



2025 Water Shortage Contingency Plan

Public Draft

JUNE 2026

CITY OF FRESNO





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Prepared by Water Systems Consulting, Inc



ACKNOWLEDGEMENTS

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ACRONYMS & ABBREVIATIONS

AMI	Advanced Metering Infrastructure
Annual Assessment	Annual Water Supply and Demand Assessment
City	City of Fresno
CWC	California Water Code
DPU	Department of Public Utilities
DRA	Drought Risk Assessment
DWR	California Department of Water Resources
FID	Fresno Irrigation District
FMC	Fresno Municipal Code
NO-DES	Neutral Output Discharge Elimination System
SWTF	Surface Water Treatment Facility
USBR	United States Bureau of Reclamation
UWMP	Urban Water Management Plan
WSCP	Water Shortage Contingency Plan

Introduction

This Water Shortage Contingency Plan (WSCP) is a strategic plan on how the City of Fresno (City) intends to respond to foreseeable and unforeseeable water shortages.

A water shortage occurs when the water supply available is insufficient to meet the normally expected customer water use at a given point in time. A shortage may occur due to a number of reasons, including water supply quality changes, climate change, drought, regional power outages, and catastrophic events (e.g., earthquake). Additionally, the State may declare a statewide drought emergency and mandate that water suppliers reduce demands. The WSCP serves as the operating manual that the City will use to prevent catastrophic service disruptions through proactive, rather than reactive, mitigation of water shortages.

This WSCP provides a process for an annual water supply and demand assessment and structured steps designed to respond to actual conditions. This level of detailed planning and preparation provides accountability and predictability to help the City maintain reliable supplies and reduce the impact of any supply shortages and/or interruptions.

This WSCP was prepared in conjunction with City's 2025 Urban Water Management Plan (UWMP) and is a standalone document that can be modified as needed. This document is compliant with the California Water Code (CWC) Section 10632 and incorporates guidance from the State of California Department of Water Resources (DWR) UWMP Guidebook.

Water purveyor planning for possible water supply shortages has become an increasingly important subject considering the drought conditions over the last several years. The City adopted its first WSCP in 1994 in response to the 1991 Assembly Bill 11X, which mandated that all water purveyors with more than 3,000 connections develop a WSCP. The WSCP was revised as part of the 2005 UWMP and adopted by the City in 2008. The WSCP was further refined in 2016 during preparation of the 2015 UWMP and was updated in 2021 as a standalone document, developed in parallel with the 2020 UWMP, and adopted in July 2021. This 2025 WSCP is still based on the original 1994 plan. The revisions are intended to meet the CWC requirements and streamline the plan's usefulness and enable the City to manage the necessary conservation measures to be enacted if a water shortage condition exists. The 2025 WSCP will be reviewed and adopted in conjunction with the 2025 UWMP.

The plan is intended to provide guidance, rather than absolute direction, for City action in response to water shortages and provide the City with options to responsibly manage water shortages.

The WSCP describes the following:

1. **Water Service Reliability Analysis:** Summarizes the City's water supply analysis and reliability and identifies any key issues that may trigger a shortage condition.
2. **Annual Water Supply and Demand Assessment Procedures:** Describes the key data inputs, evaluation criteria, and methodology for assessing the system's reliability for the coming year and the steps to formally declare any water shortage stages and response actions.
3. **Water Shortage Stages:** Establishes water shortage stages to clearly identify and prepare for shortages.
4. **Shortage Response Actions:** Describes the response actions that may be implemented or considered for each stage to reduce gaps between supply and demand.
5. **Communication Protocols:** Describes communication protocols under each stage to ensure customers, the public, and government agencies are informed of shortage conditions and requirements.
6. **Compliance and Enforcement:** Defines compliance and enforcement actions available to administer demand reductions.
7. **Legal Authority:** Lists the legal documents that grant the City the authority to declare a water shortage and implement and enforce response actions.
8. **Financial Consequences of WSCP Implementation:** Describes the anticipated financial impact of implementing water shortage stages and identifies mitigation strategies to offset financial burdens.
9. **Monitoring and Reporting:** Summarizes the monitoring and reporting techniques to evaluate the effectiveness of shortage response actions and overall WSCP implementation. Results are used to determine if shortage response actions should be adjusted or if efforts are successful and response actions should be reduced.
10. **WSCP Refinement Procedures:** Describes the factors that may trigger updates to the WSCP and outlines how to complete an update.
11. **Special Water Features Distinctions:** Identifies exemptions for ponds, lakes, fountains, pools, and spas, etc.
12. **Plan Adoption, Submittal, and Availability:** Describes the process for the WSCP adoption, submittal, and availability after each revision.

1.0 Water Service Reliability Analysis

This section is consistent with CWC Section 10632(a)(1) and describes the key findings of the water supply reliability analysis conducted pursuant to CWC Section 10635, which is presented in Section 7 of the City's 2025 UWMP. As part of the 2025 UWMP, water suppliers must perform long-term (2030-2050) water service reliability assessment to evaluate reliability under normal, single dry year, and five-year consecutive dry year periods and a short-term (2026-2030) Drought Risk Assessment (DRA) to evaluate reliability under a five-year consecutive dry year period. Water supply reliability reflects the City's ability to meet the water needs of its customers with water supplies under varying conditions. The analysis considers plausible hydrological and regulatory variability, infrastructure capacity, climate conditions, and other factors that affect the City's water supply and demand.

The City's current water supply portfolio includes groundwater from the Kings Subbasin, surface water from the Central Valley Project Friant Division through a contract with the United States Bureau of Reclamation (USBR), and surface water from the Kings River through a contract with Fresno Irrigation District (FID), as well as recycled water produced at the Fresno-Clovis Regional Water Reclamation Facility and North Fresno Water Reclamation Facility. The City manages the surface water supplies and groundwater conjunctively such that surface water supplies are used more heavily for direct use and recharge during wet periods and groundwater is used more heavily during dry periods. Over the long term, the City aims to maximize recharge to store water for future use and help groundwater levels recover. Key issues that may create a shortage condition include reduced surface water availability due to dry hydrologic conditions, reduction in groundwater due to contamination issues, or emergency conditions that reduce the City's water supply.

The water supply reliability analysis concluded that the City's supply portfolio is highly reliable and allows the City flexibility to use a majority of surface water when available in normal years and switch to a majority of groundwater in dry years, when surface water supplies are reduced. The City is projected to meet potable demands with its existing supplies in all year types through conjunctive use of its groundwater and the City is projected to recharge water in most years to help store water for dry years.

2.0 Annual Water Supply and Demand Assessment Procedures

As established by CWC Section 10632.1, urban water suppliers must conduct an Annual Water Supply and Demand Assessment (Annual Assessment) and submit an Annual Water Shortage Assessment Report to DWR by July 1 each year¹. The Annual Assessment is an evaluation of the short-term outlook for supplies and demands for the current year and one projected single dry year conditions to determine whether the potential for a supply shortage exists and whether there is a need to trigger a WSCP shortage stage, appropriate response actions, compliance and enforcement actions, and communication protocols. A single dry year is recommended to be the year that represents the lowest water supply available.

2.1 Key Data Inputs

Key data inputs and their sources for the Annual Assessments are summarized in Table 1, and described below.

Table 1. Key Data Inputs for the Annual Assessment

Key Data Input	Description	Source
Customer demands	Estimates for the current year unconstrained demand plus a modest growth factor.	Customer billing data, most recent UWMP projections, input from City staff.
Recharge demands	Estimates current year recharge demand.	Surface water allocations, historical recharge, groundwater levels.
State mandates	Reflects State orders and mandatory compliance with water use efficiency standards.	Executive orders from the governor, orders and policies from the State Water Resources Control Board, input from City staff, or other sources.
Surface water allocation	Reflects the City's available surface water supplies for treatment, recharge, and	Initial allocations from USBR and FID, typically available in April.

¹ For USBR contractors, the assessment is due by July 1 or within 14 days of receiving final USBR water allocation, whichever is later.

Key Data Input	Description	Source
	potential exchanges and transfers.	
Groundwater conditions	Reflects status of groundwater conditions.	Production data, static water levels, and input from City staff.
Infrastructure capacity	Reflects production and distribution capacity due to a variety of factors, including human-caused or natural catastrophic events.	Production data, well production capacity, wells impacted by contamination, surface water treatment facilities' capacity, distribution system constraints, and input from City staff.

2.1.1 Customer Demands

Upcoming year customer demands will be estimated based on the previous year's demand, with increases to address: (1) near-term projected growth of customers; (2) unconstrained water use if the previous year included any water use restrictions; and (3) potential water losses not accounted for in the previous year's demand.

2.1.2 Recharge Demands

Upcoming year recharge demands will be estimated by (1) availability of surface water not used at the surface water treatment facilities (SWTFs) and (2) projected availability of recharge basins.

2.1.3 State Mandates

The City has historically been required by the State to reduce demand regardless of supply reliability at the given time. As described previously, compliance with State mandates for water use efficiency can be declared during drought or in preparation for future droughts, such as in response to the governor's drought declarations in 2014 and 2022. The City may consider State mandates and mandatory compliance with water use efficiency standards in determining water shortage levels.

2.1.4 Surface Water

The City has contracts for surface water with USBR and FID. The available surface water is dependent on hydrology, and in dry years less surface water is available to the City. Final allocations from both USBR and FID are typically known in April of each year, following the rainy season. In April, the City works with FID to develop a delivery schedule of surface water supplies and submits it to USBR. The surface water allocation and delivery schedule will determine the City's operation of its SWTFs for the year, recharge

operations, and if it will engage in any exchanges or transfers of supplies. In dry years, when less surface water is available, the City will also plan for increased groundwater use to meet its demands.

2.1.5 Groundwater Conditions

Groundwater level and production trends will be compiled and considered by the City staff, or with a hydrogeologist, based on the following actions:

- Plot static groundwater levels on hydrographs to determine trends.
- Plot historic and projected production data to determine trends.
- Compare historic and projected groundwater levels against production data for average and dry years.

2.1.6 Infrastructure Capacity

Infrastructure capabilities and overall production will be analyzed to determine if a possible power outage or deficiency may occur or continue in the coming year due to a variety of factors, potentially including human-caused or natural catastrophic events. This analysis may include well replacement, evaluation of wells for possible contamination or impacts due to new regulations, SWTFs capacities, and other considerations.

2.2 Evaluation Criteria

Staff use the key data inputs to develop and compare supply and demand projections to determine if water shortage actions may be necessary. The supply projections will incorporate infrastructure constraints and an operational buffer factor of 10% will be added to the demand estimate to account for supply and demand projection uncertainties. The estimated amount of supply available versus the estimated demand will be compared with the water shortage condition triggers presented in Table 2. Various trigger conditions, which summarize specific evaluation criteria for each shortage level and can be used to determine a water shortage level, are described in the following sections. Triggers are based on current conditions, and the City will evaluate these triggers and modify them as needed.

A shortage emergency may be declared when it is demonstrated that conditions threaten the ability to provide water for public health, safety, and welfare of the community. Furthermore, compliance with State mandates for conservation can be declared during drought or in preparation for future droughts, such as in response to the governor's drought declarations in 2014 and 2022.

Short-term and long-term supply shortages may be caused by constrained production capacity or natural or human-caused catastrophic emergencies, such as power outages,

winter storms, wildfires, earthquakes, structural failures, contamination, and bomb threats. These types of emergencies may limit the City's immediate ability to provide adequate water service to meet the requirements for human consumption, sanitation, and fire protection. Impacts of such emergencies vary in duration. Thus, consumption reduction measures and prohibitions may differ for short-term and long-term conditions or shortages.

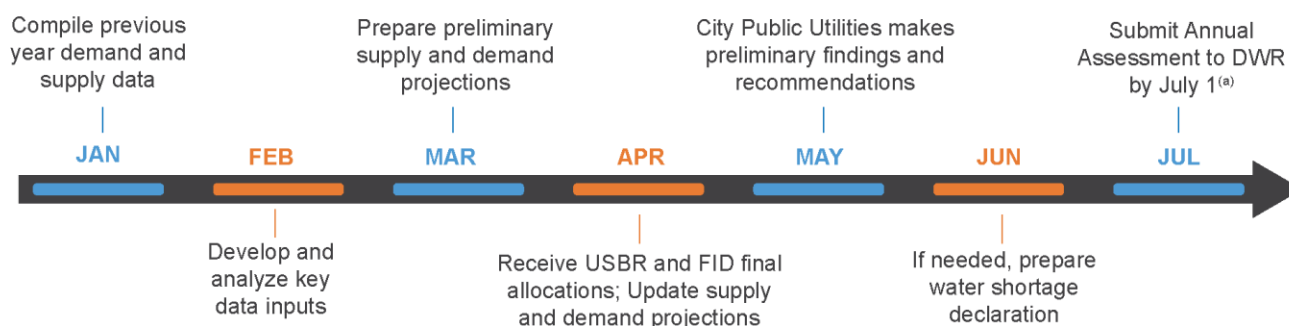
2.3 Annual Assessment Procedures

City staff will perform the Annual Assessment following initial allocations from USBR and initial projections for Kings River entitlements by FID, which is typically at the end of rainy season in April. The Annual Assessments are due to DWR by July 1 of each year². A preliminary annual assessment timeline is shown in Figure 1. The City may update the assessment after submission if key data inputs substantially change or other new information becomes available.

Steps to conduct the Annual Assessment are as follows:

1. Staff gathers the key inputs, compiles historical data, and analyzes potential supply and demand gaps.
2. Demand trends, water supply conditions, and production capacity are analyzed.
3. A hydrogeologist may be consulted to provide additional groundwater condition information.
4. City Public Utilities staff will review findings and, if necessary, determine a recommended level of conservation required at the implementation or termination of each stage that will then be brought to the City Manager or Mayor for approval.
5. The City Manager, or designee, will declare and implement the level of conservation required at the implementation or termination of each level, and the declaration shall remain in effect until the City Manager, or designee, so otherwise declares. If a conservation level declaration is made, the declaration shall be published at least once in a newspaper of general circulation.
6. The City will develop and/or implement appropriate communication protocols and applicable response actions.

² For USBR contractors, the assessment is due by July 1 or within 14 days of receiving final USBR water allocation, whichever is later.

Figure 1. Annual Assessment Approximate Timeline

^a For USBR contractors, the assessment is due by July 1 or within 14 days of receiving final USBR water allocation, whichever is later.

3.0 Water Shortage Stages

This section is consistent with CWC Section 10632(a)(2) and describes the City's water shortage levels. The City has established five water shortage stages, shown in Figure 2, along with a crosswalk to DWR's standardized six shortage levels. Shortage levels indicate the gap between supply and demand compared to normal-year conditions.

Figure 2. Water Shortage Stages Crosswalk (DWR Table 8-1R)

City of Fresno Shortage Stage	Percent Shortage Range		Standard WSCP Level	Percent Shortage Level
1	10%	→	1	10%
2	10 - 25%	→	2	20%
3	25 - 35%	→	3	30%
4	35 - 50%	→	4	40%
		→	5	50%
5	>50%	→	6	>50%

Table 2 lists the water shortage stages and the conditions that would trigger each stage. Any stage listed within the WSCP may be enacted by the City Manager, or designee, as deemed appropriate based on the water shortage condition.

Table 2. Water Shortage Contingency Plan Levels (DWR Submittal Table 8-1)

Shortage Level	Percent Shortage ^(a)	Water Shortage Condition
0		No water shortage condition. Corresponds with year-round water use measures listed in Section 4.1 of the City’s WSCP and demand reduction measures listed for “All” stages in Table 3.
1	0-10%	Stage 1 may be triggered by any of the following conditions: • The available water supplies for the next year are projected to be less than 100% of projected demand considering infrastructure constraints and an operational buffer. The available water supplies, infrastructure constraints, projected demand, and operational buffer will be estimated at least once per calendar year– and more often as appropriate - as part of the Annual Assessment. Section 2.0 of the City’s WSCP describes the key data inputs, evaluation criteria, and procedures for the annual assessment; or • After having been in a Stage 2 classification from drought conditions, the upcoming water year USBR and FID allocations results in normal-dry water year type^(b) or higher; or • After having been in a higher classification as a result of emergency, original trigger for a previous higher-stage classification has been rectified to a point that is consistent with the above conditions for this stage.
2	10-25%	Stage 2 may be triggered by any of the following conditions: • The available water supplies for the next year are projected to be less than 90% of projected demand considering infrastructure constraints and an operational buffer. The available water supplies, infrastructure constraints, projected demand, and operational buffer will be estimated at least once per calendar year – and more often as appropriate - as part of the Annual Assessment. Section 2.0 of the City’s WSCP describes the key data inputs, evaluation criteria, and procedures for the annual assessment; or • After having been in a Stage 3 classification from drought conditions, the upcoming water year USBR and FID allocations results in normal-dry water year type^(b) or higher; or • After having been in a higher classification as a result of emergency, original trigger for a previous higher-stage classification has been rectified to a point that is consistent with the above conditions for this stage.
3	25-35%	Stage 3 may be triggered by any of the following conditions: • The available water supplies for the next year are projected to be less than 75% of projected demand considering infrastructure constraints and an operational buffer. The available water supplies, infrastructure constraints, projected demand, and operational buffer will be estimated at least once per calendar year – and more often as appropriate - as part of the Annual Assessment. Section 2.0 of the City’s WSCP describes the key data inputs, evaluation criteria, and procedures for the annual assessment; or • After having been in a Stage 4 classification from drought conditions, the upcoming water year USBR and FID allocations results in normal-dry water year type^(b) or higher; or • After having been in a higher classification as a result of emergency, original trigger for a previous higher-stage classification has been rectified to a point that is consistent with the above conditions for this stage.
4	35-50%	Stage 4 may be triggered by any of the following conditions: • The available water supplies for the next year are projected to be less than 65% of projected demand considering infrastructure constraints and an operational buffer. The available water supplies, infrastructure constraints, projected demand, and operational buffer will be estimated at least once per calendar year – and more often as appropriate - as part of the Annual Assessment. Section 2.0 of the City’s WSCP describes the key data inputs, evaluation criteria, and procedures for the annual assessment; or • After having been in a Stage 5 classification from drought conditions, the upcoming water year USBR and FID allocations results in normal-dry water year type^(b) or higher; or • After having been in a higher classification as a result of emergency, original trigger for a previous higher-stage classification has been rectified to a point that is consistent with the above conditions for this stage.
5	>50%	Stage 5 may be triggered by any of the following conditions: • The available water supplies for the next year are projected to be less than 50% of projected demand considering infrastructure constraints and an operational buffer. The available water supplies, infrastructure constraints, projected demand, and operational buffer will be estimated at least once per calendar year – and more often as appropriate - as part of the Annual Assessment. Section 2.0 of the City’s WSCP describes the key data inputs, evaluation criteria, and procedures for the annual assessment.

