

# 1 CITY OF MODESTO

## 1.1 Purpose

This Annex summarizes the hazard mitigation elements specific to the City of Modesto. This Annex supplements the Stanislaus County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP); therefore the Annex is not a stand-alone plan but intended to supplement the hazard information provided in the Base Plan document. All other sections of the Stanislaus County MJHMP, or Base Plan, including the sections on the planning process, countywide risk assessment, and procedural requirements related to plan implementation and maintenance apply to the City of Modesto. This Annex provides additional information specific to the City of Modesto, including details on the City's profile, planning process, risk assessment, and mitigation strategy for the community.

## 1.2 Community Profile

### 1.2.1 Mitigation Planning History and 2021-2022 Process

This Annex was created during the development of the 2021 Stanislaus County MJHMP update. The City of Modesto did not participate in Stanislaus County's 2017 Local Hazard Mitigation Plan (LHMP) process. However, the City of Modesto did participate in a 2010-2011 MJHMP process with the County. This 2010 MJHMP was approved by Stanislaus County on May 4, 2011, but the 2010 City of Modesto LHMP Annex remained "approvable pending adoption" according to a letter from FEMA Region IX dated July 31, 2012. Therefore, the City did not include or report progress on any of the mitigation actions from a previous version of the MJHMP (a requirement only for plan updates following the release of FEMA's October 1, 2011 Local Mitigation Plan Review Guide). During the development of the 2022 Stanislaus County MJHMP, this Annex was prepared to effectively represent a new and comprehensive plan for Modesto based on current development, demographics, and mitigation capabilities that addresses the City's current hazards and vulnerabilities.

During the current update process, the City of Modesto followed the planning process detailed in Chapter 3 of the Base Plan. This planning process consisted of participation in the Hazard Mitigation Planning Committee (HMPC) and the formation of a smaller internal planning team referred to as the City's Local Planning Committee (LPT). The LPT was organized to support the broader planning process, coordinate with the City departmental staff, and develop customized mitigation actions and projects specific to the City of Modesto. The City's LPT is also responsible for the update, implementation, and maintenance of the plan. LPT members are listed in Appendix A.

### 1.2.2 Geography and Climate

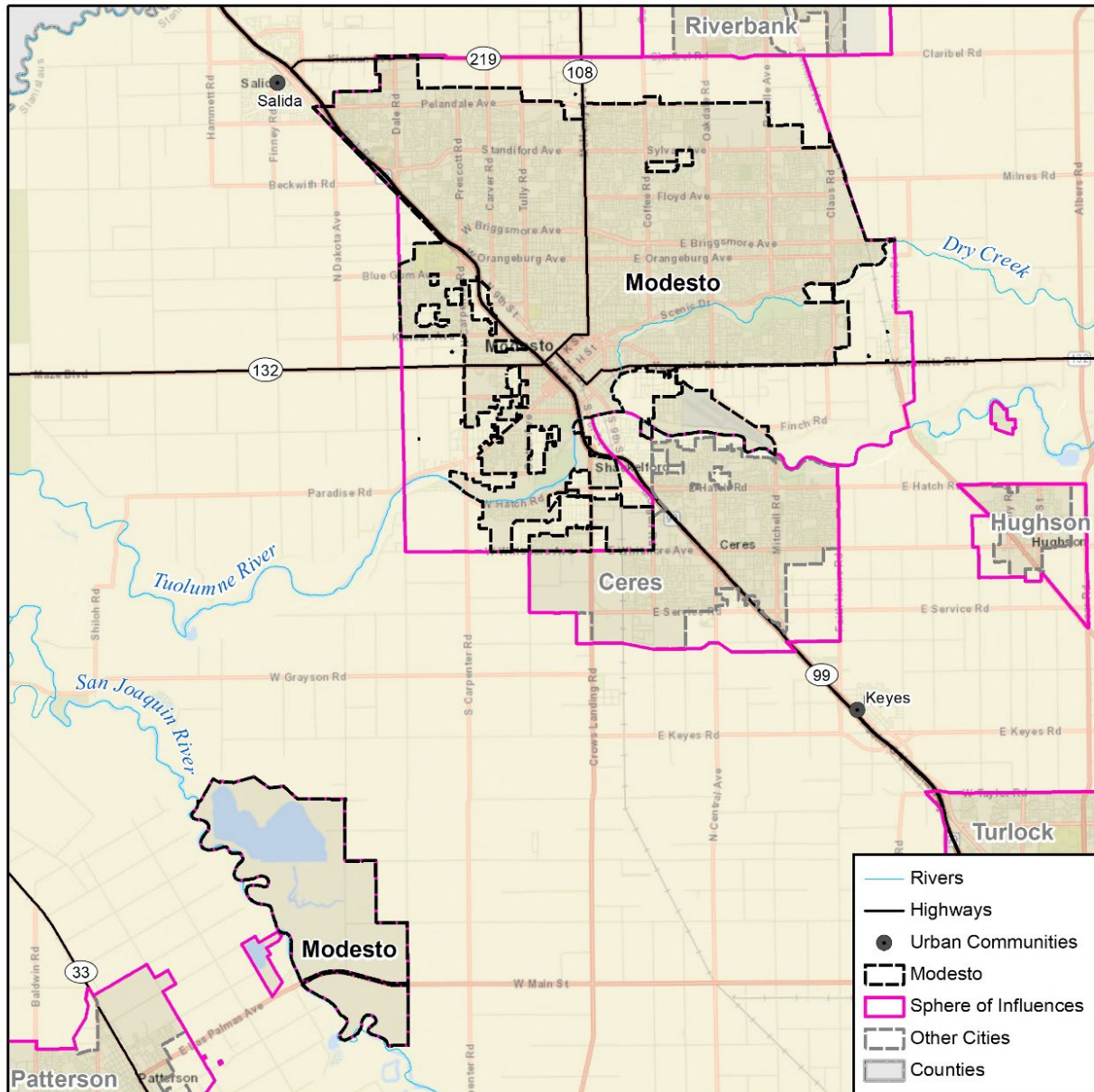
The City of Modesto is the county seat and largest city in Stanislaus County. The City of Modesto is located 68 miles south of Sacramento and 90 miles north of Fresno. The City is also 40 miles north of the City of Merced, 92 miles east of the City of San Francisco, 66 miles west of Yosemite National Park, and 24 miles south of the City Stockton. The City of Modesto is one of the most populated cities in California, and the second largest city in northern San Joaquin Valley. Downtown Modesto encompasses about one square mile in the heart of the City and is surrounded by the natural greenbelts of the Stanislaus and Tuolumne Rivers, rich farmland and large agricultural industry, and the smaller cities of Ceres and Riverbank. The City of Modesto is also home to E & J Gallo Family Winery, the largest family-owned winery in the United States.

The City receives an average annual precipitation of 12.21 inches and receives most of this precipitation from November through March (WRCC 2022). The City experiences its average monthly highest temperature in July (94.3 °F), and its monthly lowest temperature in January (53.8 °F). Similar to the rest of Stanislaus County, the City of Modesto has a mild Mediterranean climate.

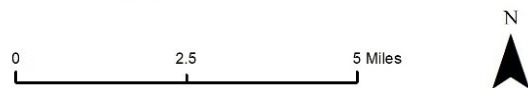
Modesto is served by one of the busiest rail corridors in the country. The Amtrak San Joaquin makes eight daily stops on the route between Oakland and Bakersfield, and four stops daily on the route between Sacramento and Bakersfield, at a station on the east edge of the City. Figure 1-1 below shows

the city limits and the sphere of influence boundary (SOI) for the City of Modesto. The city limits, or the area where the City has authority to make land use decisions, is the City’s planning area and consists of 23,200 acres, or 33.79 square miles.

**Figure 1-1 City of Modesto**



**wood.** Map compiled 2/2022;  
intended for planning purposes only.  
Data Source: Stanislaus County



**1.2.3 History**

Modesto was founded as a village in October 1870, when the Central Pacific Railroad purchased approximately one square mile of land and began selling lots. Before the Central Pacific Railroad gave shape to the village, Americans had already settled in the area and begun farming. Several villages developed to provide services to the community, among them cemeteries ("Modesto, CA | Official Website" 2022).

In the middle of the 20th Century, Modesto's irrigated agricultural industry was well established and many related businesses had developed to support it. The City of Modesto was prosperous and its citizens engaged in various cultural pursuits. The City received national attention during this period for its high-art architecture, which was even featured in books published by the New York Museum of Modern Art ("Modesto, CA | Official Website" 2022).

In 1882, Hiram Modesto arrived in this area and purchased 1,000 acres for a grain ranch and gradually came to own nearly 5,000 acres. In the early 1900s, the San Joaquin Railroad purchased land from Mr. Modesto for their tracks and developed a stop, which became known as the Modesto Stop.

Beginning in the 1960s, the 2,000-acre Beard Industrial District—owned by the Beard family, which also owns and operates Modesto & Empire Traction railroad—east of downtown along the north side of the Tuolumne River became the area's largest industrial area ("Modesto, CA | Official Website" 2022). Modesto & Empire Traction's connections to both the Burlington Northern-Santa Fe Railroad and Union Pacific Railroad (formerly the Southern Pacific Railroad) positioned Beard properties to take advantage of both interregional railroads.

Economic activity moved away from the City's downtown following World War II and by the 1970s, efforts were made to revitalize downtown. Redevelopment efforts were formalized in the middle 1980s with the establishment of Modesto's Redevelopment Agency. By 1980, Modesto had grown to 107,000 residents. The rapid pace of growth concerned Modestans, who elected Peggy Mensinger mayor in 1978 on a slow-growth platform ("Modesto, CA | Official Website" 2022). Mensinger worked to refocus infill development in the downtown ("Modesto, CA | Official Website" 2022). Today, most of the land in the City is designated for housing with pockets for public uses, city facilities, parks, schools and the airport. Commercial, office, and industrial uses are concentrated along the major transportation corridors.

#### 1.2.4 Economy

Surrounded by one of the greatest agricultural production areas in the world, Modesto is a national center for food and beverage production. The City is developing a strong presence in advanced manufacturing including off-site home and commercial construction. The City is also conveniently located near the center of the North San Joaquin Valley with easy access to major markets.

The City of Modesto is gradually growing as a City with approximately 212,616 residents, 73,906 homes, and 89,562 jobs (California Department of Finance 2019). The City's warm Mediterranean climate and affordable real estate support a diverse population with a strong sense of community. Table 1-1 below lists Modesto's top employers.

**Table 1-1 City of Modesto Top Employers**

Employers
Carlo Rossi Winery
City of Modesto
Copperridge Winery
Datapath
Del Monte Foods
Doctors Medical Center
Ecco Domani Winery
Entekra, LLC
E&J Gallo Winery Headquarters
Foster Farms Dairy
Frito-Lay
Gallo Vineyards
Kaiser Permanente
MacDonald Group
Memorial Medical Center
Modesto Bee – Bee Media Services
Modesto City Schools

Employers
Modesto Junior College
Novo Technologies
Pacific Southwest Container
Peter Vella Winery
Rizo-Lopez Foods
SaveMart Headquarters
Silgan Containers
Stanislaus County
Stanislaus Food Processing
Storer Coachways
Sutter Gould Medical Center
Zabaco Winery

Source: <https://www.modestogov.com/1240/Sampling-of-Top-Employers>

Estimates of select economic characteristics for the City of Modesto are shown in Table 1-2.

**Table 1-2 City of Modesto Economic Characteristics, 2015-2019**

Characteristic	City of Modesto
Families below Poverty Level (%)	11.1%
All People below Poverty Level (%)	15.2%
Median Family Income	\$83,504
Median Household Income	\$59,287
Per Capita Income	\$27,358
Population in Labor Force	59.9%
Population Employed*	54.5%
Unemployment Rate**	8.9%

Source: U.S. Census Bureau, California Department of Finance, 2015-2019 American Community Survey (ACS), 5-year estimates, [www.census.gov/](http://www.census.gov/)

\*Excludes armed forces. \*\*Does not reflect unemployment numbers due to COVID-19 Pandemic

The most common industries within a five-mile radius of Modesto are educational services and health care and social assistance (a combined average of 21.5 percent of workers). Retail trade and manufacturing are other two major industries, which resonates with the information regarding manufacturing being one of Stanislaus County's major industries. The tables below show the labor force breakdown by occupations and industry based on estimates from the 2015-2019 five-year American Community Survey (ACS).

**Table 1-3 City of Modesto Employment by Industry, 2015-2019**

Occupation	# Employed	% Employed
Educational services, and health care and social assistance	19,478	21.5%
Retail trade	11,652	12.9%
Manufacturing	9,707	10.7%
Professional, scientific, and management, and administrative and waste management services	9,225	10.2%
Construction	8,572	9.5%
Arts, entertainment, and recreation, and accommodation and food services	8,305	9.2%
Transportation and warehousing, and utilities	6,049	6.7%
Other services, except public administration	5,485	6.1%
Wholesale trade	2,908	3.2%

Occupation	# Employed	% Employed
Public administration	2,888	3.2%
Agriculture, forestry, fishing and hunting, and mining	2,744	3.0%
Finance and insurance, and real estate and rental and leasing	2,506	2.8%
Information	1,043	1.2%
<b>Total</b>	<b>90,562</b>	<b>100%</b>

Source: U.S. Census Bureau, California Department of Finance, 2015-2019 American Community Survey (ACS), 5-year estimates, [www.census.gov/](http://www.census.gov/)

\*Excludes armed forces

**Table 1-4 City of Modesto Employment by Occupation, 2015-2019**

Occupation	# Employed	% Employed
Management, business, science, and arts occupations	23908	26.40%
Service occupations	16935	18.70%
Sales and office occupations	22641	25.00%
Natural resources, construction, and maintenance occupations	11139	12.30%
Production, transportation, and material moving occupations	16029	17.70%
<b>Total</b>	<b>90,562</b>	<b>100%</b>

Source: U.S. Census Bureau, California Department of Finance, 2015-2019 American Community Survey (ACS), 5-year estimates, [www.census.gov/](http://www.census.gov/)

\*Excludes armed forces

## 1.2.5 Population

In May 2021, the California DOF released population data for the state demographic report. According to the report the City of Modesto has a population of 219,294 persons as of January 1, 2021 and gained 854 residents from the previous year. Select demographic and social characteristics for the City of Modesto from the 2015-2019 ACS and the California DOF, are shown in Table 1-5.

