

**JURISDICTIONAL ANNEX:**

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# **City of Dixon**



**SOLANO COUNTY**  
**MULTI-JURISDICTIONAL**  
**HAZARD MITIGATION PLAN**



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# Solano County

## Multi-Jurisdiction Hazard Mitigation Plan

### CITY OF DIXON (DX.)

#### Municipal Annex

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## Adoption Resolution

To comply with DMA 2000, the City of Dixon has officially adopted this Solano County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP), Volume 1, and its jurisdictional annex. The adoption of the MJHMP recognizes the City's commitment to reducing the impacts of natural hazards. See included adoption resolution.

**ADOPTION RECORD TO BE INSERTED UPON COMPLETION.**



## Section 1. City of Dixon

### 1.1 Purpose

This Annex details the hazard mitigation planning elements specific to the City of Dixon. This Annex is not intended to be a standalone document but appends to and supplements the information contained in the umbrella plan document. As such, all sections of the umbrella plan, including the planning process and other procedural requirements apply to and were met by the City of Dixon. This Annex provides additional information specific to the City of Dixon, with a focus on providing additional details on the planning process, risk assessment, and mitigation strategy for this community.

#### Hazard Mitigation Plan Points of Contact

**Primary Point of Contact**

Todd McNeal, Fire Chief  
City of Dixon  
205 Ford Way  
Dixon, CA 95620  
Telephone: (707) 678-1489  
e-mail: tmcneal@cityofdixon.us

**Alternate Point of Contact**

Jim Lindley, City Manager  
City of Dixon  
600 East A St.  
Dixon, CA 95620  
(707) 678-7000 ext. 1101  
e-mail: jlindley@ci.dixon.ca.us

### 1.2 Planning Methodology

The City of Dixon followed the planning process detailed in Volume 1, Section 3, including participating in the County Hazard Mitigation Planning Committee (HMPC) and Steering Committee and formulating their own internal planning team to support the broader planning process. Internal planning participants, their positions, and how they participated in the planning process are shown in Table 1-1.

Table 1-1: Planning Committee Members

Planning Committee Members	Department
Todd McNeal	Fire Chief
Dave Horigan	Parks & Maintenance Supervisor
Jim Lindley	City Manager
Joe Leach	Public Works Director & City Engineer
Joel Engrahm	Building Inspector II
Rachel Ancheta	Human Resources & Risk Manager
Sandy Soriano	Public Information Officer
Scott Greeley	Associate Planner

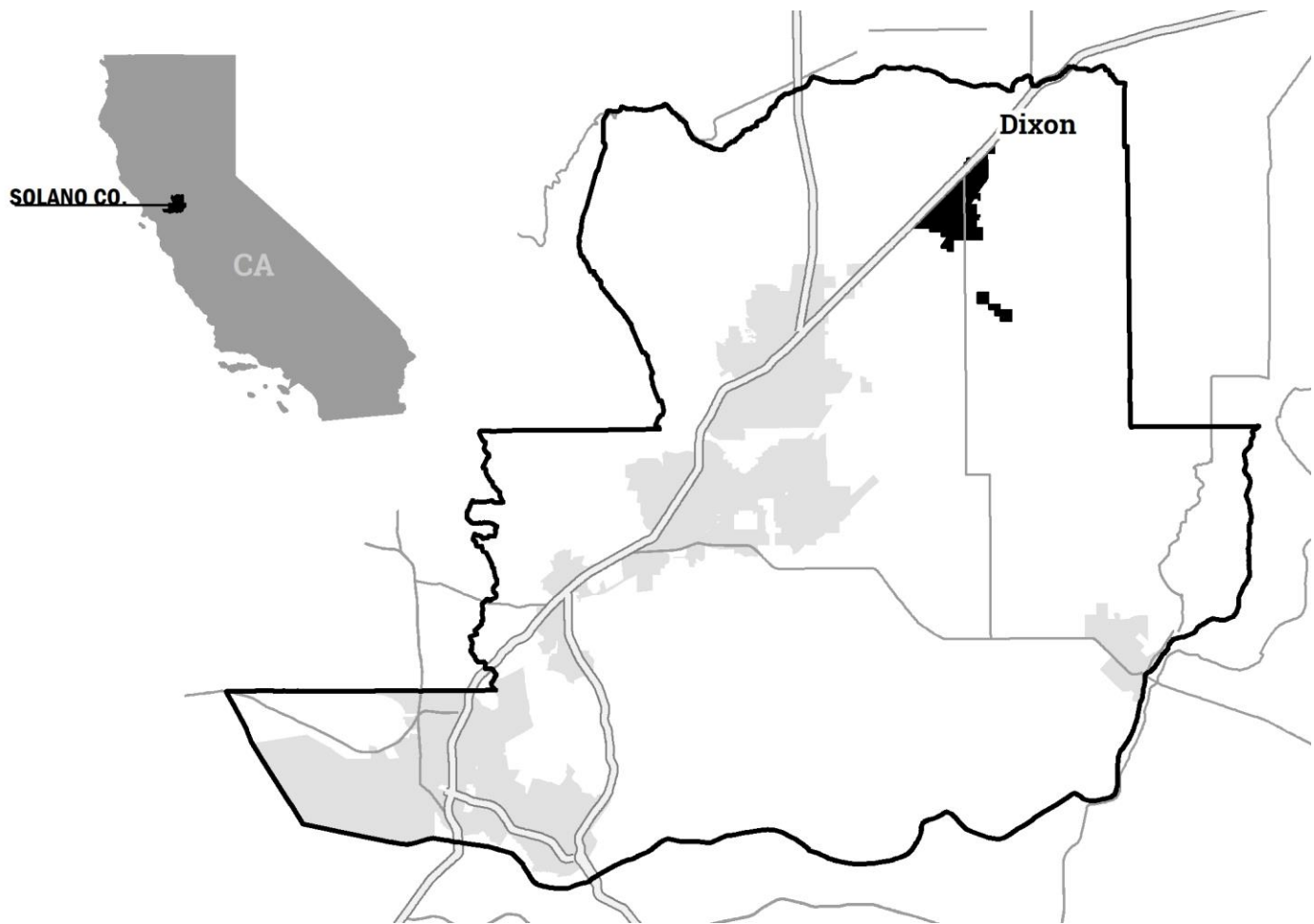


Figure 1-1: City of Dixon Location

## 1.3 What's New

The City of Dixon has not had a hazard mitigation plan since participating in the 2006 Association of Bay Area Governments MJHMP. Because the City's annex to the ABAG Plan is so old, the Planning Committee elected to not include any of the mitigation actions from the earlier plan in this MJHMP. Starting fresh will ensure that the City's mitigation strategy addresses its most pressing current vulnerabilities. The City's efforts to incorporate hazard mitigation into other planning mechanisms are documented in Section 1.5.1, the Capabilities Assessment.



### 1.3.1 Success Stories

**Artificial Turf Fields:** In effort to respond to drought conditions, the City recently installing artificial turf in many City-owned fields through the city.

**Subsidized Desalination Station:** The City of Dixon has also instituted subsidized desalination stations which reduce the need for salt filters to make water softer. The water softening company now removes cartridges which aids in regional salinity, putting less salt back into the system.

**Dam Emergency Action Plan:** Lastly, the City of Dixon has also developed a dam emergency action plan, which has been submitted to CalOES, to address the City-owned dam "Pond A."

## 1.4 Risk Assessment

The intent of this section is to profile the City of Dixon's hazards and assess the City's vulnerabilities, distinct from that of the County wide planning area. The hazard profiles in Volume 1 discuss overall impacts to the planning area and describes the hazard problem description, hazard extent, magnitude/severity, previous occurrences of hazard events and the likelihood of future occurrences. For more information on Risk Assessment Methodologies, see Vol. 1 and Appendix A.

### 1.4.1 Hazard Screening Criteria

Planning Team members from each participating jurisdiction collectively discussed which hazards should be profiled in the Plan and which should not. The results of that discussion can be found in Table 1-2. Detailed hazard profiles of the most significant County wide hazards are described in Section 4 of Volume 1. The Planning Team reviewed previously prepared hazard mitigation plans and other relevant documents to determine the realm of natural hazards that have the potential to affect the City of Dixon. Table 1-3 provides a crosswalk of hazards identified in Vol. 1 of this plan, the City of Dixon General Plan, and 2018 California State Hazard Mitigation Plan. The crosswalk was used to develop a preliminary hazards list, providing a framework for the Planning Team members to evaluate which hazards were truly relevant to the City of Dixon and which ones were not. Section 1.4.2 below describes the hazard risk ranking process that was performed by the planning team which prioritized hazards that are specifically relevant to the City of Dixon.



Table 1-2: County-Wide Hazard Prioritization

Hazard Type	Explanation
<b>Climate Change</b>	<b>High priority county-wide, profiled hazard.</b>
<b>Dam/ Levee failure</b>	Dam failure is possible in Solano County but is best addressed in other plans, specifically Emergency Action Plans for high hazard dams affecting Solano County.
<b>Drought</b>	<b>High priority county-wide, profiled hazard.</b>
<b>Earthquake/ Geologic Hazards</b>	<b>High priority county-wide, profiled hazard.</b>
<b>Flood</b>	<b>High priority county-wide, profiled hazard.</b>
<b>Hazardous Material</b>	While hazardous materials can release and impact the County, there are better avenues to address this hazard outside this plan.
<b>High Winds/ Straight Line Winds</b>	<b>High priority county-wide, profiled as part of Extreme Weather.</b>
<b>Insect Hazards</b>	While hazardous insects exist in Solano County, this was not considered a priority and is not profiled in this plan.
<b>Pandemic Disease</b>	While pandemic disease can impact the County, there are better avenues to address this hazard outside this plan.
<b>Extreme Weather, including:</b>	<b>High priority county-wide for high wind, heavy rain, and high heat.</b>
Extreme Heat	<b>Profiled as part of Extreme Weather.</b>
Hail	Hail events are rare and not considered a priority.
High Wind	<b>Profiled as part of Extreme Weather.</b>
Heavy Rain	<b>Profiled as part of Extreme Weather.</b>
Fog	Fog events are rare and are not considered a priority.
Lightning	Not a priority as an extreme weather event; discussed as source of wildfire.
Severe Thunderstorm	Severe thunderstorms were not identified as a priority in this plan.
Winter Storm / Extreme Cold/ Freeze Events	Winter storms are rare in Solano County and not identified as a priority for this plan.
<b>Slope Failure</b>	<b>High priority county-wide, profiled hazard.</b>
<b>Soil Hazards</b>	While limited soil hazards exist in Solano County (erosion and shifting soils), these are not prioritized in this plan. Erosion discussed under flood hazard.
<b>Terrorism/Human Caused Threats</b>	While terrorism is certainly a threat to the County and participating jurisdictions, it is best addressed in other plans as this HMP does not address human-caused threats.
<b>Tornado</b>	Impacts to the County from tornados are extremely unlikely, if any.
<b>Volcanic Activity</b>	Due to distance from volcanoes and the limited chance of an eruption, this hazard was not identified as a priority.
<b>Wildfire</b>	<b>High priority county-wide, profiled hazard.</b>





Table 1-3: City Document Review Crosswalk

Hazards	2020 Dixon General Plan	2014 Solano County HMP	2018 California State HMP
Agricultural Pests			■
Climate Change	■	■	■
Dam Failure	■	■	■
Drought	■	■	■
Earthquake	■	■	■
Flood	■	■	■
Landslide		■	■
Levee Failure			■
Manmade Hazards	■		■
Pandemic Disease			■
Sea Level Rise		■	■
Extreme Weather		■	■
Soil Hazards			■
Terrorism & Tech Hazards	■		■
Tsunami			■
Volcano			■
Wildfire	■	■	■

## 1.4.2 Hazard Risk Ranking

The City of Dixon's Planning Team used the same hazard prioritization process as the Solano County Hazard Mitigation Planning Committee. This process is described in detail in Section 4.3.1 of Vol. 1. Figure 1-2 displays the results of the hazard risk ranking exercise that was performed by the Planning Team. The Planning Team chose to assess the City of Dixon's vulnerability to the following hazards:

- Flood
- Extreme Weather  
(High heat, Heavy rain, High wind)
- Climate Change
- Earthquake
- Drought

All of these hazards have been profiled in Vol. 1 of this document. The purpose of this annex to specifically address the City of Dixon's vulnerability to these specifically-identified hazards.

## 1.4.3 Vulnerability Assessment

Assessing vulnerabilities exposes the unique characteristics of individual hazards and begins the process of narrowing down which areas within the City of Dixon are vulnerable to specific hazard events. The vulnerability assessment considered unique local knowledge of hazards and impacts and a GIS overlaying



method for examining such vulnerabilities more in depth. Using these methods, participating jurisdictions estimated vulnerable populations, infrastructure, and potential losses from hazards.

### **1.4.3.1 Risk Assessment**

Each participating jurisdiction developed a risk matrix that assessed the probability and impact of various hazards within the jurisdiction. Figure 1-2 is the jurisdiction's risk assessment, which was completed in part using the web based and interactive Risk Assessment Mapping Platform (RAMP), accessed via the project website at [www.mitigatehazards.com](http://www.mitigatehazards.com). RAMP allows interactive discovery of robust risk, vulnerability, and exposure data developed especially for Solano County. RAMP is a mapping platform built specifically for mitigation planning. It displays County/jurisdiction facilities and buildings overlaid with natural hazards layers to bring interactivity and individual discovery to the GIS analysis performed for the MJHMP. See Vol. 1 for a detailed description of RAMP. The Planning Team used RAMP in meetings and as needed to understand vulnerabilities to the City of Dixon. Users interactively filter facilities and buildings by natural hazard zones and/or construction characteristics. The City of Dixon also conducted a more detailed climate vulnerability assessment, included as Appendix A to this annex. The climate vulnerability assessment analyzed climate-related vulnerabilities by considering the impact from the climate vulnerability and the community's adaptive capacity to respond to the vulnerability.