^a Shortage levels indicate the gap between supply and demand compared to normal-year conditions. The Annual Assessment incorporates a 10% buffer on top of projected demands for conservative planning.

^b Water year types are defined in the 2006 San Joaquin River Restoration Settlement Agreement for USBR allocations and are characterized in Section 6.3 of the City’s 2025 UWMP.

4.0 Shortage Response Actions

The Fresno Municipal Code (FMC) contains sections on water conservation that are to take place under normal water supply conditions. Regulations in place under normal water supply conditions encourage smart water use and help the City manage its water supply. Some of those regulations include year-round outdoor water schedules; turf type restrictions; turf irrigation methods; and prohibition of willful or negligent water wasting, flood irrigating, washing hardscape with potable water, and frequent draining of pools. Additional details of these regulations can be found in FMC Section 6-520(a) (Attachment 1). These restrictions are mandated year-round by the City and must be observed. In addition to the normal restrictions on water usage, the City developed shortage response actions to implement during a water shortage at the City level and consumer level in order to reduce demands. The restrictions during a shortage are described in Section 4.2 and detailed in Table 3.

In the event of a potential water shortage, the City will evaluate the cause of the shortage to help inform which response actions should be implemented. Depending on the nature of the water shortage, the City can elect to implement one or several response actions to mitigate the shortage and reduce gaps between supply and demand. The City has identified actions that fall within the demand reduction, supply augmentation, operational changes, and additional mandatory restrictions, as stated by DWR. It should be noted that all prohibitions listed for Stage 1 will apply to Stage 2 and, likewise, all restrictions that apply to Stage 2 will apply to Stage 3 and so on, until Stage 5 is reached. Also, due to the City's diverse supply portfolio, Stage 1 imposes only voluntary consumer reductions, while Stages 2–5 all include mandatory reduction actions. If necessary, the City may adopt additional actions not listed here in extreme circumstances.

4.1 Year-Round Measures

FMC Section 6-520(a) lists actions that are prohibited at all times, whether or not there is a shortage condition and include:

- Use of potable water to irrigate or water outdoor landscaping in a manner that causes runoff.
- Keep, maintain, operate, or use any water connection, hose, faucet, hydrant, pipe, outlet, or plumbing fixture which is not tight and free from leakage.
- Willfully or negligently waste water as defined in FMC Section 6-501.
- Sprinkle or irrigate any yard, ground, premise, or vegetation except as set forth in the City's Outdoor Water Use Schedule.

- Sprinkle or irrigate any yard, ground, premise, or vegetation, unless the watering device used is controlled by a shutoff device or a person is in immediate attendance of the hose or watering device.
- Use of potable water to wash sidewalks, walkways, driveways, parking lots, or other hard-surfaced areas, except where necessary for public health or safety.
- Use potable water in a fountain or other decorative water feature, except where the water is part of a recirculating system.
- Irrigate ornamental turf on public street medians with potable water, except where the turf serves a community or neighborhood function, there is incidental irrigation by an irrigation system designed to irrigate trees, or the turf is irrigated with recycled water.
- Irrigate outdoor landscapes with potable water during and within 48 hours after measurable rain.
- Serve drinking water other than upon request in eating or drinking establishments, including but not limited to, restaurants, hotels, cafes, cafeterias, bars, or other public places where food or drink are served or purchased.
- Irrigate landscapes outside of newly constructed homes and buildings in a manner inconsistent with regulations or other requirements established by the California Building Standards Commission and the Department of Housing and Community Development.
- Automatically change towels and linens in hotels and motels daily. Operators of hotels and motels shall provide guests the option of choosing not to have towels and linens laundered daily.
- Drain swimming pools more than once every three years, except as necessary to complete structural repairs or to comply with public health standards, as determined by the County Health Officer.
- Fill new or refurbished swimming pools without obtaining a pool fill permit from the City.
- Refill (top off) established swimming pools except during times when outdoor water use is allowed at the property address pursuant to the Outdoor Water Use Schedule.
- Use potable water in a manner that is prohibited by or inconsistent with applicable federal or state regulations or other requirements not specifically identified in FMC Section 6-520(a).

The City may update these year-round restrictions in the future as needed. For the latest permanent restrictions refer to FMC Section 6-520(a) (Attachment 1).

4.2 Demand Reduction

The City has identified a variety of demand reduction actions to offset supply shortages. Demand reduction measures are strategies intended to decrease water demand to close the gap between supply and demand. Demand reduction actions available to the City that may be considered during water shortage conditions are summarized in Table 3. Although

it is difficult to estimate the volume of savings for each action, the City expects to meet required reductions through a combination of response actions in conjunction with outreach and communication efforts to the extent necessary to mitigate any impacts from a water shortage.

Table 3. Demand Reduction Actions by City (DWR Submittal Table 8-3)

Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?^(a)	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement^(b)
All	Expand Public Information Campaign	Not Applicable	Community outreach includes classroom presentations, outreach educational information, and water tours. Increase communication as drought stages increase.	Not Applicable
All	Improve Customer Billing	Not Applicable	Water bills show customer usage vs. average usage for the customer category. Increase customer notifications of high water use based on advanced metering infrastructure data as drought stages increase.	Not Applicable
All	Offer Water Use Surveys	Not Applicable	Use water leak surveys with all community members.	Not Applicable
All	Provide Rebates for Landscape Irrigation Efficiency	Not Applicable	The City offers rebates for micro-irrigation conversions, soil moisture sensors, smart irrigation controller, and rain sensors to improve efficiencies.	Not Applicable
All	Provide Rebates for Turf Replacement	Not Applicable	The City provides rebates for community members who wish to replace their turf with a drought-resistant garden.	Not Applicable
All	Provide Rebates on Plumbing Fixtures and Devices	Not Applicable	The City offers rebates on a variety of high-efficiency plumbing fixtures, such as washers, toilets, and urinals.	Not Applicable
All	Decrease Line Flushing	Not Applicable	The City uses NO-DES for regular pipe flushing to eliminate discharging water.	Not Applicable
All	Reduce System Water Loss	Not Applicable	The City has a comprehensive system water loss reduction program in place. Increase efforts to correct water system losses as drought stages increase.	Not Applicable
1	Decrease Line Flushing	0 to 100% of shortage gap	For dead-end flushing where the NO-DES truck cannot be used, reduce normal flushing time.	Not Applicable
1	Increase Water Waste Patrols	0 to 100% of shortage gap	Increase monitoring of AMI reporting and communication with customers; Conduct patrols based on public input.	Not Applicable
1	Landscape — Limit landscape irrigation to specific times	0 to 100% of shortage gap	Voluntary limits: Summer: three days/week Winter: one day/week	No
2	Landscape — Limit landscape irrigation to specific times	0 to 100% of shortage gap	Summer: three days/week Winter: one day/week	Yes
3	Landscape — Limit landscape irrigation to specific times	0 to 100% of shortage gap	Summer: two days/week Winter: one day/week	Yes
4	Landscape — Limit landscape irrigation to specific times	0 to 100% of shortage gap	Summer: one day/week Winter: one day/week	Yes
4	Other — Prohibit use of potable water for construction and dust control	0 to 100% of shortage gap	Prohibit use of potable water for construction, compaction, dust control, street or parking lot sweeping, and building washdowns where non-potable or recycled water is sufficient.	Yes
4	Other — Prohibit vehicle washing except at facilities using recycled or recirculating water	0 to 100% of shortage gap	Prohibit washing cars, boats, trailers, aircraft, or other vehicles, except at commercial or fleet vehicle-washing facilities using water recycling equipment.	Yes

Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap? ^(a)	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement ^(b)
4	Pools and Spas - Require covers for pools and spas	0 to 100% of shortage gap	Require covers for swimming pools when not in use.	No
4	Other	0 to 100% of shortage gap	Prohibit use of potable water for sewer system maintenance or fire protection training without prior approval by the City manager.	Not Applicable
4	Other	0 to 100% of shortage gap	Prohibit use of outdoor misters.	No
5	Landscape — Prohibit all landscape irrigation	0 to 100% of shortage gap	Prohibit outdoor irrigation year-round.	Yes
5	Moratorium or Net Zero Demand Increase on New Connections	0 to 100% of shortage gap	The City will temporarily limit or ban new water service connections within the service area.	Not Applicable

^a Reduction in the shortage gap is estimated and can vary significantly.

^b Refer to Section 6.0 for Penalties for Water Wastage.

4.3 Supply Augmentation

Given the consistent supply of groundwater through pumping, the City has no immediate plan to augment supply. However, the City could purchase additional USBR or FID surface water, if available. Also, the Cities of Fresno and Clovis have an agreement for interconnection of their potable water systems to provide service during emergencies and other times of hardship in either community. Although these options are discretionary and quantifying their ability to reduce the shortage gap can vary significantly, they are readily available if needed, as indicated in Table 4.

Table 4. Supply Augmentation & Other Actions (DWR Table 8-2R)

Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier	How much is this going to reduce the shortage gap?	Additional Explanation or Reference
1 to 5	Transfers	As Available	Purchase or exchange available USBR or FID surface water
1 to 5	Other Purchases	As Available	Interconnection with City of Clovis for use in emergencies

4.4 Operational Changes

Operational changes to address a short-term water shortage may be implemented based on the severity of the reduction goal. The City can maximize its supply by implementing operational strategies and demand reduction measures. As part of the Annual Assessment process, the City will consider their operational procedures at the time of a shortage to identify changes that can be implemented to address water shortage on a short-term basis, including but not limited to:

- Utilization of a SWTF to treat pumped groundwater to offset lack of surface water supply.
- Expansion of public information campaign to educate and inform customers of the water shortage emergency and required water savings.
- Decrease line flushing to only on a compliant basis strictly using the currently operational NO DES truck.
- Use water patrols and increase frequency of meter reading by recruiting staff from other departments if necessary.
- Offer water use surveys.
- Prohibit any new permits for hydrant construction or temporary construction meters.

- Monitoring construction meters and fire hydrant meters for efficient water use in the event that a meter identified wastes water.
- Moratorium on issuing any new building permit unless the: (a) Project is found by the City Manager, or designee, to be necessary for public health and safety. (b) Project will use recycled water for construction. (c) Project will not result in a net increase in non-recycled water use. (d) Project has adequate Conservation Offsets.
- Suspending the consideration of annexation to its service area unless the annexation increases the water supply available more than the anticipated demands of the property to be annexed.
- Reducing overhead in the short-term and mid-term by deferring non-critical Capital Improvement Plan projects and major maintenance expenditures, and in the long-term by adjusting operational and staffing levels and retail water rate structures to incorporate the reality of lower retail water sales than previously anticipated.
- Decrease in the level or, if need be, even a total interruption in the expenditures for the agency's facility replacement program. Non-critical replacement projects will have little or no impact on the agency or its customers and would only extend the master planned replacement schedule.

4.5 Emergency Response Plan

In addition to responding to drought conditions, the City's WSCP can be used to respond to emergency or catastrophic conditions that impact the availability of the City's water supplies, and/or the ability to deliver water within the City's service area. Potential events are listed below:

- Loss of surface water supply
- Loss of groundwater supply
- Area-wide electrical power failure
- Natural disaster — earthquake or flood

In the event of a supply interruption, there are several measures that could be taken that would mitigate the overall negative impacts of a water shortage. The following discussion indicates possible events and actions to maintain water service to the service area.

The City has an agreement with the City of Clovis that discusses an intertie system between the two cities that could provide service during emergencies and other times of hardship in either community. The agreement covers interconnections, including apportionment of capital costs, at two locations: Leonard Avenue at the Gould Canal alignment and Behymer Avenue at Willow Avenue. The Leonard interconnection was constructed and remains in place for emergency uses through manual operation. The agreement also provided for temporary deliveries from Fresno to northern Clovis through the Behymer connection through 2015. However, the Behymer interconnection has yet to be constructed.

The City also cooperates with the County of Fresno's Office of Emergency Services during an emergency. The goal during any emergency scenario is to maintain water supply such that the health and safety of the community is protected.

In the event of contamination of either the surface or ground water supplies, the non-impacted water supply could be used more heavily or the intertie with the City of Clovis could be activated. Additionally, overall demand reduction and the use of other wells or treated surface water would help meet demands.

If a regional power outage were to occur, the City could use backup power generators to operate wells. This measure, in conjunction with demand reduction, could supply sufficient water for health and safety purposes. The City has a number of backup power generators installed at wells, SWTFs, and tank sites, and is taking efforts to add additional backup generators.

If a natural disaster occurs, in addition to the actions discussed above, the City will isolate any areas of the system that were compromised for emergency repairs and, potentially, use the intertie with the City of Clovis. Implementing the WSCP could also occur to reduce demands.

For more information on actions during an emergency, refer to the City of Fresno's Risk and Resilience Assessment Report finalized in September 2020 (AARC Consultants, LLC, 2020) and the City of Fresno Emergency Response Plan finalized in March 2020 (AARC Consultants, LLC, 2020).

4.6 Seismic Risk Assessment and Mitigation Plan

Refer to the Fresno County Multi-Jurisdictional Hazard Mitigation Plan implemented in May 2024, Annex E: City of Fresno included as Attachment 2, for appropriate Seismic Risk Assessment and Mitigation Plan procedures.

4.7 Shortage Response Action Effectiveness

The City of Fresno has assessed its overall water reduction by evaluating historic water usage trends with measures implemented to meet the SBX7-7 2020 target in conjunction with the American Water Works Association water loss calculator. See Chapter 4 of the 2025 UWMP, respectively, for additional information.

The overall decrease of water use per capita and compliance with the 2020 per capita water use target indicate that the reduction measures have been effective in the community. All the City's customers are metered using advanced metering infrastructure (AMI) and the City will monitor actual water use and reductions in water during enacted shortage levels compared to normal year conditions. This data allows the City to

determine the effectiveness of the implemented shortage response actions. If reduction goals are not met, the City Manager, or designee, can make the necessary decisions for corrective action to be taken.

5.0 Communication Protocols

The City's Department of Public Utilities (DPU) currently has a contract with Bodewell Group, formerly known as Southwest Strategies Group, to manage stakeholder engagement and public education for its customers. Bodewell Group's services include strategic communications and integrated planning, messaging frameworks and narrative development, community outreach, multicultural and multilingual engagement, traditional and public relations and media relations, and crisis communications and rapid response. The City also has a communications office, whose purpose is to communicate water shortage procedures or general utility information effectively and efficiently to customers.

During normal supply conditions, the Water Division implements informational campaigns to customers that emphasize user-level changes in water use and overall mindfulness of water waste while promoting voluntary conservation. Over the past few years, DPU has increased use of social media to communicate with customers quickly and organically. The City uses Facebook, X, and Instagram to promote water saving tips, notify of shortage conditions, and spotlight DPU employees to foster a sense of community centered around the water supply. The City strives to be proactive in communicating work strategy and conservation efforts with customers.

This WSCP includes a staged plan to communicate the declaration of a shortage stage, inform restrictions, and provide updates during a water shortage emergency. A summary of actions the City could potentially take during a specific shortage stage is outlined in Table 5.

Table 5. Communication Protocol During Water Shortage Conditions

Shortage Stage	Action
1	Information posted on the City's website
1	Social media posts (Facebook, X, Instagram, and Nextdoor)
2	Information included in utility bill inserts on a regular basis
2	Promotion of rebates and water conservation services
2	Letters, postcards, and flyers mailed to customers impacted by water use regulations
2	Targeted outreach and technical assistance to highest water users in each use class
2	Engage City council members with resources to share with constituents
3	Increased paid advertising — print, online, radio, TV, streaming, social media, etc.
3	Messaging printed directly on utility bills
3	Press releases to local media (online and print newspapers, TV, radio, etc.)
3	Assembly and promotion of the speaker's bureau for water shortage presentations for neighborhood groups, gardening clubs, homeowners' associations, churches, senior centers, neighborhood associations, business associations, community groups, property management companies, etc.
4	Increased coordination with the local landscaping industry, including water shortage information in their newsletters, publications, and facilities; local wholesale and retail nurseries; and irrigation supply stores
4	Signage posted at nurseries and irrigation supply stores
4	Outreach materials and drought notices mailed to the hospitality industry, including restaurants and lodging

Note: If a water shortage progresses through multiple stages all measures in the previous stage(s) are implemented in addition to current stage actions.