**Table 1-5 City of Modesto Demographic and Social Characteristics, 2015-2019**

Characteristic	City of Modesto
<b>Gender/Age</b>	
Male	49.4%
Female	50.6%
Median age (years)	35.6
Under 5 years	7.1%
Under 18 years	25.5%
65 years and over	14.3%
<b>Race/Ethnicity</b>	
White	44.2%
Asian	6.9%
Black or African American	4.1%
American Indian/Alaska Native	0.5%
Hispanic or Latino (of any race)	40.2%
Native Hawaiian and Other Pacific Islander	1.0%
Some other race	0.1%
Two or more races	3.0%
<b>Education*</b>	

Characteristic	City of Modesto
% High school graduate or higher	82.6%
% with Bachelor's Degree or Higher	18.7%
<b>Social Vulnerability</b>	
% with Disability	14.8%
% Language other than English spoken at home	36.8%
% Speak English less than "Very Well"	13.7%
% of households with a computer	95.5%
% of households with an Internet subscription	91.6%
% of households with no vehicle available	6.6%

Source: U.S. Census Bureau, California Department of Finance, 2015-2019 American Community Survey (ACS), 5-year estimates, [www.census.gov/](http://www.census.gov/)

\* Population 25 years and over

The following table summarizes information from the ACS 5-year estimates (2015-2019) related to housing occupancy in the City of Modesto. Most of the City residents own the home they live in.

**Table 1-6 City of Modesto Housing Occupancy and Units, 2015-2019**

Housing Characteristic	Estimate	Percentage
<b>Housing Occupancy</b>		
Total Housing Units	75,221	100%
Units Occupied	72,332	96.2%
Vacant	2,889	3.8%
<b>Housing Units</b>		
1-unit detached	53,474	71.1%
1-unit attached	3,077	4.1%
2 units	2,255	3.0%
3 or 4 units	4,082	5.4%
5-9 units	2,990	4.0%
10-19 units	1,786	2.4%
20 or more units	5,575	7.4%
Mobile Home	1,928	2.6%
Boat, RV, van etc.	54	0.1%
<b>Housing Tenure</b>		
Owner Occupied	1,652	66.5%
Renter Occupied	834	33.5%

Source: U.S. Census Bureau, California Department of Finance, 2015-2019 American Community Survey (ACS), 5-year estimates, [www.census.gov/](http://www.census.gov/)

### 1.2.6 Disadvantaged Communities

The Community Development policies in the City's General Plan discuss nine individual Disadvantaged Unincorporated Communities (DUCs) within the City. The General Plan describes the general infrastructure needs, including water, wastewater, storm drainage and structural fire protection, of each DUC and discusses potential funding opportunities for these communities. The City also coordinates with the County of Stanislaus regarding long-term planning for the provision of infrastructure services for these DUCs.

The City is made up numerous census tracts, 11 of which are defined as low income communities. Based on information from the California Office of Environmental Health Hazard Assessment (OEHHA) a large percentage of people residing with these census tracts are housing burdened low income households.

Housing-burdened low-income households are households that are both low income and highly burdened by housing costs. California has very high housing costs relative to the rest of the country, which can make it hard for households to afford housing ("CalEnviroScreen 4.0" 2021). Households with lower incomes may spend a larger proportion of their income on housing and may suffer from housing-induced poverty ("CalEnviroScreen 4.0" 2021).

The OEHHA CalEnviroScreen tool applies a formula to generate a combined ranking score that considers 21 indicators for each Census tract that cover pollution indicators, such as diesel emissions and concentrations of toxic clean-up sites and population indicators, such as poverty and unemployment rates. The Census tracts with CalEnviroScreen rankings between 75 and 100 percent (i.e., a combined score in the top 25 percent of all Census tracts in the State) are considered to be disadvantaged communities (DACs). The City of Modesto can use this information to conduct targeted outreach and engage community members to consider what other hazards and mitigation strategies or programs should be considered to meet community needs. The City can also engage these communities to proactively prioritize hazard mitigation projects that benefit DACs.

### 1.2.7 Development Trends

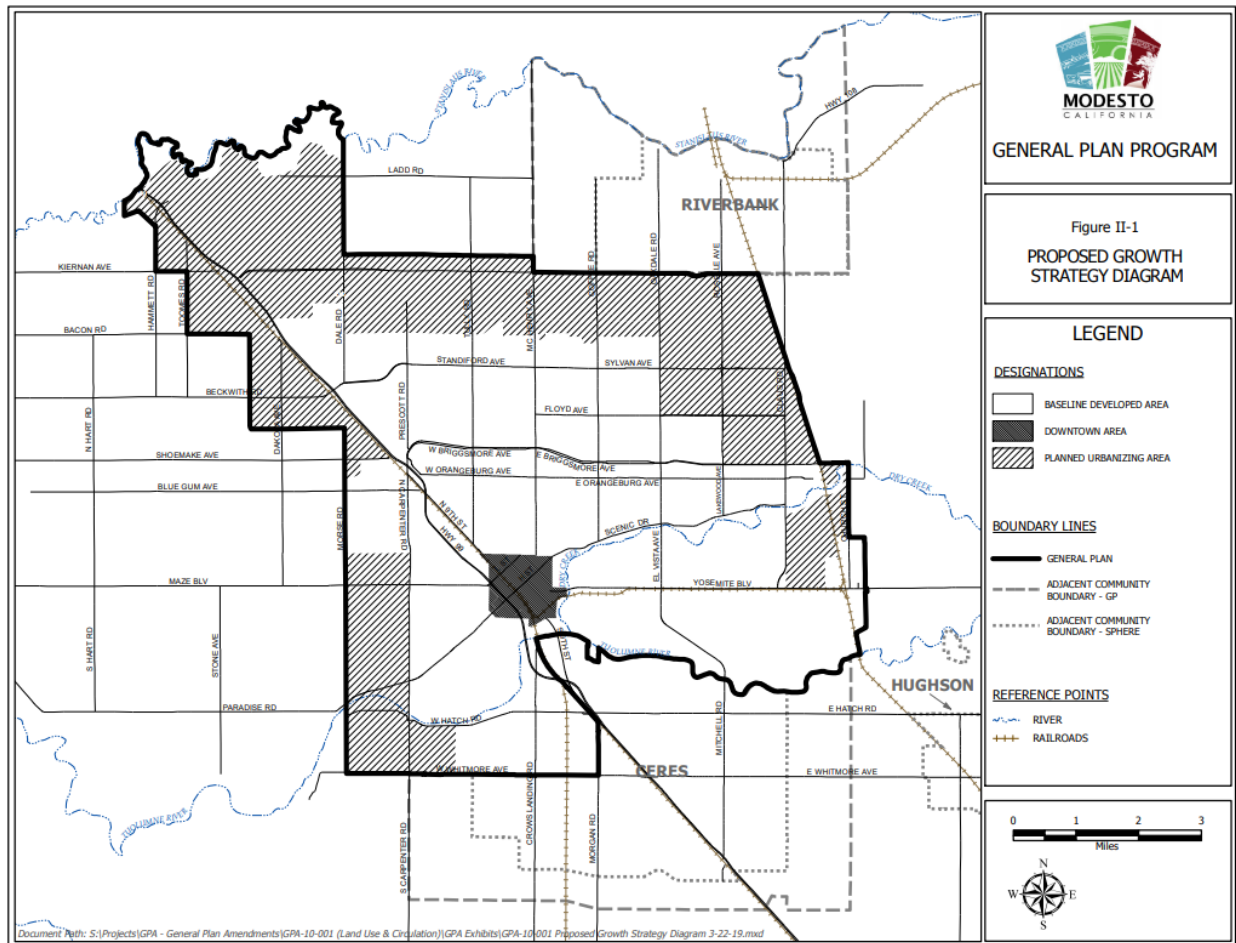
The City's Community Growth Strategy and Economic Development chapter of the City's General Plan establishes a growth strategy based on a Growth Strategy Diagram that divides the City into three geographic areas: the Downtown Area, the Baseline Developed Area (BDA), and the Planned Urbanizing Area (PUA). Together, these three defined planning areas shape the land uses and community character in the City and surrounding areas. Figure 1-2 below shows the locations of the Downtown Area, BDA and PUA.

The approximately 710-acre Downtown area is the historic heart of the City and is a focal point of the City's urban area. The zoning standards and regulations that apply to the Downtown shape the development in this high-priority area with a mix of residential, commercial, office, and institutional land uses.

The BDA, comprising approximately 22,460 acres excluding the Downtown area, is generally defined as the developed area of the City. However, certain developed areas within the City limits are not part of the BDA. Also included within the BDA are vacant lands outside the City limits that have a clearly defined future, such as those within the Beard Tract industrial area.

Future development within the approximately 19,450-acre PUA is proposed on land that is vacant or currently under agricultural use, and minimally, if at all, served with urban infrastructure, including roads. However, the PUA is not all for future development and there are significant portions of PUA within the city limits, as shown in Figure 1-2, and much of which has already been developed. The majority of the PUA outside of the City limits, is expected to absorb future and comprehensively planned urban development by implementing the land uses projected by the City General Plan's Land Use Diagram.

Figure 1-2 Proposed Growth Strategy Diagram, Modesto General Plan

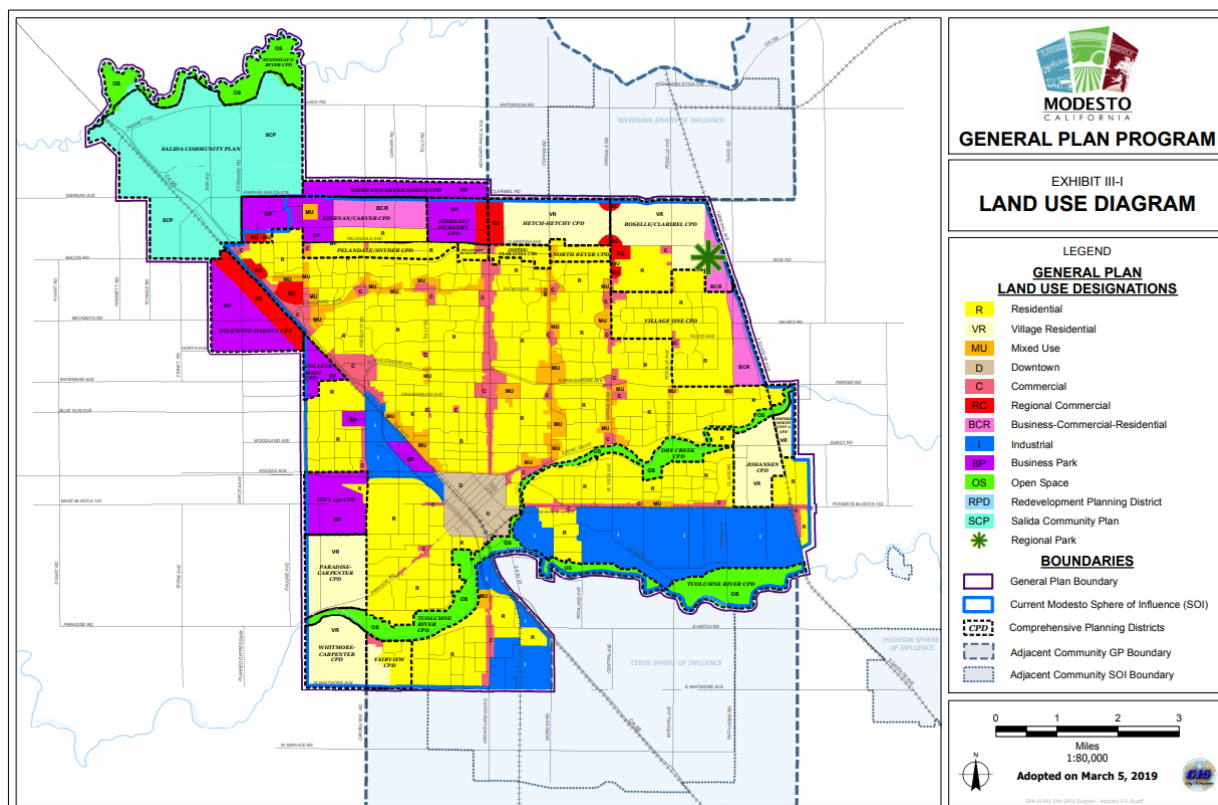


Source: City of Modesto, General Plan

The Community Growth Strategy and Economic Development Chapter also establishes priority areas for new development and identifies financing for capital projects consistent with applicable City policies and standard operating procedures. For example, Policy II.B.1 supports new development with infrastructure developed in accordance with the established Capital Improvement Program (CIP) priority areas of Downtown, Kiernan Business Park, the Tivoli Specific Plan area and the South Modesto Industrial Park. The development policies in this chapter of the General Plan contain the “instructions” for building the physical components of the City in a manner consistent with the General Plan. It contains land use policies to guide the physical development of Modesto, within the Downtown Area, BDA, and PUA. This chapter also provides the Land Use Diagram and Land Use Designations for the Modesto Urban Area General Plan. Figure 1-3 illustrates the General Plan land use diagram.



Figure 1-3 Modesto General Plan Land Use Diagram



Source: Modesto General Plan

Key land use goals and policies include maintaining and improving the integrity of the existing developed City, and promoting complete, sustainable, compatible and high-quality development. The City also promotes complete, cohesive, pedestrian-friendly and family-oriented neighborhoods across the entire City. It is important that development along major transportation corridors should be scaled appropriately to match the context and transition to existing nearby neighborhoods. Moreover, employment centers should improve the City's economy by decreasing the local unemployment rate and improving the local economy. As mentioned previously, the City's future development will occur on PUA lands that are predominantly vacant or currently underused agricultural land, as shown in Figure 1-2.

The City's LPT provided input regarding the specific development trends within the City. Modesto is seeing development of single and multi-family housing (as well as some institutional housing), and commercial and industrial land uses. Growth is being seen in the northern areas of the City (KBPE, Tivoli SP, Woodglenn SP), vacant lands within Village 1 SP to the east, and in South Modesto (south of the Tuolumne River). Infill properties within the BDA have also seen development of commercial and higher-density housing land uses.