### **1.4.3.2 Exposure Maps and Damage Estimation Tables**

The included snapshot maps and damage estimation tables illustrate the City of Dixon's vulnerability to specific hazards. Based on the risk assessment, the snapshot maps focus on those hazards prioritized by the jurisdiction. These maps helped the Planning Team understand the exposure of population, parcels, and critical infrastructure to specific hazards. Each map contains an exposure summary that displays the percent of the population, the improvement and content value of parcels, and the amount of critical infrastructure that is exposed to each respective hazard. For flood and earthquake, detailed damage estimations were conducted through FEMA's Hazus software and are shown in tabular form. Additional mapping is also included. Figures and tables include:

- Figure 1-3: Dixon - FEMA Flood Risk Exposure
- Table 1-4: Dixon - Damage Estimate Summaries, 100 YR Flood
- Figure 1-4: Dixon - BAM 200-YR Flooding and Awareness Zones
- Figure 1-5: Dixon - Hayward Rodger's Creek EQ Scenario (M7.1)
- Table 1-5: Dixon - Hayward Roger's Creek Damage Estimation Summaries
- Figure 1-6: Dixon - Concord Green Valley EQ Scenario (M6.8)
- Table 1-6: Dixon - Concord Green Valley Damage Estimate Summaries
- Figure 1-7: Dixon – Areas with Potential for Liquefaction
- Figure 1-8: Dixon - 30-YR Normal Maximum Temperature for July
- Figure 1-9: Dixon - Average Annual Precipitation (1981-2010)
- Figure 1-10: Dixon - Average Annual Wind Speed (Power Class)
- Figure 1-11: Drought Severity Timeline - Suisun Bay
- Figure 1-12: Dixon - RCP Comparison



## Risk Assessment Matrix Definitions

### PROBABILITY RATING

The likelihood of a hazard event occurring within a time period?

PROBABILITY	Highly Likely	<b>Highly likely</b> - 100% annual probability. Or Likely to occur every year in your lifetime.
	Likely	<b>Likely</b> - between 10 & 100% annual probability. Or will occur several times in your lifetime.
	Possible	<b>Possible</b> - between 1 & 10% annual probability. Or Likely to occur some time in your lifetime.
	Unlikely	<b>Unlikely</b> - less than 1% annual probability. Or unlikely but possible to occur in your lifetime.

### IMPACT RATING

In terms of injuries, damage, or death, would you anticipate impacts to be minor, limited, critical, or catastrophic when a significant hazard event occurs? The impact could be in terms of one hazard event (flooding from a culvert failure) or a large-scale event (multiple rivers flooding) in the same jurisdictional boundary.

IMPACT			
Minor	Limited	Critical	Catastrophic
<p><b>Minor</b> - very few injuries, if any. Only minor property damage &amp; minimal disruption on quality of life. Temporary shutdown of critical facilities.</p> <p><b>Limited</b> - minor injuries only. Approx. 10% or less of property in disaster footprint damaged or destroyed. Complete shutdown of critical facilities for more than one day.</p> <p><b>Critical</b> - multiple deaths/injuries possible. Between 25% and 50% of property in disaster footprint is damaged or destroyed. Complete shutdown of critical facilities for more than one week.</p> <p><b>Catastrophic</b> - high number of deaths/injuries possible. More than 50% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for 30 days or more.</p>			

To concentrate resources on highest priority hazards, the jurisdictional planning team will focus on "High" and "Extreme" risk hazards in this annex. These hazards have higher probability and greater impact as it relates to the jurisdiction's planning area.

Hazard definitions are included in Vol. 1 of this plan. If a hazard is grey in color, the jurisdictional planning team felt the hazard had a minimal footprint within their planning area, and no mitigation strategy was developed.

### Hazard Information / Legend:



Climate Change is prioritized for all jurisdictions.



Extreme Weather in Solano County includes high heat, high wind, and heavy rain.



If a hazard symbol is grey, the planning team did not develop hazard vulnerability information due to lower perceived probability and impact.

### City Of Dixon Risk Matrix

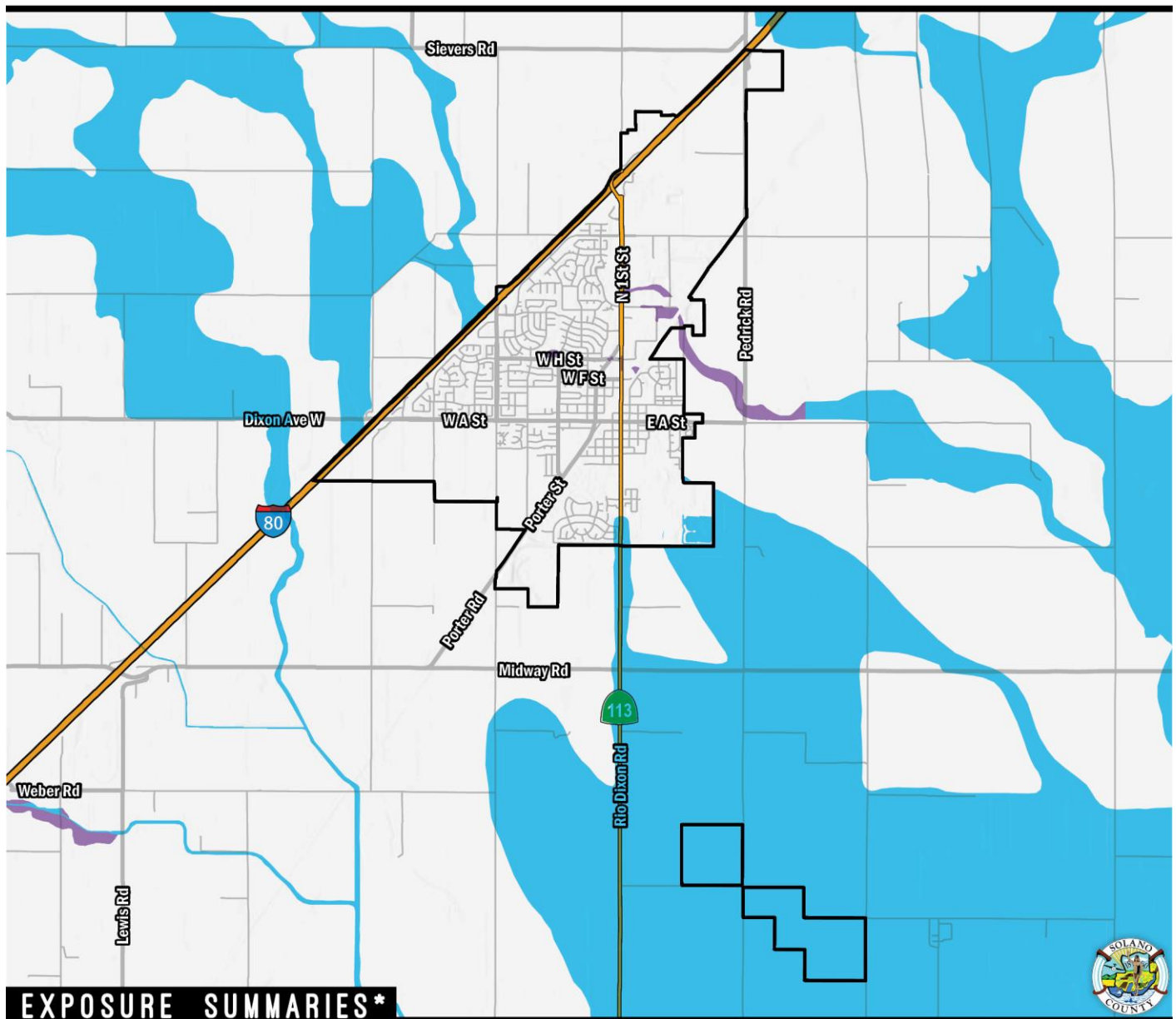
		IMPACT			
		Minor	Limited	Critical	Catastrophic
PROBABILITY	Highly Likely	Medium	DROUGHT	Extreme	Extreme
	Likely	Medium	FLOOD  EXTREME WEATHER	High	Extreme
	Possible	Low	WILDFIRE	EARTHQUAKE	High
	Unlikely	SLOPE FAILURE	Low	Medium	Medium

Figure 1-2: City of Dixon Risk Assessment



## FEMA FLOOD RISK EXPOSURE

DIXON



### EXPOSURE SUMMARIES\*

#### POPULATION COUNT IN HAZARD AREA

Count	Exp. Rate**
<b>199</b>	<b>1%</b>
Count Includes: 100 + 500	

#### PARCEL COUNT IN HAZARD AREA

Count	Exp. Rate**
<b>52</b>	<b>1%</b>
Count Includes: 100 + 500	

#### PARCEL VALUE IN HAZARD AREA

Sum of Improvement Value	Exp. Rate**
<b>\$38,317,843</b>	<b>1%</b>
Count Includes: 100 + 500	

Sum of Content Value	Exp. Rate**
<b>\$29,860,515</b>	<b>1%</b>
Count Includes: 100 + 500	

#### CRITICAL INFRASTRUCTURE COUNTS IN HAZARD AREA

Infrastructure Category	Count	Exp. Rate**	Count/Sum Includes:
Essential Facilities	<b>0</b>	<b>0%</b>	100 + 500
High Potential Loss	<b>28</b>	<b>14%</b>	Sum of Transportation & Lifeline Linear Mileage
Transportation & Lifeline	<b>0</b>	<b>0%</b>	<b>5</b> <b>4%</b>

100-YR	COASTAL
AREA PROTECTED BY LEVEE	
500-YR	

\*Exposure summaries include 100-year and 500-year flood zone areas, including coastal and leveed areas. Hazard data source: FEMA.

\*\*Exposure Rate - Exposed summary or count as a percentage of total summary or count within jurisdiction.

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Figure 1-3: Dixon - FEMA Flood Risk Exposure



Table 1-4: Dixon - Damage Estimate Summaries, 100 YR Flood

Building Type	Building Damage (\$)	Building Damage (% of total loss)	Content Damage (\$)	Content Damage (% of total loss)	Total Damage (\$)	Proportion of Loss (%)
Agriculture	\$0	0.0%	\$0	0.0%	\$0	0%
Commercial	\$0	0.0%	\$0	0.0%	\$0	0%
Education*	\$0	0.0%	\$0	0.0%	\$0	0%
Emergency	\$0	0.0%	\$0	0.0%	\$0	0%
Government	\$0	0.0%	\$0	0.0%	\$0	0%
Industrial	\$0	0.0%	\$0	0.0%	\$0	0%
Religion	\$0	0.0%	\$0	0.0%	\$0	0%
Residential	\$106,811	74.8%	\$36,057	25.2%	\$142,868	100%
<b>Total</b>	<b>\$106,811</b>	<b>75%</b>	<b>\$36,057</b>	<b>25%</b>	<b>\$142,868</b>	

\*School district asset information not available during time of Hazus analysis.