6.0 Compliance and Enforcement

The City has penalties for violation of the water use restrictions in Table 3. The City tracks customer usage through AMI in order to enforce water wastage during shortage conditions as detailed in Section 9.0. However, it should be noted that currently, fines cannot be imposed on AMI meter data alone. The fines are noted in Table 6. Penalties for water waste are based on FMC, Section 6-520(e), Section 6-522(g), and the City's Master Fee Schedule.

Table 6. Penalties for Water Wastage

Incident Month^(a)	Penalty and Fine
1	\$0 – Issued a Notice of Water Waste
2	\$25
3	\$50
4-12	\$100
6	If a customer has more than six incident months of water wastage within a one-year period, the City may implement any or all of the following measures: • Require the customer to get a landscape evaluation, lawn water audit, and water budget, as appropriate, in order to learn efficient water use. This work shall be completed at the customer's expense by landscape irrigation auditors certified by the Irrigation Association. • Installation by the City of flow restrictors or termination of water service. • Require a customer to repair any defects in their watering system within 14 days of notice by the City.

Note:

^a Number of incident months are based on a calendar year.

7.0 Legal Authority

CWC Section 375 provides the City with the statutory authority to adopt and enforce water conservation restrictions, and CWC Sections 350 et seq. authorize the City to declare a water shortage emergency and impose water conservation measures when it is

determined that the City may not be able to satisfy ordinary demands without depleting supplies to an insufficient level.

If necessary, the City will declare a water shortage emergency in accordance with CWC Chapter 3 (commencing with Section 350) of Division 1. Once having declared a water shortage, the City is provided with broad powers to implement and enforce regulations and restrictions for managing a water shortage. For example, CWC section 375(a) provides the following:

“Notwithstanding any other provision of the law, any public entity which supplies water at retail or wholesale for the benefit of persons within the service area or area of jurisdiction of the public entity may, by ordinance or resolution adopted by a majority of the members of the governing body after holding a public hearing upon notice and making appropriate findings of necessity for the adoption of a water conservation program, adopt and enforce a water conservation program to reduce the quantity of water used by those persons for the purpose of conserving the water supplies of the public entity.”

Water Code Section 375(a). CWC Section 375(b) grants the City with the authority to set prices to encourage water conservation.

Under California law, including CWC Chapter 3.3 and Chapter 3.5 of Division 1, Parts 2.55 and 2.6 of Division 6, Division 13, and Article X, Section 2 of the California Constitution, the City is authorized to implement the water shortage actions outlined in this WSCP. Prior to enacting a shortage level, the resolution providing the Council with authority to enact each level of the WSCP will be adopted. Resolutions to enact the WSCP can be adopted at any meeting of the City Council. The resolution providing the City Manager, or designee, with authority to enact each stage of the WSCP is included in Attachment 3.

The City shall also coordinate with any city or county within which it provides water supply services, as listed below, for the possible proclamation of a local emergency under California Government Code, California Emergency Services Act (Article 2, Section 8558).

8.0 Financial Consequences of WSCP Implementation

This section is in accordance with CWC Section 10632(a)(8) and describes the financial consequences of implementing the WSCP and potential mitigation strategies. The City anticipates reduced revenue while implementing the WSCP because of decreased water use by its customers and additional costs associated with implementing water use restrictions and associated reduction actions. The incurred cost may vary depending on the shortage stage and duration of the water shortage emergency. The cost of compliance may be tracked when a shortage is declared. The City may track the staff time and resources used to implement the WSCP, including reduced revenue, implementation and enforcement of shortage response actions, and communication and outreach efforts. Impacts of implementing the WSCP include:

- Impact of quantity of water sales on revenue.
- Increased staff, salaries, and overtime required for implementing and enforcing restrictions.
- Increased costs of new supplies, transfers, or other exchanges.

The City's mandatory conservation targets can result in reductions in water sales; however, associated revenue reductions may be proportionally lower due to the City's two-component water rate structure, which includes a fixed water meter service charge for all service connections and a volumetric water quantity charge. Because a portion of revenues is fixed, overall revenue impacts are typically less than the total reduction in water use. In general, revenue impacts identified in the WSCP would be offset through a combination of the following:

- An increase in water commodity and service charges.
- A reduction in annual operating expenses due to decreased demands.
- Reserves currently earmarked for long range capital.
- General tax fund revenues currently earmarked for future capital improvements.

Methods to mitigate revenue/expenditure impacts are discussed in detail below.

8.1 Drought Rate Structures and Surcharges

At present, the City does not have in place a drought rate structure. The City has contracted with a rate consultant to review existing water rates and, if appropriate, develop new future water rates. The City's is not currently considering a drought rate structure.

8.2 Use of Financial Reserves

The City of Fresno Water System maintains two reserve funding sources that can be used to meet a portion of the utility’s revenue requirements during emergency or drought conditions. They are as follows:

- **Water Operating Reserves** – This is cash set aside in the Water Enterprise Fund that provides a “rainy day savings account” for unexpected cash flow shortages and large, unexpected expenses or losses. Normally, these reserves are not intended to be used to make up income shortfalls. However, in an emergency situation, they can be transferred to the Water Rate Stabilization Fund (see below) for transfer back to the Water Enterprise Fund to meet revenue requirements, including debt coverage ratios.
- **Water Rate Stabilization Fund** – Indentures from previous bond issuances required the establishment of the Water Rate Stabilization Fund. The purpose of the Rate Stabilization Reserve is to maintain a prescribed stable balance in reserve as a means to mitigate future rate increases to customers and to be consistent with bond covenants. These funds can be drawn on to meet a portion of the utility’s revenue requirements through unexpected low-revenue periods and may be applied to debt coverage ratio calculations to help avoid technical default of bond covenants and loan agreements. The following restrictions shall apply to this reserve account: 1) only current system excess revenues may be deposited into these accounts; and 2) use of these funds is limited to only operations and maintenance related expenses and not capital improvements

In addition, the City maintains funding in the Emergency Reserve Fund for the purpose of meeting unforeseen emergencies (see Section 1212 of the City’s Charter for more information). This funding may be used by an affirmative vote of at least five members of the City Council upon presentation of a statement declaring the reason for use of the funding. This funding would be used only if the Water System reserves were insufficient to meet revenue requirements.

8.3 Other Measures

If the funding mentioned above is not sufficient to compensate for loss of revenue during a water shortage, the City may temporarily suspend components of its operations and maintenance activities.

9.0 Monitoring and Reporting

As described in Section 2.0, the City will track its supplies and project demands annually as part of the Annual Assessment, and, if conditions described in Table 2 are projected,

the City will enact its WSCP. Monitoring demands is essential to ensure the WSCP response actions are adequately meeting reductions and decreasing the supply/demand gap. This will help to analyze the effectiveness of the WSCP or identify the need to activate additional response actions.

The City currently has AMI technology to monitor customer water usage, which the City can use to enforce demand reduction measures and restrictions. The AMI system is currently set up to monitor and enforce outdoor watering restrictions. The program monitors customer meter flows against an “excessive use” flowrate, which will vary based on the WSCP stage. The system flags customer meters exceeding the excessive use flowrate during a day/time outside of permitted outdoor watering hours as excessive use and an incident of water waste. If a customer has one or more incidents of water waste during a month, the customer shall be issued a Notice of Water Waste and, if applicable, be charged fines and penalties. The City may expand this monitoring program in the future to monitor other uses beyond outdoor watering restrictions.

The City can also use the detailed water usage data to monitor customers’ response and demand reduction due to restrictions for each stage in the WSCP. The many restrictions and prohibitions assigned to each stage in Table 3 are inherently flexible so the City can implement certain the restrictions, monitor customer usage, and implement additional restrictions if the demand reductions are not sufficient to close the supply and demand gap. The City also intends to provide reporting to the State based on forthcoming regulations for monthly reporting of water production and other water uses, along with associated enforcement metrics.

10.0 WSCP Refinement Procedures

The City intends to use this WSCP as an adaptive management plan to respond to foreseeable and unforeseeable water shortages. The WSCP is used to provide guidance to the City’s governing body and staff and the public by identifying response actions to allow for efficient management of any water shortage with predictability and accountability. To maintain a useful and efficient standard of practice in water shortage conditions, the requirements, criteria, and response actions need to be continually evaluated and improved on to make sure the WSCP provides the tools to maintain reliable supplies and reduce the impacts of supply shortages.

This 2025 WSCP reflects the latest analysis of the City’s water supply portfolio in relation to demand and updates the percentage reduction stages to better align with the supply shortages that trigger each stage. This is a process that should be reevaluated annually

and updated as necessary. Potential changes to the WSCP that would warrant an update include any changes to shortage level triggers, changes to the shortage level structure, and changes to the response actions. Any prospective changes to the WSCP would need to be presented at a public hearing; staff would obtain any comments and adopt the updated WSCP. The steps to formally amend the WSCP are discussed in Section 12.0.

Potential refinements will be documented and integrated into the next WSCP update. If new response actions are identified by staff or the public, these could be advertised as voluntary actions until they are formally adopted as mandatory.

11.0 Special Water Feature Distinction

CWC Section 10632 (b) requires that suppliers analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas, as defined in subdivision (a) of Section 115921 of the Health and Safety Code. As listed in Table 3 and Section 4.1, there are separate requirements for decorative water features — including decorative fountains, lakes, or ponds — and for pools and spas. The City has separate response actions, enforcement actions, and monitoring programs for both decorative water features and pools and spas. Non-pool or non-spa water features may use or be able to use recycled water, whereas pools and spas must use potable water for health and safety considerations. Limitations to pools and spas may require different considerations compared to non-pool or non-spa water features.

12.0 Plan Adoption, Submittal, and Availability

This WSCP update was prepared in tandem with the 2025 UWMP. The 2025 UWMP and WSCP were made available for public review in June 2026, and the City held a public hearing and adopted the 2025 WSCP on June 25, 2026. A copy of the published Notice of Public Hearing is included as Appendix J of the 2025 UWMP and a copy of the WSCP adopting resolution is included in Attachment 3. Before the public hearing, notices were published notifying the public of the date and time of the hearing.

Once the 2025 WSCP has been adopted, a copy will be submitted to DWR, the State Library, and the County of Fresno. Also, a hard copy will be made available for public reference at the City of Fresno Department of Public Utilities office at City Hall (located at

2600 Fresno Street) and the Water Division office (located at 1910 E. University Avenue). Additionally, an electronic copy will be uploaded to the City of Fresno website and made available for public reference.

Based on DWR's review of the WSCP, the City will make any amendments to its adopted WSCP, as required and directed by DWR. If the City revises its WSCP after the UWMP is approved by DWR, then an electronic copy of the revised WSCP will be submitted to DWR within 30 days of its adoption.

References

AARC Consultants, LLC. (2020). *City of Fresno Department of Public Utilities Risk and Resilience Assessment for the America's Water Infrastructure Act 2018*. Fresno, California.

AARC Consultants, LLC. (2020). *City of Fresno Water Division All Hazards Emergency Response Plan*.

Attachment 1 City of Fresno Municipal Code Chapter 6-520

SEC. 6-520. - WATER CONSERVATION.

- (a) In the use of potable water supplied by the city, no customer shall do or permit any of the following:
- (1) Use potable water to irrigate or water outdoor landscaping in a manner that causes runoff such that water flows onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots or structures,
 - (2) Keep, maintain, operate, or use any water connection, hose, faucet, hydrant, pipe, outlet, or plumbing fixture which is not tight and free from leakage,
 - (3) Willfully or negligently waste water,
 - (4) Flood any part of the premises of another,
 - (5) Sprinkle the premises of another so as to prevent the normal use thereof or unreasonably wet objects thereon which should not be subjected to a spray of water except as naturally caused by the elements or by action of the owner of the object,
 - (6) Sprinkle or irrigate any yard, ground, premise, or vegetation except as set forth in the City's Outdoor Water Use Schedule,
 - (i) Annual Exemptions. The following properties may submit an application for a one-year exemption to the Outdoor Water Use Schedule in effect at the time of the application:
 - a. Properties with multiple addresses, and
 - b. School and park facilities, and
 - c. Properties without street addresses.

The owners of such properties shall submit a proposed modified Outdoor Water Use Schedule in writing to the Director or designee for approval or modification. The Director may approve a modified Outdoor Water Use Schedule for with more frequent watering or different watering days than allowed by the Outdoor Water Use Schedule in effect at the time the application for an exemption is submitted for consideration. If the Director determines the proposed exemption will adversely impact system water pressures in the service area, the proposed exemption will be denied. All Annual Exemptions approved by the Director shall automatically expire on December 31 of each year, and the property owners must re-apply for an exemption to the Outdoor Water Use Schedule.

- (ii) Short-term Exemptions. The following properties may submit an application for an exemption from the Outdoor Water Use Schedule for a specific time period not to exceed one month.
 - a. Properties with new lawns not yet established.
 - b.

Properties seeking to use water for a bona fide use, such as solar panel cleaning or other use necessary for health or preservation of property.

The owners of such properties shall submit a proposed modified Outdoor Water Use Schedule in writing to the Director or designee for approval or modification no less than 48 hours before the proposed non-compliant water usage. The Director may approve a modified Outdoor Water Use Schedule that may provide for more frequent outdoor water use or different outdoor water use days than allowed by the Outdoor Water Use Schedule in effect at the time the application for an exemption is submitted for consideration. If the Director determines the proposed exemption will adversely impact system water pressures in the service area, the proposed exemption will be denied. All Short-term Exemptions approved by the Director shall automatically expire on the date set forth on the Short-Term Exemption permit.

- (7) Sprinkle or irrigate any yard, ground, premise, or vegetation unless the watering device used is controlled by an automatic shut-off device, or a person is in immediate attendance of the hose or watering device,
- (8) Wash any privately owned motor vehicle, trailer, or boat except from a bucket or in a commercial car wash, provided a hose equipped with a shut-off nozzle may be used for a quick rinse without causing water to flow onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots, or structures,
- (9) Wash or rinse with a hose or watering device any sidewalk, driveway, parking area, tennis court, patio, or any other exterior paved area, except for public health and safety reasons at public gathering places, or
- (10) Use potable water in a fountain or other decorative water feature, except where the water is part of a recirculating system.
- (11) Irrigate ornamental turf on public street medians with potable water, except where:
 - (i) The turf serves a community or neighborhood function, including but not limited to, recreational uses and civic or community events;
 - (ii) The turf is irrigated incidentally by an irrigation system primarily intended to irrigate trees;
 - (iii) The turf is irrigated with recycled water.

This prohibition does not include trees and shrubs on public medians, which may be irrigated.

- (12) Irrigate outdoor landscapes with potable water during and within 48 hours after measurable rainfall.
- (13) Serve drinking water other than upon request in eating or drinking establishments, including but not limited to, restaurants, hotels, cafes, cafeterias, bars, or other public places where food or drink are served or purchased.

- (14) Irrigate landscapes outside of newly constructed homes and buildings in a manner inconsistent with regulations or other requirements established by the California Building Standards Commission and the Department of Housing and Community Development.
 - (15) Automatically change towels and linens in hotels and motels daily. Operators of hotels and motels shall provide guests the option of choosing not to have towels and linens laundered daily. The hotel or motel shall prominently display notice of this option in each guestroom using clear and easily understood language.
 - (16) Drain swimming pools more than once every three years, except as necessary to complete structural repairs or to comply with public health standards, as determined by the County Health Officer. Residents with private swimming pools shall file a written application for a permit with the City of Fresno Water Division at least 48 hours prior to draining the pool. Any customer whose swimming pool is drained by order of the Department of Health for failure to maintain it properly will also be issued a notice of violation of the City of Fresno Municipal Code. The draining of pools for reasons of health and safety hazards as determined by the City of Fresno Water Division and/or the Department of Health is permitted. The application shall include the results of a pool water test conducted by an independent testing organization which shows a cyanuric acid level above 100 parts per million, total dissolved solids over 2,500 parts per million, or calcium over 450 parts per million, or stating the nature and duration of repairs to be made and the date on which the pool will be drained.
 - (17) Fill newly constructed or refurbished swimming pools without a pool fill permit from the City of Fresno Water Division.
 - (18) Refill (top off) established swimming pools except during times when outdoor water use is allowed at the property address pursuant to the Outdoor Water Use Schedule.
 - (19) Use potable water to irrigate or water outdoor landscaping in a manner that is prohibited by or inconsistent with any Federal or State regulations or other requirements not specifically identified in this section.
- (b) Notwithstanding the foregoing, drip irrigation of community and residential fruit and vegetable gardens and fruit trees is permitted any day of the week; for this subsection, "drip irrigation system" means a non-spray, low-pressure, and low volume irrigation system in good working order utilizing emission devices with a flow rate of less than four gallons per hour, designed to slowly apply small volumes of water at or near the root zone of plants, when used primarily for irrigation of fruit and vegetable gardens and fruit trees; should any city water customer be cited for excessive water use, the customer may contact the Water Division and request an exemption from the Outdoor Water Use Schedule for a home or community garden that is irrigated with a drip irrigation system. Upon being contacted, the Water Division will schedule a visit to the

subject property to inspect the garden and the drip irrigation system used to irrigate the garden. The Water Division shall grant an exemption for home or community garden with the following conditions:

- (1) The property must limit water use to an amount equal to, or less than, the average monthly water use for the single-family residential customer class. The monthly average water use for the single-family residential customer class is printed on monthly utility bills issued by the City.
 - (2) The drip irrigation system must be in good working order with no leaks, line breaks, or other deficiencies that will contribute to water waste. Exemptions shall be withheld until corrective action is taken to address system deficiencies.
 - (3) The drip irrigation system must be used primarily for the home or community garden, and not for other landscape on the property- Exemptions shall be withheld until the drip irrigation system for the home or community garden can be isolated from other landscape on the property.
 - (4) No flood irrigation will be allowed with the drip irrigation system, and water must remain on the subject property with no runoff to sidewalks, driveways, pavements, or adjacent properties.
 - (5) The home and community garden exemption is provided exclusively for drip irrigation systems only, and will not be allowed for other types of irrigation systems.
 - (6) This exemption shall only apply to properties $\frac{1}{4}$ acre or smaller. For properties greater than $\frac{1}{4}$ acre, the property owner may apply to the Director or designee for an exemption.
- (c) Lawn sprinkling systems shall be properly designed, installed, maintained, and operated to prevent waste of water.
- (d) Repealed.
- (e) The provisions of this section are conditions of service.
- (1) Each incident of Excessive Use as defined in section 6-501, or use of water inconsistent with the provisions of this section, is an incident of water waste.
 - (2) If a customer has one or more incidents of water waste during a month, as observed by City staff or as recorded by the City's water meter reading system, the customer shall be issued a Notice of Water Waste and, if applicable, charged a fine as set forth in the Master Fee Schedule. Such fines shall be added to the customer's monthly utility bill and shall be due and payable with that utility bill and subject to the FMC 6-106, Late Payment of Municipal Service Bills.
 - (3) Incident counts for water waste shall be monitored, recorded, documented and enforced on a monthly basis during the calendar year for individual customers, and the incident counts shall be reset January 1 of each year.