Moreover, based on the input received from the City's LPT, the City of Modesto carried out several annexations in the last five years. The City acquired a parcel at the intersection of Lodi Avenue and Whitmore Avenue, which used to be part of the unincorporated Stanislaus County and is located to the south of the City. The City also plans to develop a parcel between Pelandale Avenue and W Union Avenue, which is to the northwest of the City. Another annexation is a 12.86-acre parcel at the intersection of Grecian Avenue and Mchenry Avenue, which is located to the north of the City. This specific annexation is also referred to as the Mchenry-Coralwood Reorganization. Furthermore, the City achieved the annexation of a parcel that is between W Hatch Road and W Whitmore Avenue, while intersecting with Carpenter Road. This parcel abuts the Fairview Village Specific Plan area from the west and is to the South of the City's General Plan Amendment area.

### 1.2.8 Future Development

The areas located in the SOI shown in Figure 1-1 are areas each City plans to grow into and are potentially slated for future development. Understanding the potential hazard exposure in the area can help to mitigate the impacts of events before development occurs in those areas.

The City of Modesto manages future development through two key growth measures. In 1979 and 1997, voters in the City adopted Measures A and M, respectively, to ensure that the public can share their opinions on potential growth. The City now reviews local growth trends to ensure these boundaries provide an adequate inventory of vacant land and infrastructure to accommodate future growth, according to inputs received from the LPT. If the City determines that additional land is needed, the City Council can schedule a public vote to approve extending infrastructure to land outside the City's boundaries to serve future development.

Additionally, the City regularly updates its building codes to meet minimum standards in the California Building Code (CBC) last updated in 2019. Compliance with the 2019 CBC ensures construction standards are met and hazards risks related to earthquake, landslides, flood, severe weather, and wildfire are minimized. The City also complies with the National Flood Insurance Program (NFIP) and all development must meet minimum flood protection standards set forth by FEMA. Participation in the 2021-2022 MJHMP update planning process also ensures the City of Modesto continually updates hazard data and takes this information into account when reviewing development applications. This process will help the City make better decisions on where, when, and how future development occurs.

During this plan update process, a parcel analysis was conducted using the SOI and overlaid with available hazard risk layers to determine where future development may be at risk of natural hazard events. The results of the analysis have been integrated into the applicable hazard sections: dam incidents and flood. Table 1-7 is the summary of the SOI total exposure for the City of Modesto.

**Table 1-7 Sphere of Influence Total Exposure Summary**

Property Type	Improved Parcel Count	Improved Value	Estimated Content Value	Total Value
Commercial	305	\$206,530,420	\$206,530,420	\$413,060,840
Industrial	436	\$885,829,209	\$1,328,743,814	\$2,214,573,023
Non-Assessable	5	\$2,579,768	\$2,579,768	\$5,159,536
Residential	5,271	\$431,731,430	\$215,865,715	\$647,597,145
Residential-Income	214	\$24,894,963	\$12,447,482	\$37,342,445
Rural, Farm, Agricultural	254	\$41,414,715	\$41,414,715	\$82,829,430
Unclassified	136	\$82,833,588	\$82,833,588	\$165,667,176
Vacant Commercial	55	\$1,459,536	\$1,459,536	\$2,919,072
Vacant Residential	16	\$337,345	\$168,673	\$506,018
<b>Total</b>	<b>6,692</b>	<b>\$1,677,610,974</b>	<b>\$1,892,043,710</b>	<b>\$3,569,654,684</b>

Source: Stanislaus County Assessor, Wood analysis

## 2 HAZARD IDENTIFICATION AND SUMMARY

The City of Modesto LPT identified the hazards that affect the City and summarized their frequency of occurrence, spatial extent, potential magnitude, and significance specific to their community (see Table 2-1). There are no hazards that are unique to Modesto, although the flood risk in the City is greater and distinct from the flooding risk in the County's planning area. The purpose of this section is to profile the City of Modesto hazards and assess the City's specific vulnerabilities.

The hazards profiled in the County MJHMP Base Plan discuss the overall impacts to the County's planning area. This information is summarized in the hazard description, geographic extent,

magnitude/severity, previous occurrences, and probability of future occurrences sections. The information in the City of Modesto’s risk assessment summarizes only those hazards that vary from the County’s planning area. The hazard profile information is organized in a similar format here as a way to identify priority hazards for mitigation purposes.

Table 2-1 summarizes the hazards profiled in the County’s planning area and risk assessment to provide a way for the LPT to evaluate which hazards are addressed in their General Plan Safety Element and which hazards are relevant and priority hazards for the City. The City’s General Plan Community Facilities and Services Chapter and Environmental Resources, Open Space and Conservation Chapter (Elements) address safety issues including water supply, seismic and geologic hazards, public safety, flooding hazards, fire hazards, and hazardous materials. The Modesto 2050 General Plan covers flooding, extreme temperature (extreme heat), drought, and severe weather hazards in the hazards and safety briefing book. Among these hazards in the General Plan, dam incidents and flooding hazards are further addressed in this Annex, while landslide and wildfire hazards are further addressed in the Base Plan. Climate change considerations are also addressed in the Base Plan.

**Table 2-1 City of Modesto —Hazard Significance Summary**

Hazard	Geographic Area	Probability of Future Occurrence	Magnitude/Severity (Extent)	Overall Significance	Priority Hazard?
Agriculture Pest and Disease	Extensive	Likely	Negligible	Low	No
Aquatic Invasive Species	Limited	Likely	Negligible	Low	No
Cyber Attack	Significant	Likely	NA	Medium	No
Dam Incidents	Extensive	Unlikely	Catastrophic	High	Yes
Drought	Extensive	Likely	Negligible	Low	No
Earthquake	Extensive	Occasional	Critical	Medium	No
Extreme Temperatures: Freeze and Extreme Heat	Significant	Highly Likely	Critical	High	No
Flood	Significant	Likely	Limited	Medium	Yes
Landslide, Mud/Debris Flow, Rockfall	Limited	Occasional	Negligible	Low	No
Pandemic/Epidemic	Extensive	Occasional	Critical	High	No
Severe Weather: Dense Fog	Extensive	Likely	Critical	Medium	No
Severe Weather: Hail, Heavy Rain, Thunderstorms, Lightning	Extensive	Highly Likely	Critical	High	No
Severe Weather: High Wind/Tornado	Extensive	Highly Likely	Critical	High	No
Wildfire	Limited	Occasional	Negligible	Low	No
<b>Geographic Area</b> Limited: Less than 10% of planning area Significant: 10-50% of planning area Extensive: 50-100% of planning area  <b>Probability of Future Occurrences</b> Highly Likely: Near 100% chance of occurrence in next year or happens every year. Likely: Between 10 and 100% chance of occurrence in next year or has a recurrence interval of 10 years or less.		<b>Magnitude/Severity (Extent)</b> Catastrophic—More than 50 percent of property severely damaged; shutdown of facilities for more than 30 days; and/or multiple deaths Critical—25-50 percent of property severely damaged; shutdown of facilities for at least two weeks; and/or injuries and/or illnesses result in permanent disability Limited—10-25 percent of property severely damaged; shutdown of facilities for more than a week; and/or injuries/illnesses treatable do not result in permanent disability			

Hazard	Geographic Area	Probability of Future Occurrence	Magnitude/Severity (Extent)	Overall Significance	Priority Hazard?
Occasional: Between 1 and 10% chance of occurrence in the next year or has a recurrence interval of 11 to 100 years. Unlikely: Less than 1% chance of occurrence in next 100 years or has a recurrence interval of greater than every 100 years.		Negligible—Less than 10 percent of property severely damaged, shutdown of facilities and services for less than 24 hours; and/or injuries/illnesses treatable with first aid  <b>Significance</b> Low: minimal potential impact Medium: moderate potential impact High: widespread potential impact			

## 2.1 Vulnerability Assessment

The intent of this section is to assess Modesto's vulnerability that is separate from that of the planning area as a whole, which has already been assessed in Section 4 Hazard Identification and Risk Assessment in the Base Plan. For dam incidents and flood hazards, this vulnerability assessment analyzes the population, property, and other assets at risk to hazards ranked of medium or high significance that may vary from other parts of the planning area. For the other hazard profiles, the City described the specific vulnerabilities in the community by developing problem statements that qualitatively summarize areas of concern associated with the hazards that vary from other parts of the County planning area. These specific vulnerabilities are referred to as "problem statements" in the risk assessment. The problem statements are based on the risk assessment mapping and modeling and where spatial data and maps are not available, they are based on specific input from the City LPT. With this information mitigation actions were then developed to address these specific vulnerabilities; this process provides the connection between the problem statement and the mitigation action.

The information to support the hazard identification and risk assessment was based on a combination of the previous LHMP for the City and County and jurisdiction-specific information collected during the 2021 update. A Data Collection Guide and associated worksheets were distributed to each participating municipality or special district to complete during the update process in 2021. Information collected was analyzed and summarized in order to identify and rank all the hazards that could impact anywhere within the County, as well as to rank the hazards and identify the related vulnerabilities unique to each jurisdiction.

Each participating jurisdiction was in support of the main hazard summary identified in the Base Plan (see Table 4-2). However, the hazard summary rankings for each jurisdictional Annex may vary due to specific hazard risks and vulnerabilities unique to that jurisdiction. The information in this Annex helps differentiate the jurisdiction's risk and vulnerabilities from that of the overall County.

Note: The hazard "Significance" reflects the overall ranking for each hazard and is based on the City of Modesto's LPT input from the Data Collection Guide and the risk assessment developed during the planning process (see Section 4 of the Base Plan), and the set of problem statements developed by the City LPT. The hazard significance summaries in Table 2-1 above reflect the hazards that could potentially affect City. The discussion of vulnerability for each of the following hazards is located in Section 2.3 Estimating Potential Losses, which includes an overview of the local issues and areas of concern associated with the hazard, a problem statement for the priority hazard, and a quantitative risk assessment, where spatial data is available. Based on this analysis, the priority hazards for the City of Modesto for mitigation are identified below.

- Dam Incidents
- Flood

Cyber Attack, Earthquake, Pandemic/Epidemic and Severe Weather hazards are not addressed in this vulnerability assessment as the exposure is similar to the overall County exposure, and the potential for losses are difficult to quantify specific to the City of Modesto. Additionally, hazards assigned a significance rating of Low and which do not differ significantly from the County ranking (e.g., Low vs. High) are not addressed further and are not assessed individually for specific vulnerabilities in this Annex. In the City of Modesto, those hazards include: Agriculture Pests and Disease, Aquatic Invasive Species, Drought, Landslide (Mud/Debris Flow, Rockfall), and Wildfire. For example, both landslide and wildfire

hazards were assessed for the City and based on the analysis and mapping neither hazard resulted in significant vulnerabilities or impacts. Extreme Temperatures and drought hazards are profiled only for planning and awareness purposes.

## 2.2 Assets

This section considers Modesto's assets at risk, including values at risk, critical facilities and infrastructure, historic assets, economic assets and growth and development trends.

### 2.2.1 Property Exposure

The following data on property exposure is derived from the Stanislaus County 2021 Parcel and Assessor data. This data should only be used as a guideline for overall values in the City as the information has some limitations. It is also important to note that in the event of a disaster, it is generally the value of the infrastructure or improvements to the land that is of concern or at risk. Generally, the land itself is not a loss and is not included in the values below. Table 2-2 shows the exposure of properties (e.g., the values at risk) broken down by property type for the City of Modesto.

**Table 2-2 City of Modesto Property Exposure by Type**

Property Type	Improved Parcel Count	Improved Value	Estimated Content Value	Total Value
Commercial	2,071	\$3,304,473,791	\$3,304,473,791	\$6,608,947,582
Industrial	318	\$396,367,700	\$594,551,550	\$990,919,250
Non-Assessable	6	\$2,427,991	\$2,427,991	\$4,855,982
Residential	55,011	\$9,002,867,528	\$4,501,433,764	\$13,504,301,292
Residential-Income	510	\$109,144,569	\$54,572,285	\$163,716,854
Rural, Farm, Agricultural	12	\$1,448,594	\$1,448,594	\$2,897,188
Unclassified	2,606	\$1,288,060,077	\$1,288,060,077	\$2,576,120,154
Vacant Commercial	120	\$20,134,118	\$20,134,118	\$40,268,236
Vacant Residential	19	\$1,397,413	\$698,707	\$2,096,120
<b>Total</b>	<b>60,673</b>	<b>\$14,126,321,781</b>	<b>\$9,767,800,876</b>	<b>\$23,894,122,657</b>

Source: Stanislaus County Assessor, Wood analysis

### 2.2.2 Critical Facilities and Infrastructure

For the purposes of this plan, a critical facility is defined as one that is essential in providing utility or direction either during the response to an emergency or during the recovery operation. FEMA sorts critical facilities into seven lifeline categories as shown in Figure 4-1 in the Base Plan. Table 2-3 shows a summary of the critical facilities within the City of Modesto. Critical facilities and other community assets as important to protect in the event of a disaster.

**Table 2-3 Critical Facilities within the City of Modesto**

Lifeline	# of Critical Facilities
Communication	52
Energy	24
Food, Water, Shelter	25
Hazardous Materials	9
Health and Medical	112
Safety and Security	90
Transportation	32
<b>Total</b>	<b>344</b>

Within the City of Modesto, the following are considered critical facilities:

- Modesto Fire Department Stations 1 through 9 & 11

- Stanislaus Consolidated Fire Protection District Station 30
- Modesto Police Department building
- Modesto City-County Airport
- Water supply lines and wells
- Wastewater Treatment Plant (WWTP), pumping stations, and trunk lines
- Major electrical transmission lines and substations
- Major communication lines and microwave transmission facilities
- Major public and private schools
- Emergency shelter
- Public Library
- Hospital facilities, nursing homes and dialysis centers

There are also several designated shelters in Modesto for use in an emergency event including Children Crisis Center and Modesto Central SDA Church. Also, major critical facilities in the City of Modesto, such as the Sutter Avenue WWTP were analyzed in the vulnerability assessment as a critical facility, not by property exposure by type.

### 2.2.3 Historic, Cultural and Natural Resources

Table 2-4 lists the historical resources that are located in the City of Modesto.