Note: Total Inventory Values

1 - Building Replacement Costs = \$3,773,922,295

2 - Content Replacement Costs = \$2,667,166,517

3 - Total Value = \$6,441,088,812





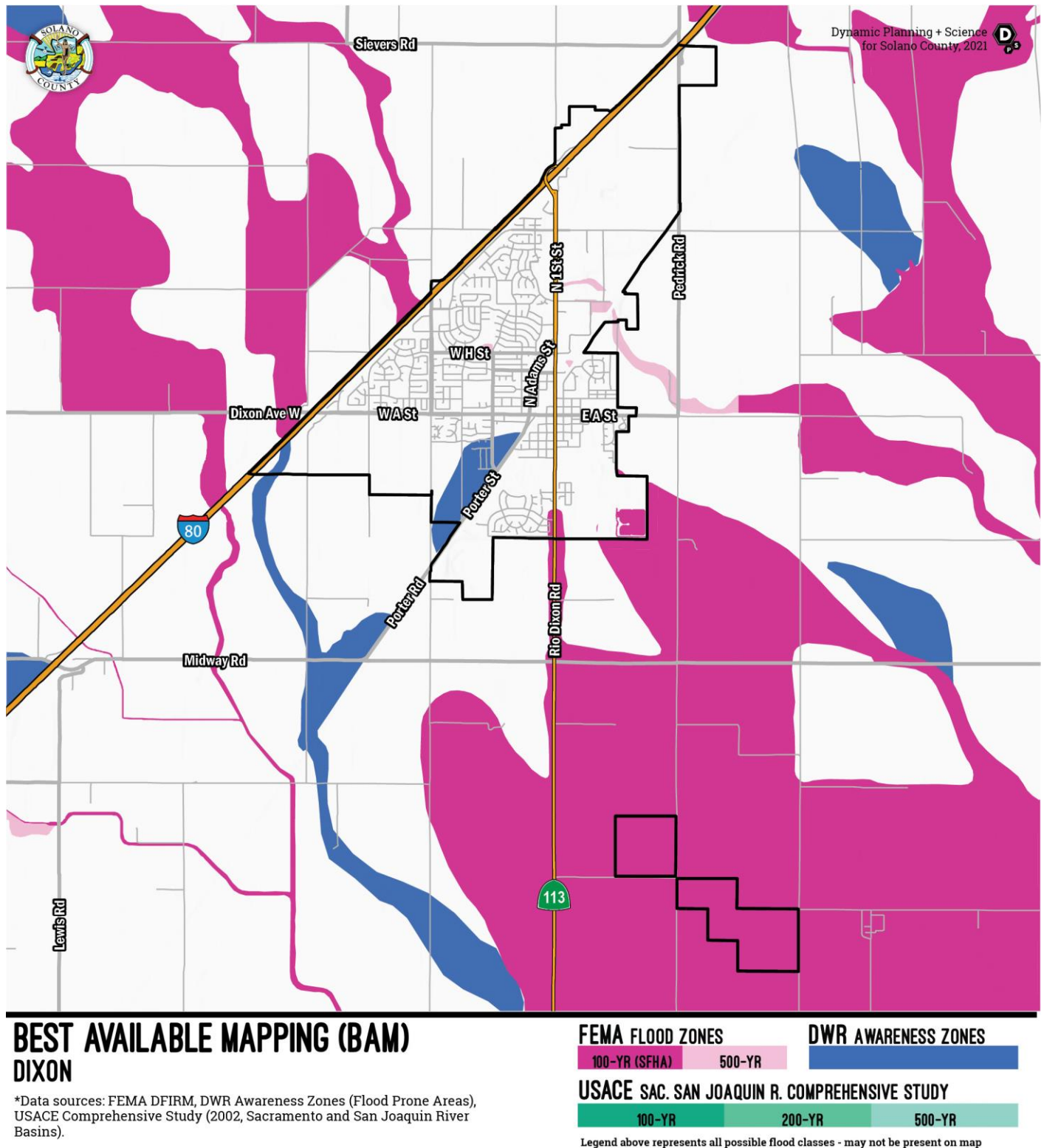
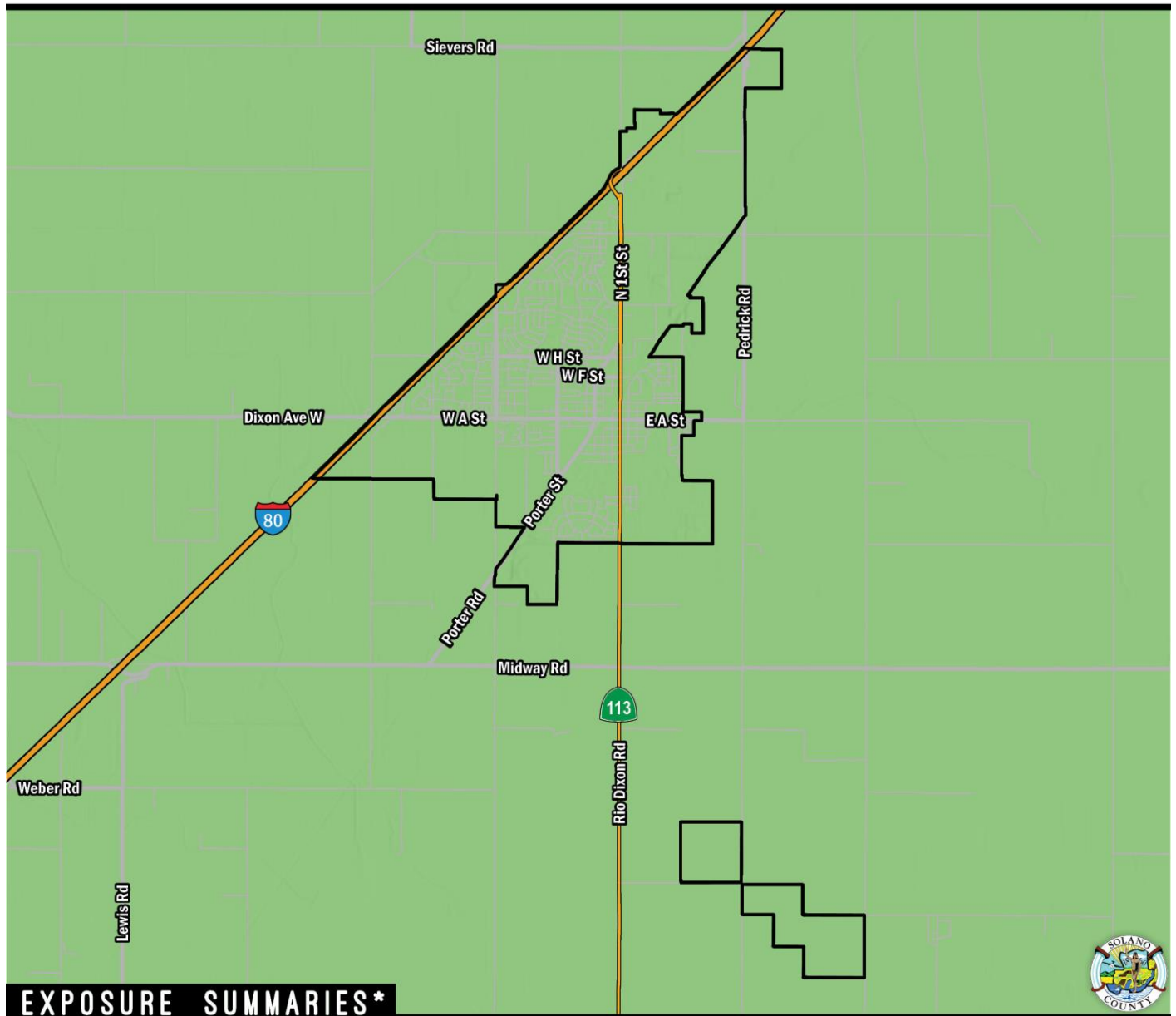


Figure 1-4: Dixon - BAM 200-YR Flooding and Awareness Zones



# HAYWARD-RODGER'S CREEK EARTHQUAKE SCENARIO (M7.1)

DIXON



## EXPOSURE SUMMARIES\*

### POPULATION COUNT IN HAZARD AREA

Count	Exp. Rate**
0	0%
Count Includes: S+++E	

### PARCEL COUNT IN HAZARD AREA

Count	Exp. Rate**
0	0%
Count Includes: S+++E	

### PARCEL VALUE IN HAZARD AREA

Sum of Improvement Value	Exp. Rate**
\$0	0%
Sum of Content Value	
\$0	0%
Count Includes: S+++E	

### CRITICAL INFRASTRUCTURE COUNTS IN HAZARD AREA

Infrastructure Category	Count	Exp. Rate**	Count/Sum Includes:
Essential Facilities	0	0%	S+++E
High Potential Loss	0	0%	
Transportation & Lifeline	0	0%	0 0%

### MAP LEGEND

III	IV	V	VI	VII	VIII	IX	X
WEAK MMI	LIGHT	MODERATE	STRONG	VERY STRONG	SEVERE	VERY STRONG	EXTREME

\*Exposure summaries include strong, very strong, violent, and severe MMI classes.  
Hazard data source: USGS.

\*\*Exposure Rate - Exposed summary or count as a percentage  
of total summary or count within jurisdiction.

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Figure 1-5: Dixon - Hayward Rodger's Creek EQ Scenario (M7.1)



Table 1-5: Dixon - Hayward Roger's Creek Damage Estimation Summaries

Building Type	Average of Potential Damage to Exceed "Slight"	Average of Potential Damage to Exceed "Moderate"	Average of Potential Damage to Exceed "Extensive"	Average Economic Loss for Each Building Category	Sum of Economic Loss	Proportion of Loss (%)
Agriculture	12%	4%	0%	\$5,291	\$10,583	0%
Commercial	5%	1%	0%	\$45,923	\$7,806,889	36%
Education*	12%	4%	0%	\$13,291	\$13,291	0%
Emergency	2%	0%	0%	\$8,466	\$25,397	0%
Government	4%	1%	0%	\$1,966	\$112,039	1%
Industrial	12%	4%	0%	\$71,411	\$4,498,869	21%
Religion	4%	0%	0%	\$3,208	\$32,085	0%
Residential	3%	0%	0%	\$1,695	\$9,071,995	42%
<b>Total</b>					<b>\$21,571,146</b>	

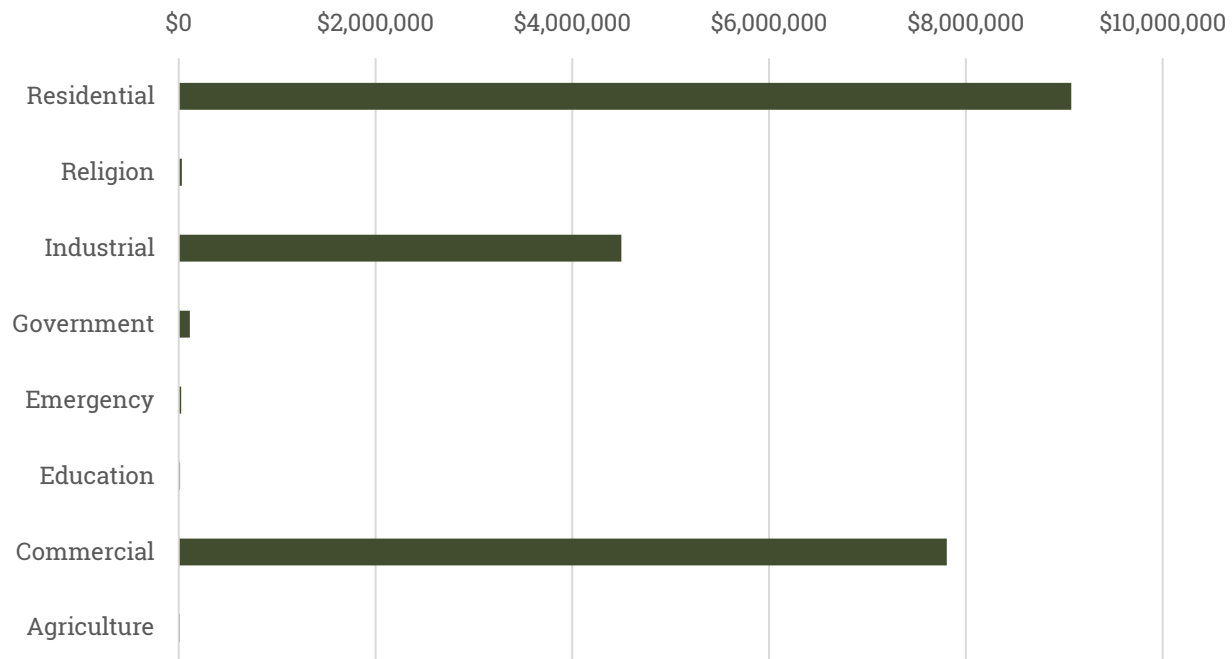
\*School district asset information not available during time of Hazus analysis.

Note: Total Inventory Values

1 - Building Replacement Costs = \$3,773,922,295

2 - Content Replacement Costs = \$2,667,166,517

3 - Total Value = \$6,441,088,812

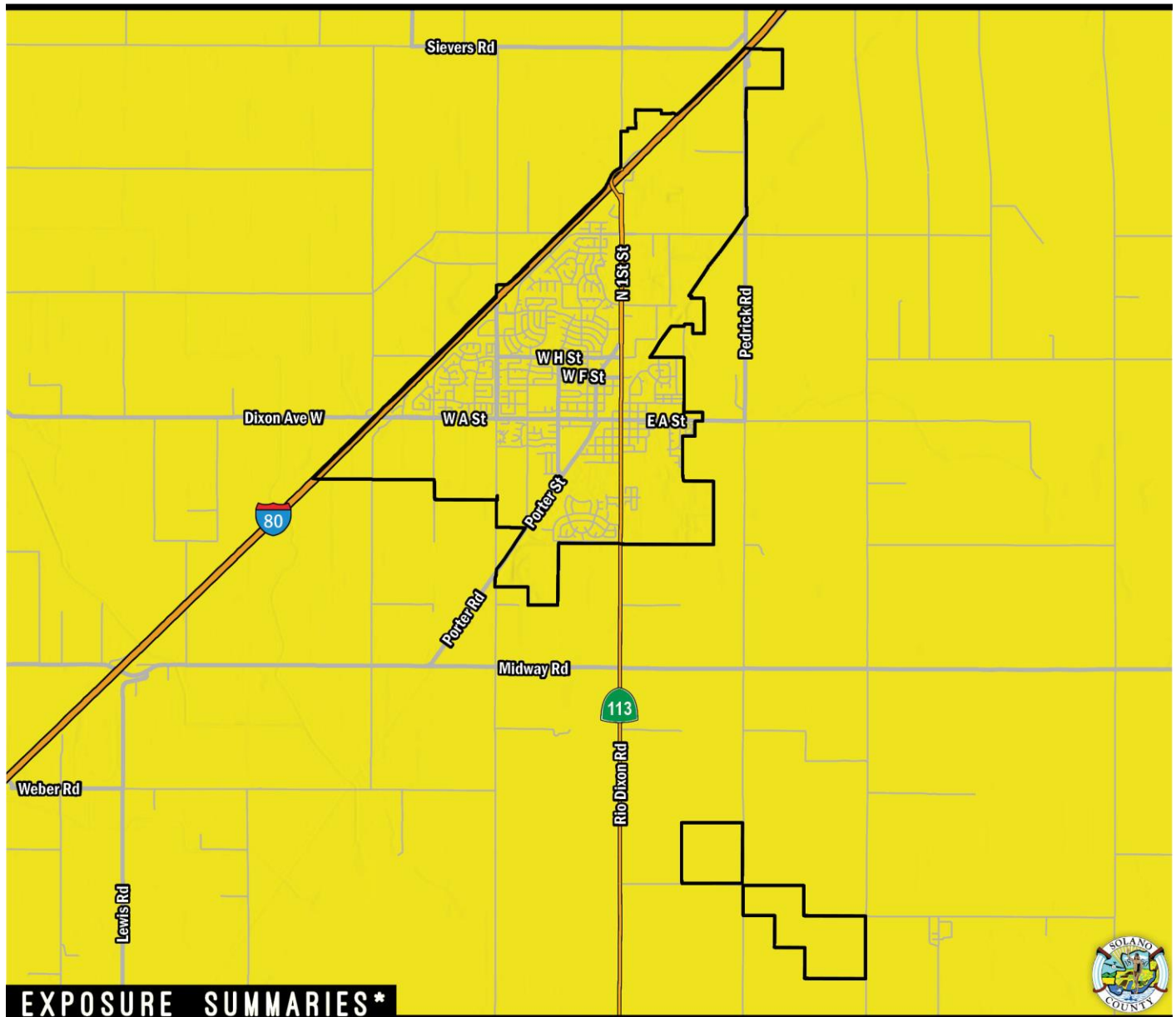






CONCORD-GREEN VALLEY EARTHQUAKE SCENARIO (M6.8)

DIXON



**EXPOSURE SUMMARIES\***

POPULATION COUNT IN HAZARD AREA		PARCEL COUNT IN HAZARD AREA		PARCEL VALUE IN HAZARD AREA		CRITICAL INFRASTRUCTURE COUNTS IN HAZARD AREA		
Count	Exp. Rate**	Count	Exp. Rate**	Sum of Improvement Value	Exp. Rate**	Infrastructure Category	Count	Exp. Rate**
19,759	100%	5,610	100%	\$3,436,676,008	100%	Essential Facilities	2	100%
Count Includes: S+++E		Count Includes: S+++E		Sum of Content Value		High Potential Loss	206	100%
				\$2,230,172,154	100%	Transportation & Lifeline	9	100%
				Count Includes: S+++E			122	100%

MAP LEGEND									
III	IV	V	VI	VII	VIII	IX	X		
WEAK	LIGHT	MODERATE	STRONG	VERY STRONG	SEVERE	VERY STRONG	SEVERE	VERY STRONG	SEVERE
MMI									

\*Exposure summaries include strong, very strong, violent, and severe MMI classes.  
Hazard data source: USGS.  
\*\*Exposure Rate - Exposed summary or count as a percentage of total summary or count within jurisdiction.