- (4) If a customer performs or permits incidents of water waste more than six consecutive months, the water service to the customer may be terminated unless in the opinion of the Director such termination would result in an unreasonable risk to the health and safety of persons. If water service is terminated for successive incident of water waste, the water service may only be restored upon execution of an agreement with the customer to adhere to the conditions of service described in this section.
- (5) If a customer objects to a fine imposed for an incident of water waste pursuant to this section, the following appeal process may be used.

Step 1.

- (a) Within thirty days of issuance of the utility bill including the fine, the customer may contact the Water Conservation Program to appeal an incident of water waste resulting in a fine with the staff person who initiated the enforcement measure. The staff person shall gather the facts about the incident.
- (b) The customer may provide staff with evidence there was no incident of water waste, or of a bona fide reason for the incident of water waste, including evidence of a water leak, or another reasonable justification for the water use, within ten business days of the customer's first communication with the Water Conservation Program regarding the alleged incident of water waste.
- (c) Within ten business days of the initiation of an appeal, staff shall provide the customer with documentation demonstrating the incident of water waste, if applicable.
- (d) The staff will provide the facts and evidence related to the appeal to the Water Conservation Program Supervisor, who will determine whether to rescind the enforcement measure. The Water Conservation Program Supervisor will provide a written decision to the customer within fifteen business days of the customer's appeal, or receiving any applicable evidence from the customer, whichever comes later.

Step 2. If the customer is not satisfied with the decision of the Water Conservation Program Supervisor, they may appeal to the Director or designee within ten business days of the date of the Water Conservation Program Supervisor's decision. The Director or designee shall review the appeal and any evidence the customer previously submitted, and provide a written decision within thirty days of receiving the appeal.

Step 3. If the customer is not satisfied with the decision of the Director of Public Utilities, the customer may appeal to the City's Administrative Hearing Officer in the manner provided in Chapter 1, Article 4 of this code. Such decision shall be final.

(Orig. Ord. 4481; Am. Ord. 6486, 1964; Am. Ord. 73-120, § 6, eff. 8-16-73; Am. Ord. 77-99, § 1, eff. 9-23-77; Am. Ord. 78-74, §§ 1, 2, eff. 5-26-78; Am. Ord. 80-115, § 149, eff. 8-8-80; Am. Ord. 89-48, §§ 1, 2, eff. 4-18-89; Am. Ord. 89-77, § 1, eff. 6-7-89; Am. Ord. 89-102, § 1, eff. 9-22-89; Am. Ord. 90-72, § 1, eff. 8-24-90; Am. Ord. 90-97, § 1, eff. 10-12-90; Am. Ord. 91-104, § 1, eff. 10-18-91; Am. Ord. 91-112, § 1, eff. 11-22-91; Am. Ord. 93-14, § 1, eff. 2-23-93; Am. Ord. 93-20, § 2, eff. 4-30-93; Am. Ord. 2015-13, § 1, eff. 5-21-15; Am. Ord. 2015-29, § 1, eff. 8-27-15; Am. Ord. 2017-56, § 3, eff. 11-19-17; Am. Ord. 2018-45, § 1, eff. 8-10-18; Am. Ord. 2019-011, § 3, eff. 5-31-19; Am. Ord. 2022-026, § 1, eff. 10-8-22).

Editor's note— The provisions in subsection 6-520(e) regarding the enforcement program for incidents of water waste are effective January 1, 2018.

Attachment 2 Fresno County Multi- Jurisdictional Hazard Mitigation Plan

Annex E: City of Fresno

Available online at:

<https://www.fresnocountyca.gov/files/sharedassets/county/v/1/county-administrative-office/hazard-mitigation-plan/annex-files/draft-annex-e-city-of-fresno.pdf>

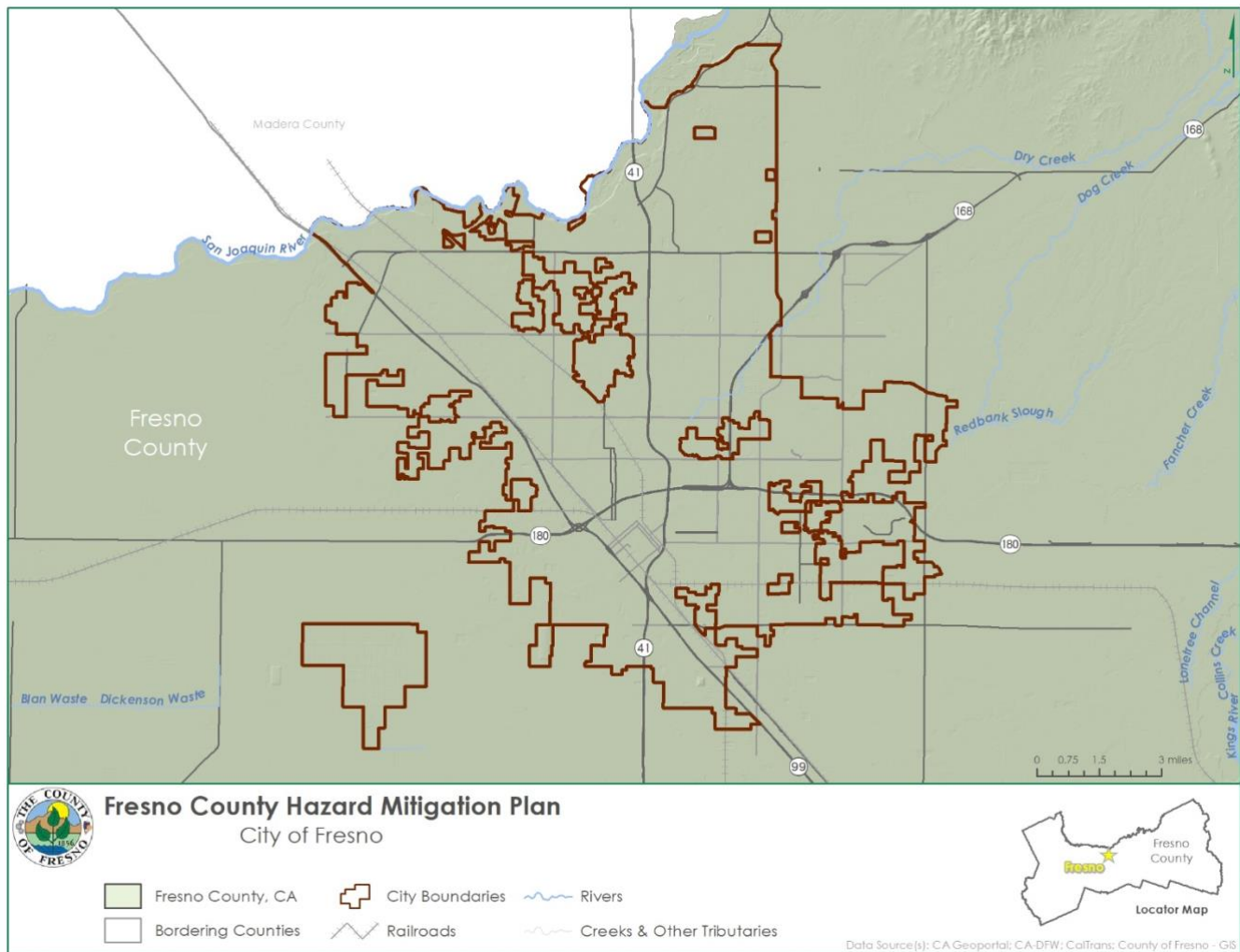
Annex E: City of Fresno



COMMUNITY PROFILE

Figure 1. City of Fresno City Boundaries displays a map and the location within Fresno County of the City of Fresno.

Figure 1. City of Fresno City Boundaries



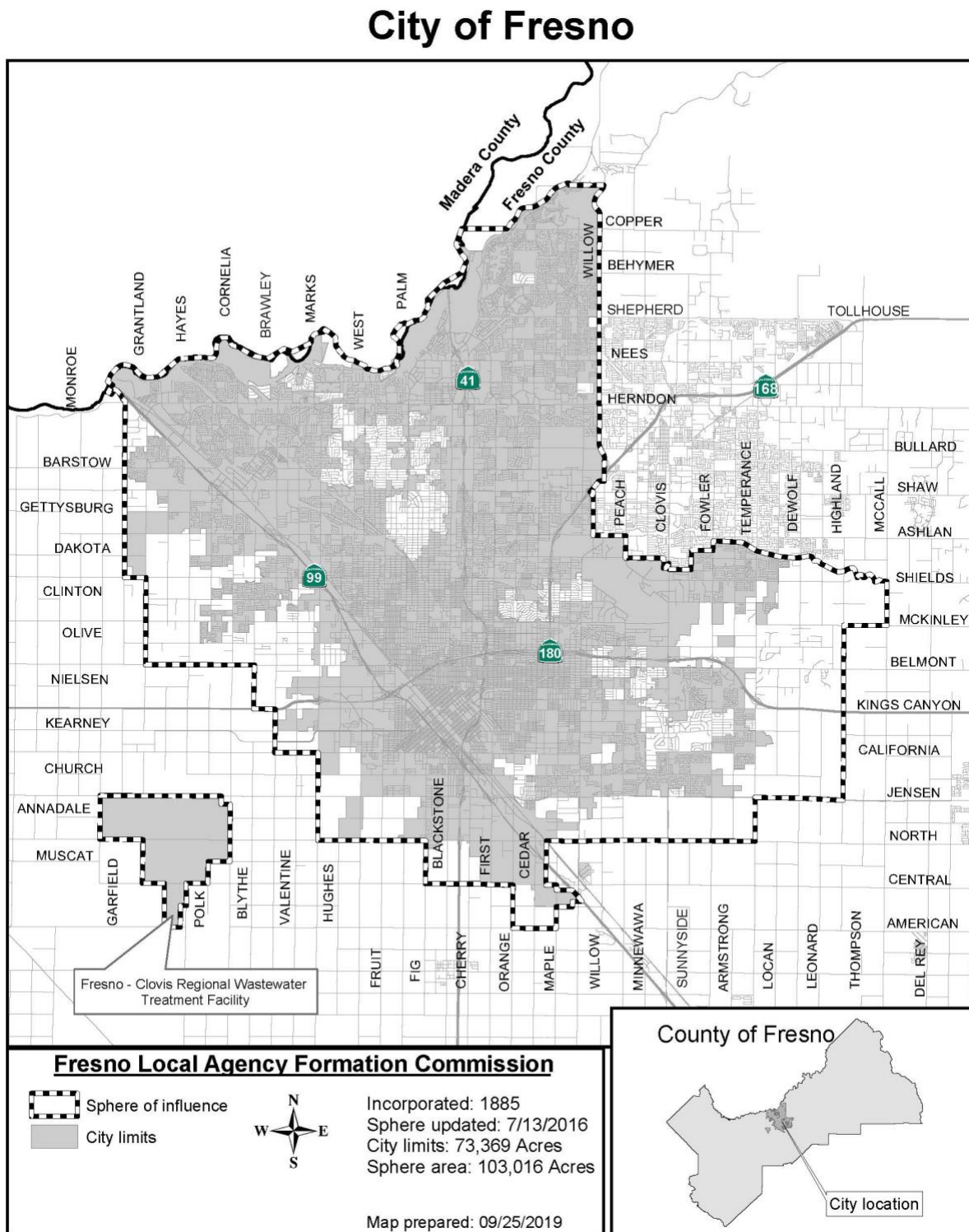
Source: CA Geoportal; CA-DFW; CalTrans; County of Fresno - GIS



GEOGRAPHY AND CLIMATE

The City of Fresno, located in the Central Valley, covers an area of 113 square miles. The Sphere of Influence (SOI) encompasses 157 square miles in total, of which 44 square miles is unincorporated land. **Figure 2. City of Fresno Limits and Sphere of Influence** shows the SOI and City limits. Over the past decade, the City has expanded into the northern, northwestern, and eastern reaches of its Sphere of Influence.

Figure 2. City of Fresno Limits and Sphere of Influence







Except for the deep channel of the San Joaquin River at the northern boundary of the City, Fresno's topography is generally level and slopes gently to the southwest. The upper San Joaquin River lies at the City's northerly boundary and has carved a deep channel, confining the river between steep bluffs that range from 20 to approximately 100 feet in height. Fresno has a Mediterranean climate, averaging over 300 sunny days per year and little or no measurable precipitation from June through September. Annual rainfall averages 11 inches and the City's prevailing winds are typically light and from the northwest.

Storms with strong weather disturbances (lightning and very agitated winds) may occur from autumn months through the spring, with the strength of the storm dependent upon temperature gradients between moving weather fronts.

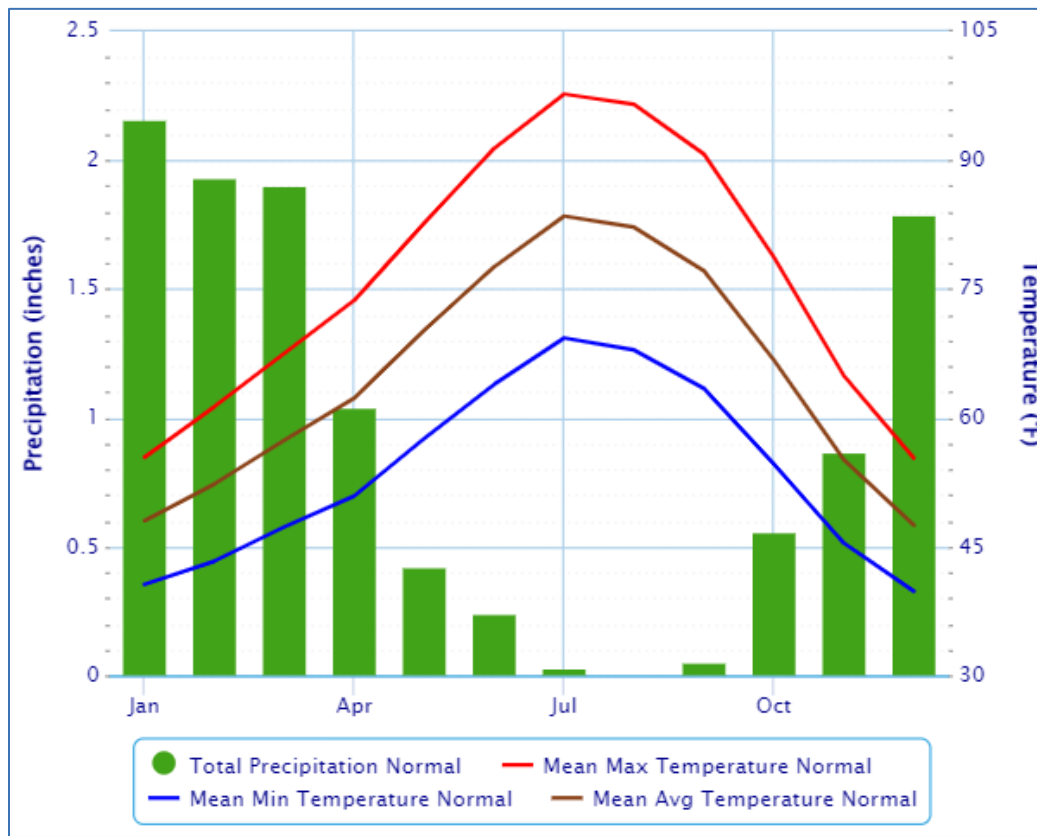
Winter mornings in December and January approach freezing but only rarely reach as low as, or below, 32°F; winter daytime high temperatures almost always approach or exceed 40°F. Snowfall is an extremely rare and transient phenomenon; the last recorded snowfall had trace amounts on December 11, 2005. The Tule fog, a thick ground fog that settles in the San Joaquin Valley from late fall through early spring, is the leading cause of weather-related accidents in California. In addition to causing visibility issues, "black ice" from precipitated fog may temporarily affect some roadways and bridges during the winter.