**Table 2-4 Historical Resources within the City of Modesto**

Property Name	Register	Jurisdiction	Date Listed
Hotel Covell	National	Modesto	12/29/1994
Mchenry Mansion	National	Modesto	4/4/1978
Mchenry Mansion	Point of Interest	Modesto	7/31/1979
Paradise	Point of Interest	Modesto	7/31/1979
U.S. Post Office	National	Modesto	2/10/1983
Walton, Dr. Robert and Mary, House	National	Modesto	12/14/2006
Wood, Walter B., House	National	Modesto	5/20/1988

Source: California Office of Historic Preservation

Natural resources are important to include in benefit-cost analyses for future projects and may be used to leverage additional funding for projects that also contribute to community goals for protecting sensitive natural resources. According to the City's General Plan Environmental Resources and Open Space Chapter, the Modesto Urban Area has a variety of natural and altered habitats supporting a diverse assemblage of plant and animal species. Many of these species depend upon natural areas and linkages between natural areas for their survival. Awareness of natural assets can lead to opportunities for meeting multiple objectives related to hazard mitigation. For instance, protecting wetlands areas protects sensitive habitat as well as attenuates and stores floodwaters.

## 2.3 Estimating Potential Losses

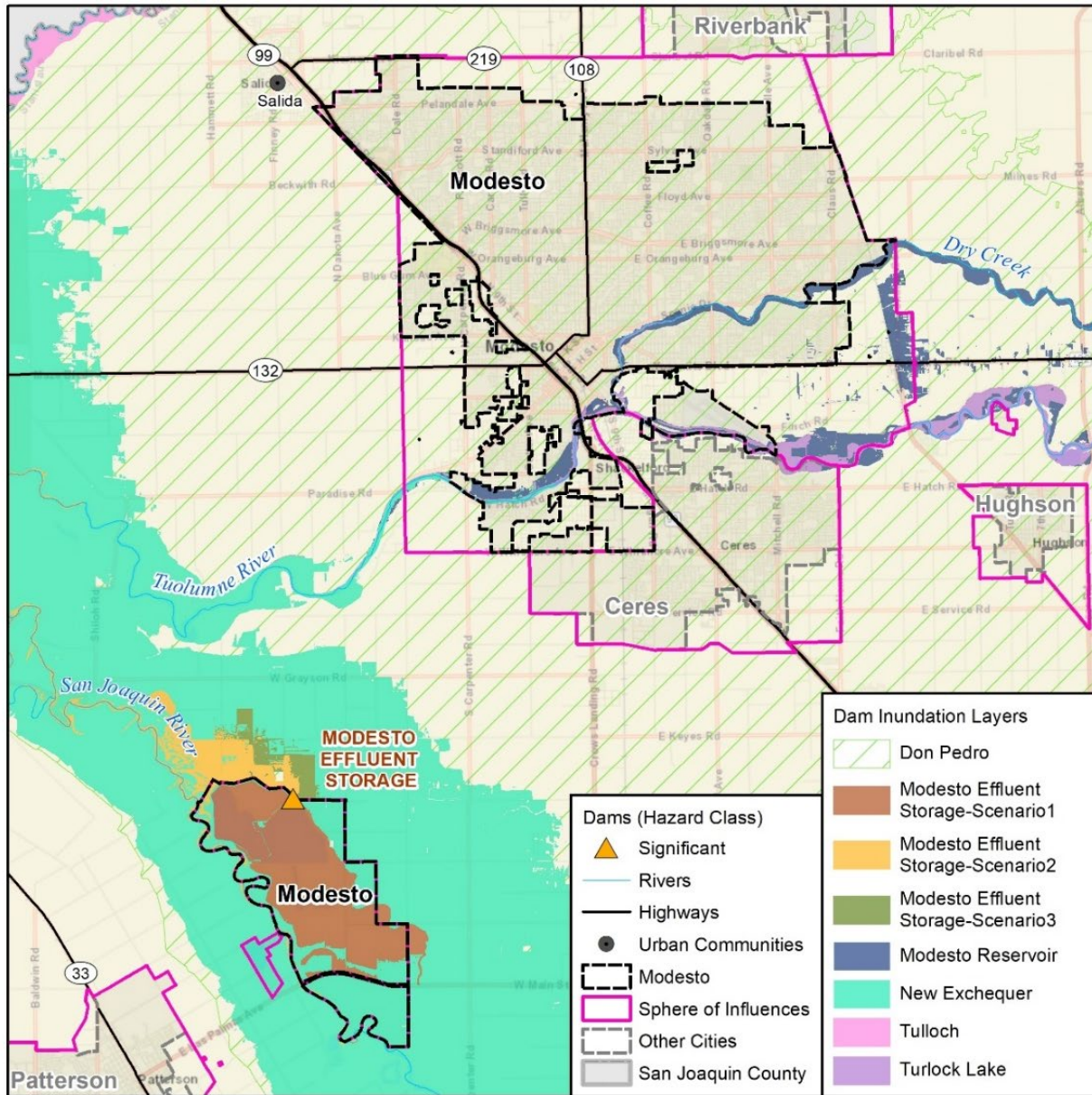
### 2.3.1 Dam Incidents

Protection from flood hazards created by dam failures is critical to the safety and well-being of Modesto residents. A dam vulnerability assessment was completed during the 2021 update, following the methodology described in Section 4 of the Base Plan. Dam inundation areas from the Don Pedro, Modesto Reservoir, Turlock Lake, New Exchequer, McSwain, Relief and Modesto Effluent Storage dams within the City of Modesto are shown in Figure 2-1. Don Pedro, Modesto Reservoir, Turlock Lake, New Exchequer, McSwain, Relief dams are all rated as high hazard. Don Pedro, Modesto Reservoir, New Exchequer and Relief dams are also rated as Extremely High by the California Department of Water Resources (DWR), Division of Safety of Dams (DSOD). Extremely High rated dams are expected to cause considerable loss of human life or result in an inundation area with a population of 1,000 or more. All areas within City Limits and SOI are vulnerable to dam incidents. The City would experience

catastrophic damage if Don Pedro dam were to breach. A total of 344 critical facilities are located within the various dam inundation areas.

In addition, according to input received from the LPT, there is an existing problem with the floodway capacity downstream of Don Pedro dam. The current operation releases of 9,000 cubic feet per second (cfs) (or non-damaging flow) limits the preemptive releases needed to minimize a massive uncontrolled spill from the reservoir, which in the past has resulted in repeated flooding of DACs that reside along the edges of the Tuolumne River as well as the City of Modesto Sutter Avenue WWTP. Some of these DACs have experienced repeated flooding in 1950, 1955, 1969 and 1997.

Figure 2-1 City of Modesto Potential Dam Inundation Areas



Map compiled 2/2022;  
Intended for planning purposes only.  
Data Source: Stanislaus County,  
Department of Water Resources,  
Division of Safety of Dams (DSOD)



Table 2-5 summarizes the values at risk within Don Pedro dam’s inundation area.

Table 2-5 Don Pedro Dam Inundation

Property Type	Improved Parcel Count	Population
Commercial	2,071	
Industrial	318	
Non-Assessable	6	
Residential	55,011	159,532
Residential-Income	510	1,479



Rural, Farm, Agricultural	12	
Unclassified	2,606	
Vacant Commercial	120	
Vacant Residential	19	
<b>Total</b>	<b>60,673</b>	<b>161,011</b>

Source: California DSOD, National Inventory of Dams, Stanislaus County Assessor's Office

## Future Development

The results of the SOI and dam analysis are shown in Table 2-6.

**Table 2-6 Sphere of Influence Areas Exposed to Don Pedro Inundation**

Property Type	Improved Parcel County	Population
Commercial	305	
Industrial	435	
Non-Assessable	5	
Residential	5,271	15,286
Residential-Income	214	621
Rural, Farm, Agricultural	254	
Unclassified	136	
Vacant Commercial	55	
Vacant Residential	16	
<b>Total</b>	<b>6,691</b>	<b>15,907</b>

Source: Stanislaus County Assessor, Wood analysis

### 2.3.2 Drought

The City's Utilities Department and Water Services Team provides water supply production, treatment, and distribution to City residents through over 75,000 water connections served by a system of pipelines, wells, and water tanks (City of Modesto 2021). The City's water supply is sourced from both surface water and groundwater (City of Modesto 2021). In 2021, the City obtained approximately 54 percent of its water supply from groundwater via City-operated wells with the remaining 46 percent sourced from surface water from the Modesto Irrigation District (MID).

Because the City relies on surface water that is primarily replenished by the Sierra Nevada snowpack, the City is susceptible to drought, especially as the City grows and the demand for water increases. With drier winters and higher temperatures that lead to more rain instead of snow, the San Joaquin Valley will experience a reduction in the spring snowpack runoff, which can lead to long-term drought conditions. The City of Modesto already encourages the community to do their part to conserve the region's groundwater and surface water supplies. The City adopted a water schedule that becomes effective from April through October where outdoor water use is prohibited on certain days. Outdoor water accounts for about a third of the average household's water use, thereby effectively reducing water consumption in the City by roughly 25 percent. The City began installing water meters in 2006 as part of a 15-year plan to help the City's customers conserve water and save money; more than 70,000 water meters are now in operation. The City also offers homeowners rebates for installing efficient applicants. Further, the City implements Utility Master Plans, a Water Conservation Plan, the Groundwater Sustainability Plans (GSPs), and Water Shortage Contingency Plan (WSCP), which is part of their 2020 Joint Urban Water Management Plan (UWMP) (City of Modesto 2020). Each of these plans provide a guide for the City to assess water supply availability and mitigate water supply shortages to maintain public health and safety. The City also has preparedness efforts in place to allow the City to plan for both near-term and 5-year drought situations. Nevertheless, long-term climate change and the impact of reduced snow melt and change in seasonal run-off patterns, warmer temperatures, and potentially higher frequency and/or severe droughts could have on the region and the City within this century will need to be more clearly defined regarding risk, impact, and mitigation. If drought hazards become too frequent or too severe and

the current surface water storage and conveyance system and groundwater management efforts start to resemble a situation where the City and the nearby region can no longer provide the necessary water supply to sustain the City's future water needs, drought hazards will be revisited and addressed in this Annex and may become a priority hazard in the future. At this time drought hazards are profiled for public awareness and planning purposes only.

In summary, the City has dedicated staff and resources to manage water resources and decrease the demand on the Modesto Subbasin. The City may benefit from developing alternative backup supplies through additional storage facilities to mitigate impacts during drought events in the future. As such, various projects and policy initiatives are proposed to maintain the City's balanced water portfolio and reduce the City's reliance on groundwater pumping to allow for aquifer recovery; these storage facility projects are currently addressed in the GSP, UWMP, and WSCP. Future water conservation policies are also updated on a routine basis to comply with new legislation and water use objectives.

### **2.3.3 Extreme Temperatures: Freeze and Extreme Heat**

The frequency of heat waves has been increasing in recent years across the County and the City of Modesto. As noted in the County Base Plan, climate change will continue to cause more extreme heat events and studies show that, by the end of this century, the number of days with temperatures reaching or exceeding 100°F is projected to increase as a result of climate change. The historic average maximum temperature in Modesto has been 74.6°F. This number is expected to increase to 79.7°F by 2050 and to 82.9°F by 2100. According to Cal-Adapt and the Modesto 2050 General Plan Update documents, any day that reaches a high of 102.9°F or above in Modesto has qualified as a high heat day, and approximately four high heat days have occurred per year. By 2050, approximately 22 high heat days are projected to occur per year. By 2100, Modesto is projected to experience 42 high heat days per year. As temperatures rise and extreme heat events last longer and become more severe and frequent, they will result in a rise in heat-related health problems and deaths caused by heat.

Households in the City of Modesto may also lack air conditioning systems, and the City needs additional cooling centers (cooling zones). These cooling facilities also may need to be upgraded with adequate HVAC equipment and permanent back-up power to provide the community with a safe and cool place during extreme heat events. However, at this time, the City's overall risk to extreme temperatures is low.

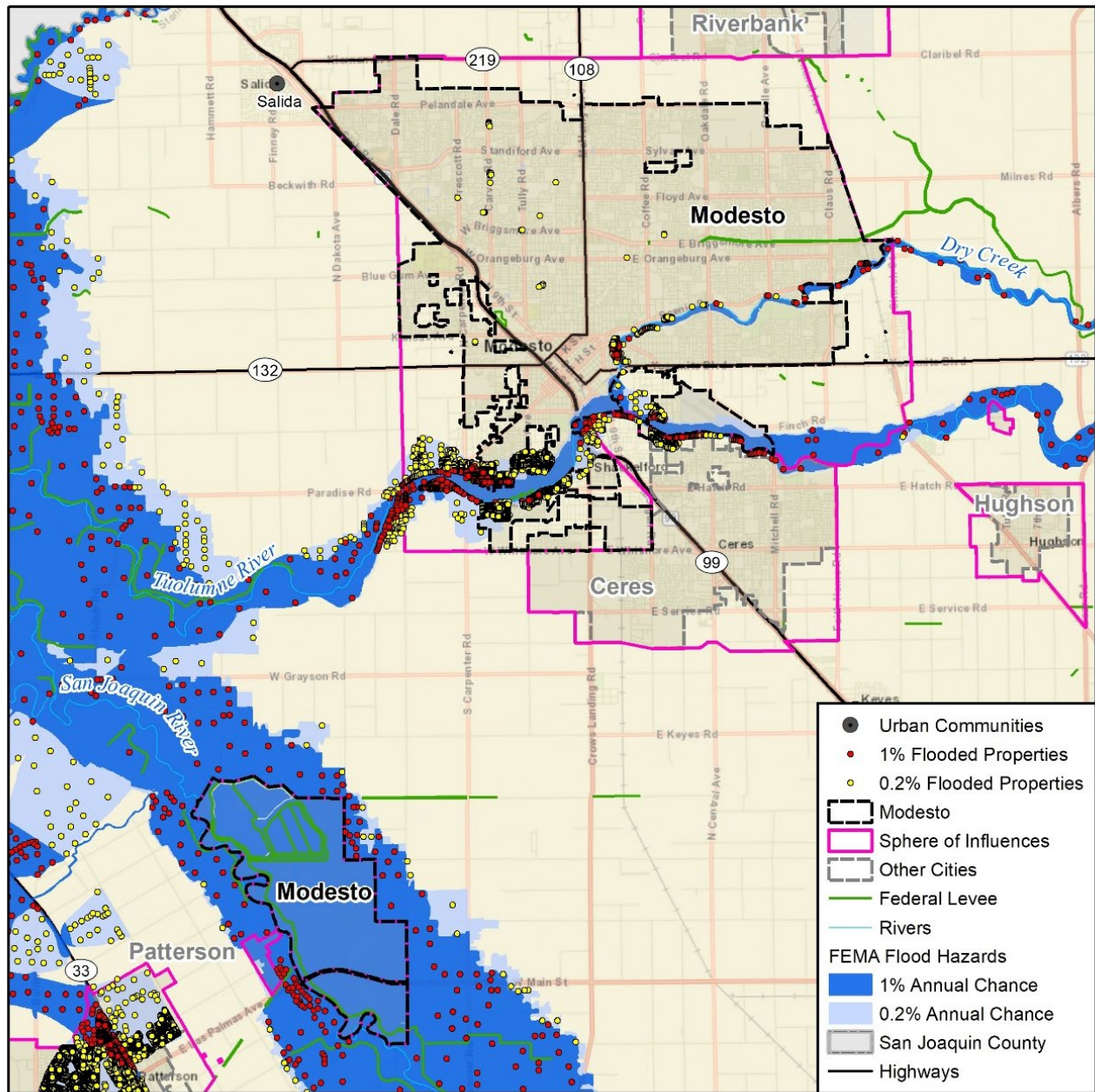
### **2.3.4 Flooding**

The primary types of flood events that may impact the City of Modesto are riverine and local urban flooding. Regardless of the type of flood, the cause is often the result of severe weather and excessive rainfall, either in the flood area, upstream, or from winter snowmelt.