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Figure 1-6: Dixon - Concord Green Valley EQ Scenario (M6.8)



Table 1-6: Dixon - Concord Green Valley Damage Estimate Summaries

Building Type	Average of Potential Damage to Exceed "Slight"	Average of Potential Damage to Exceed "Moderate"	Average of Potential Damage to Exceed "Extensive"	Average Economic Loss for Each Building Category	Sum of Economic Loss	Proportion of Loss (%)
Agriculture	27%	12%	2%	\$13,309	\$26,617	0%
Commercial	15%	4%	1%	\$136,066	\$23,131,297	35%
Education*	26%	11%	1%	\$33,656	\$33,656	0%
Emergency	6%	1%	0%	\$32,038	\$96,113	0%
Government	12%	2%	0%	\$6,354	\$362,185	1%
Industrial	29%	12%	2%	\$194,249	\$12,237,657	18%
Religion	11%	2%	0%	\$10,559	\$105,595	0%
Residential	10%	1%	0%	\$5,641	\$30,191,928	46%
<b>Total</b>					<b>\$66,185,048</b>	

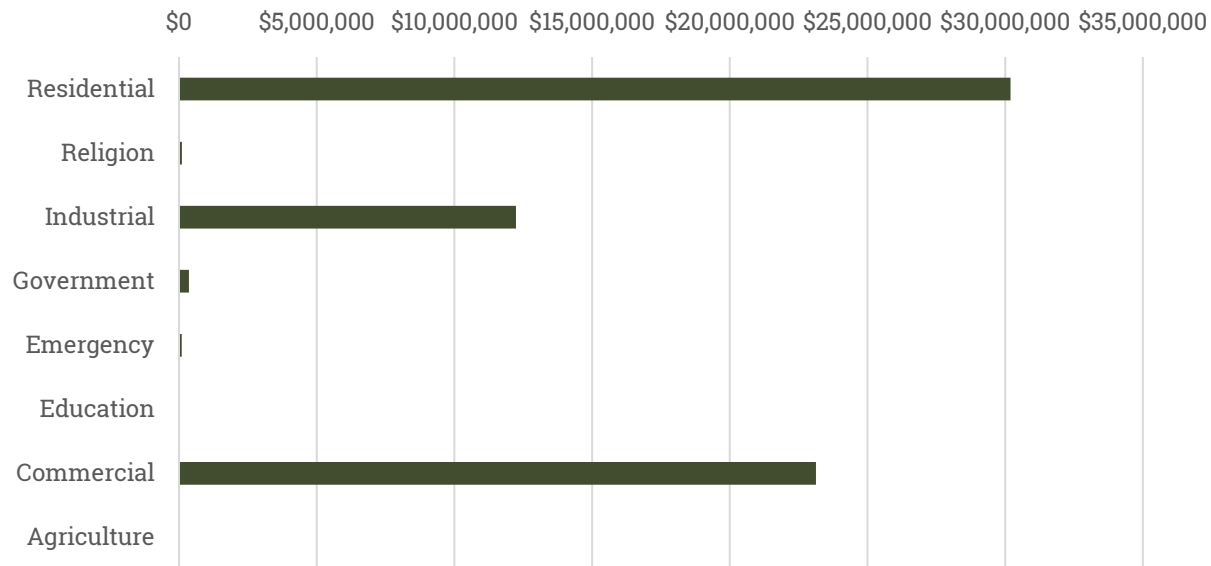
\*School district asset information not available during time of Hazus analysis.

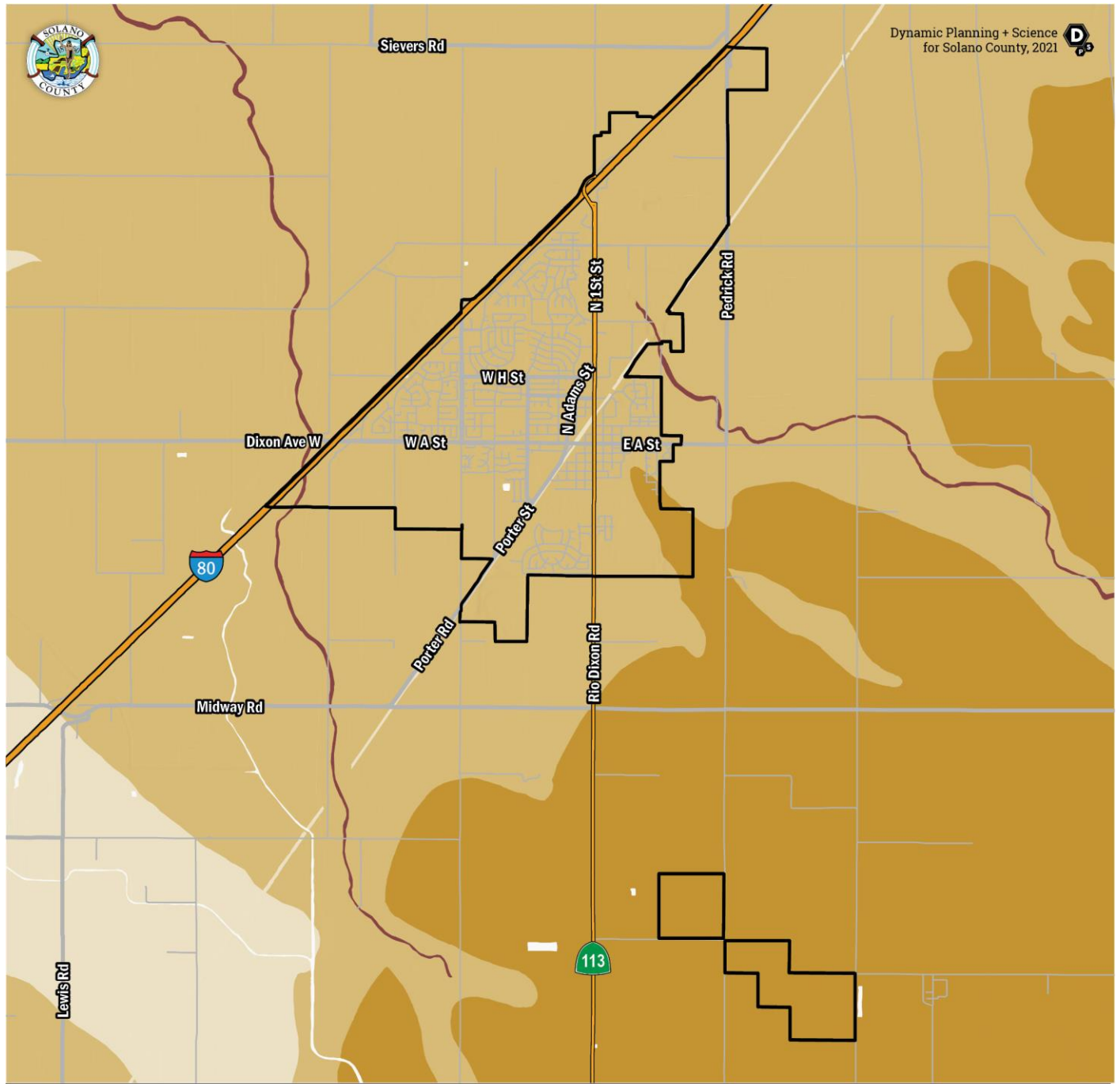
Note: Total Inventory Values

1 - Building Replacement Costs = \$3,773,922,295

2 - Content Replacement Costs = \$2,667,166,517

3 - Total Value = \$6,441,088,812





## POTENTIAL FOR LIQUEFACTION DIXON

\*Data sources: USGS.

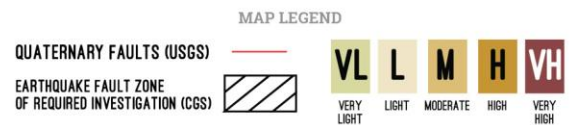
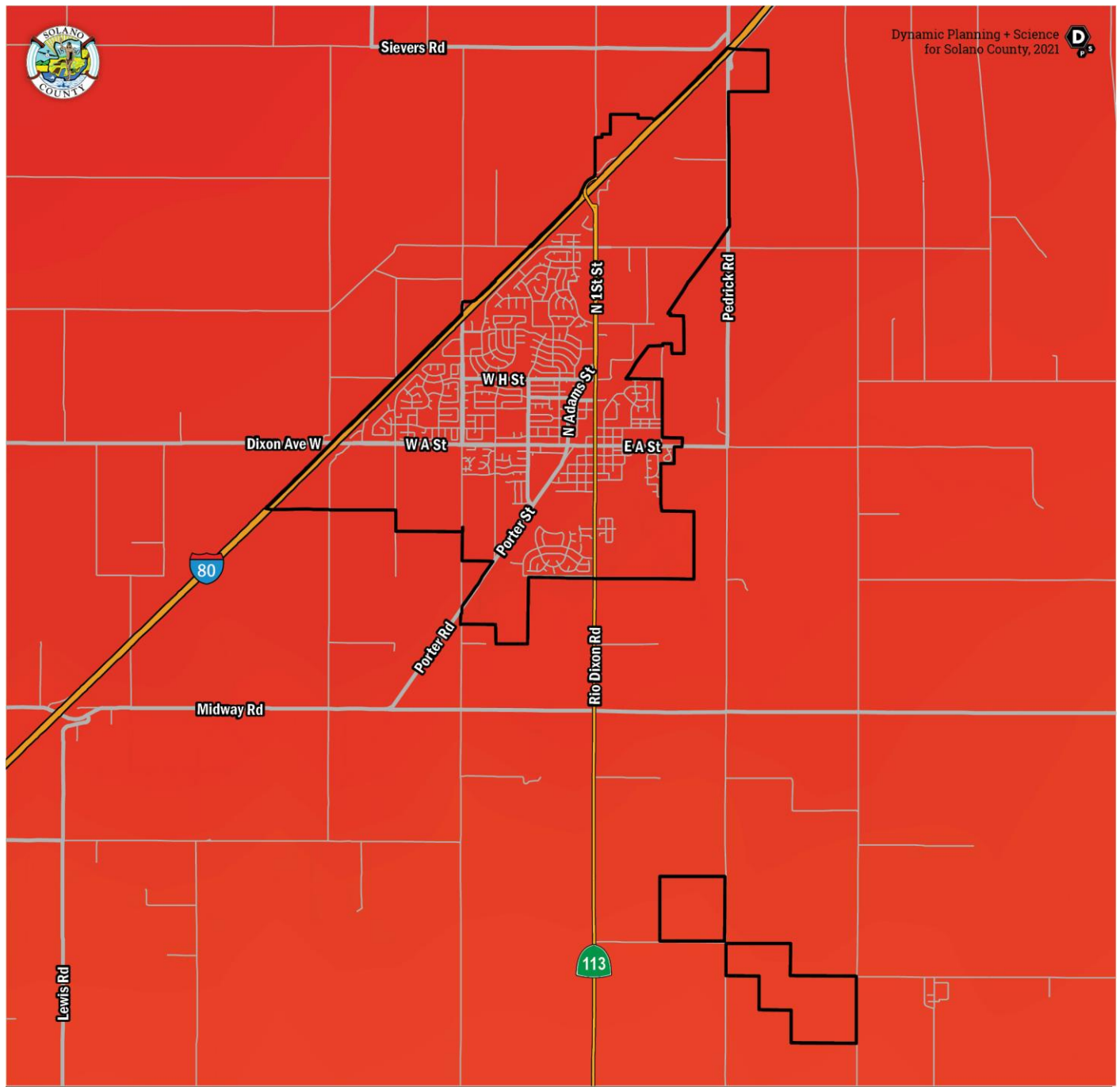