Summer daytime peak temperatures are high in Fresno. Some heat waves last over a week with daytime highs well over 100°F and issuance of health advisories. Summer evenings provide for some cooling of 10-15°F with the early morning daybreak hours cooling by 20-30°F, depending on humidity (low humidity allows for more radiant cooling). In 2021, the Fresno area experienced 69 days over 100 degrees – a record-breaking number of days, according to data from the National Weather Service.

¹The figure below shows the monthly normal for temperature and precipitation at the Fresno Yosemite International Airport NWS weather station.

¹ Extreme heat in Fresno County affects health (fresnoland.org) <https://fresnoland.org/2022/08/26/fresno-county-heat-waves-will-last-longer-in-the-future-heres-what-that-means-for-your-health/>
2024 Fresno County Hazard Mitigation Plan
May 2024

Figure 3. Fresno-Yosemite International Airport Monthly Normals for Precipitation and Temperature (1991-2020)



Source: NWS

Geography and climate combine to create a general accumulation of air pollutants in the San Joaquin Valley (and in the City of Fresno) that occasionally result in unhealthy air quality conditions. Air quality problems are exacerbated by dust storms, human activities (e.g., vehicle emissions and fireplace and wood stove use), atmospheric photochemical processes, and forest fires from local and regional fires.

According to a report published by the American Lung Association, Fresno County is the dirtiest place in America for short-term particle pollution. The Fresno metro area saw a greater than 40 percent increase in the Lung Association's statistic for annual short-term exposure to PM_{2.5} particles.²

The City has chronically failed to attain some of the national and state ambient air quality standards, but due to the efforts of the California Air Resources Board and the regional San Joaquin Valley Unified Air Pollution Control District, progress toward attainment of ozone (oxidant) and particulate matter standards is being made. Carbon monoxide standards were deemed to have been attained in the 1990s.

² New report says Fresno region has dirtiest air in US. Experts call for critical change - FresnoLand

<https://fresnoland.org/2022/04/21/new-report-says-fresno-region-has-dirtiest-air-in-us-experts-call-for-critical-change>
 2024 Fresno County Hazard Mitigation Plan
 May 2024



HISTORY

Development of what today is the City of Fresno began in 1871, when the Central Pacific Railroad chose the Fresno Station for its San Joaquin Valley rail line. The City soon became the County seat and the shipping and distribution hub for the region's agricultural industry. An economic boom across California in the 1880s helped transform Fresno from a village to a city and helped drive its incorporation in 1885. Today, the City of Fresno is the center of trade, commerce, finance, and transportation for the San Joaquin Valley.

ECONOMY

The most comprehensive economic data available for the City of Fresno comes from the U.S. Census Bureau by way of the American Community Survey (ACS). Select estimates of economic characteristics for the City of Fresno are shown in **Table 1. City of Fresno's Economic Characteristics**.

Table 1. City of Fresno's Economic Characteristics

Characteristic	City of Fresno
Families below Poverty Level	15.1%
All People below Poverty Level	20.6%
Median Family Income	\$74,085
Median Household Income	\$64,196
Per Capita Income	\$30,533
Population in Labor Force	263,824
Population Employed	242,002
Unemployment	7.9%

Source: U.S. Census Bureau American Community Survey 2018-2022 5-Year Estimates, www.census.gov/

Table 2. City of Fresno's Employment by Occupation and **Table 3. City of Fresno's Employment by Industry** show how the City of Fresno's labor force breaks down by occupation and industry based on 5-year estimates from the 2018-2022 American Community Survey.

Table 2. City of Fresno's Employment by Occupation

Occupation	# Employed	% Employed
Management, Business, Science and Arts Occupations	80,046	33.08%
Management, Business, and Financial Occupations	(33,682)	(49.37%)
Computer, Engineering, and Science Occupations	(8,280)	(12.64%)



Occupation	# Employed	% Employed
Education, Legal, Community Service, Arts, and Media Occupations	(26,257)	(38.49%)
Sales and Office Occupations	48,846	20.18%
Service Occupations	54,667	22.59%
Production, Transportation, and Material Moving Occupations	36,666	15.15%
Natural Resources, Construction, and Maintenance Operations	21,777	8.99%
Total	242,002	100.00%

Source: U.S. Census Bureau American Community Survey 2018-2022 5-Year Estimates, www.census.gov/

Table 3. City of Fresno's Employment by Industry

Industry	# Employed	% Employed
Educational Services, and Health Care, and Social Assistance	55,512	22.94%
Retail Trade	25,233	10.43%
Arts, Entertainment, and Recreation, and Accommodation, and Food Services	26,632	11.00%
Professional, Scientific, and Management, and Administrative and Waste Management Services	24,980	10.32%
Manufacturing	16,051	6.63%
Public Administration	16,904	6.99%
Finance and Insurance, and Real Estate and Rental and Leasing	13,334	5.51%
Other Services, Except Public Administration	11,996	4.96%
Construction	14,154	5.85%
Agriculture, Forestry, Fishing, and Hunting, and Mining	8,625	3.56%
Transportation and Warehousing and Utilities	19,686	8.13%
Wholesale Trade	6,119	2.53%
Information	2,776	1.15%
Total	242,002	100.00%

Source: U.S. Census Bureau American Community Survey 2022 5-Year Estimates, www.census.gov/

With the depressed real estate and construction market and economic recession toward the end of the 2000–2010-decade, unemployment rates increased to a peak of 18.0 percent in 2010. Since then, the unemployment rate has steadily decreased. In recent years, unemployment sharply rose again, 17.4

percent in April 2020, during the COVID-19 as many businesses shut down and employees were laid off. The most recent annual data from the State of California Employment Development Department indicates that in 2022 there were 244,027 people employed in the City of Fresno labor force. The unemployment rate was 8.2 percent as of December 2023.

POPULATION

According to the U.S. Census Bureau 2022 Population Estimate, Fresno's population was estimated to be 545,567. Select demographic and social characteristics for the City from the U.S. Census Bureau's 2015 American Community Survey 5-year estimates are shown in **Table 4. City of Fresno's Demographic and Social Characteristics**.

Table 4. City of Fresno's Demographic and Social Characteristics

Characteristics	City of Fresno
Gender/Age	
Male	49.2%
Female	50.0%
Median Age	30.0
Under 5 Years	8.9%
Under 18 Years	29.5%
65 Years and Over	9.9%
Race/Ethnicity	
White	52.2%
Asian	13.0%
Black or African American	7.9%
American Indian/Alaska Native	1.1%
Hispanic or Latino (of any race)	48.5%
Education	
High school graduate or higher	75.2%
Disability Status	
Population 5 years and over with a disability	11.75%

Source: U.S. Census Bureau American Community Survey 2018-2022 5-Year Estimates, www.census.gov/

For information about how some of these demographics affect social vulnerability and how they compare to other Fresno County jurisdictions, California, and the United States, see "Social Vulnerability" in Section 4.3.1 Fresno County Vulnerability and Assets at Risk of the main plan. A more in-depth look at the population of the City of Fresno, including the City's special needs populations, is available in the City of Fresno General Plan 2015-2023 Housing Element commissioned by the City of Fresno Development and Resource Management Department and prepared by MIG, Inc (available at www.fresno.gov/housingelement).

HAZARD IDENTIFICATION AND SUMMARY

The City of Fresno's planning team identified the hazards that affect the City and summarized their frequency of occurrence, spatial extent, potential magnitude, and significance specific to Firebaugh (see **Table 6. City of Fresno - Hazard Summaries**). **Table 5. Risk Methodology** shows the methodology to how the hazards were ranked. In the context of the plan's planning area, there are no hazards that are unique to Fresno.

Table 5. Risk Methodology

RF Value = {(Probability x .30) + (Impact x .30) + (Spatial Extent x .20) + (Warning Time x .10) + (Duration x .10)}				
Risk Assessment Category	Degrees of Risk			Weight Value
Probability: What is the likelihood of a hazard event occurring in a given year?	Unlikely	Less than 1% annual probability	1	30%
	Possible	Between 1% and 49.9% annual probability	2	
	Likely	Between 50% and 90% annual probability	3	
	Highly Likely	Greater than 90% annual probability	4	
Impact: In terms of injuries, damage, or death, would you anticipate impacts to be minor, limited, critical, or catastrophic when a significant hazard event occurs?	Minor	Very few injuries, if any. Only minor property damage and minimal disruption on quality of life. Temporary shutdown of critical facilities.	1	30%
	Limited	Minor injuries. More than 10% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for more than one day.	2	
	Critical	Multiple deaths / injuries possible. More than 25% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for more than a week.	3	
	Catastrophic	High number of deaths / injuries possible. More than 50% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for 30 days or more.	4	
Spatial Extent: How large of an area could be impacted by	Negligible	Less than 1% of area affected	1	20%
	Small	Between 1% and 10.9% of area affected	2	



$RF \text{ Value} = \{(Probability \times .30) + (Impact \times .30) + (Spatial \text{ Extent} \times .20) + (Warning \text{ Time} \times .10) + (Duration \times .10)\}$				
Risk Assessment Category	Degrees of Risk			Weight Value
a hazard event? Are impacts localized or regional?	Moderate	Between 11% and 25% of area affected	3	
	Large	Greater than 25% of area affected	4	
Warning Time: is there usually some lead time associated with the hazard event? Have warning measures been implemented?	More than 24 hours	Self-Defined	1	10%
	12 to 24 hours	Self-Defined	2	
	6 to 12 hours	Self-Defined	3	
	Less than 6 hours	Self-Defined	4	
Duration: how long does the hazard event usually last?	Less than 6 hours	Self-Defined	1	10%
	Less than 24 hours	Self-Defined	2	
	Less than 1 week	Self-Defined	3	
	More than 1 week	Self-Defined	4	



Table 6. City of Fresno - Hazard Summaries

Hazard	0.3	0.3	0.2	0.1	0.1	Overall Risk
	Probability	Impact	Spatial Extent	Warning Time	Duration	
Agricultural Hazards	Likely	Minor	Negligible	12 to 24 hours*	Less than 24 hours*	Low
Avalanche	Unlikely	Minor	Negligible	N/A	N/A	Low
Dam Failure	Unlikely	Catastrophic	Moderate	Less than 6 hours	Less than 24 hours	High
Drought	Possible	Limited	Large	More than 24 hours	More than 1 week	High
Earthquake	Possible	Limited	Large	Less than 6 hours	Less than 6 hours	Medium
Flood/Levee Failure	Possible	Limited	Large	More than 24 hours	Less than 1 week	High*
Hazardous Materials	Likely	Critical	Significant	Less than 6 hours	Less than 1 week	High
Human Health Hazards						
Epidemic/Pandemic	Possible	Catastrophic	Large	More than 24 hours	More than 1 week	High
West Nile Virus	Highly Likely	Minor	N/A	N/A	N/A	Low
Severe Weather						
Extreme Cold/Freeze/Heat	Highly Likely	Limited	Large	More than 24 hours	Less than 1 week	High
Fog	Likely	Limited	Large	More than 24 hours	Less than 24 hours	Medium*
Heavy Rain/Thunderstorm/Hail/Lightning/Wind	Highly Likely	Minor	Large	More than 24 hours	Less than 24 hours	Medium*
Tornado	Possible	Minor	Large	Less than 6 hours	Less than 6 hours	Low*
Winter Storm	Highly Likely	Minor	Large	More than 24 hours	Less than 1 week	Medium*
Soil Hazards						
Erosion	Highly Likely	Minor	Moderate	N/A	N/A	Medium
Expansive Soils	Unlikely	Minor	Negligible	N/A	N/A	Medium
Land Subsidence	Possible	No Data	Limited	N/A	N/A	Medium
Landslide	Likely	Limited	Small	12 to 24 hours*	Less than 24 hours*	Medium
Volcano	Unlikely	Minor	Negligible	Less than 6 hours	More than 1 week	Low
Wildfire	Highly Likely	Critical	Small	12 to 24 hours*	More than 1 week*	High

*Rated on an average basis. For example, warning time for agricultural hazards vary by the type of hazard



**Hazard “Overall Risk” differs from the risk factor methodology used based on the jurisdiction’s Hazard Risk Assessment Worksheet. For example, the “Overall Risk” for a hazard may be High but the jurisdiction assessed the hazard to be a Low risk based on other factors.*

Note: *N/A was identified for hazard characteristics when the information was not available or relevant to the hazard/jurisdiction.*



VULNERABILITY ASSESSMENT

The intent of this section is to assess Fresno's vulnerability separate from that of the planning area as a whole, which has already been assessed in the Vulnerability Assessment section in the main plan. 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.

The information to support the hazard identification and risk assessment for this Annex was collected through a worksheet, which was distributed to each participating municipality or special district to complete during the 2024 plan update. 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 to identify the related vulnerabilities unique to each jurisdiction.

Each participating jurisdiction was in support of the main hazard summary identified in the base plan. However, the hazard summary rankings for each jurisdictional annex may vary slightly due to specific hazard risk and vulnerabilities unique to that jurisdiction (See Figure 6. City of Fresno—Hazard Summaries). Identifying these differences helps the reader to differentiate the jurisdiction's risk and vulnerabilities from that of the overall County.

The hazard risk reflects overall ranking for each hazard and is based on the City of Fresno's HMPC member input from the Risk Assessment Worksheet and the risk assessment developed during the planning process (see Chapter 4 of the base plan), which included a more detailed qualitative analysis with best available data.

The hazard summaries in Figure 6 reflect the hazards that could potentially affect the City. The discussion of vulnerability for each of the following hazards is located in the Estimating Potential Losses section. Those hazards that are not profiled in the vulnerability assessment were identified as consistent with the County's overall vulnerability assessment. See Chapter 4 Risk Assessment for details on vulnerability to these hazards.

ASSETS AT RISK

This section considers Fresno's assets at risk, including values at risk; critical facilities and infrastructure; historic, cultural, and natural resources; economic assets; and growth and development trends.

Since the 2009 Plan, the City of Fresno has experienced notable increases in agricultural, commercial, and residential properties and property values at risk. Compared to improved values from the Fresno County Assessor's Office's 2007 Certified Roll Values, agricultural improved value has increased by 254.2 percent, commercial improved value has increased by 299.8 percent and total residential improved value has increased by 265.8 percent. Part of this dramatic increase in exposure of commercial and residential properties can be attributed to annexations of previously unincorporated County land that have occurred within the last decade.

CRITICAL FACILITIES AND INFRASTRUCTURE

A critical facility may be defined as one that is essential in providing utility or direction either during the response to an emergency or during the recovery operation. An inventory of critical facilities in the City



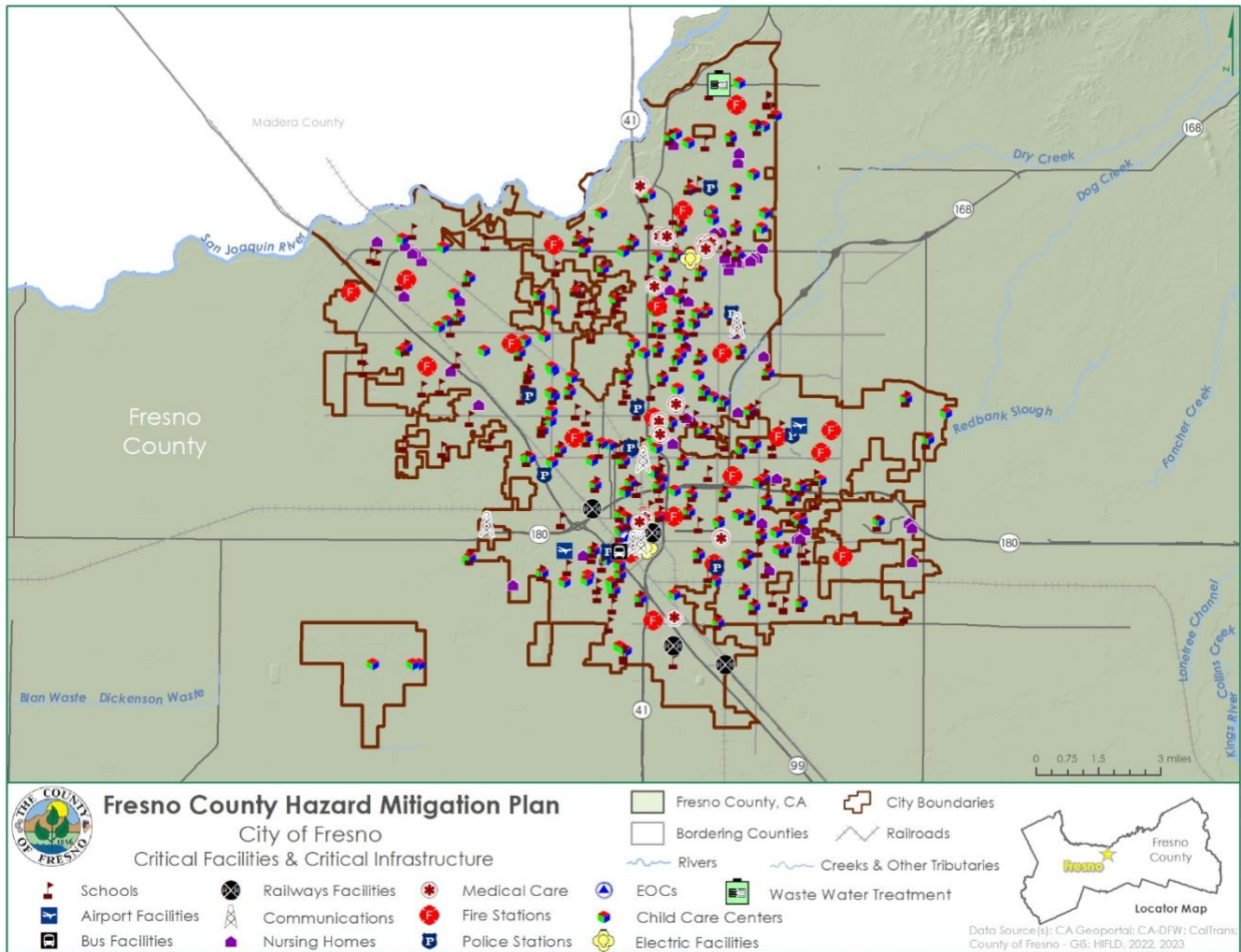
of Fresno from Fresno County GIS is provided in **Table 7. City of Fresno's Critical Facilities** and mapped in **Figure 4. City of Fresno Critical Facilities**.