The entire southwestern portion of the City of Modesto, as well as a segment to the south of the City's northeastern portion, have been determined to be in the FEMA Special Flood Hazard Area (SFHA) or 100-year floodplain and also 500-year floodplain. The physical risks associated with potential flooding and the regulatory requirements for floodplain management are important considerations when decisions are being made regarding future land use throughout the City of Modesto. The rest of Modesto lies outside the 100-year floodplain designated by FEMA. Based on the history of flooding in the County of Stanislaus, the City of Modesto and surrounding areas are considered likely to have the hazard potential for future flooding. Parts of the City may also be prone to local flooding problems associated with poor drainage issues. Climate change is also expected to increase the intensity of major storms, which could create more frequent and severe flooding. In summary, the risk to riverine flooding in the City is high due to development in the floodplain and localized flooding issues. The City also participates in the NFIP; therefore, the flood hazards are addressed in this vulnerability assessment for public awareness and planning purposes.

A flood vulnerability assessment was completed during the 2021 update, following the methodology described in Section 4 of the Base Plan. Flood hazards for the City of Modesto are shown in Figure 2-2. Table 2-7 summarizes the values at risk in the City's 1% annual chance floodplain. Table 2-8 summarizes the values at risk in the City's 0.2% annual chance floodplain.

Figure 2-2 City of Modesto FEMA 1% & 0.2% Annual Chance Floodplains



Map compiled 2/2022;  
intended for planning purposes only.  
Data Source: Stanislaus County  
FEMA NFHL 8/24/2021

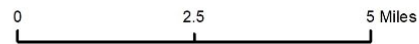


Table 2-7 City of Modesto FEMA 1% Annual Chance Flood Hazard, by Property Type

Property Type	Improved Parcel Count	Improved Value	Estimated Content Value	Total Value	Estimated Loss	Population
Industrial	1	\$3,453,683	\$5,180,525	\$8,634,208	\$2,158,552	
Residential	183	\$30,649,630	\$15,324,815	\$45,974,445	\$11,493,611	531
Residential-Income	1	\$230,847	\$115,424	\$346,271	\$86,568	3
Unclassified	2	\$64,756	\$64,756	\$129,512	\$32,378	

Property Type	Improved Parcel Count	Improved Value	Estimated Content Value	Total Value	Estimated Loss	Population
<b>Total</b>	<b>187</b>	<b>\$34,398,916</b>	<b>\$20,685,519</b>	<b>\$55,084,435</b>	<b>\$13,771,109</b>	<b>534</b>

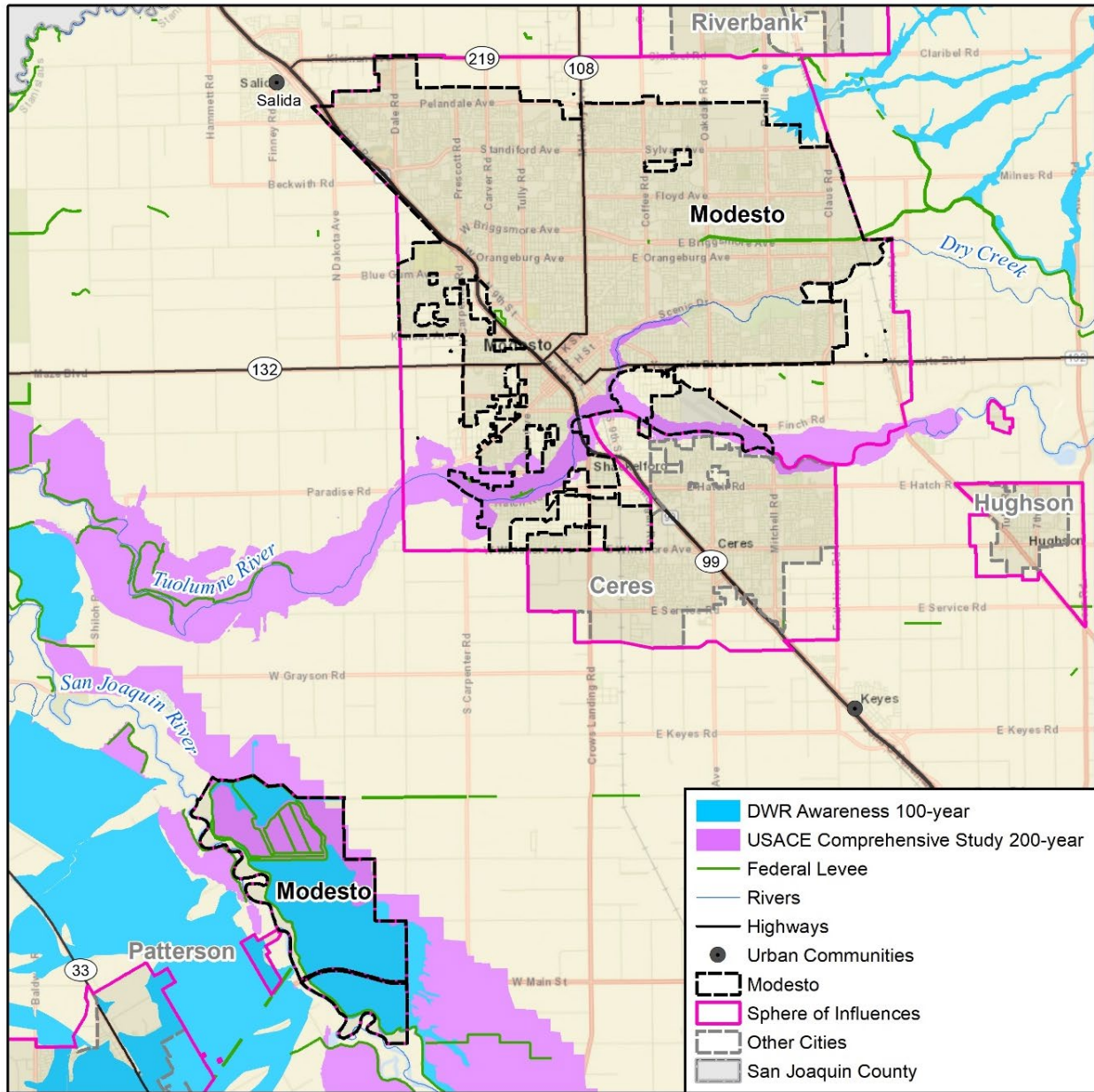
Source: Stanislaus County Assessor's Office; National Flood Hazard Layer Effective 8/24/2021; FEMA; Wood analysis

**Table 2-8 City of Modesto FEMA 0.2% Annual Chance Flood Hazard, by Property Type**

Property Type	Improved Parcel Count	Improved Value	Estimated Content Value	Total Value	Estimated Loss	Population
Commercial	16	\$2,465,262	\$2,465,262	\$4,930,524	\$1,232,631	
Industrial	2	\$589,725	\$884,588	\$1,474,313	\$368,578	
Residential	913	\$121,250,154	\$60,625,077	\$181,875,231	\$45,468,808	2,648
Residential-Income	11	\$1,530,478	\$765,239	\$2,295,717	\$573,929	32
Unclassified	92	\$17,681,365	\$17,681,365	\$35,362,730	\$8,840,683	
Vacant Commercial	1	\$17,288	\$17,288	\$34,576	\$8,644	
<b>Total</b>	<b>1,035</b>	<b>\$143,534,272</b>	<b>\$82,438,819</b>	<b>\$225,973,091</b>	<b>\$56,493,273</b>	<b>2,680</b>

Based on this analysis, the City of Modesto has 187 improved parcels located within the 1% annual chance floodplain for a total value of around \$55.1 million. The potential loss is estimated at around \$13.8 million if these areas were inundated by the 1% annual chance flood. In addition, the City of Modesto has 1,035 improved parcels located within the 0.2% annual chance floodplain for a total value of around \$226 million. The potential loss is estimated at around \$56.5 million if these areas were inundated by the 0.2% annual chance flood. The population at risk was calculated for the 1% and 0.2% annual chance floodplains based on the number of residential properties at risk and the average number of persons per household (2.9). There are an estimated 534 persons at risk to 1% annual chance flood and 1,780 persons at risk to 0.2% annual chance flood in the City of Modesto. The DWR Awareness 100-year and USACE Comprehensive Study 200-year floodplains within the City of Modesto are shown in Figure 2-3.

**Figure 2-3 City of Modesto DWR Awareness 100-Year & USACE Comprehensive Study 2—Year Floodplains**



Map compiled 2/2022;  
intended for planning purposes only.  
Data Source: Stanislaus County,  
DWR, USACE



**Critical Facilities at Risk**

Critical facilities are those community components that are most needed to withstand the impacts of disaster as previously described. Table 2-9 and Table 2-10 list the critical facilities in the City’s 1% and 0.2% annual chance floodplains respectively. Figure 2-4 shows the location of the critical facilities in the City’s 1% and 0.2% annual percent chance floodplains. There is a total of six facilities potentially exposed to a 1% annual chance flood events, including the Sutter Avenue WWTP, Domestic Wastewater Collection System River Trunk, Cannery Segregation Trunk, Modesto Effluent Storage Dam, and two bridges. There are also seven facilities potentially exposed to a 0.2% annual chance flood events, including three elementary schools, two bridges, one cell tower and one assisted living facility. The impact

on the community could be substantial if any of these facilities are damaged or destroyed during a flood event. Impacts to any of the City's key wastewater facilities and infrastructure and conveyance systems would result in severe service disruptions to the community and subsequent costs associated with response and recovery.

**Table 2-9 Critical Facilities at risk of 1% Annual Chance Flood Hazard, by FEMA Lifeline**

FEMA Lifeline	Count
Communications	-
Energy	-
Food, Water, Shelter	2
Hazardous Materials	1
Health and Medical	-
Safety and Security	1
Transportation	2
<b>Total</b>	<b>6</b>

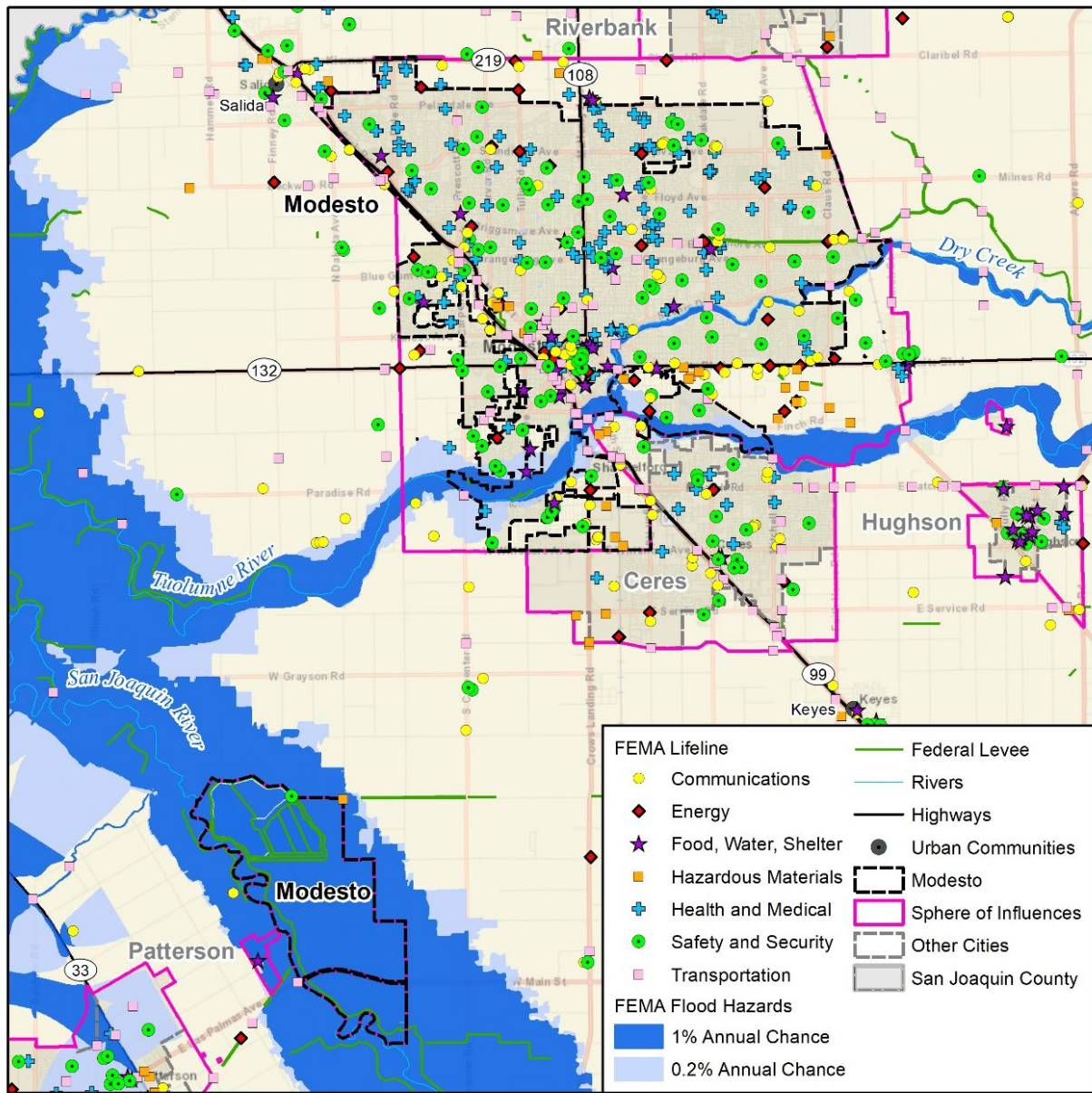
Source: Stanislaus County; Stanislaus County, HIFLD, NID, DWR, National Flood Hazard Layer Effective 8/24/2021; FEMA; Wood analysis