Figure 1-7: Dixon – Areas with Potential for Liquefaction



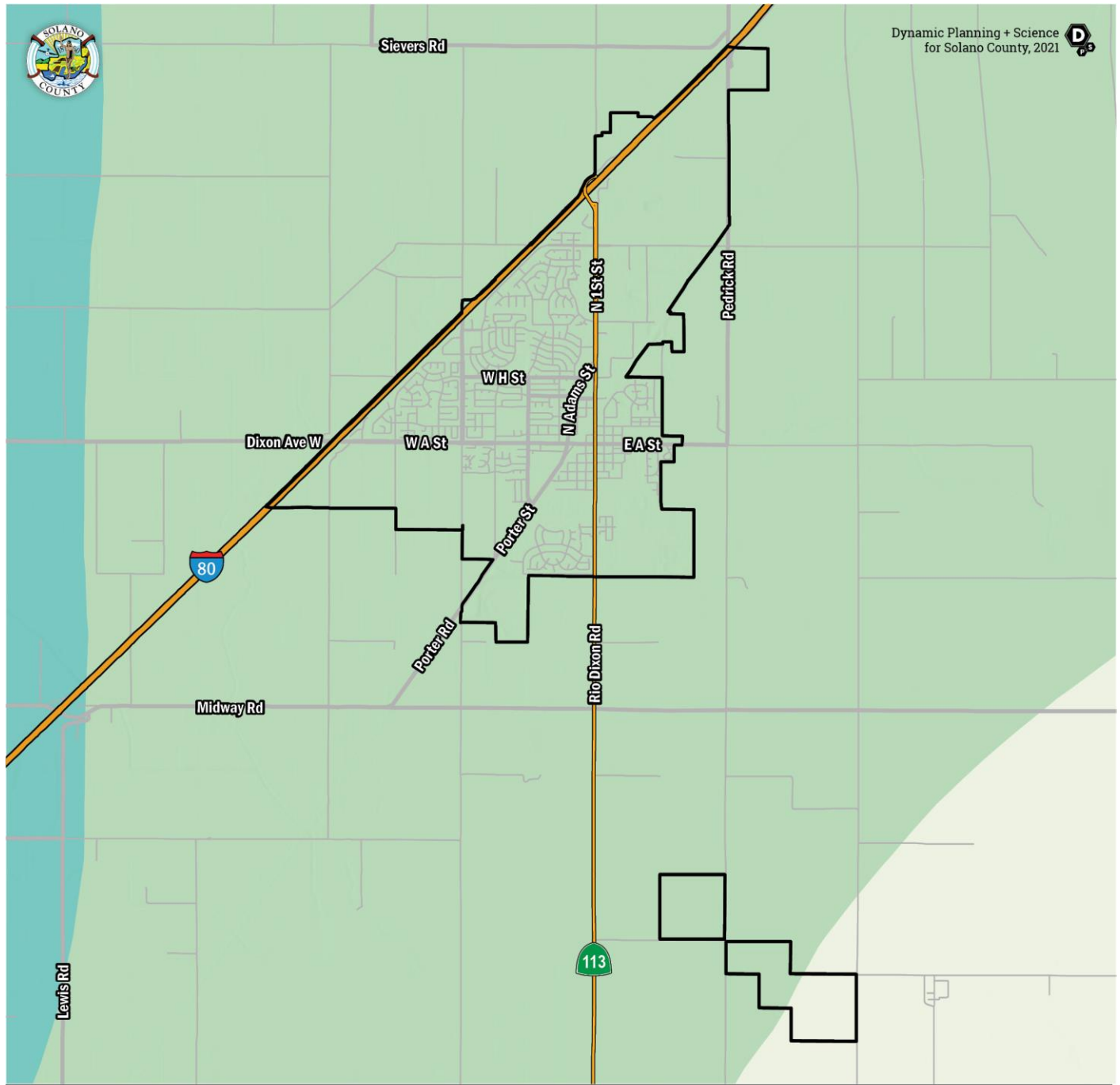
## 30-YR NORMAL MAXIMUM TEMPERATURE FOR JULY DIXON

\*Data sources: PRISM 800m Resolution 30-YR Normals.

MAP LEGEND



Figure 1-8: Dixon - 30-YR Normal Maximum Temperature for July



## AVERAGE ANNUAL PRECIPITATION (1981-2010, INCHES) DIXON

\*Data sources: USDA - 1981-2010 Annual Average Precipitation by State.

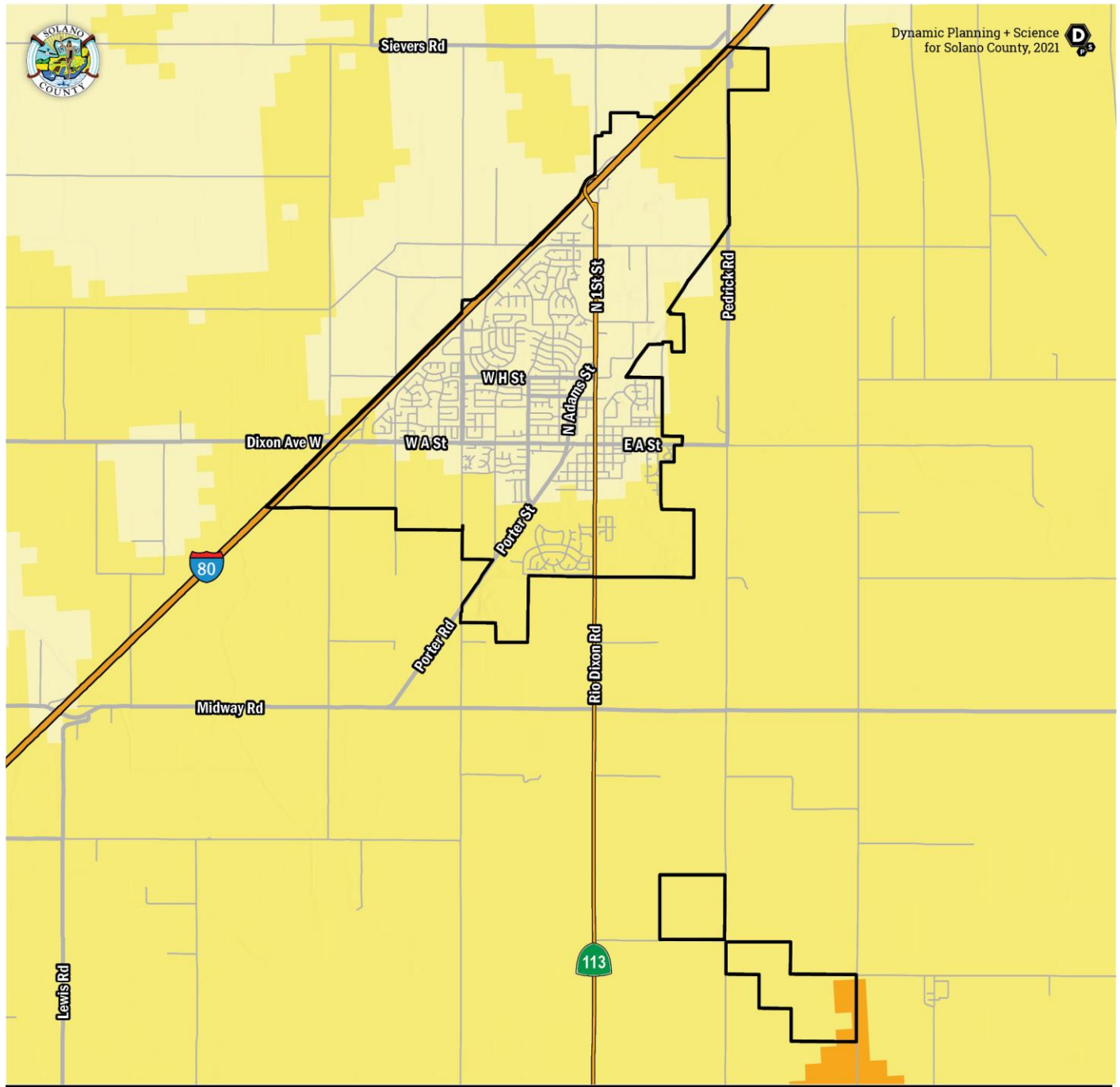
MAP LEGEND

14	18	23	28	33
17	22	27	32	37

INCHES

Figure 1-9: Dixon - Average Annual Precipitation (1981-2010)





## ANNUAL AVERAGE WIND SPEED (POWER CLASS) DIXON

\*Data sources: NREL.

MAP LEGEND



Figure 1-10: Dixon - Average Annual Wind Speed (Power Class)



Table 1-7: Dixon Drought Classifications and Impacts

Category	Description	Possible Impacts
D0	Abnormally Dry	<ul style="list-style-type: none"> <li>Active fire season begins.</li> <li>Going into drought, short term dryness, slowing planting, growth of crops or pastures.</li> <li>Coming out of drought, some lingering water deficits and pasture or crops not fully recovered</li> </ul>
D1	Moderate Drought	<ul style="list-style-type: none"> <li>Some damage to crops, pastures.</li> <li>Streams, reservoirs, or wells low, some water shortages developing or imminent.</li> <li>Voluntary water-use restrictions requested</li> </ul>
D2	Severe Drought	<ul style="list-style-type: none"> <li>Crop or pasture losses likely</li> <li>Water shortages common</li> <li>Water restrictions imposed</li> </ul>
D3	Extreme Drought	<ul style="list-style-type: none"> <li>Major crop/ pasture losses</li> <li>Widespread water shortages or restrictions</li> </ul>
D4	Exceptional Drought	<ul style="list-style-type: none"> <li>Exceptional and widespread crop/ pasture losses</li> <li>Shortages of water in reservoirs, streams, and wells creating water</li> </ul>

*Adapted from U.S. Drought Monitor Drought Classifications and Impacts*

## Drought Severity Timeline

## Suisun Bay

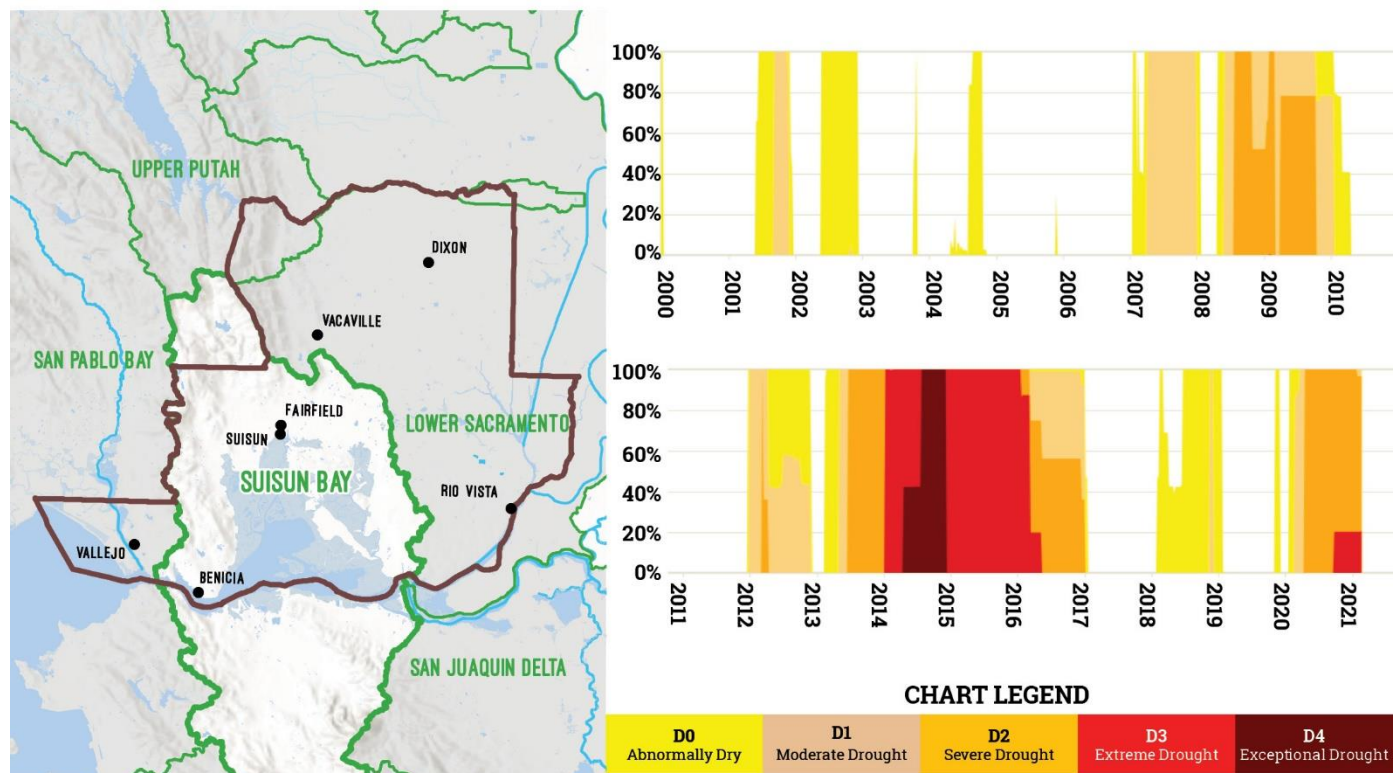


Figure 1-11: Drought Severity Timeline - Suisun Bay



# DIXON

## AVERAGE ANNUAL MAXIMUM TEMPERATURE

COMPARISON OF CURRENT OBSERVED TO RCP 4.5 AND RCP 8.5 SCENARIOS



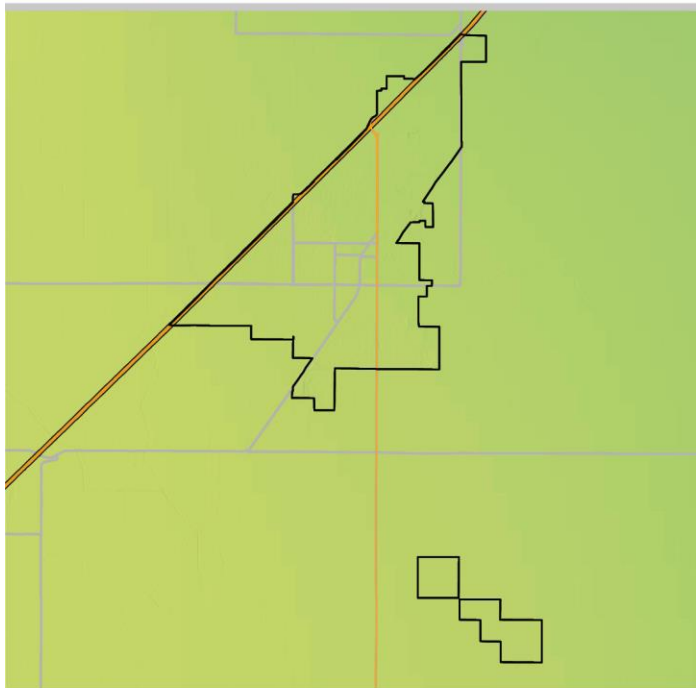
\*Data sources: Cal-Adapt CanESM2 RCP 4.5 & 8.5, PRISM 30-YR Norms Annual Max Temp



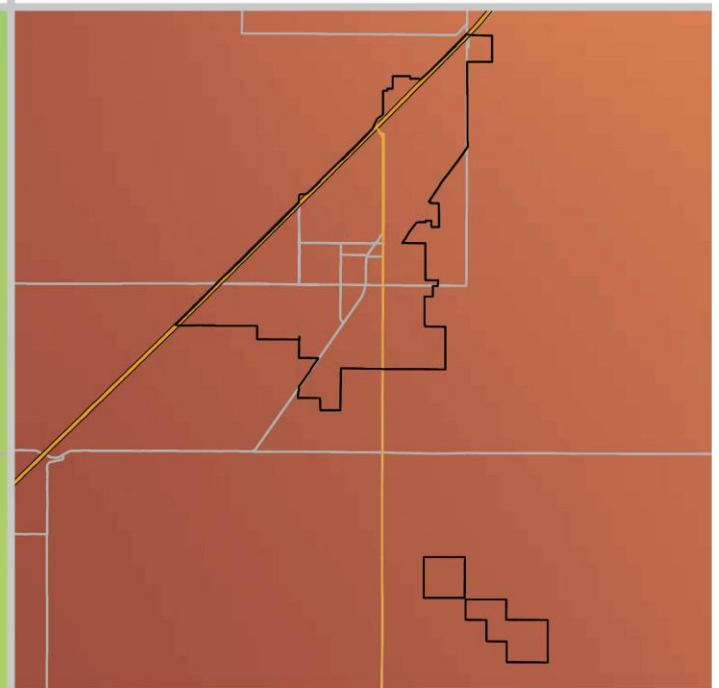
Dynamic Planning + Science  
for Solano County, 2021



**CURRENT 30-YR NORMAL**



**RCP 4.5 YEAR 2100**



**RCP 8.5 YEAR 2100**

Figure 1-12: Dixon - RCP Comparison





### 1.4.3.3 Past and Future Development

The City of Dixon is a general law city that crafts its own development regulations and is subject to State law. Future development is subject to compliance with state and local planning, zoning, subdivision, and architecture laws.