Table 7. City of Fresno's Critical Facilities

Critical Facility Type	Count
Airport	2
Bus	1
CalARP	28
Colleges & Universities	8
Communications	29
Electric	5
EOC	1
Fire Station	27
Health Care	13
Police	11
Railway	7
School	190
Supplemental College	7
Wastewater	2
Total	331

Source: Fresno County

Figure 4. City of Fresno Critical Facilities



Source: CA Geoportal; CA-DFW; CalTrans; County of Fresno – GIS, 2022, 2023



The list of specific critical facilities and community assets is maintained by the City of Fresno Police Department. The Fresno Urban Area Critical Infrastructure List is considered confidential and may be accessed through the Fresno Police Department Homeland Security Division.

HISTORIC, CULTURAL, AND NATURAL RESOURCES

HISTORIC AND CULTURAL SITES

The Cultural Resource Facility located on the California State University, Bakersfield campus maintains a database, maps, and descriptive surveys of prehistoric sites in the Fresno area. Details of the locations are kept confidential due to the risk of theft or vandalism of artifacts. The general location of these sites is along the San Joaquin River and its bluffs, where permanent Native American settlements were established near a permanent water supply and seasonal salmon fishery.

The City of Fresno maintains a local official register of historic resources (available from the historic preservation officer in the City's Planning and Development Department). There are approximately 284 properties on the register. Twenty-one of the properties were demolished or destroyed by fire after being placed on the list, and three other properties have been relocated to sites outside the City of Fresno. The local register includes 31 properties that are on the National Register of Historic Places (see **Table 8. City of Fresno's Properties on the National Register of Historic Places**).

Table 8. City of Fresno's Properties on the National Register of Historic Places

Property Name	Address	Date-Listed
Azteca Theater	836-840 F Street	4/05/2017
Bank of Italy	1015 Fulton Mall	10/29/1982
Ben Gefvert Rank Historic District	4770 W Whites Bridge Road	1/01/2011
Brix, H.H, Mansion	2844 Fresno Street	9/15/1983
Einstein House	1600 M Street	1/31/1978
Fig Garden Woman's Club	4550 N. Van Ness Blvd	7/18/1994
Forestiére Underground Gardens	5021 W. Shaw Avenue	10/28/1977
Fresno Bee Building	1555 Van Ness Avenue	11/1/1982
Fresno Brewing Company Office and Warehouse	100 M Street	1/5/1984
Fresno County Hall of Records	2281 Tulare Street	12/22/2011
Fresno Memorial Auditorium	2425 Fresno Street	5/10/1994
Fresno Republican Printery Building	2130 Kern Street	1/2/1979
Fresno Sanitary Landfill	West and Jensen Avenues	8/7/2010
Holy Trinity Armenian Apostolic Church	2226 Ventura Street	7/31/1986
Hotel California	851 Van Ness Avenue	4/21/2004
Kearney, M. Theo, Park and Mansion	7160 Kearney Boulevard	3/13/1975
Kindler, Paul, House	1520 E Olive Avenue	10/29/1982
Maulbridge Apartments	2344 Tulare Street	5/6/1982



Property Name	Address	Date-Listed
Meux House	1007 R Street	1/13/1975
Old Administration Building, Fresno City College	1101 University Avenue	5/1/1974
Old Fresno Water Tower	2444 Fresno Street	10/14/1971
Pantages, Alexander, Theater	1400 Fulton Street	2/23/1978
Physicians Building	2607 Fresno Street	11/20/1978
Rehorn House	1050 S Street	1/8/1982
Romain, Frank, House	2055 San Joaquin Street	1/11/1982
San Joaquin Light & Power Corporation Buildings	1401 Fulton Street	1/3/2006
Santa Fe Hotel	935 Santa Fe Avenue	3/14/1991
Santa Fe Passenger Depot	2650 Tulare Street	11/7/1976
Site of First Junior College in California	2500 Stanislaus Street	6/28/1965
Site of the Fresno Free Speech Fight of the Industrial Workers of the World	Mariposa and I Streets	7/19/1974
Southern Pacific Passenger Depot	1033 H Street	3/21/1978
Temporary Detention Camps for Japanese Americans-Fresno Assembly Center	1141 South Chance Avenue	5/13/1980
Tower Theatre	1201 N. Wishon Avenue	9/24/1992
Twining Laboratories	2527 Fresno Street	3/26/1991
Warehouse Row	722, 744, and 764 P Street	3/24/1978
YWCA Building	1660 M Street	9/21/1978

Source: National Register of Historic Places, www.nps.gov/nr/

Other historic resources in the City of Fresno include the following historic districts:

- The Porter Tract Historic District (45 homes)
- The Chandler Field/Fresno Municipal Airport Historic District (four historic structures)
- The Wilson Island Historic District (76 homes)
- The Huntington Boulevard Historic Districts (82 homes)

As comprehensive as the City's register may be, it does not include all properties in the City with potential historic or cultural significance. The list is continually being expanded as sites are discovered through routine analysis of proposed development areas and through proposed new listings of historic districts. The pool of potentially historic properties also changes through time, since federal law provides for a 50-year retrospective review, which now encompasses the post- World War II building boom era. Ten properties that were recommended for the City's register but were denied inclusion by the Fresno City Council are still recognized for their historic/cultural significance (heritage properties),

which is taken into account when any actions are undertaken on them pursuant to provisions of the California Environmental Quality Act. (Three of these properties have been since been demolished.)

While a detailed assessment of seismic and flood risks for the listed properties in Fresno is currently beyond the available staff resources of the City's Historic Preservation Office, it can be generally assumed that most of the structures have not been seismically reinforced and that their masonry is vulnerable to strong ground shaking.

While many of the structures are in Fresno's old downtown and were built when this area was largely within the 100-year floodplain of the Fresno Stream Group, efforts by the Fresno Metropolitan Flood Control District in conjunction with the U.S. Army Corps of Engineers and the City of Fresno have provided for flood detention structures and ponding basins that have greatly reduced the size and extent of the floodplain in the downtown, helping to preserve these historic resources.

NATURAL RESOURCE AREAS

San Joaquin River Corridor

While the City maintains many community and neighborhood parks, its natural resources are primarily along the San Joaquin River. Owing to the year-round presence of water, the river bottom and bluffs host the richest aquatic and riparian forest biota in the City. It is in this area where migratory waterfowl and federally and state-listed endangered wildlife are most likely be encountered. These species include the valley elderberry longhorn beetle, the giant garter snake, and the American bald eagle (recently recommended for delisting from the National Endangered Species list).

Over past decades, land in the river corridor has been purchased and aggregated by state agencies (Department of Fish and Game, San Joaquin River Conservancy), by nonprofit groups (San Joaquin River Parkway Trust, Fresno Sportsmen's Club), and by the City and County (the City's Woodward Park and Milburn Unit, the County's Lost Lake Park). The ultimate goal of the San Joaquin River Conservancy Plan is to fashion a regional parkway with continuity of wildlife corridors and to manage it for joint recreational, habitat conservation, and floodplain protection uses.

Due to its location, this natural resource area is flood-prone. In some areas, this risk has been increased due to removal of massive amounts of sand and gravel (from mining), which lowered the ground surface over past decades. While the native riparian plants and animals have largely evolved with coping mechanisms for periodic severe flooding, any developed recreation facilities would be at risk. The face of the bluff is also very vulnerable to wildfire because of its vegetative overgrowth and nearly vertical slopes. Fire prevention efforts are difficult here because the soils are too unstable for vegetative removal projects or for irrigation that would keep the plants well-watered.

Vernal Pool Areas

In the northerly parts of the City, outside the river corridor, certain clay soils have the capacity to form impermeable hardpans and layers that do not allow rapid percolation of rainwater. During the rainy season, shallow vernal pools form that are populated by a host of specialized plants and animals. Many species associated with vernal pools are federally and state-listed species (e.g., the California tiger salamander, various types of fairy shrimp crustaceans, orcutt grass, button celery species, meadowfoam, and owl clover). Vernal pools are also heavily utilized by nonlisted species, such as migratory waterfowl, rodents, furbearing predators, and raptors that prey on other animals.



Wildfire is not considered a major risk to these natural communities, because they evolved with dry season fires as a common occurrence (the plants have very resistant seeds and the crustaceans and amphibians go into protected parts of their life cycles such as deep dormancy). Human encroachment through agriculture and land development is the greatest risk to vernal pool areas. If the clay layers are disrupted by “deep ripping” plowing, water cannot accumulate on the surface and the pools will not form. If the land is subjected to year-round irrigation, specially adapted vernal pool species will be outcompeted by other species. Conversion of land to urban development with structures, paving, lawns, pets, and people will destroy vernal pool natural communities.

ECONOMIC ASSETS

The City of Fresno’s economic sector includes both private and public entities that have been compiled into clusters in order to identify key economic assets. These ten clusters, known as the Regional Job Initiative (RJI) clusters, are Advanced Manufacturing, Clean Energy, Construction, Food Processing, Healthcare, Info Processing (Call Centers, Logistics, and Distribution), Software Development, Tourism, and Water Technology. Among these clusters are major employers like Saint Agnes, Pelco, Gottschalks, and Ruiz Foods that both boost Fresno’s economic growth and provide employment opportunities.

If a disaster struck the City, it could have a severe impact on Fresno’s economic assets. Sectors of greatest concern include all the RJI clusters, but in particular Food Processing, which includes the agricultural industry, and Healthcare.

GROWTH AND DEVELOPMENT TRENDS

The City of Fresno is growing at a rapid pace. Its expansion from incorporation in 1885 to the present day (August 2017) is illustrated in **Figure 5. City of Fresno Annexation History**. Even more growth is anticipated in the years to come, based on current trends.

Table 9. City of Fresno's Change in Population and Housing Units, 2017-2022 shows how the City has grown in terms of population and number of housing units between 2017 and 2022 alone.

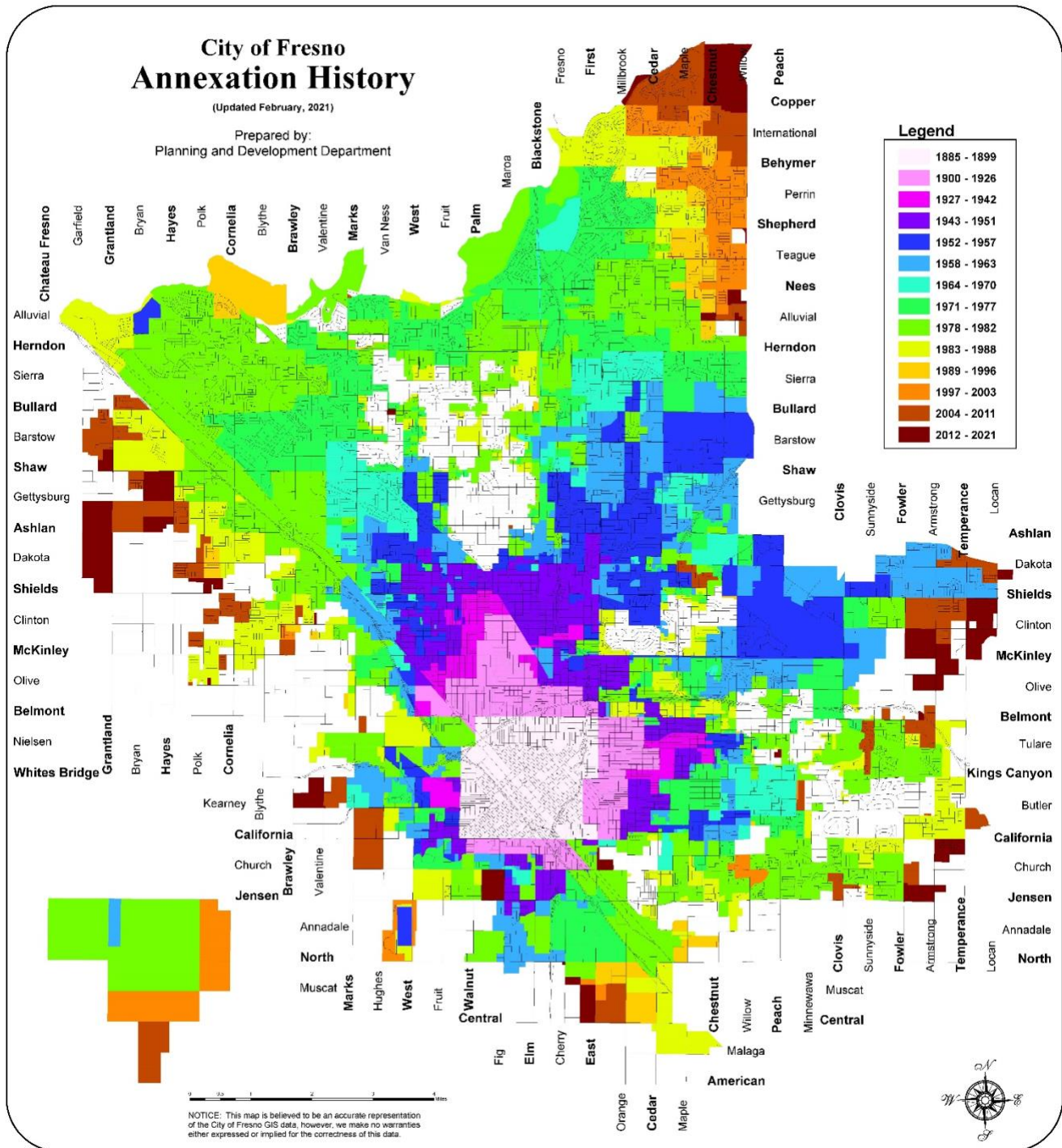
Table 9. City of Fresno's Change in Population and Housing Units, 2017-2022

2017 Population	2022 Population Estimate	Estimated Percent Change 2017-2022	2017 # of Housing Units	2022 Estimated # of Housing Units	Estimated Percent Change 2017-2022
527,422	545,564	+3.44%	180,495	192,007	+6.38%

Source: American Community Survey 5-Year Estimates 2017 and 2022



Figure 5. City of Fresno Annexation History



Source: City of Fresno Development Department.



By December 31, 2035 (the “Horizon” year of the most recent Fresno General Plan), it is estimated that 771,000 people will reside in the Fresno Metropolitan Area (which would include County islands and areas inside the City’s Sphere of Influence but not yet annexed). This figure of 771,000 would be 64 percent of the projected 2035 Fresno County population of 1,201,416 (State of California Department of Finance population projections).

Development had reached the natural and political northerly boundary of the City, the San Joaquin River, and began expanding to the west and southeast through conversion of rural residential and agricultural land. Within the Sphere of Influence, there continued to be “County islands” and partially urbanized fringe areas. An urban unification annexation program may reduce the numbers and sizes of these enclaves in the coming decade.

The Fresno General Plan made a concerted effort to revitalize the City’s downtown by balancing new growth areas to geographically recenter the downtown. With construction of a major sewer trunk along the Grantland Avenue alignment and proposed construction of new wastewater and water treatment plants in the southeastern area, the City’s future growth is expected to concentrate primarily to the west and southeast.

The Fresno Metropolitan Flood Control District (FMFCD) has commenced major flood control facility construction on Fancher Creek in the eastern portion of the City’s Sphere of Influence. Since the Fresno General Plan was completed in December 2014, the FMFCD will compile technical studies and update its master service plan in conjunction with the City’s land use plan for this new growth area.

The Fresno General Plan also directed that new development be more compact and that single-family residential densities be higher than the City’s traditional 4± dwelling units/acre pattern for subdivisions. The recently adopted Fulton Corridor Specific Plan and Downtown Neighborhoods Community Plan and other plan amendments and projects in process (and proposed in the future) feature smaller lots, multi-story housing, multi-family units, and reduced setbacks.

Unless the cost of manufactured housing units provides a substantial savings over site-built homes, it is not expected that the proportion of manufactured housing in the City of Fresno will greatly increase. It is possible that there will be some increase as producers of these units create models with appropriate roof pitches and other features to meet the City’s design review standards.

More information about the City of Fresno’s growth and current housing stock is available in the City of Fresno General Plan 2015-2023 Housing Element commissioned by the City of Fresno Development and Resource Management Department and prepared by MIG, Inc (available at www.fresno.gov/housingelement). More general information on growth and development in Fresno County as a whole can be found in “Growth and Development Trends” in Section 4.3.1 Fresno County Vulnerability and Assets at Risk of the main plan.

ESTIMATING POTENTIAL LOSSES

Note: This section details vulnerability to specific hazards, where quantifiable, and/or where (through HMPC member input) it differs from that of the overall County.