**Table 2-10 Critical Facilities at risk of 0.2% Annual Chance Flood Hazard, by FEMA Lifeline**

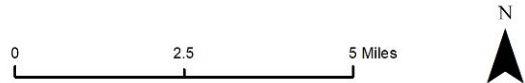
FEMA Lifeline	Count
Communications	1
Energy	-
Food, Water, Shelter	-
Hazardous Materials	-
Health and Medical	1
Safety and Security	3
Transportation	2
<b>Total</b>	<b>7</b>

Source: Stanislaus County; Stanislaus County, HIFLD, NID, DWR, National Flood Hazard Layer Effective 8/24/2021; FEMA; Wood analysis

Figure 2-4 Critical Facilities at Risk of FEMA 1% & 0.2% Annual Flood Hazard



Map compiled 2/2022;  
intended for planning purposes only.  
Data Source: Stanislaus County,  
HIFLD, NID, DWR, FEMA NFHL 8/24/2021



### Insurance Coverage, Claims Paid, and Repetitive Losses

The City of Modesto joined the NFIP on August 15, 1980. NFIP Insurance data indicates that as of May 2022, there were 166 flood insurance policies in force in the City with \$46,130,900 of coverage. 53 of these policies are located in A01-30 & AE zones. 133 policies are located in B, C & X zones. Most of the policies are single-family residential. There have been 50 historical claims for flood losses totaling \$1,654,264. According to the FEMA Community Information System accessed April 6, 2022, the City has had 18 Repetitive Loss properties but no Severe Repetitive Loss properties.

### Future Development

The results of the SOI flood analysis are shown in Table 2-11 and Table 2-12. A total of 517 parcels within the SOI are exposed to the 1% annual chance flood. A total of 586 parcels within the SOI are

exposed to the 0.5% annual chance flood. This indicates the risk to existing development that could be under the City's jurisdiction if the area was annexed.

**Table 2-11 Sphere of Influence Areas Exposed to 1% Annual Chance Flood Hazard**

Property Type	Improved Parcel Count	Improved Value	Estimated Content Value	Total Value	Estimated Loss	Population
Commercial	11	\$3,739,598	\$3,739,598	\$7,479,196	\$1,869,799	N/A
Industrial	7	\$12,048,836	\$18,073,254	\$30,122,090	\$7,530,523	N/A
Non-Assessable	1	\$229,802	\$229,802	\$459,604	\$114,901	N/A
Residential	457	\$31,451,735	\$15,725,868	\$47,177,603	\$11,794,401	1,325
Residential-Income	8	\$830,897	\$415,449	\$1,246,346	\$311,586	23
Rural, Farm, Agricultural	6	\$1,563,758	\$1,563,758	\$3,127,516	\$781,879	N/A
Unclassified	24	\$3,326,479	\$3,326,479	\$6,652,958	\$1,663,240	N/A
Vacant Commercial	2	\$24,038	\$24,038	\$48,076	\$12,019	N/A
Vacant Residential	1	\$3,546	\$1,773	\$5,319	\$1,330	3
<b>Total</b>	<b>517</b>	<b>\$53,218,689</b>	<b>\$43,100,018</b>	<b>\$96,318,707</b>	<b>\$24,079,677</b>	<b>1,351</b>

Source: Stanislaus County Assessor, Wood analysis

**Table 2-12 Sphere of Influence Areas Exposed to 0.2% Annual Chance Flood Hazard**

Property Type	Improved Parcel Count	Improved Value	Estimated Content Value	Total Value	Estimated Loss	Population
Commercial	16	\$4,992,920	\$4,992,920	\$9,985,840	\$2,496,460	
Industrial	16	\$83,980,590	\$125,970,885	\$209,951,475	\$52,487,869	
Residential	492	\$41,162,869	\$20,581,435	\$61,744,304	\$15,436,076	1,427
Residential-Income	20	\$1,816,858	\$908,429	\$2,725,287	\$681,322	58
Rural, Farm, Agricultural	16	\$2,008,449	\$2,008,449	\$4,016,898	\$1,004,225	
Unclassified	22	\$2,451,776	\$2,451,776	\$4,903,552	\$1,225,888	
Vacant Commercial	2	\$15,441	\$15,441	\$30,882	\$7,721	
Vacant Residential	2	\$30,617	\$15,309	\$45,926	\$11,481	6
<b>Total</b>	<b>586</b>	<b>\$136,459,520</b>	<b>\$156,944,643</b>	<b>\$293,404,163</b>	<b>\$73,351,041</b>	<b>1,491</b>

Source: Stanislaus County Assessor, Wood analysis

Climate change continues to bring intensified impacts and greater challenges to flood management in the Central Valley and the City of Modesto and why strengthening flood programs is critical to recharging groundwater aquifers and protecting public safety. Climate change will continue to effect hydrology and result in increases in precipitation falling as rain instead of snow at higher elevations, result in extreme precipitation events (exacerbated by atmospheric rivers and greater runoff events), and increase the frequency and intensity of storms. These impacts will also increase flood risks for the Central Valley as a result of population and development growth.

The latest climate science information relevant to the Central Valley and the City of Modesto is summarized in the 2022 CVFPP update. This update advanced the information summarized in the 2017 CVFPP and improved the understanding of uncertainty associated with climate change projections for the



Central Valley watersheds and reservoir vulnerability. While further climate change trends are improving, the range of potential future conditions still remains uncertain. As a result, key findings focused on three climate change projections created by downscaled climate models. In summary, more warming is projected for all future scenarios, which will result in less watershed below freezing temperatures.

For example, the freezing elevation in the San Joaquin River will increase from 8,000 feet in no climate change scenario to 12,000 feet in the high climate change scenario (CVFPP 2022). Increasing and warmer rainfall and less snow will result in more runoff above 6,000 feet in elevation, thereby increasing peak flows. Less snowfall from major storms means decreases in winter snow accumulation and earlier snowmelt. Precipitation levels will vary from a 10 percent decrease in the low climate change scenario, no change in the medium climate change scenario, and a 15 percent increase in the high climate change scenario. Also, major storms will generate higher flow peaks, which will result in more streamflow in the winter and less streamflow in the spring.

Climate change will also make the Central Valley reservoirs more vulnerable as flood events may require reservoirs to need to release more water downstream. However, reservoirs can only release as much water as the downstream channel can safely accommodate (CVFPP 2022). When inflows to a reservoir exceed the reservoir capacity, dam safety concerns necessitate emergency operations to reduce storage based on the system's designed structural capacity. This means peak flows may increase throughout these systems due to the increased runoff from upstream of the flood control reservoirs. Therefore, there are needs to decrease flood risk, both above and below reservoirs, expand storage, and increase downstream flood capacity (CVPPP 2022).

### 3 CAPABILITY ASSESSMENT

Capabilities are the programs and policies currently in use to reduce hazard impacts or that could be used to implement hazard mitigation activities. This capabilities assessment is divided into five sections: regulatory mitigation capabilities, administrative and technical mitigation capabilities, fiscal mitigation capabilities, mitigation outreach, and partnerships, and other mitigation efforts. To develop this capability assessment, the LPT representatives reviewed a matrix of common mitigation activities to inventory which of these policies or programs and shared any updates or changes through the Modesto Data Collection Guide. The team then supplemented this inventory by reviewing additional existing policies, regulations, plans, and programs to determine if they contribute to reducing hazard-related losses.

During the plan update process, this inventory was reviewed by the jurisdictional planning representatives and Wood consultant team staff to update information where applicable and note ways in which these capabilities have improved or expanded. Additionally, in summarizing current capabilities and identifying gaps, the jurisdictional planning representatives also considered their ability to expand or improve upon existing policies and programs as potential new mitigation strategies. The City of Modesto's capabilities are summarized below.

#### 3.1 Regulatory Capability

The regulatory and planning capabilities table lists planning and land management tools typically used by local jurisdictions to implement hazard mitigation activities. The table below indicates those that are in place in the City of Modesto.

**Table 3-1 City of Modesto —Regulatory and Planning Capabilities**

Regulatory Tool (ordinances, codes, plans)	Yes/No	Comments
General Plan	Yes	Adopted March 5, 2019
Zoning ordinance	Yes	Title 10
Subdivision ordinance	Yes	Title 4 Chapter 4
Growth management ordinance	No	
Floodplain ordinance	Yes	Title 9 Chapter 4
Other special purpose ordinance (stormwater, steep slope, wildfire)	Yes	Title 5 Chapter 10 Storm Water Management and Discharge Controls
Building code	Yes	Title 9

Fire department ISO rating	Yes	Rating 2
Erosion or sediment control program	Yes	Title 5 Chapter 10 Article 3. – Grading and Erosion Control
Stormwater management program	Yes	2011 Revised Modesto Stormwater Guidance Manual
Site plan review requirements	Yes	Title 9 Chapter 11 Article 6 9-11.606 Site Plan
Capital improvements plan	Yes	Fiscal Year 2021-2022 through 2025-2026 (most recent)
Economic development plan	No	
Local emergency operations plan	No	
Other special plans	Yes	Water System Emergency Response Plan (2021)
Flood insurance study or other engineering study for streams	Yes	Included in the County's Flood Insurance Study (FIS), which was revised on August 24, 2021
Elevation certificates (for floodplain development)	No	No
Other	Yes	Mid San Joaquin River Regional Flood Management Plan (MSJR RFMP)

### Modesto General Plan 2040 (2019)

The General Plan is “a set of instructions on how to build the City presented in nine chapters (elements): Land Use; Open Space; Conservation; Housing; Circulation; Noise; Safety; Air Quality; and, Environmental Justice. The Modesto General Plan addresses the challenges of the future by presenting a blueprint for the preservation of Modesto’s “quality of life” while providing direction for the growth of business and industry to meet the needs of future generations in the Modesto community. The General Plan includes visions for the future, covering the following aspects:

- **Employment Opportunities:** A guiding principal in the General Plan is to provide jobs to match housing and population growth by designating more than 5,000 total acres of new Business Park and Commercial land acreage combined in the City. This contributes to the potential for approximately 295,000 total jobs within the General Plan boundary.
- **Comprehensive Planning:** As Modesto grows, comprehensive planning approaches are needed to respond to increasingly complex land development and public facilities and service issues.
- **Accommodating Mobility Needs:** This General Plan envisions a street system, supplemented by transit, passenger rail and nonmotorized transportation systems, to provide for efficient movement of people, goods and services, and to reduce traffic congestion and reduce vehicle miles traveled over time.
- **Maintaining Older Neighborhoods:** Modesto’s historic and older neighborhoods provide a range of aesthetic and lifestyle choices. The City reinforces the appeal, character, and economic value of these neighborhoods by investing in infrastructure improvements and revitalization efforts in these areas.
- **Integrating New Neighborhoods and Development:** The City integrates new development into the fabric of existing adjacent neighborhoods, with strong pedestrian connections, compatible scale and complementary architecture. The City’s development standards and design guidelines will help realize this vision as new development occurs.
- **Agricultural Land Preservation:** Agriculture is a leading industry in Stanislaus County.

The City of Modesto did not participate in the 2017 LHMP process. For this reason, the County’s 2017 LHMP was not incorporated into the City’s General Plan Safety Element. The City is also in the process of preparing a comprehensive update to the Urban Area General Plan. While the current General Plan was last amended in 2019, it has not be comprehensively updated since 1995. The Modesto 2050 update process will determine the City’s long-term future in order to reflect the current issues, ideas, and aspirations of the community and to plan ahead through the year 2050.

### City of Modesto Strategic Plan 2020 – 2025

The City of Modesto’s 2020 – 2025 Strategic Plan serves as a roadmap for Modesto’s promise as a place where inclusive community can prosper, and innovation grows. The Strategic Plan is the result of a year-long planning process that included the community, city management, and city staff. Through the process, the Council and executive team identified ten long-range goals and specific strategies for reaching those goals. The Strategic Plan contains three overarching areas of focus, including Quality of Life, Economic Vitality and Governance and Service Delivery, and the ten long-range goals apply to these three overarching areas.

### **Emergency Services Ordinance, Title 3 Chapter 4**

The purpose of the Emergency Services Ordinance is to provide for the preparation and carrying out of plans for protection of persons and property within the City in the event of an emergency; the direction of the emergency organization; and the coordination of the emergency functions of the City with all other public agencies, corporations, organizations, and affected private persons.

The Ordinance establishes the Modesto Disaster Council membership; the Disaster Council powers and duties, which include developing and recommending for adoption by the City Council; emergency and mutual aid plans and agreements and such ordinances and resolutions and rules and regulations as are necessary to implement such plans and agreements. The City Manager shall be the Director of Emergency Services. The Director is empowered to request the City Council to proclaim the existence or threatened existence of a "local emergency" if the City Council is in session, or to issue such proclamation if the City Council is not in session. The Director is also empowered to request the Governor to proclaim a "state of emergency" when, in the opinion of the Director, the locally available resources are inadequate to cope with the emergency. Moreover, the Ordinance authorizes that the Modesto Disaster Council to be responsible for the development of the City of Modesto Emergency Plan, which provides for the effective mobilization of all of the resources of the City to meet the needs constituting a local emergency, state of emergency, or state of war emergency. Such plan shall take effect upon adoption by resolution of the City Council.

