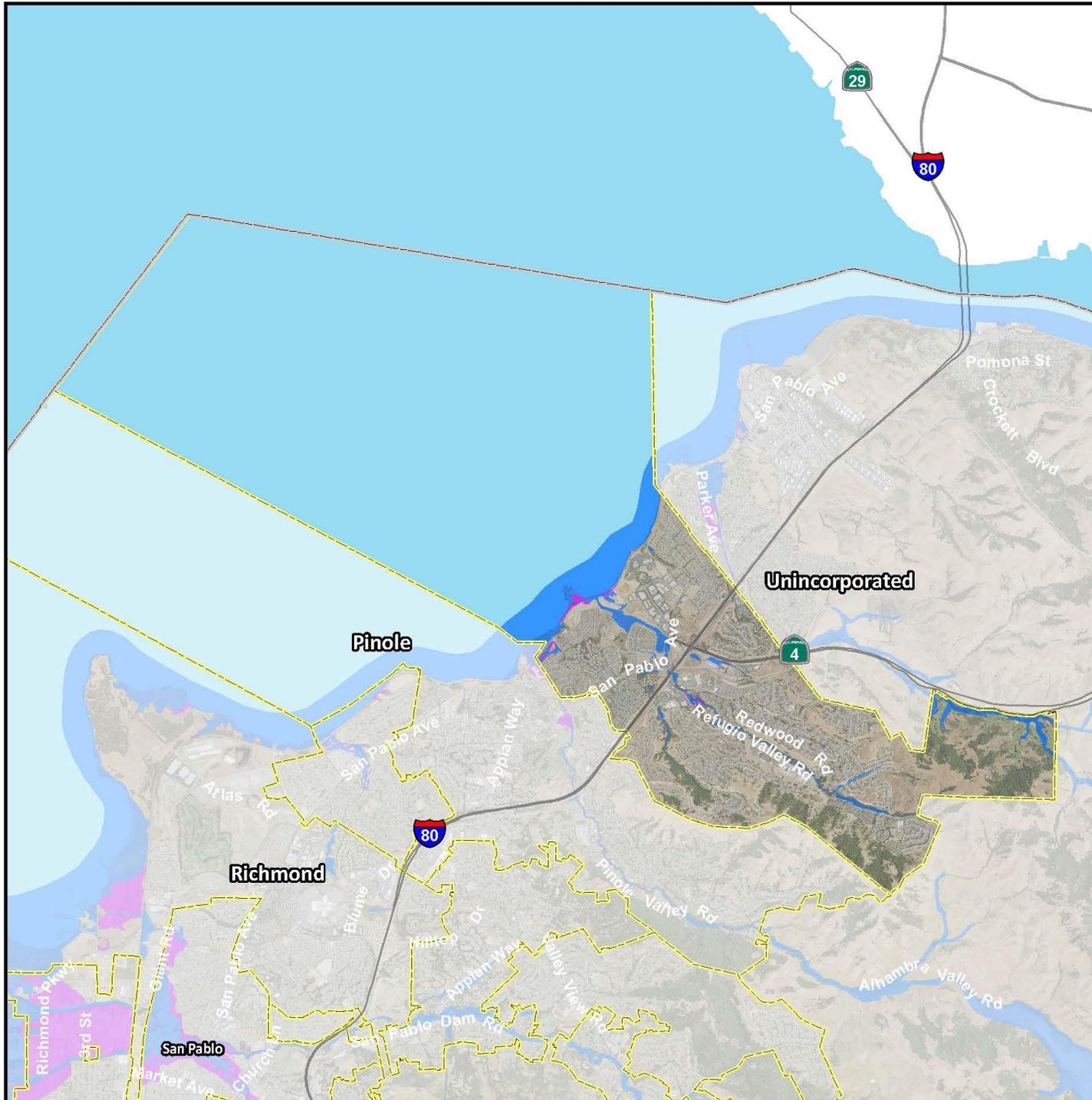


The City of Hercules

FEMA DFIRM Flood Hazard Areas

-  1% Annual Chance (100-Year) Flood Zone
-  0.2% Annual Chance (500-Year) Flood Zone
-  Contra Costa County Boundary
-  City Boundaries
-  Water Bodies