Figure 12 above shows Fresno’s exposure to hazards in terms of number and value of structures. Fresno County’s parcel and assessor data was used to calculate the improved value of parcels. The most vulnerable structures are those in the floodplain (especially those that have been flooded in the past), unreinforced masonry buildings, and buildings built prior to the introduction of modern day building codes. No further information on vulnerable structures is available. Impacts of past events and



vulnerability to specific hazards are further discussed below (see Section 4.1 Hazard Identification for more detailed information about these hazards and their impacts on Fresno County).

AGRICULTURAL HAZARDS (LOW)

Agricultural hazards are ranked with a Low significance in the City of Fresno; lower than for the County overall (ranked High) because very little land in the City is used for agricultural purposes. Agricultural losses due to hazard events have greater economic impact on the small communities and rural areas of the County than on the City of Fresno. However, ornamental and garden plants in the City, and pets and incidental livestock kept within City limits, may become involved in any countywide responses to crop pests or infectious agents, because these urban plants and animals provide reservoirs for the diseases and crop pests that threaten the County's agriculture.

DAM FAILURE (HIGH)

The National Inventory of Dams lists five dams located in the City of Fresno, including the Redbank Creek Detention basin, Fancher Creek Detention, Friant Millerton Road Embankment A, Redbank, and Friant Dike 3.

DROUGHT (HIGH)

Annual rainfall in the City of Fresno is typically 12-14 inches. This makes the region vulnerable to episodic drought and to chronic drawdown of aquifer levels (the U.S. Environmental Protection Agency has designated the groundwater below Fresno as a sole source aquifer). Water in this aquifer has historically flowed through permeable strata from north and northeast toward the south and west, but the aquifer has been so affected by drawdown that a "cone of depression" has been created, reversing the historic flow directions (the "groundwater gradient") in portions of west and south Fresno.

In the last 10 years the City of Fresno has made strides to reduce dependence on groundwater by setting a course to implement water plans, which include the Urban Water Management Plan, Recycled Water Waster Plan, and the recently adopted Water Capital Program. A surface water treatment plant is currently under construction in Southeast Fresno and should be completed by 2018. When operational, the plant will maximize use of Fresno's surface water allocations during normal years and allow the City to reduce overuse of groundwater. Recycled water use will also grow in Fresno with the new recycled water mains now being constructed. The City has plans to use 25,000 acre-feet per year of recycled water for irrigating open spaces, parks, street medians and golf courses.

EARTHQUAKE (MEDIUM)

The seismic hazard in the City of Fresno is low relative to California coastal and mountain communities and is lower than in the Sierra and western areas of Fresno County. There are no known earthquake faults underlying Fresno, and the City has never been the epicenter of a known seismic event. However, Fresno is considered to have a moderate risk of earthquake damage due to the presence of major fault systems to the west, south, and east and due to Fresno's large population and number of buildings, critical facilities, and infrastructure and other development that could be vulnerable to more severe ground shaking.



Historically, Fresno has sustained very little damage from major earthquakes occurring on California's major faults: the Owens Valley earthquake of 1872 toppled an unreinforced masonry (brick) church steeple. More recent major earthquakes in the past four decades (with epicenters near Coalinga and the Bay Area) have resulted in perceptible tall building swaying in Fresno, minor injuries (attributable to shelved items falling), and slight damage (e.g., minor cracked plaster, etc.). To date, no soil liquefaction has been observed in Fresno from any seismic event.

The most serious impacts of an earthquake in Fresno would probably arise from damage to large dams in the Sierra Nevada on the upper reaches of the San Joaquin River very close to active Long Valley Caldera-related faults. Should either of the two most easterly (and largest) dams in this area be severely damaged or breached, the resulting sequential dam failures could cause floodwaters to overtop Friant Dam northeast of the City. While the dam failure inundation map for Friant shows that most of the flooded area would be expected in the northwest part of town (where the confining river bluffs are not as high), there are some residences and important infrastructure in the river channel itself that would be inundated and gravely damaged (or destroyed), including highway bridges and the inlet of the Friant-Kern Canal, which supplies Bureau of Reclamation surface water to the Fresno area and to other communities in the southern San Joaquin Valley.

EPIDEMIC/PANDEMIC (HIGH)

Fresno's population includes many residents who have limited access to health care, with causes related to low household income levels, lack of insurance coverage, a limited number of primary health care facilities and acute care beds, a low ratio of public health and medical professionals to population, and language barriers. Highly communicable diseases tend to affect a large percentage of the City, perhaps due to large household size and the mobility of the population. If a highly communicable disease outbreak occurred that caused serious or life-threatening illness for most infected persons, health care and other public service systems would experience disruption or breakdown and would require outside intervention with resources from other communities, the state, or the federal government. The recent COVID-19 pandemic caused high mortality and illness across the State of California and within Fresno. The Hazard Profile section in Chapter 4: Risk Assessment, details this event further.

EXTREME COLD/FREEZE (HIGH)

Freeze events occur occasionally in Fresno, but impacts are greater to the agriculture industry in the County than to the City. In January 2007, overnight minimum temperatures fell below freezing between January 6 and 10. The event led to a presidential disaster declaration due to the estimated \$710 million in agricultural damage in the Central and South Valley. The 2007 event occurred in another eight-year interval after the devastating citrus freezes of 1998 and 1990. The event caused frozen pipes in Fresno but little other property damage. The City also has a plan for freezing temperature events and opens warming centers. These centers are primarily geared toward the homeless population.

EXTREME HEAT (HIGH)

Fresno uses a local version of the California State Plan for Extreme Heat. This plan was used during the extreme heat event during the summer of 2006 and worked well. The City operates cooling centers,



which are primarily geared toward the homeless. Public notification for extreme heat events is conducted through the Public Affairs office in coordination with Fresno County.

EXPANSIVE SOILS (MEDIUM)

These types of soils occur in northern Fresno in the far northeastern portions of its Sphere of Influence (in the “Copper River” area). Expansive clay soils can cause cavitation over time and require special construction standards for foundations.

FLOOD/LEVEE FAILURE (HIGH)

As noted in the preceding section, there is some flood risk to the City from San Joaquin River major dam failure inundation, but the more common flood risk, repetitively experienced in Fresno, is that of shallow “sheet” flooding from major precipitation events. Except for the San Joaquin River, streams in the Fresno-Clovis Metropolitan Area originate in the Sierra foothills to the east and extend into the valley floor west of State Route 99 by way of dual-use irrigation and storm runoff channels and disperse into numerous smaller irrigation canals. Overflow from these canals and urban stormwater from intense precipitation events is sent back to the San Joaquin River or to farmland southwest of Fresno via spillway channels.

In the City of Fresno, these canals and channels are under control of the Fresno Irrigation District, an independent public agency, but their use during storm events is shared by another independent district, the Fresno Metropolitan Flood Control District (FMFCD). The FMFCD was created to develop flood control facilities to prevent further repetitive losses created by the Fresno Stream Group and to provide an urban drainage network. This District is responsible for administering a Storm Drainage and Flood Control Master Plan. The City’s municipal code supports these efforts by including a Drainage Fee Ordinance to ensure that grading and development comply with the FMFCD’s Master Plan and standards and provide proportionate shares of storm drain and ponding basin infrastructure.

The City of Fresno’s Floodplain Ordinance further coordinates and supports FMFCD efforts. This ordinance and the Fresno General Plan Safety Element policies require conformance to FEMA floodplain management policies and to those of California’s Central Valley Flood Prevention Board (which regulates the designated floodway along the San Joaquin River channel). Still, in areas not completely developed to urban standards, areas where the urban drainage network is not yet completed, and in some County “island” areas (land within the City that the County has authority over), stormwater drainage facilities may not prevent localized shallow flooding during intense runoff events.

According to FEMA’s 2016 Flood Insurance Study (FIS), the following major canals and ditches run through the City:

- Central Canal flows southwest through the southeastern part of the City of Fresno.
- Dry Creek Canal begins at the confluence of Mill Ditch and Herndon Canal, just downstream of North Millbrook Avenue, and flows southwest through the southwestern portion of the City.
- Fancher Creek Canal flows southwest along the eastern corporate limits of the City of Fresno and joins Central Canal at the southeast corner of the City.



- Herndon Canal begins at the confluence of Mill Ditch and Dry Creek Canal. It flows west through the center of the City of Fresno, then flows northwest through the northwestern part of the City.
- Mill Ditch flows west along East McKinley Avenue to its confluence with Herndon and Dry Creek Canals.

The FIS details the City of Fresno's flood history as follows:

In February 1884, flood flows from streams of the Fresno-Clovis group inundated the business section of the City of Fresno. Frequent flooding was a problem in the City throughout 1880. Suburban areas of the City were flooded in spring 1920; the downtown area was inundated in 1923; flooding occurred in the Fig Garden area in 1936; and parts of the City, especially in the northeast section, were flooded in March 1938. Since the 1938 flood, which had an estimated discharge of 2,700 cubic feet per second (cfs) on Dry Creek at the Big Dry Creek Dam site, high flows occurred on that stream in December 1955 (3,800 cfs), January 1969 (5,700 cfs), and February 1969 (4,500 cfs). During December 1955, approximately 500 acres of agricultural and suburban land were flooded by overflow from irrigation canals, and damage, mostly to public facilities, totaled approximately \$50,000. The largest and most damaging flood period was January and February 1969, when the combined discharges of Dry, Dog, Redbank, Fancher, and Mud Creeks flooded an estimated 14,500 acres and caused almost \$4.7 million in damage. Most of the flooding was in the eastern and northeastern parts of the City. It occurred because many of the streams in the Fresno-Clovis group discharged floodwater into various irrigation canals, causing them to overflow.

Several flood events that have occurred in Fresno are detailed below.

- **1998 (El Niño rain event):** In 1998, Fresno County was hit by extensive rainfall over 33 days within a six-month period, causing widespread flooding and prompting local, state, and federal emergency declarations. Property and public facility damage totaled nearly half a million dollars, while the farming industry suffered a \$17 million loss, primarily impacting tree fruit and row crops. The community faced substantial economic impacts between \$38-48 million, and the agricultural workforce experienced significant unemployment and reduced work hours.
- **2005-2006:** Above average rainfall occurred between December 19, 2005, and January 1, 2006. This resulted in flooding of low-lying areas throughout the County. Flood control basins were overflowing in several areas, including the Cities of Fresno and Clovis. Property damage included damage to approximately 180 businesses and homes estimated at \$1.4 million within the unincorporated County. Damage to other jurisdictions was estimated at \$611,307. Damage to crops was minimal due to the time of year. Flooding further resulted in several road closures, which were one to two weeks in duration.
- **October 29, 2007:** Newspapers and broadcast meteorologists reported several roadways flooded in Northwest Fresno. Numerous vehicles were stranded, and water rescues occurred. Heavy rain caused a roof to collapse at an industrial plant on the northwest side of the city. Damage was estimated at 250,000 to the roof structure alone. Total property damage associated with the event amounted to over \$500,000.
- **December 2007:** Heavy rain and snowstorms ravaged central California, including the San Joaquin Valley and Fresno metropolitan area. The combination of locally heavy rains and poor drainage



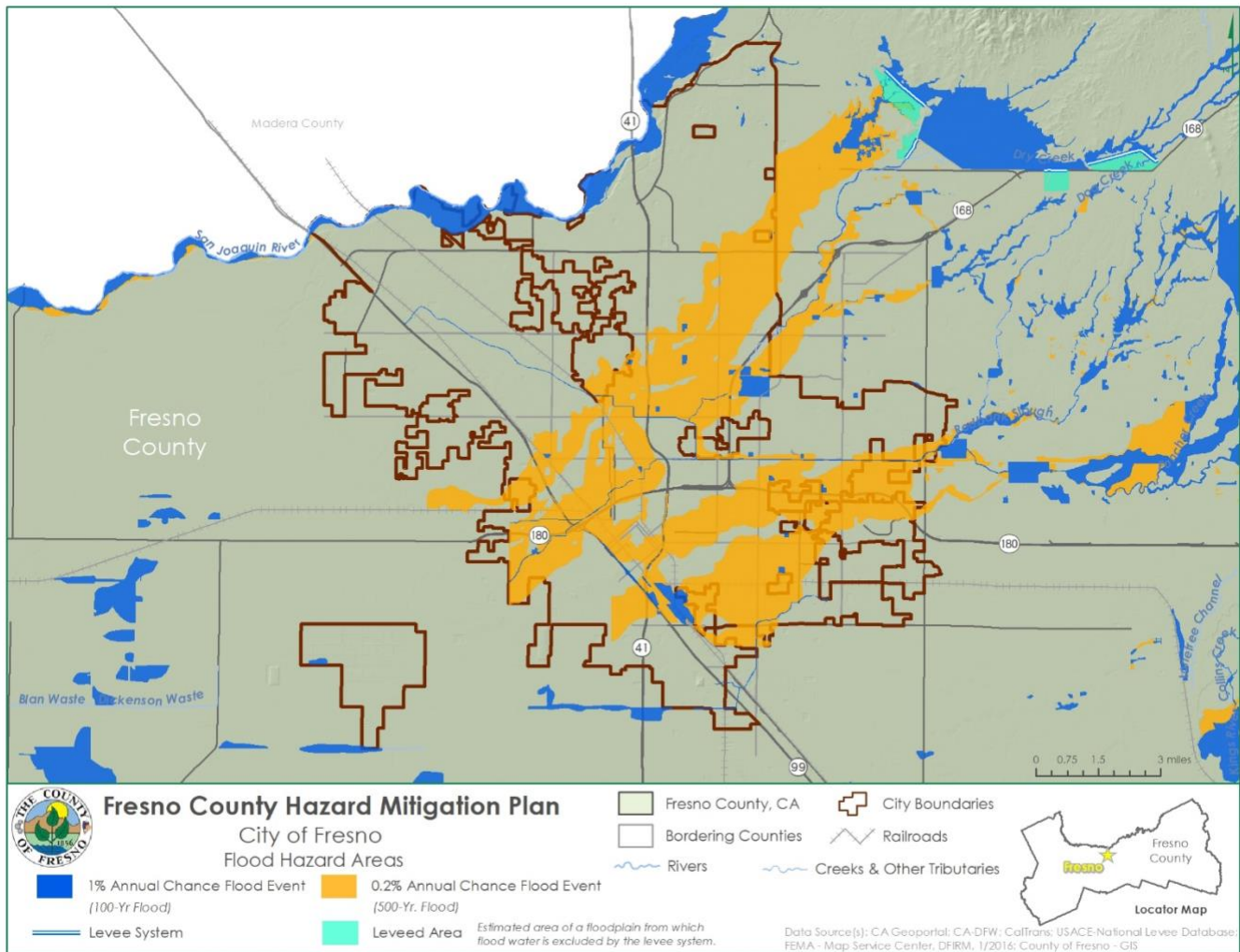
areas within the urban and suburban land lead to over \$175,000 in property damage between December 18th and 19th.

- **December 29, 2010:** On the morning of the 29th, heavy rain across the San Joaquin Valley caused widespread urban and poor drainage flooding. Especially hard hit were the metro areas of Fresno, Visalia, and Bakersfield, and the adjacent foothills. Fresno had a record rainfall of 0.92 inch on the 28th, breaking the old record of 0.72 inch, set in 2004. The two-day total at Fresno-Yosemite International Airport was 1.54 inch, which pushed the December rainfall to 5.92 inches for the second wettest December on record for Fresno; the wettest December was in 1955, with 6.73 inches. It was also the coldest low of the year for Fresno, with temperatures dropping below 32 degrees. Property damage amounted to \$125,000.
- **November 30, 2011:** Fresno set record high minimum temperatures on the last day of the month, establishing the total record for the sixth warmest November. This was also the fourth consecutive month that Fresno ranked in the top 10 warmest months. Fresno had a record rainfall on November 30th of 0.62 inch; the old record was 0.50 inch. As a result of the heavy rainfall, some rock and mud slides occurred as the moisture weakened the soil. Law enforcement reported a rock and mud slide on Highway 168 about 15 miles northeast of Clovis, which closed the road for several hours while authorities cleaned up the debris.
- **December 16, 2018:** A cold front that was associated with a moist upper trough pushed across central California on December 17. This system brought moderate to locally heavy rainfall from Fresno County northward the late evening of December through the morning of December 17 where several stations reported a half inch to an inch and a quarter of rainfall, and there were several reports of mainly nuisance flooding during this time. The precipitation mainly fell as snow above 6500 feet where several stations in the Southern Sierra Nevada north of Fresno County picked up between 3 and 6 inches of new snow. Further south the rainfall was less plentiful with most locations receiving between a few hundredths of an inch to a quarter of an inch of rain by the time the precipitation ended by early afternoon on December 17.

VALUES AT RISK

Following the methodology described in Section 4.3.2 Vulnerability of Fresno County to Specific Hazards, a flood map for the City of Fresno was created (see **Figure 6. City of Fresno Flood Hazard Areas**). **Table 10. City of Fresno's FEMA 1% Annual Chance Flood Hazard Property Type** and **Table 11. City of Fresno's FEMA 0.2% Annual Chance Flood Hazard by Property Type** summarize the values at risk in the City's 100-year and 500-year floodplain, respectively. These tables also detail loss estimates for each flood.