### **Adoption of the California Fire Code, 2019 Edition, Title 3 Chapter 1**

The City of Modesto adopts by reference the California Fire Code, 2019 Edition of the California Code of Regulations Title 24. The Fire Code regulates the safeguarding of life and property from fire and explosion hazards arising from the storage, handling, and use of hazardous substances, materials and devices, and from conditions hazardous to life or property in the occupancy of buildings. The Code also authorizes the City to issue permits, collect fees, and provide penalties for the violation and each and all of the regulations, provisions, penalties, conditions and terms of the California Fire Code, 2019 Edition.

### **Floodplain Management Ordinance Title 9 Chapter 4**

The purpose of the City's Floodplain Management Ordinance is to promote public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas by legally enforceable regulations. These regulations are applied to all publicly and privately owned land within flood-prone, mudslide, or flood-related erosion areas. These regulations are designed to protect human life and health; minimize expenditure of public money for costly flood control projects; minimize the need for rescue and relief efforts associated with flooding; and minimize prolonged business interruptions. The Floodplain Management Ordinance is in place to minimize damage to public facilities and utilities in SFHAs and help maintain a stable tax base by providing for the sound development of areas of special flood hazard. The Ordinance also ensures that potential buyers are notified that property is in a SFHA and ensure that those who occupy the areas of special flood hazard assume responsibility for their actions.

All new construction or substantial improvements of residential structures shall have the lowest floor, including the basement elevated to or above the base flood elevation (BFE) (in AE, AH, A1-30 zones), or elevated to or above the BFE, as determined under the review, use and development of other base flood data (in an A zone, without BFE's specified on the FIRM). Where FEMA has not provided the City with BFE data in accordance with SFHA, the Floodplain Administrator shall obtain, review, and reasonably utilize any BFE and floodway data available from a federal or state agency, or other sources. Upon the completion of the structure, the elevation of the lowest floor including basement shall be certified by a registered professional engineer or surveyor and verified by the Community Building Inspector to be properly elevated. When BFE changes due to physical alternations, within six months after issuance of a grading permit, before issuance of a building permit, or before the start of construction, whichever occurs first, the Floodplain Administrator shall submit or assure that the permit applicant submits technical or scientific data to FEMA as required for a Letter of Map Revision.

### **Urban Water Quality Control Ordinance, Chapter 8.30**

The purpose of the Urban Water Quality Control Ordinance is to ensure, protect, and promote the health, safety, general welfare, and protection of property for City of Modesto. It includes regulations that prohibit

non-storm water discharges into the City municipal separate storm sewer system (MS4), and to reduce the discharge of pollutants in storm water to the maximum extent practicable. This is accomplished by regulating non-storm water discharges to the City's MS4; controlling the discharge to City's MS4 from spills, overland flow, dumping, or disposal of materials other than storm water; reducing pollutants in storm water discharges from the City's MS4 to the maximum extent practicable; and minimizing damage to property and public rights-of-way. The Ordinance also minimizes degradation of the water quality of watercourses and controlling industrial and commercial pollutant discharges to City's MS4.

### 3.2 Administrative and Technical Capability

The table below identifies City personnel with responsibilities for activities related to mitigation and loss prevention in the City of Modesto. Many positions are full-time and/or filled by the same person. A summary of technical resources follows based on the organization of the City's departmental staff.

**Table 3-2 City of Modesto —Personnel Capabilities**

Personnel Resources	Yes/No	Department/Position	Comments
Planner/engineer with knowledge of land development/land management practices	Yes	Community & Economic Development Department	
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	Community & Economic Development Department	
Planner/engineer/scientist with an understanding of natural hazards	Yes	Community & Economic Development Department	
Personnel skilled in GIS	Yes	Information Technology Department	
Full time building official	Yes	Community & Economic Development Department	
Floodplain manager	Yes	City Engineer	
Emergency manager	Yes	The City Manager (Director of Emergency Services)	
Grant writer	Yes	Administration	
Other personnel	Yes	Multiple agencies and departments with support personnel expanding capabilities for mitigation	
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	Yes	City of Modesto GIS ArcGIS Online Platform	
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	No	City of Modesto Alert Center	
Other			

### City Council

The City of Modesto has a Council-Manager form of government. Voters elect the City Council to serve as the policy-making board of the City. The Council, in turn, appoints a City Manager to administer these policies. The Modesto City Council has seven members, including the Mayor, elected at large on a nonpartisan basis for four-year terms. Their terms of office expire in alternate odd-numbered years. The City Council serves as a legislative body, enacting ordinances, orders and resolutions necessary for governing Modesto as outlined in the City Charter and deemed important by the public.

The Modesto City Council is the City's legislative body. It sets policies, approves budgets, determines tax rates and passes ordinances and resolutions to govern the City. Council also appoints citizen volunteers to more than 26 City advisory boards, committees, and commissions; and appoints and supervises the performance of the City Manager, City Attorney and City Clerk.

One of the several boards and commission overseen by City Council includes the Board of Zoning Adjustment. This Board upholds the integrity of zoning regulations and the Modesto General Plan. The board makes decisions on applications for conditional use permits, variances and site plans for office

development. The Board of Zoning Adjustment also hears appeals concerning decisions made by the Community and Economic Development Department staff.

The Council also oversees the Planning Commission. The Planning Commission is responsible for making decisions and recommendations regarding the development of the community. The Planning Commission has final authority regarding subdivision maps and parcel maps, certain zoning matters and development plans, and occasionally matters appealed either from the staff level or Board of Zoning Adjustment. The Planning Commission makes recommendations to the City Council regarding annexations, rezonings, code amendments and most General Plan-related matters.

The Citizens Housing and Community Development Committee provides overall review of the City's Housing and Urban Development (HUD) funds. The committee makes funding recommendations to the Modesto City Council regarding the HUD Community Development Block Grant, Emergency Shelter Grant, and Home Investment Partnership Grant programs.

The Modesto City Council also oversees the Modesto Economic Development Committee. The Modesto Economic Development Committee is associated with the City's Community & Economic Development and Public Works Departments. The Committee's roles cover land use, redevelopment, the downtown Master Plan, urban growth, economic development, stormwater, and implementation of wastewater & water master plans.

### **City Attorney**

The City Attorney's Office provides legal services to the City in support of the City Council, Mayor, and Department staff. It provides advice on transactional matters, litigation, and prosecutorial legal services.

### **City Auditor**

The City Auditor (Modesto City Auditor's Office [MCAO]) provides objective assurance and advisory services designed to restore the public trust. The auditor effectively evaluates the effectiveness of the City Council, City Manager, City Clerk, and City Attorney. This responsibility encompasses sound financial management, adequate reporting, maintaining an effective system of internal controls, compliance with applicable rules and regulations, and maintaining the highest standards of ethical conduct at the City.

### **City Clerk**

The City Clerk is appointed by the City Council. The City Clerk attends regular and special meetings of the Council and keep an accurate record of the proceedings of the Council. The City Clerk records all ordinances of the City, and of all written resolutions adopted by the Council. The Clerk also keeps records of Council proceedings and in a way that is easily accessible to the public. The City Clerk also administers oaths and affidavits in connection with City affairs or business, oversees City and Board of Education elections, and the publications of all official City advertisements. The City Clerk also files Officer of Campaign Financial Disclosure Statements and Statements of Economic Interests, as required by State Law.

### **City Manager's Office**

The City Manager's Office manages the services of the City and is responsible for all operations of city government and making recommendations to the City Council on a variety of issues. The City Manager's Office addresses the community's priorities through the three focus areas outlined in the City's Strategic Plan 2020-2025.

### **Community and Economic Development Department**

The objective of the Community & Economic Development Department is to ensure that new development achieves a balance between the economic, social, environmental and quality of life goals for the City of Modesto. The Community & Economic Development Department consists of multiple divisions, including Building Safety and Neighborhood Preservation Division, Community Development Division, Economic Development Division, Land Development and Engineering Division, Planning Division and Transportation Engineering and Design Division. The Planning Division is currently managing the comprehensive update to the City's General Plan.

## **Finance Department**

The Finance Department oversees the City's financial functions including the collection, receipting, disbursement, and accounting of all monies received. The City Finance Department also oversees the development and administration of operating and capital improvement budgets, purchasing, new debt investments, and audits and grants.

## **Fire Department**

The Modesto Fire Department is a professional, community service-driven organization that provides All risk Emergency Services to meet the needs of the community. The Modesto Fire Department serves, protects, and partners with agencies to make the City safe. The mission of the Fire Department is to provide efficient and effective fire and life safety protection to the community through control of hostile fire, fire prevention services, emergency medical services, emergency preparedness, and mitigation of hazardous materials incidents.

## **Human Resources Department**

The mission of the Human Resources Department is to recruit and retain a qualified and diverse workforce to meet the varied needs of the organization ("Modesto, CA | Official Website" 2022). The Department also trains and develops the department workforce towards minimizing the risk of loss associated with the provision of City services.

## **Information Technology**

The Information Technology Department (ITD) provides technology services, support and guidance to City departments as well as a growing community of residents, businesses, and visitors within the City of Modesto ("Modesto, CA | Official Website" 2022). The ITD manages the GoModesto! Platform, which is a multi-lingual reporting tool to report issues related to street flooding, light outages, illegal dumping and vandalism. The ITD also oversees the Geographic Information Systems (GIS) mapping and database program. .

## **Parks, Recreation, and Neighborhoods Department**

The Parks, Recreation and Neighborhoods Department builds and maintains parks, trails, and recreational facilities and implements recreational and enrichment programs. The Department also meets to exceed the open space and recreation needs of the community.

## **Police Department**

The mission of the Modesto Police Department cut the crime rate and improve the quality of life in the City of Modesto.

## **Public Works Department**

The City's Public Works Department provides maintenance services for the airport, streets, traffic control systems, City buildings, parking, City vehicles and City trees. The Department also provides services such as garbage pick-up and recycling, green waste collection and public transit.

## **Utilities Department**

The Modesto Utilities Department provides various services, including water services, wastewater reclamation, and environmental services.

## **3.3 Fiscal Capability**

The following table identifies financial tools or resources that the City could potentially use to help fund mitigation activities. There are currently no specific funding sources for hazard mitigation.

**Table 3-3 City of Modesto —Available Financial Tools and Resources**

Financial Resources	Accessible/ Eligible/ Use	Has This Been Used for Mitigation in the Past?	Comments
Community Development Block Grants	Yes	No	
Capital improvements project funding	Yes	No	
Authority to levy taxes for specific purposes	Yes	No	Must be approved by voters
Fees for water, sewer, gas, or electric services, new development	Yes	No	
Incur debt through general obligation bonds	Yes	No	
Incur debt through special tax bonds	Yes	No	Requires approval by two-thirds of voters
Incur debt through private activities	Yes	No	Do not have any in place
Federal Grant Programs (Hazard Mitigation Grant Program)	Yes	No	Various Departments

### 3.4 Outreach and Partnerships

The City of Modesto partners with the Stanislaus County Office of Emergency Services (OES) Division. The Stanislaus County OES is responsible for the day-to-day administration of Stanislaus County's disaster preparedness, mitigation, response and recovery programs. OES develops and maintains the Stanislaus County Emergency Operations Plan and its associated annexes. OES also coordinates training, planning and exercises for first responders throughout the Stanislaus Operational Area. According to Stanislaus County OES' 2021 – Emergency Management Strategic Plan, OES listed "increase number of outreach engagements (i.e. meetings, events) as an action item to achieve one of its strategic goals, which is to build a culture of preparedness. The Stanislaus County OES will work with community partners to develop agreements for mutual aid, facilitate discussion with partners regarding preparedness planning, conduct outreach activities to engage residents, and attend emergency management trainings and conferences to stay up to date with the most current practices for disaster preparedness. The City also works in coordination with the County on the Stanislaus County MJHMP.

Moreover, the Stanislaus County OES protects the public's safety by developing and maintaining general and specific preparedness programs for the County and its nine cities. The OES educates and informs the public in the areas of emergency preparedness and fire prevention.

During the 2021-2022 planning process the following outreach efforts were identified that the City of Modesto could support related to hazard mitigation:

- Ongoing "City Beat" Monthly Newsletter
- Community Health and Assistance Team (C.H.A.T.)
- Fire Prevention School Programs
- Social Media (Facebook, Instagram)
- Continued collaboration with the Mid San Joaquin Regional Flood Management Plan Working Group

Education and outreach efforts, as well as emergency response planning, will also need to address the needs of low-income residents and the large Spanish-speaking population in the City. The City's LPT can enhance outreach to engage better participation among the Spanish-speaking population through bi-lingual newsletter publications, social media posts, and surveys.

### 3.5 Other Mitigation Efforts

#### Central Valley Flood Protection Plan

The Central Valley Flood Protection Plan (CVFPP) is the State of California's strategic blueprint for Central Valley flood risk management. It guides the State's policies, investments, and partnerships. And it ensures a climate-driven technical foundation for a flood management system that helps protect communities, contributes to native species recovery, and integrates fully into broader water management conversations. The CVFPP is part of California's integrated water resources management strategy. The CVFPP is a descriptive document that reflects a systemwide approach to flood management. The San Joaquin River Basin Systemwide Management as well as the related regional flood management strategy has been a focus area in the CVFPP. The 2022 CVFPP Update public review draft was made available in April 2022; this update uses new information, updated science, innovative tools, and recommends priority actions to address flood risk related to climate change.

The flood mitigation actions identified by the City's LPT, which are described in Section 4.3 of this Annex, align with the CVFPP regarding improving Tuolumne River Resilience, as part of the San Joaquin River Basin. Refer to Section 4.3.8 of the Base Plan for more details on the CVFPP.

#### Mid San Joaquin River Regional Flood Management Plan (2017)

The Mid San Joaquin River Regional Flood Management Plan (MSJR RFMP) was first developed in 2013-2014, and was updated in 2017, through the participation of a range of stakeholders primarily from Stanislaus County. This regional planning effort was created to give stakeholders the opportunity to develop a plan to reduce flood risks in the area from the confluence of the Merced and the San Joaquin Rivers to the confluence of the Stanislaus and the San Joaquin Rivers. The result of these efforts is a vision for a safer and more flood-resilient region that identifies challenges and opportunities for flood management and a prioritized list of actions for Department of Water Resources to consider in the CVFPP. The MSJR RFMP also identifies priority flood protection projects to be carried out by local sponsors, and the City of Modesto has been a major stakeholder in developing the MSJR RFMPs. The 2022 MSJR RFMP update is also underway with a focus on further defining a safer and flood resilient region with strategies and projects that reshape flood management and include locally-sponsored strategies and projects that meet multiple objectives for floodplain management, habitat restoration, groundwater recharge, recreation access, and environmental justice.