The City of Dixon's General Plan (GP) establishes long-range development policies. The GP is designed to help the City address issues related to land use, circulation (traffic), housing, open space, conservation, noise, and safety. The Land Use portion of the plan helps guide the City in determining the location of future development(s), including possible future annexation. In addition to the GP, the City has other plans that guide development in specific areas, including specific plans, policy plans, and master plans. These plans help to shape future development and dictate the City's Sphere of Influence (SOI). One of the central functions in these planning documents is to decrease risk of impact from natural hazards.

#### Development since Previous HMP

The City considered its growth since the last HMP and determined it had completed several significant mitigation activities and substantially decreased its vulnerability to hazards. In effort to respond to drought conditions, the City recently installed artificial turf fields and instituted subsidized desalination stations which reduce the need for salt filters to make water softer. The City of Dixon has also developed a dam emergency action plan for City-owned dam "Pond A," which has been submitted to CalOES. This HMP Annex reflects these substantial changes and focuses on avenues to better mitigate impacts from problematic past development.

#### Future Development

City of Dixon is required to update building codes to meet the minimum standards to those required in the California Building Code last updated in 2019. California Building Codes provide some of the safest construction standards in the world and are meant to reduce risk to occupants from high wind, seismic activity, landslides, flood, wildfire, and other natural hazards. In addition to California minimum development standards, all jurisdictions belong to the NFIP, and all development must meet minimum flood protection standards set forth by FEMA. See Section 4.3.5 of Volume 1 for more information about past and future development in Solano County.

As the General Plan is updated and incorporates information from this HMP, City of Dixon staff are continually improving hazard information through these hazard mitigation plan updates. With this 2020 update, improved online mapping about natural hazards available on RAMP will inform those responsible for future development to make better decisions where and how future development occurs.

City of Dixon reviewed its general plans under the capability assessments undertaken for this hazard mitigation plan. See Section 1.5.1. Deficiencies revealed by these reviews are identified as mitigation actions to decrease risks to move beyond past trends.



The City's municipal codes includes regulations to mitigate the impact of hazards on new and existing development, including:

- Drainage and stormwater retention requirements,
- Steep slope restrictions for new development,
- Waterbody buffer requirements,
- Floodplain management regulations,
- Zoning that prevents development in hazardous areas of the community such as floodplains, landslide areas, the wildland-urban interface (WUI), or other known hazard areas, and
- Building codes that include the most up-to-date California Fire Code, seismic standards, and many other provisions crafted to protect new construction from hazard events.

The City of Dixon is currently growing at a fast pace, specifically within two previously approved subdivisions at the south and southwest portions of the city. Future residential growth will continue in the southwest as well as vacant lands on the southwest and eastern parts of the city. Future industrial and commercial growth will focus on the northeast portions of the city and along the interstate, along with infill and redevelopment within developed parts of the city.

With the recent adoption of the general plan 2040 on May 18, 2021, the City will next embark on two major planning initiatives. The first will include updating the Housing Element for the next housing cycle of 2023-2031. This is due to be completed by 2023. Additionally, the City will update the outdated Zoning Ordinance and Zoning Map, Funds were requested as part of the 2021-22 budget and recently approved. The updated Zoning Ordinance will review and modernize the City's zoning and development standards

Even in the event that limited development did occur within a hazard area, the municipal code should ensure impacts from a hazard event are mitigated and losses are minimal. If development does occur in hazard areas, evacuation and emergency planning should take into consideration the anticipated local impacts of the hazard event, including potential interrupted services or the elimination of access.

The anticipated growth in the City will not cause significant change in vulnerability to the City for identified priority hazards.



### National Flood Insurance Program (NFIP)

The NFIP makes federally backed flood insurance available to homeowners, renters, and business owners in participating communities. FEMA has prepared a detailed Flood Insurance Study (FIS) for Solano County and municipalities. The study presents water surface elevations for floods of various magnitudes, including the 1-percent annual chance flood and the 0.2-percent annual chance flood (the 500-YR flood). Base flood elevations and the boundaries of the 100- and 500-YR floodplains are shown on Flood Insurance Rate Maps (FIRMs), which are the principal tools for identifying the extent and location of the flood hazard. FIRMs are the most detailed and consistent data source available, and for many communities they represent the minimum area of oversight under their floodplain management program. See Section 4 of Volume 1 for general information on the NFIP.

The City of Dixon has participated in the NFIP since 1981. The City of Dixon is currently in good standing with the provisions of the NFIP. Compliance is monitored by FEMA regional staff and by the California Department of Water Resources under a contract with FEMA. Maintaining compliance under the NFIP is an important component of flood risk reduction. See Table 1-8 for more information on the City's policies and historic flood insurance claims.

Table 1-8: NFIP Status Table

NFIP and CRS Status & Information	
City of Dixon	
NFIP Status	05/19/81
CRS Class	-
Policies in Force	23
Policies in SFHA	18
Policies in non-SFHA	5
Total Claims Paid	\$6,231
Paid Losses	1
Repetitive Loss Properties	1
Severe Repetitive Loss Properties	-
Repetitive Loss Payment by NFIP on Building	\$10,488
Repetitive Loss Payment by NFIP on Contents	\$0

**Source: OpenFEMA Data, FIMA RUL Solano County**

*Note: Policies and claims tabulation by jurisdiction is derived from the "reported city." Repetitive loss tabulations by jurisdiction derived via GIS-based intersect of data available at OpenFEMA Data (<https://www.fema.gov/about/openfema/data-sets>). Countywide data reported for entire county area including municipalities. The Privacy Act of 1974 (5 U.S.C. 522a) restricts the release of certain types of data to the public. Flood insurance policy and claims data are included in the list of restricted information. FEMA can only release such data to state and local governments, and only if the data are used for floodplain management, mitigation, or research purposes.*

*Therefore, this plan does not identify the repetitive loss properties or include claims data for any individual property.*

*See Volume 1, Section 4.5 for more information on the NFIP*



#### 1.4.3.4 Identify Hazard Problem Statements

As part of the mitigation action identification process, the Planning Committee for each jurisdiction identified areas of concern (aka problem statements) for their respective facilities based on the risk assessment and vulnerability analysis, utilizing the RAMP mapping and static snapshot maps. Problem statements focused on the impact, victim, or threat that the hazard could create in the jurisdiction, as described in Figure 1-13. Identifying common issues and weaknesses through these problem statements assisted the Planning Committee in understanding the realm of resources needed for mitigation. Jurisdiction problem statements are listed in Table 1-9.

The goal is to have at least one mitigation action for every problem statement. Projects or actions have been developed to mitigate each problem identified. See Table 1-14 for a full list of mitigation actions and corresponding problem statements that they address. Each problem statement is coded with a problem number for cross-referencing between Table 1-9 and Table 1-14.



Figure 1-13: Guidance for Problem Statements



Table 1-9: Problem Statements

Problem No.	Hazard Type	Area of Concern	Mitigation Alternatives	Primary Agency	Problem Description	Related MA
ps-AH-DX-149	All Hazard	Impact	PRV - Prevention, PE&A - Public Education & Awareness, ES - Emergency Services	City of Dixon	If the jurisdiction's railway were damaged, the city would not have access to the interstate.	ma-AH-DX-116
ps-AH-DX-150	All Hazard	Victim	PE&A - Public Education & Awareness, ES - Emergency Services	City of Dixon	Dixon needs a secondary alerting system to notify community of impending incidents.	ma-AH-DX-117
ps-EQ-DX-151	Earthquake	Impact	PPRO - Property Protection, PE&A - Public Education & Awareness, NRP - Natural Resource Protection, SP - Structural Projects	City of Dixon	Earthquakes can cause major damage to the jurisdiction causing liquefaction throughout the city.	ma-EQ-DX-119
ps-EQ-DX-152	Earthquake	Impact	PRV - Prevention, PPRO - Property Protection, SP - Structural Projects	City of Dixon	Many city facilities, constructed in 1978 including city administration buildings, need retrofits.	ma-EQ-DX-120
ps-EQ-DX-153	Earthquake	Impact	PRV - Prevention, PPRO - Property Protection, SP - Structural Projects	City of Dixon	Most of the City's water is produced from wells, however if pumps are damaged during an earthquake, this may cause major water supply issues.	ma-EQ-DX-121
ps-EQ-DX-154	Earthquake	Impact	PRV - Prevention, PE&A - Public Education & Awareness	City of Dixon	Dixon has several petroleum transmission (PGE) lines running through jurisdiction, mostly natural gas, which presents the potential for gas leaks throughout the town.	ma-EQ-DX-122
ps-EQ-DX-155	Earthquake	Impact	PRV - Prevention, SP - Structural Projects	City of Dixon	Sewer lines are vitrified clay pipes, there is potential for failure when shaking.	ma-EQ-DX-123
ps-FL-DX-156	Flood	Impact	PRV - Prevention, PE&A - Public Education & Awareness	City of Dixon	Sandbagging is required annually to address flooding.	ma-FL-DX-126, ma-FL-DX-186
ps-DR-DX-157	Drought	Impact	PE&A - Public Education & Awareness	City of Dixon	There is not enough public outreach to educate the community about drought and drought impacts.	ma-DR-DX-118
ps-EW-DX-158	Extreme Weather	Impact	PRV - Prevention, PPRO - Property Protection, PE&A - Public Education & Awareness, ES - Emergency Services	City of Dixon	70 mile per hour wind gusts have become more frequent presenting potential damage opportunity to infrastructure and increased susceptibility to damaging wildland fires.	ma-EW-DX-124



Problem No.	Hazard Type	Area of Concern	Mitigation Alternatives	Primary Agency	Problem Description	Related MA
ps-EW-DX-159	Extreme Weather	Impact	PE&A - Public Education & Awareness, ES - Emergency Services	City of Dixon	The city lacks a documentation system and additional resources to document recurring heavy rain events, causing flooding.	ma-EW-DX-179
ps-EW-DX-160	Extreme Weather	Impact	PE&A - Public Education & Awareness, ES - Emergency Services	City of Dixon	Need for more generators throughout the jurisdiction for cooling centers.	ma-EW-DX-125
ps-CC-DX-180	Climate Change	Impact	PRV - Prevention, PPRO - Property Protection, SP - Structural Projects	City of Dixon	Climate change is predicted to increase the intensity of storms, drought, flooding, and wildfire.	ma-FL-DX-126

#### 1.4.4 Mitigation Action Support Tool (MAST)

As a living document, hazard problem statements and mitigation activities will be updated through a web interface application developed specifically for participating jurisdictions. The Mitigation Action Support Tool (MAST) is accessible through [mitigatehazards.com/SolanoHMP/](https://mitigatehazards.com/SolanoHMP/).

MAST is a web-based interactive tool that enables multiple users to search, view, enter, and update mitigation actions, ideas or projects, and other information. MAST provides participating jurisdictions and plan reviewers (Cal OES/FEMA) access to valuable mitigation information that can be leveraged by future planning or other risk reduction efforts within the County. Participating jurisdictions can update the status of their mitigation projects throughout the planning lifecycle, and this web-based tool will improve participating jurisdiction's ability to apply for FEMA's Hazard Mitigation Assistance (HMA) grant programs including initial grant application processes through Cal OES.



## 1.5 Mitigation Strategy

The mitigation strategy is the guidebook to future hazard mitigation administration, capturing the key outcomes of the MJHMP planning process. The mitigation strategy is intended to reduce vulnerabilities outlined in the previous section (a.k.a. problem statements) with a prescription of policies and physical projects. These mitigation actions should be compatible with existing planning mechanisms and should outline specific roles and resources for implementation success.

### 1.5.1 Capabilities & Adaptive Capacity Assessment

This section examines the planning and regulatory, administrative, technical, financial, educational, and outreach capabilities to augment known issues and weaknesses from identified natural hazards.

Capabilities assessments in this Volume 1 and in Volume 2 include considerations of a community's adaptive capacity for climate change, as outlined in Cal OES' 2020 California Adaptation Planning Guide. Adaptive capacity is a community or region's existing ability to moderate climate change impacts. Assessing adaptive capacity includes analysis of policies, plans, programs, funding, and staffing capacity.

The tables in this section explore various local planning mechanisms, administrative capacity, financial capabilities, and education and outreach initiatives. The columns in each table represent deeper dives into the following questions:

- Is the existing planning or regulatory mechanism used currently? (Column 1, Status)
- Has the HMP been integrated into the planning mechanism currently so that the named mechanism is currently used in HMP planning? (Column 2, Current Mitigation Use)
- Is there a future opportunity to expand, improve upon, and incorporate this 2020 HMP Update into the planning or regulatory mechanism? (Column 3, Future Opportunity)

The capabilities assessment is easily digestible and based on color coding to indicate which policies and plans are adequate, need improvement or in which the HMP could be integrated. Each table includes a legend that explain how each one of these questions are being answered according to the color indicated: green, yellow, and orange.