Flood hazard areas as depicted on Effective FEMA Digital Flood Insurance Rate Maps (DFIRM)



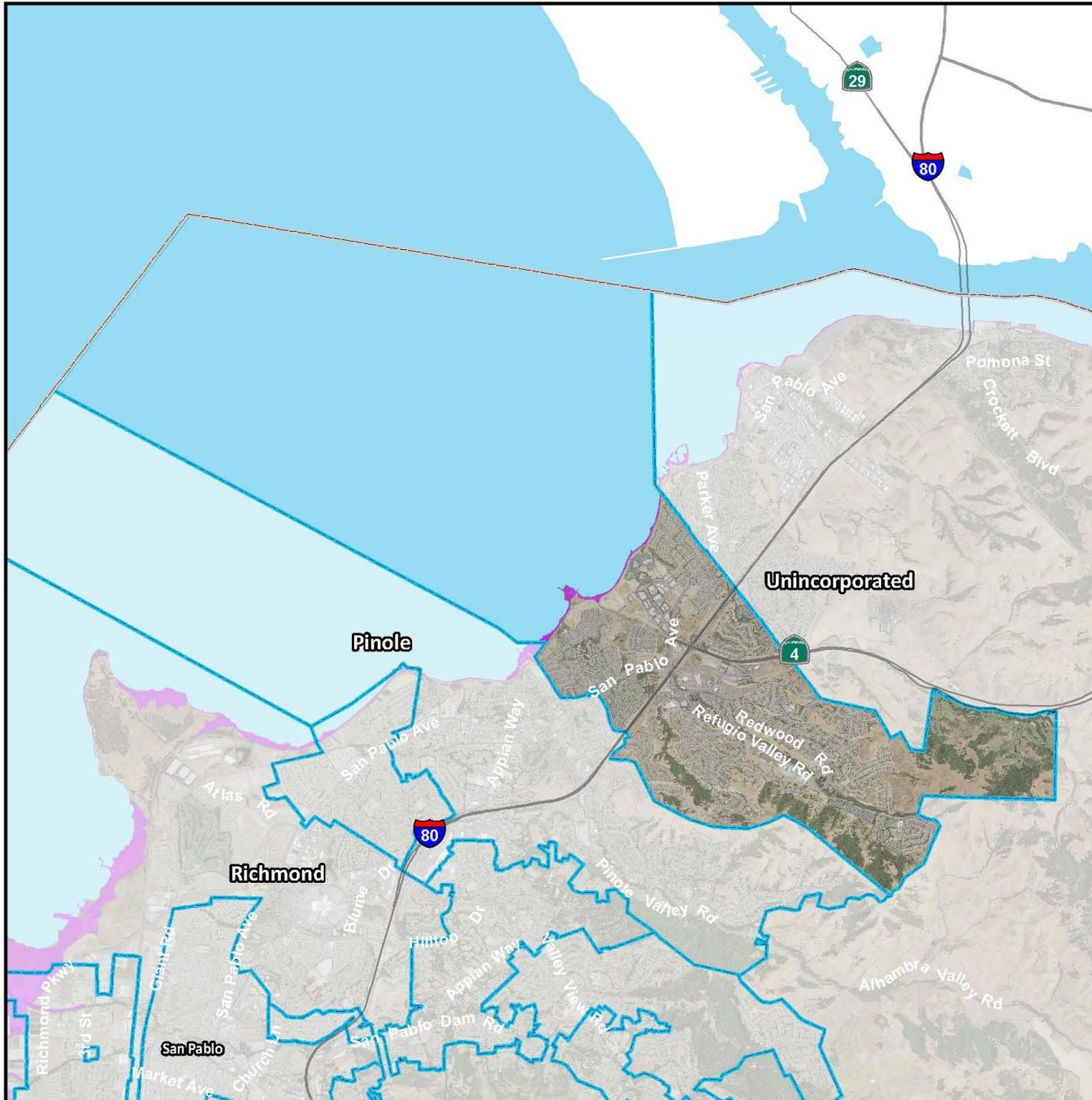
Map Data Sources: Contra Costa County, CalTrans, FEMA, USDA

The City of Hercules

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.



Miles



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