The flood mitigation actions identified by the City's LPT, which are detailed described in Section 4.3, conform and are consistent with the MSJR RFMPs' goal to recognize projects and actions for flood control and management as well as creating a safer and more flood-resilient region. Both the relocation of Sutter Avenue Primary WWTP Facilities project and an action related to Tuolumne River & Carpenter Road are listed as high priority projects in the MSJR RFMP. Refer to Section 4.3.8 of the Base Plan for more details on the MSJR RFMP.

#### Tuolumne River Floodway Capacity Increase Draft Action Plan (2022)

This Action Plan guides the planning and implementation of priority actions in the San Joaquin River Basin to increase Tuolumne River floodway capacity to respond to the Water Resilience Portfolio and specifically Action 25.4, which is to update and refine the regional flood management strategy in the CVFPP to account for the projected impacts of climate change in order to protect vulnerable communities and infrastructure and restore floodplains along the San Joaquin River and its tributaries. The Tuolumne River Floodway Capacity Increase mitigation project, which is described in Section 4.3 is consistent with this Draft Action Plan and aims for increased flood risk reduction and safer operation of Don Pedro Dam, both currently and within a future when rainfall and other precipitation events will be affected by climate change.

### 3.6 Opportunities for Enhancement

Based on the capability assessment, the City of Modesto has existing regulatory, administrative/technical, fiscal mechanisms in place that help to mitigate hazards. In addition to these existing capabilities, there are opportunities for the City to expand or improve on these policies and programs to further protect the community. These are organized below by regulatory, administrative/technical, fiscal, and outreach opportunities.



## Regulatory Opportunities

Future opportunities for regulatory enhancement should focus on compliance with Assembly Bill 2140, including amending the City of Modesto General Plan Safety Element to incorporate the 2021-2022 Stanislaus County MJHMP and City of Modesto Annex by reference; or by comprehensively updating the Hazards and Safety Element in the current Modesto 2050 Urban Area General Plan.

## Administrative/Technical Opportunities

Other future enhancements may include providing hazard training for staff or hazard mitigation grant funding in partnership with Stanislaus County and Cal OES. Existing City staff are aware of the benefits of participating in training and webinars offered by Cal OES Hazard Mitigation Assistance (HMA) Team related to HMGP opportunities, HMGP Sub application Development support, and other funding programs, such as Prepare California Jumpstart. Other opportunities may be related to coordinating and educating key stakeholders in the City. Other stakeholders may be interested in aligning efforts related to hazard mitigation and also supporting HMGP Sub applications and other hazard mitigation trainings.

## Fiscal Opportunities

The City can update other plans, such as their CIP to incorporate hazard information and include hazard mitigation actions and climate adaptation strategies that relate to infrastructure systems resiliency associated with the water and wastewater systems. Once projects related to hazard mitigation are approved, the recent CIP can be shared with the community on the City's webpage. Capital investments and improvements related to seismic retrofits, cooling center upgrades, water supply systems, and WWTP upgrades should all be emphasized in the outreach materials as they are related to hazard mitigation. Additionally, given the prioritization of flooding mitigation projects, the City should apply for HMGP grants to fund implementation costs associated with key CIP projects, and related projects in the City's mitigation strategy. These fiscal capabilities may be supported by City staff or augmented with Consultant staff.

## Outreach Opportunities

The City can also expand their outreach capabilities related to the implementation of the 2021-2022 Stanislaus County MJHMP and the City of Modesto Annex. Specific enhancements may include continued public involvement through social media posts and advertisements focused on projects successes related to the Annex Mitigation Strategy, and focused outreach to under-represented and special-interest groups in the City. The City can also develop outreach kits for partner organizations.

# 4 MITIGATION STRATEGY

## 4.1 Goals and Objectives

The City of Modesto adopted the hazard mitigation goals and objectives developed by the HMPC and described in Section 5 Mitigation Strategy of the Base Plan. Like the Mitigation Strategy in the Base Plan, this section outlines the City's roadmap for future hazard mitigation administration and implementation. The purpose of the strategy is to reduce vulnerabilities from key priority hazards outlined in the risk assessment through regulatory tools and projects.

## 4.2 Continued Compliance with the National Flood Insurance Program

The City has been an NFIP participating community since 1980. In addition to the mitigation actions identified herein the City will continue to comply with the NFIP. Floodplain management is under the purview of the Community & Economic Development Department and the City Engineer. This includes ongoing activities such as enforcing local floodplain development regulations, issuing permits for appropriate development in SFHAs and ensuring that this development is mitigated in accordance with the regulations. This will also include periodic reviews of the floodplain ordinance to ensure that it is clear and up to date and reflects new or revised flood hazard mapping.

### 4.3 Mitigation Actions

The LPT for the City identified and prioritized the following new mitigation actions based on risk assessments, goals, and objectives. Background information as well as information on how the action will be implemented and administered, such as ideas for implementation, responsible office, partners, potential funding, estimated cost, and timeline also are described. Because the City did not participate in the 2017 LHMP the LPT did not have existing mitigation actions to review and did not provide status updates on past hazard mitigation planning efforts.

The mitigation strategy includes only those actions and projects which reflect the actual priorities and capacity of the jurisdiction to implement over the next five years covered by this plan. It should further be noted, that although a jurisdiction may not have specific projects identified for each significant (medium or high) hazard for the five-year coverage of this planning process, each jurisdiction has focused on identifying those projects which are realistic and reasonable for them to implement. Should future projects be identified for significant hazards where the implementing jurisdiction has the capacity to implement, the jurisdiction would add those projects to their Annex. The City also recognizes that other mitigation actions proposed in the County's mitigation strategy will cover the significant hazards in the City that are not currently linked to a mitigation action.

**Table 4-1 City of Modesto Mitigation Action Plan**

ID	Goal(s) and Lifelines	Hazard(s) Mitigated	Description/Background/Benefits	Lead Agency and Partners	Cost Estimate and Potential Funding	Priority	Timeline	Status/Implementation Notes
1	Goals 1 and 5; Safety and Security	Flood, Dam Incidents	<p>Relocation of Sutter Treatment Primary Facilities – The Sutter Treatment Primary Facilities are located along the Tuolumne River within the FEMA designated floodplain. It experienced repeated flooding several times previously. The “Sutter Treatment Facility Feasibility Study” that was finalized in April 2015 concluded that flood protection of the Sutter Plant was not feasible. To avoid future flooding, the Sutter Treatment Primary Facilities will be demolished. New facilities will be constructed 6.5 miles away at the Jennings Treatment Plant Facilities, which are outside the 100-year FEMA floodplain along the San Joaquin River.</p> <p>The footprint of the old primary facilities will be incorporated into the Tuolumne River Regional Park Master Plan and regraded to further reduce flood risk by removing levees around the sludge drying beds and by relocating the emergency holding pond.</p> <p>This project would avoid repeat flooding of the Sutter Treatment Plant and prevent sanitary sewer from flowing into the Tuolumne River. The bottleneck that the Sutter Treatment Plant causes on the Tuolumne River can be removed to reduce flood risk for residential homes across the River from the Treatment Plant, which also flooded in 1997.</p>	City of Modesto; Tuolumne River Regional Park JPA	\$100.4 million; FEMA (BRIC, HMGP, HMA, Central Valley Project Improvement Act Habitat Restoration Program, Conservation Reserve Program, Cal OES/Prepare CA Grants, Habitat Conservation Fund, Proposition 1 Watershed Restoration Grant Program, Wildlife Conservation Board Public Access Program, Proposition 68 Wildlife Corridor and Fish Passage Program, Central Valley Tributaries Program	High	5-10 years	New in 2022
2	Goals 1, 4 and 5; Safety and Security; Food,	Flood	Tuolumne River & Carpenter Road Bridge River Restoration Project – A 1999 FEMA Flood Hazard Mitigation Study identified that the constriction at Carpenter Road on the Tuolumne River was caused by the bridge and roadway	City of Modesto; Stanislaus County, Communities along the	\$29 million to \$50 million (partial removal – complete removal); FEMA (BRIC, HMGP, HMA,	High	5-10 years	New in 2022

ID	Goal(s) and Lifelines	Hazard(s) Mitigated	Description/Background/Benefits	Lead Agency and Partners	Cost Estimate and Potential Funding	Priority	Timeline	Status/Implementation Notes
	Water, Shelter; Health and Medical		<p>embankment on the north side of the river. The embankment could be replaced by a “causeway” (lengthened bridge). Additionally, the remaining elevated land east of Carpenter roadway embankment (former Carpenter Eastern Landfill) and the elevated land to the west (existing Carpenter Western Landfill) would have to be removed and graded to increase the cross-sectional flow area, to eliminate the constriction on the river and lower flood elevations and reduce the repeated flooding of the neighborhood adjacent and upstream of these flood flow obstacles. Homes in the adjacent neighborhood “Robertson Road Neighborhood” have experienced flooding in 1950, 1955, 1969, and 1997. A hydraulic analysis is also underway to determine the boundary of the new 100-year floodplain as if the project had been completed. This analysis would also determine the number of homes that would be protected (not flooded) during the 100-year flood event.</p> <p>The project would reduce the overall flooding risk and the risk of repeated flooding of adjacent and upstream disadvantaged communities.</p>	Tuolumne River, Tuolumne River Regional Park JPA, Community Organizations and NGOs	Central Valley Project Improvement Act Habitat Restoration Program, Conservation Reserve Program, Cal OES/Prepare CA Grants, Habitat Conservation Fund, Proposition 1 Watershed Restoration Grant Program, Wildlife Conservation Board Public Access Program, Proposition 68 Wildlife Corridor and Fish Passage Program, Central Valley Tributaries Program			
3	Goals 1 and 5; Safety and Security	Multi-Hazard: Dam Incidents, Flood	Tuolumne River Floodway Capacity Increase – The problem with the floodway capacity downstream of Don Pedro is that the current operation objective releases of 9,000 cubic feet per second (cfs) (or non-damaging flow) limit the preemptive releases needed to minimize a massive uncontrolled spill from the reservoir, which in the past has resulted in repeated flooding of disadvantaged communities that line the edges of the	City of Modesto; USACE, Central Valley Flood Protection Board, DWR, MID, TID, Stanislaus County, City of Ceres, Communities along the	TBD in Phase 1 in years 1-3 of project; FEMA (BRIC, HMGP, HMA, Central Valley Project Improvement Act Habitat Restoration Program, Conservation Reserve Program, Cal OES/Prepare	High	1-3 years	New in 2022

ID	Goal(s) and Lifelines	Hazard(s) Mitigated	Description/Background/Benefits	Lead Agency and Partners	Cost Estimate and Potential Funding	Priority	Timeline	Status/Implementation Notes
			<p>Tuolumne River as well as the City of Modesto Sutter Avenue Wastewater Treatment Plant. Some of these communities have experienced repeated flooding in 1950,1955, 1969 and 1997.</p> <p>The project aims to increase the floodway capacity downstream of Don Pedro to match or exceed the maximum-controlled release level of approximately 15,000 cfs upstream of Modesto, and 25,000 cfs below the Dry Creek confluence, in order to grant Don Pedro Reservoir operators more flexibilities to reduce flood risk, increase water supply and address impacts caused by climate change in the San Joaquin Valley.</p>	<p>Tuolumne River, Tuolumne River Regional Park JPA, Agricultural Interests and other private landowners, Community Organizations and NGOs,</p>	<p>CA Grants, Habitat Conservation Fund, Proposition 1 Watershed Restoration Grant Program, Wildlife Conservation Board Public Access Program, Proposition 68 Wildlife Corridor and Fish Passage Program, Central Valley Tributaries Program</p>			

## 5 IMPLEMENTATION AND MAINTENANCE

Moving forward, the City will use the mitigation action table in the previous section to track the progress on the implementation of each project. Implementation of the plan overall is discussed in Section 6 in the Base Plan.

### 5.1 Incorporation into Existing Planning Mechanisms

The information contained within this plan, including results from the Vulnerability Assessment, and the Mitigation Strategy will be used by the City to help inform updates and the development of local plans, programs and policies. The City's Public Works Department may use the hazard information when implementing forestry, street, and solid waste division projects. The Utilities Department may utilize the hazard information when implementing water, wastewater reclamation, and environmental projects that are part of the City's Capital Improvement Program. For example, the City has several groundwater well improvement, water storage, and pump station projects underway or completed within the last year, based on inputs received from the City's LPT.

Similarly, the City's Community and Economic Development Department, including the Building Safety and Neighborhood Preservation Division (Building Division), Community Development Division, Economic Development, Land Development and Engineering (LDE), Planning Division, and Transportation Engineering and Design (TED) Division may utilize the hazard information when completing the comprehensive update to the City's Urban Area General Plan (Modesto 2050). The natural hazard information can directly inform the City's Vulnerability Assessment underway that looks at the potential impacts from flooding, extreme temperature, drought, and severe weather hazards, including how climate change may increase the threat and how the City can build long-term resiliency. The City's Community and Economic Development Department can also use the hazard information when reviewing a site plan or other types of development applications. The City will also incorporate this MJHMP into the Safety Element of their General Plan, as recommended by AB 2140 and as part of the current and comprehensive Urban Area General Plan update.

As noted in Section 6 of the Base Plan, the City of Modesto LPT representatives will report on efforts to integrate the hazard mitigation plan into local plans, programs and policies and will report on these efforts at the annual LPT plan review meeting.

### 5.2 Monitoring, Evaluation and Updating the Plan

The City will follow the procedures to monitor, review, and update this plan in accordance with Stanislaus County as outlined in Section 6 of the Base Plan. The city will continue to involve the public in mitigation, as described in Section 6.3 of the Base Plan. The Police Chief, Director of Community and Economic Development, and Battalion Chief will be responsible for representing the City in the County LPT, and for coordination with City staff and departments during plan updates. The City realizes it is important to review the plan regularly and update it every five years in accordance with the Disaster Mitigation Act Requirements as well as other State of California requirements.

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