For more information on the regulatory environment surrounding each hazard, see hazard-specific sections of Volume 1. Volume 1, Section 5.3.5 includes an extensive list of federal and state funding opportunities as well.



### 1.5.1.1 Planning and Regulatory Capabilities

Table 1-10: Planning and Regulatory Capabilities

CAPABILITY ASSESSMENT LEGEND		
Status	Current Mitigation Use	Future Opportunity
Currently in use or present.	Used widely for mitigation.	Opportunity to expand and integrate.
(Sort of) Seldomly used or limited presence.	Limited use in mitigation planning.	Limited opportunity to expand and integrate.
(No) Not present or available.	Not used in mitigation planning.	No opportunity to expand or integrate.

Resource	HMP Integration			Notes / Additional Detail
	Status	Current Mitigation Use	Future Opportunity	
Planning and Regulatory Capabilities				
Construction and Future Development Regulations				
Building Codes				2019 California Building Code
Building Code Effectiveness Grading Schedule (BCEGS) Rating	N/A	N/A	N/A	Unknown
Public Protection (ISO Class)				3
Hazard Related Development Standards				Flood Damage Prevention (9.04)
Hazard-Specific Ordinance				Flood Damage Prevention (9.04); Fire Code, Means of Egress (Chapter 10); Water efficient landscaping (14.02.275)
Zoning Ordinance				
Growth Management Ordinance				Measure B Residential Growth Implementation Plan (18.48).
Hazard Reduction Programs (Annually Conducted)				
Capital Improvements Program (CIP) or Plan				2017/18-2021/22.Capital Improvement Plan
Erosion/Sediment Control Program				
Hazard-Related Public Outreach Program				See Education & Outreach Capabilities for more specifics.
Stormwater Management Program (Annual Inspections)				.
Seismic Safety Program (Non-structural Inspections)				
Earthquake Modernization Program (Building Safety Inspections)				
Hazard Plans				
General Plan Safety Element				1993, currently being updated
Noteworthy Area/ Specific Plan with Hazard Focus	N/A	N/A	N/A	





Resource	HMP Integration			Notes / Additional Detail
	Status	Current Mitigation Use	Future Opportunity	
Planning and Regulatory Capabilities				
Community Wildfire Protection Plan (CWPP)		N/A	N/A	
Wildfire Vulnerability Assessment	N/A	N/A	N/A	
Urban or Integrated Regional Water Management Plan				Cal Water Service, Dixon Area, 2015
Floodplain Management Plan				See UWMP
Stormwater Management Plan				Stormwater Management Plan fiscal years 2003/4-2007/8
Ground Water Management Plan(s)				Solano County Groundwater Sustainability Plan in development
Open Space and Land Management Plan(s)				
Emergency Operations Plan				2014 City of Dixon Emergency Operations Plan
Climate Action Plan, Vulnerability Ass'mt, or Adaptation Plan				2011 County of Solano Climate Action Plan
Sustainable Community Plan (SB 375)				ABAG Plan Bay Area 2040 (2017)
Local Delta/ Wetlands Program(s)	N/A	N/A	N/A	
Downtown Plan with hazard focus	N/A	N/A	N/A	
Community Health Assessment(s)	N/A	N/A	N/A	Solano County Health Assessment
National Flood Protection Program (NFIP)				
Floodplain Management Regulations				Methods of Reducing Flood Losses (9.04.040)
Flood Insurance Education and Technical Assist.				2013 Flood Insurance Study
Flood Hazard Mapping / Re-Mapping				FEMA Flood Insurance Rate Map 2009
Community Rating System (CRS)				



### 1.5.1.2 Administrative and Technical Capabilities

Table 1-11: Administrative and Technical Capabilities

CAPABILITY ASSESSMENT LEGEND		
Status	Current Mitigation Use	Future Opportunity
Currently in use or present.	Used widely for mitigation.	Opportunity to expand and integrate.
(Sort of) Seldomly used or limited presence.	Limited use in mitigation planning.	Limited opportunity to expand and integrate.
(No) Not present or available.	Not used in mitigation planning.	No opportunity to expand or integrate.

Resource	HMP Integration			Notes / Additional Detail
	Status	Current Mitigation Use	Future Opportunity	
Administrative and Technical				
Community Planning and Development Services				
Community Planner				Associate Planner, Scott Greeley
Civil Engineer				Public Works Director/City Engineer Joe Leach
Building Code Official				Building inspector II, Joel Engrahm
Floodplain Administrator				Deputy Public Works Director, Louren Kotow
Fire Marshall				Fire Chief, Greg Lewis
Dedicated Public Outreach Personnel				
GIS Specialist and Capability				
Emergency Manager				
Grant Manager, Writer, or Specialist				
Other				
Warning Systems/Services				
General				AlertSolano
Flood				AlertSolano: Flood Risk: California Department of Water Resources Flood Risk Notification Program Flood Control: Solano County Water Agency
Wildfire				AlertSolano
Geological Hazards				AlertSolano ShakeAlert.org (nation-wide)



### 1.5.1.3 Financial Capabilities

Table 1-12: Financial Capabilities

CAPABILITY ASSESSMENT LEGEND		
Status	Current Mitigation Use	Future Opportunity
Currently in use or present.	Used widely for mitigation.	Opportunity to expand and integrate.
(Sort of) Seldomly used or limited presence.	Limited use in mitigation planning.	Limited opportunity to expand and integrate.
(No) Not present or available.	Not used in mitigation planning.	No opportunity to expand or integrate.

Resource	HMP Integration			Notes / Additional Detail	
	Status	Current Mitigation Use	Future Opportunity		
Fiscal Capabilities					
Financial Resources for Hazard Mitigation					
Levy for Specific Purposes with Voter Approval				While the City has employed these various financial capabilities to varying degrees, there are no examples of employing them for hazard mitigation projects or planning. However, it's not anticipated that many of these would be used to fund hazard mitigation projects in the future, either, unless paired with other grant funding.	
Utilities Fees					
Benefit assessments					
System Development Fee					
Various Bonds to Incur Debt					
Withheld Spending in Hazard-Prone Areas	N/A	N/A	N/A		
Stormwater Service Fees					
Capital Improvement Project Funding					



### 1.5.1.4 Education and Outreach

Table 1-13: Education and Outreach Capabilities

CAPABILITY ASSESSMENT LEGEND		
Status	Current Mitigation Use	Future Opportunity
Currently in use or present.	Used widely for mitigation.	Opportunity to expand and integrate.
(Sort of) Seldomly used or limited presence.	Limited use in mitigation planning.	Limited opportunity to expand and integrate.
(No) Not present or available.	Not used in mitigation planning.	No opportunity to expand or integrate.

Resource	HMP Integration			Notes / Additional Detail
	Status	Current Mitigation Use	Future Opportunity	
Education / Outreach Capabilities				
Education/Outreach Resources				
Website Dedicated to Hazard Topics				"Disaster Resources" webpage
Dedicated Social Media				Yes, City and Police FB, Instagram, Twitter
Hazard Info. Avail. at Library/ Planning Desk				
Annual Public Safety Events				not currently during COVID-19 pandemic
Ability to Field Public Tech. Assistance Requests				
Public Safety Newsletters or Printed Outreach				
Fire Safe Councils	N/A	N/A	N/A	
Resource Conservation Districts				Solano Resource Conservation District
Other				

### 1.5.1.5 Capability and Adaptive Capacity Opportunities

The City of Dixon identified many opportunities for strengthening community capabilities and adaptive capacity. The City considered this assessment in developing its Mitigation Strategy in Section 1.5.2. Volume 1, Section 5.3.5 includes an extensive list of federal and state funding opportunities to leverage to improve community capabilities. The City's General Plan is almost twenty years old and currently being updated. Like many small cities, Dixon could increase staffing capacity, especially with emergency response and grant writing assistance, and could look to increase fiscal capabilities to improve. This City could also review its inspection programs for stormwater and earthquake safety. The City also has good capacity under its current codes and current education and outreach capacity.



## 1.5.2 Mitigation Actions

Mitigation actions were developed based upon the jurisdiction's priorities, risk assessment results, and mitigation alternatives. The mitigation action prioritization method used by all participating jurisdictions is described in Section 5.5.1 of Volume 1. Table 1-14 lists each priority mitigation action, responsible party, time frame, potential funding source, implementation steps, and resources need to implement based upon the Planning Committee consensus.

Each participating jurisdiction, including the City of Dixon, considered ongoing relevancy of mitigation actions from the existing MJHMP and retained or removed such actions while adding new relevant actions as well. Mitigation actions were examined for relevancy and the potential for future implementation and then evaluated for potential follow-up. Some mitigation actions developed during the previous HMP effort were not included because they were an inherent part of the HMP update process or were not detailed enough for implementation at a local Jurisdiction level. the City of Dixon has made significant changes to other mitigation actions because of the updated risk assessment and implementation strategy, to include more detail, or to update based on current mitigation practices. Volume 1, Section 5.5.2 provides a record of County wide mitigation actions, the status, and additional notes for each action.

Table 1-14 lists each mitigation action for the City of Dixon. Each participating jurisdiction developed unique mitigation actions, targeted at their own unique priorities and vulnerabilities. Each mitigation action identifies the responsible party, time frame, potential funding source, implementation steps and resources needed to implement these priority mitigation actions. As a living document, hazard problem statements and mitigation activities will be updated through MAST. The detail in Table 1-14 meets the regulatory requirements of FEMA and DMA 2000.

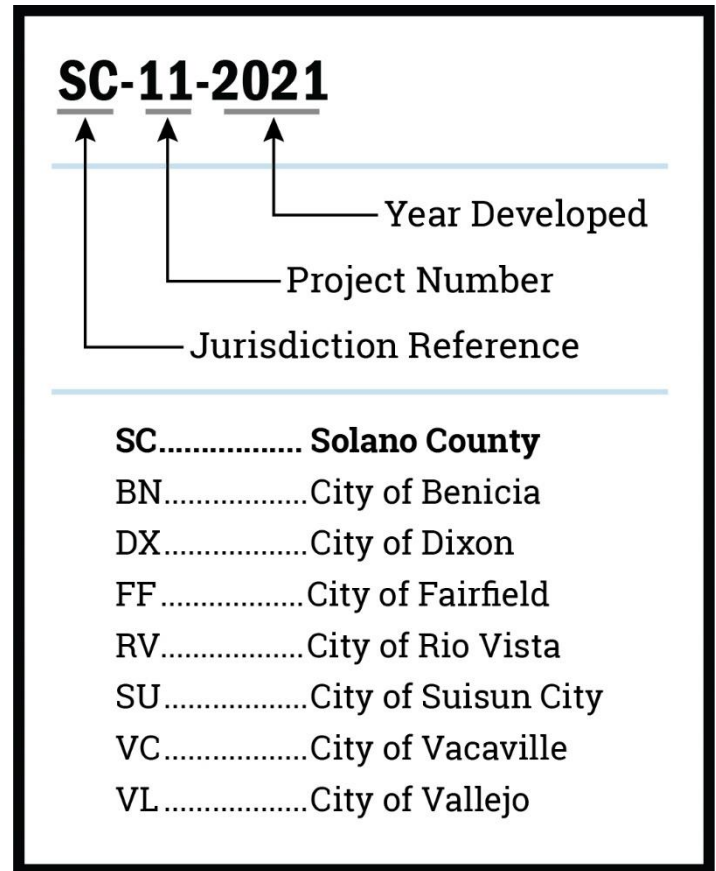


Figure 1-14: Mitigation Action Key



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Table 1-14: City of Dixon Mitigation Actions

Mitigation No.	Hazard Type	Mitigation Type	Status	Year	Primary Agency	Title/Description	Responsible Party	Estimated Cost	Estimated Benefit	Time Frame	HMA Activity Type	Potential Grant Source	Priority	Goal	Related Problem Statements
ma-FL-VC-49	All Hazard	ES - Emergency Services	Ongoing	2017	City of Vacaville	Provide ample space and/or care for vulnerable populations at evacuation centers.	Community Services American Red Cross	High - Existing funding will not cover the cost of the project; implementation would require new revenue through an alternative source (for example, bonds, grants, and fee increases).	High - Project will provide an immediate reduction of risk exposure for life and property.	Ongoing	N/A	EMPG	Medium	Goal 1: People	ps-FL-VC-4, ps-FL-VC-173
ma-AH-VC-185	All Hazard	ES - Emergency Services	Pending	2021	City of Vacaville	Construct backup generators at critical facilities (fire stations, hospital) and sheltering locations to respond to hazard events in loss of power.	Public Works; Fire Department	Medium - The project could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.	High - Project will provide an immediate reduction of risk exposure for life and property.	3-5 Years	Project	HMGP / BRIC , EMPG , Internal Funding	High	Goal 1: People , Goal 2: Infrastructure	ps-AH-VC-103, ps-AH-VC-104, ps-AH-VC-105
ma-FL-VC-191	All Hazard	PPRO - Property Protection	Ongoing	2021	City of Vacaville	Clean out culverts, basins, stormwater and flood channels and drainage structures prior to, during and after large rain events where they cross residential streets, especially downstream of English Hills, Ulatis, and Alamo Creek burn areas from 2020 Hennessey Fire.	Public Works	Medium - The project could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.	High - Project will provide an immediate reduction of risk exposure for life and property.	Ongoing	N/A	Internal Funding	High	Goal 2: Infrastructure , Goal 4: Resilience	ps-WF-VC-102, ps-SF-VC-85
ma-CC-VC-189	Climate Change	PRV - Prevention	Ongoing	2021	City of Vacaville	Develop a climate action plan; develop adaptation options that minimize climate change impacts and public health hardships. (In progress, expected completion 2021)	Comm Dev	Medium - The project could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.	High - Project will provide an immediate reduction of risk exposure for life and property.	1-3 Years	Planning	HMGP / BRIC , Internal Funding	High	Goal 1: People , Goal 4: Resilience	ps-CC-VC-80, ps-CC-VC-81
ma-DR-VC-56	Drought	SP - Structural Projects	Pending	2017	City of Vacaville	Continue to implement a reclaimed water system as secondary delivery system.	Utilities Department	High - Existing funding will not cover the cost of the project; implementation would require new revenue through an alternative source (for example, bonds, grants, and fee increases).	High - Project will provide an immediate reduction of risk exposure for life and property.	3-5 Years	Project	HMGP / BRIC	High	Goal 3: Environment , Goal 4: Resilience	ps-DR-VC-93

Mitigation No.	Hazard Type	Mitigation Type	Status	Year	Primary Agency	Title/Description	Responsible Party	Estimated Cost	Estimated Benefit	Time Frame	HMA Activity Type	Potential Grant Source	Priority	Goal	Related Problem Statements
ma-DR-VC-57	Drought	NRP - Natural Resource Protection	Ongoing	2017	City of Vacaville	Reduce fire risk by clearing drought-damaged vegetation.	Public Works	Medium - The project could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.	High - Project will provide an immediate reduction of risk exposure for life and property.	3-5 Years	Project	HMGP / BRIC	High	Goal 1: People , Goal 2: Infrastructure , Goal 3: Environment , Goal 4: Resilience	ps-DR-VC-95, ps-WF-VC-5, ps-WF-VC-101
ma-DR-VC-58	Drought	PRV - Prevention	Pending	2017	City of Vacaville	Strengthen water use ordinances as needed and educate public to such.	Community Dev.; Utilities	Medium - The project could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.	High - Project will provide an immediate reduction of risk exposure for life and property.	1-3 Years	Planning	HMGP / BRIC	Medium	Goal 3: Environment , Goal 4: Resilience	ps-DR-VC-94
ma-WF-VC-53	Earthquake	PPRO - Property Protection	Ongoing	2017	City of Vacaville	Continue to upgrade and improve city infrastructure to withstand anticipated ground shaking within the city.	Public Works Community Development	High - Existing funding will not cover the cost of the project; implementation would require new revenue through an alternative source (for example, bonds, grants, and fee increases).	High - Project will provide an immediate reduction of risk exposure for life and property.	Funding Dependent	Project	HMGP / BRIC , Internal Funding	Medium	Goal 2: Infrastructure	ps-EQ-VC-3, ps-FL-VC-4
ma-WF-VC-54	Earthquake	PE&A - Public Education & Awareness	Ongoing	2017	City of Vacaville	Improve public education programs and practices to residents for earthquake risk.	PIO, Fire Department, Community Development	Medium - The project could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.	High - Project will provide an immediate reduction of risk exposure for life and property.	Ongoing	5%	HMGP / BRIC	High	Goal 1: People , Goal 4: Resilience	ps-EQ-VC-3
ma-WF-VC-55	Earthquake	PPRO - Property Protection	Ongoing	2017	City of Vacaville	Explore incentives or cost-sharing programs to facilitate needed retrofits on high occupancy and residences	PIO Community Development	Medium - The project could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.	Medium - Project will have a long-term impact on the reduction of risk exposure for life and property, or project will not provide an immediate reduction in the risk exposure for property.	1-3 Years	Planning	HMGP / BRIC , Internal Funding	Medium	Goal 1: People , Goal 4: Resilience	ps-EQ-VC-2
ma-EW-VC-60	Extreme Weather	PE&A - Public Education & Awareness	Ongoing	2017	City of Vacaville	Help educate the citizens of Vacaville of ways/programs to reduce electrical demand at commercial and resident's homes during high heat events.	City Manager	Medium - The project could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.	Medium - Project will have a long-term impact on the reduction of risk exposure for life and property, or project will not provide an immediate reduction in the risk exposure for property.	Ongoing	5%	HMGP / BRIC , Internal Funding	Medium	Goal 4: Resilience	ps-EW-VC-89



Mitigation No.	Hazard Type	Mitigation Type	Status	Year	Primary Agency	Title/Description	Responsible Party	Estimated Cost	Estimated Benefit	Time Frame	HMA Activity Type	Potential Grant Source	Priority	Goal	Related Problem Statements
ma-EW-VC-61	Extreme Weather	SP - Structural Projects	Ongoing	2017	City of Vacaville	Maintain and reduce concrete and asphalt infrastructure to mitigate damage from high heat conditions.	Public Works Dept. Community Development	High - Existing funding will not cover the cost of the project; implementation would require new revenue through an alternative source (for example, bonds, grants, and fee increases).	High - Project will provide an immediate reduction of risk exposure for life and property.	3-5 Years	Project	HMGP / BRIC , Internal Funding	High	Goal 2: Infrastructure	ps-EW-VC-91, ps-EW-VC-92
ma-HH-VC-62	Extreme Weather	PE&A - Public Education & Awareness	Ongoing	2017	City of Vacaville	Provide alert, notification and cooling center information to residents during high heat conditions.	PIO Fire Dept.	Low - The project could be funded under the existing budget. The project is part of or can be part of an ongoing existing program.	High - Project will provide an immediate reduction of risk exposure for life and property.	Ongoing	Planning	HMGP / BRIC	High	Goal 1: People	ps-EW-VC-90
ma-HH-VC-63	Extreme Weather	ES - Emergency Services	Pending	2017	City of Vacaville	Provide improved cooling center infrastructure for residents.	Public Works Dept. Community Services	High - Existing funding will not cover the cost of the project; implementation would require new revenue through an alternative source (for example, bonds, grants, and fee increases).	High - Project will provide an immediate reduction of risk exposure for life and property.	Funding Dependent	Project	HMGP / BRIC , EMPG , Internal Funding	High	Goal 1: People , Goal 2: Infrastructure	ps-EW-VC-90
ma-EW-VC-190	Extreme Weather	PPRO - Property Protection	Pending	2021	City of Vacaville	Develop cost share program to help private landowners with tree maintenance to avoid power outages and damage during windstorms.	City Admin/ Pub. Works	High - Existing funding will not cover the cost of the project; implementation would require new revenue through an alternative source (for example, bonds, grants, and fee increases).	High - Project will provide an immediate reduction of risk exposure for life and property.	3-5 Years	Project	HMGP / BRIC	Medium	Goal 1: People , Goal 4: Resilience	ps-EW-VC-86, ps-EW-VC-87
ma-FL-VC-41	Flood	SP - Structural Projects	Ongoing	2017	City of Vacaville	Implement City drainage studies and master plans to improve drainage conveyance, and/or mitigate peak flow in local tributaries. Priorities include Alamo Creek, Ulatis, and N. Horse Creek Basin #2 Detention Projects.	Public Works	High - Existing funding will not cover the cost of the project; implementation would require new revenue through an alternative source (for example, bonds, grants, and fee increases).	High - Project will provide an immediate reduction of risk exposure for life and property.	5-10 Years	Project	HMGP / BRIC	Extreme	Goal 2: Infrastructure , Goal 4: Resilience	ps-FL-VC-4, ps-FL-VC-96, ps-EW-VC-88
ma-FL-VC-42	Flood	ES - Emergency Services	Ongoing	2017	City of Vacaville	Evacuate and shelter populations displaced due to flooding.	Fire Dept.	Medium - The project could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.	High - Project will provide an immediate reduction of risk exposure for life and property.	1-3 Years	Planning	HMGP / BRIC , CDBG DRI , EMPG	High	Goal 1: People	ps-FL-VC-4

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ma-FL-VC-44	Flood	PRV - Prevention	Ongoing	2017	City of Vacaville	Increase use of technology and the data developed during the preparation of this LHMP to improve upon operational efficiency and effectiveness in maintaining drainage areas.	Public Works	Medium - The project could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.	High - Project will provide an immediate reduction of risk exposure for life and property.	3-5 Years	Planning	HMGP / BRIC	High	Goal 4: Resilience	ps-FL-VC-4, , ps-FL-VC-173
ma-FL-VC-46	Flood	PRV - Prevention	Ongoing	2017	City of Vacaville	Institute regulatory and educational improvements for increased floodplain protection. These may include: <ul style="list-style-type: none"><li>- Additional local regulations for manufactured homes.</li><li>- Changes in zoning ordinance to designate special land uses for floodprone areas</li><li>- Enhanced subdivision regulations</li><li>- Additional policies and regulations to enhance the preservation of Open Space in floodprone areas</li><li>- Development of Policies/standards for addressing 200-year flood protection standard</li><li>- Provide Certified Floodplain Manager training and certification to staff</li></ul>	Public Works Building Dept.	High - Existing funding will not cover the cost of the project; implementation would require new revenue through an alternative source (for example, bonds, grants, and fee increases).	High - Project will provide an immediate reduction of risk exposure for life and property.	3-5 Years	Planning	HMGP / BRIC	Medium	Goal 4: Resilience	ps-FL-VC-4, ps-FL-VC-173
ma-FL-VC-192	Flood	NRP - Natural Resource Protection	Pending	2021	City of Vacaville	Assess and implement erosion and flood control options for Ulati Creek at intersection with Main Street.	Public Works	High - Existing funding will not cover the cost of the project; implementation would require new revenue through an alternative source (for example, bonds, grants, and fee increases).	High - Project will provide an immediate reduction of risk exposure for life and property.	3-5 Years	Planning	HMGP / BRIC , Internal Funding	High	Goal 2: Infrastructure	ps-FL-VC-96, ps-FL-VC-97
ma-FL-VC-199	Flood	PRV - Prevention	Pending	2021	City of Vacaville	Conduct funding and engineering assessment for options to implement Alamo Conveyance Project.	Public Works	High - Existing funding will not cover the cost of the project; implementation would require new revenue through an alternative source (for example, bonds, grants, and fee increases).	High - Project will provide an immediate reduction of risk exposure for life and property.	3-5 Years	Planning	HMGP / BRIC , FMA	Extreme	Goal 2: Infrastructure , Goal 4: Resilience	ps-FL-VC-4, ps-FL-VC-173

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ma-SF-VC-64	Slope Failure	NRP - Natural Resource Protection	Ongoing	2017	City of Vacaville	Replant deep-rooted vegetation on bare slopes of City-owned land, especially focusing on recent burn areas.	Public Works Department	Medium - The project could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.	High - Project will provide an immediate reduction of risk exposure for life and property.	Ongoing	Project	HMGP / BRIC , Internal Funding	Medium	Goal 1: People , Goal 3: Environment	ps-SF-VC-85
ma-SF-VC-65	Slope Failure	NRP - Natural Resource Protection	Ongoing	2017	City of Vacaville	Continue to perform slope stabilization near landslide/rockslide/mudslide hazard zones, such as I-80.	Public Works Department	High - Existing funding will not cover the cost of the project; implementation would require new revenue through an alternative source (for example, bonds, grants, and fee increases).	High - Project will provide an immediate reduction of risk exposure for life and property.	3-5 Years	Project	HMGP / BRIC	Medium	Goal 1: People , Goal 2: Infrastructure	ps-SF-VC-85
ma-SF-VC-66	Slope Failure	PPRO - Property Protection	Pending	2017	City of Vacaville	Encourage and explore incentive programs for homeowners in high landslide hazard areas to plant native trees and shrubbery; develop cost-share program to offer financial assistance to homeowners.	Community Development	Medium - The project could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.	High - Project will provide an immediate reduction of risk exposure for life and property.	1-3 Years	Project	HMGP / BRIC	Medium	Goal 1: People , Goal 3: Environment	ps-SF-VC-82, ps-SF-VC-83, ps-SF-VC-84
ma-WF-VC-47	Wildfire	NRP - Natural Resource Protection	Ongoing	2017	City of Vacaville	Increase fuel management and fuel reduction in open space, creeks, around critical facilities, and urban / wildland interface areas. Continue cow grazing and pursue goat grazing as effective fuel management techniques.	Fire Dept.	Medium - The project could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.	High - Project will provide an immediate reduction of risk exposure for life and property.	1-3 Years	Project	HMGP / BRIC , FP&S , EMPG , Internal Funding	High	Goal 1: People , Goal 2: Infrastructure	ps-WF-VC-99, ps-WF-VC-100, ps-WF-VC-102, ps-WF-VC-182, ps-WF-VC-185, ps-WF-VC-184
ma-WF-VC-48	Wildfire	ES - Emergency Services	Ongoing	2017	City of Vacaville	Maintain and improve access to fire prone areas.	Fire Dept.	High - Existing funding will not cover the cost of the project; implementation would require new revenue through an alternative source (for example, bonds, grants, and fee increases).	High - Project will provide an immediate reduction of risk exposure for life and property.	1-3 Years	Project	HMGP / BRIC , Internal Funding	High	Goal 1: People , Goal 2: Infrastructure	, ps-WF-VC-99
ma-WF-VC-50	Wildfire	PRV - Prevention	Pending	2017	City of Vacaville	Evaluate and modify as needed weed abatement policies and enforcement throughout City.	Fire Dept.	Medium - The project could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.	High - Project will provide an immediate reduction of risk exposure for life and property.	1-3 Years	Planning	HMGP / BRIC , Internal Funding	High	Goal 3: Environment , Goal 4: Resilience	ps-EW-VC-98

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ma-WF-VC-51	Wildfire	PE&A - Public Education & Awareness	Ongoing	2017	City of Vacaville	Develop public education for wildfire risks and mitigation in areas of extreme fire danger.	Public Information Officer, Fire Department	Medium - The project could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.	High - Project will provide an immediate reduction of risk exposure for life and property.	Ongoing	5%	HMGP / BRIC , Internal Funding	Extreme	Goal 1: People , Goal 4: Resilience	ps-WF-VC-101
ma-WF-VC-52	Wildfire	NRP - Natural Resource Protection	Ongoing	2017	City of Vacaville	Repair burned sloped; landslides/ mudslides/slope stabilization after a fire.	Public Works	High - Existing funding will not cover the cost of the project; implementation would require new revenue through an alternative source (for example, bonds, grants, and fee increases).	High - Project will provide an immediate reduction of risk exposure for life and property.	3-5 Years	Project	HMGP / BRIC	Extreme	Goal 4: Resilience	ps-WF-VC-102