Figure 6. City of Fresno Flood Hazard Areas



Source: CA Geoportal; CA Geoportal; CA-DFW; CalTrans; USACE-National Levee Database; FEMA – Map Service Center, DFIRM, 1/2016; County of Fresno - GIS



Table 10. City of Fresno's FEMA 1% Annual Chance Flood Hazard Property Type

Property Type	Parcel Count	Improved Value	Content Value	Total Value	Loss Estimate
Agriculture	7	\$2,946,135	\$5,728,367	\$8,674,502	\$2,168,625.50
Apartments	105	\$164,861,445	\$31,921,659	\$196,783,104	\$49,195,776.00
Commercial	17	\$2,728,412	\$1,698,214	\$4,701,726	\$1,175,431.50
Condominium	9	\$2,946,834	\$1,001,664	\$3,948,498	\$987,124.50
Industrial	74	\$253,466,476	\$91,341,641	\$347,777,017	\$86,944,254.25
Mobile/Manufactured Home	1	\$2,562,515	\$2,959,024	\$5,521,539	\$1,380,384.75
Office/Professional Space	1	\$300,900	\$81,600	\$382,500	\$95,625.00
Primary Use Not Designated	80	\$0	\$0	\$0	\$0.00
Recreation	1	\$164,951	\$176,735	\$341,686	\$85,421.50
Single-Family Residence	187	\$30,890,879	\$12,724,102	\$43,624,981	\$10,906,245.25
Vacant	34	\$1,040	\$6,284,806	\$6,285,846	\$1,571,461.50
Unknown	1,004				
Total	1,520	\$460,869,587	\$153,917,812	\$618,041,399	\$154,510,349.75

Source: Fresno County Parcel and Assessor Data; 2009 FIRM

Table 11. City of Fresno's FEMA 0.2% Annual Chance Flood Hazard by Property Type

Property Type	Parcel Count	Improved Value	Content Value	Total Value	Loss Estimate
Agriculture	32	\$5,495,613	\$10,676,537	\$16,172,150	\$4,043,037.50
Apartments	3,113	\$11,491,883,444	\$2,307,538,758	\$13,799,422,202	\$3,449,855,550
Church	36	\$26,935,989	\$3,602,572	\$30,755,561	\$7,688,890.25
Commercial	1,003	\$4,370,582,940	\$958,255,679	\$5,361,476,269	\$1,340,369,067
Communications	1	\$0	\$3,458	\$3,458	\$864.50
Condominium	14	\$34,466,814	\$6,779,664	\$41,246,478	\$10,311,619.50
Group Housing/Lodging	25	\$71,850,485	\$15,170,699	\$87,700,784	\$21,925,196.00
Hospital	16	\$341,363,536	\$17,708,710	\$359,072,246	\$89,768,061.50
Industrial	159	\$152,095,940	\$35,261,197	\$190,612,677	\$47,653,169.25
Mobile/Manufactured Home	2	\$2,701,780	\$4,529,389	\$7,231,169	\$1,807,792.25
Office/Professional Space	361	\$795,090,433	\$241,409,256	\$1,039,367,489	\$259,841,872.25
Outlot & Common Area	1	\$9	\$14	\$23	\$5.75



Property Type	Parcel Count	Improved Value	Content Value	Total Value	Loss Estimate
Primary Use Not Designated	164	\$0	\$0	\$0	\$0.00
Recreation	1	\$2,147,372	\$418,318	\$2,565,690	\$641,422.50
School	8	\$9,884,350	\$2,386,174	\$12,309,124	\$3,077,281.00
Single-Family Residence	5,390	\$673,165,551	\$240,945,384	\$914,127,235	\$228,531,808.75
Vacant	359	\$949,614	\$45,393,715	\$46,471,529	\$11,617,882.25
Total	10,685	\$17,978,613,870	\$3,890,079,524	\$21,908,534,084	\$5,477,133,521

Source: Fresno County Parcel and Assessor data; FEMA 2009 FIRM

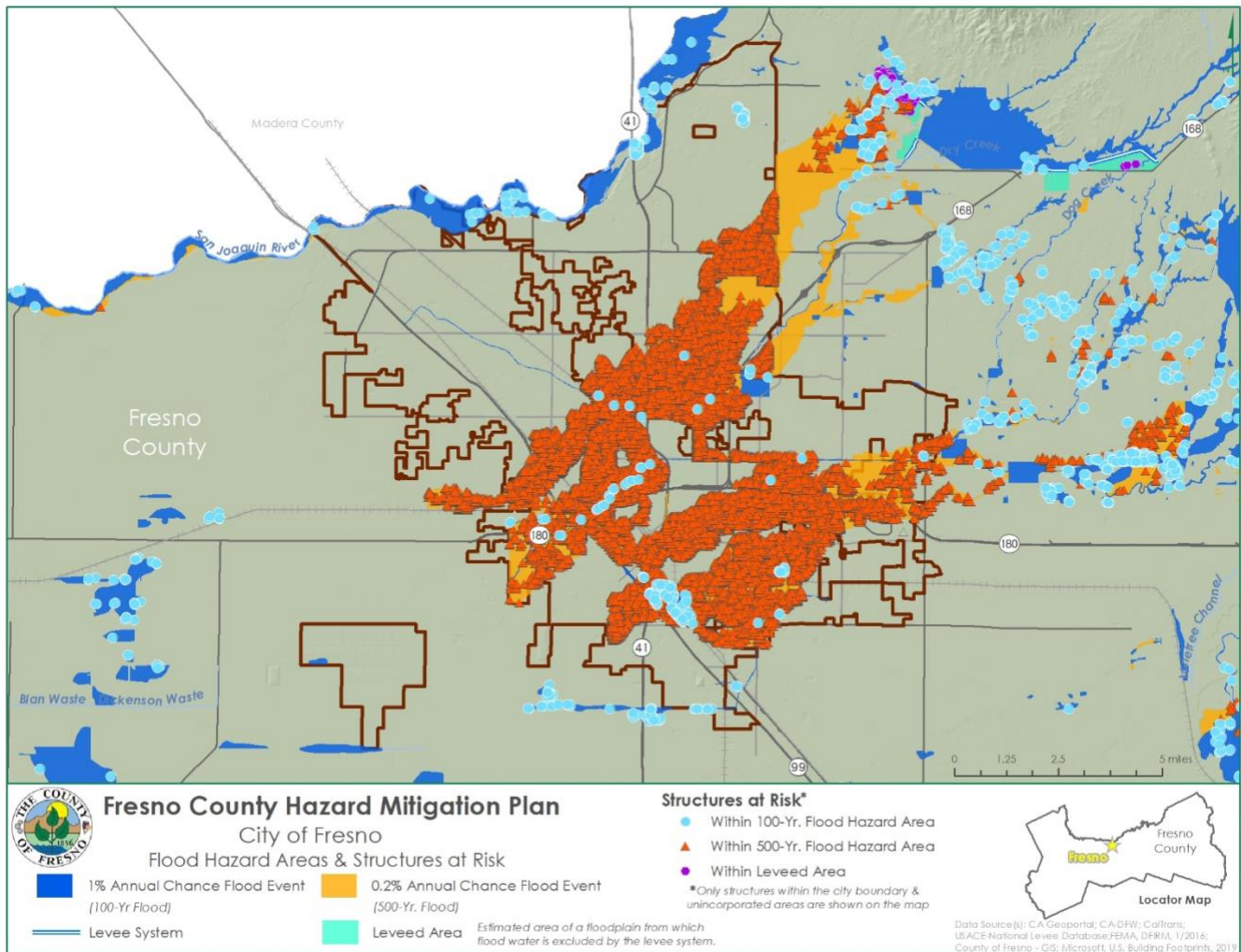
Based on this analysis, the City of Fresno has significant assets at risk to the 100-year and greater floods. There are 1,520 parcels within the 100-year floodplain for a total value of roughly \$618 million, including building and content value. An additional 10,685 parcels valued at roughly \$21.9 billion fall within the 500-year floodplain.

Applying the 25 percent damage factor as described in Section 4.3.2, there is a 1 percent chance in any given year of a 100-year flood causing roughly \$154 million in damage in the City of Fresno and a 0.2 percent chance in any given year of a 500-year flood causing roughly \$5.48 billion in damage (combined damage from both floods).

Properties at risk to flooding are shown in relation to the mapped floodplains in Figure 16. City of Fresno's Properties at Risk in the 100- and 500-Year Floodplains.

Limitations: This model may include structures in the floodplains that are elevated at or above the level of the base-flood elevation, which will likely mitigate flood damage. Also, the assessed values are well below the actual market values. Thus, the actual value of assets at risk may be significantly higher than those included herein.

Figure 7. City of Fresno Flood Hazard Area Buildings at Risk



Source: CA Geoportal; CA-DFW; CalTrans; USACE National Levee Database, FEMA, DFIRM, 1/2016; County of Fresno – GIS, Microsoft, U.S. Building Footprints, 2019

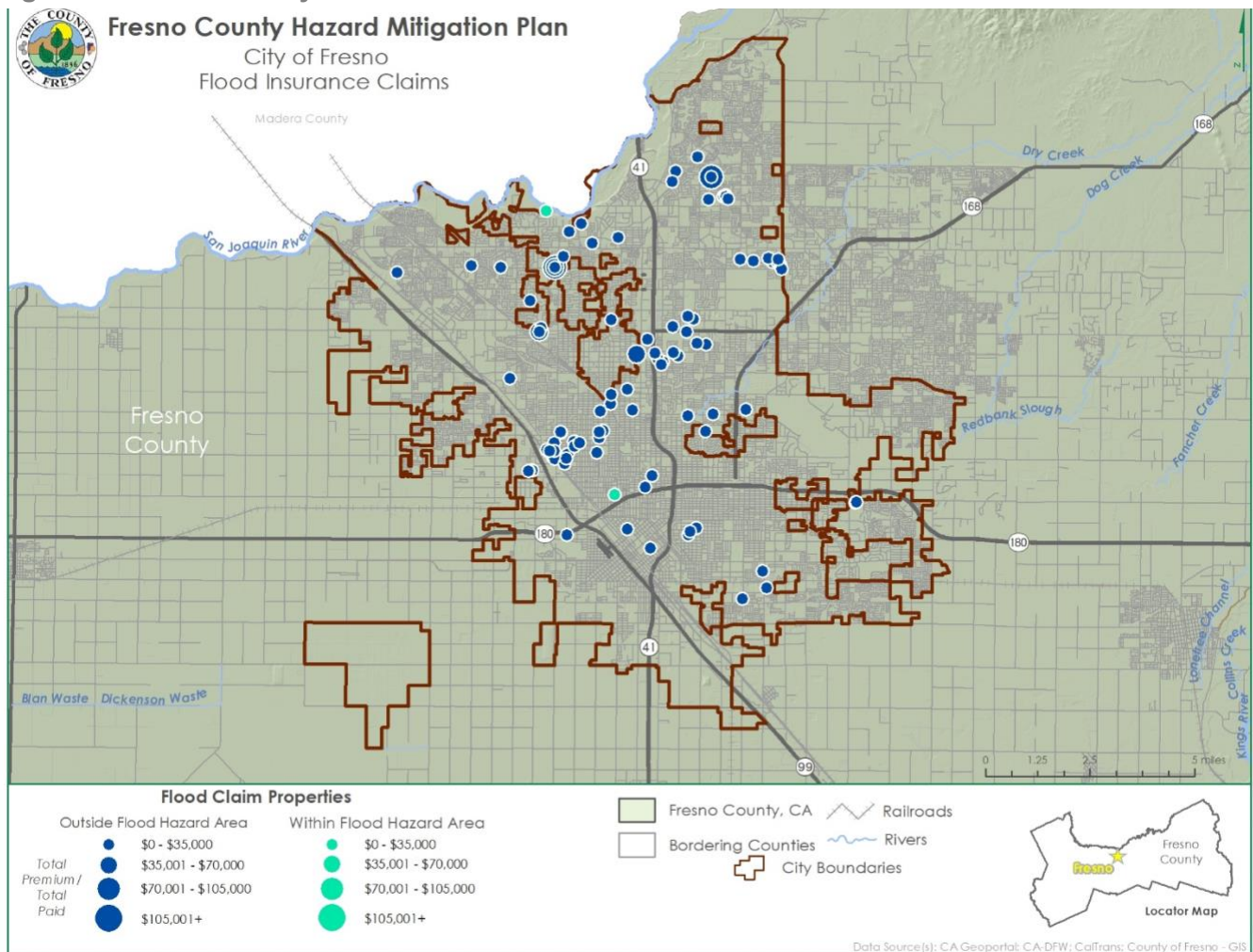
In addition to the 100-year and 500-year floodplains mapped by FEMA, the California Department of Water Resources maintains Best Available Maps (BAM) which include the floodplains in the Sacramento and San Joaquin River Basins, based on a study performed in 2002 by the U.S. Army Corps of Engineers (USACE). Though limited to the San Joaquin River as a flood source and thus not as comprehensive as the FEMA FIRM, the USACE study shows additional differentiation in flood risk by modeling the 200-year floodplain (the flood with a 0.5 percent annual chance of occurring).

INSURANCE COVERAGE, CLAIMS PAID, AND REPETITIVE LOSSES

The City of Fresno joined the National Flood Insurance Program (NFIP) on December 1, 1982. In addition to providing insurance for properties at risk of flooding, the program collects and publishes statistics on flood-related losses in participating jurisdictions.

NFIP insurance data for the City of Fresno indicates that as of March 19, 2024, there were 182 flood insurance policies in force in the City with \$126,073 in total premium or total paid. This coverage represents a decline of nearly 200 policies over the last decade. **Figure 8. Fresno County Flood Insurance Claims** displays where the flood claims were submitted across the City of Fresno.

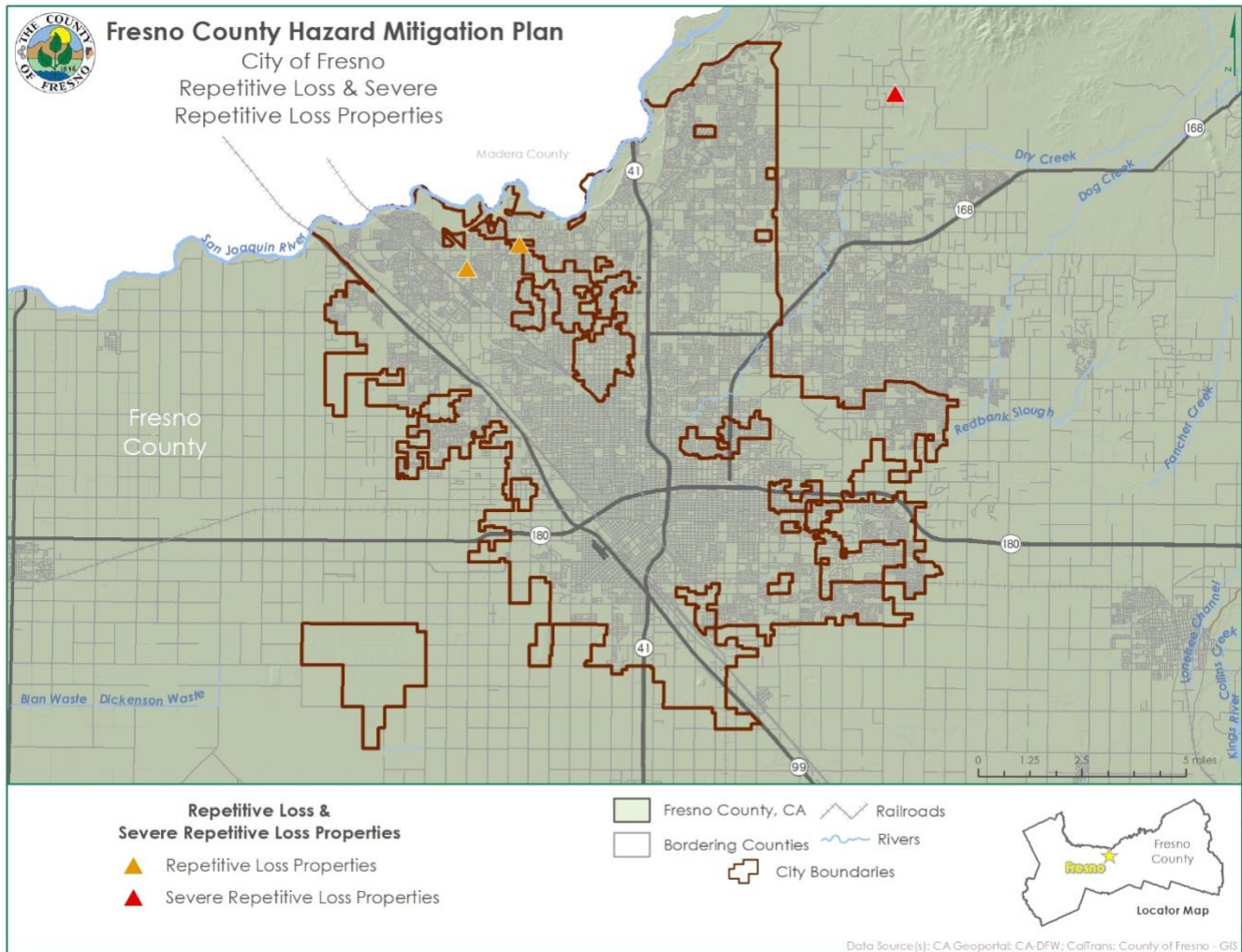
Figure 8. Fresno County Flood Insurance Claims





There have been 148 historical claims for flood losses totaling \$931,867.10; According to the FEMA Community Information System accessed March 19, 2024, there are two repetitive loss properties within the City of Fresno, shown in **Figure 9. City of Fresno Repetitive Loss and Severe Repetitive Loss Properties.**

Figure 9. City of Fresno Repetitive Loss and Severe Repetitive Loss Properties



Source: CA Geoportal; CA-DFW; CalTrans; County of Fresno - GIS

POPULATION AT RISK

Using census tract population values from the 2020 US Census, the planning team estimates that the following are at risk to flooding in the City of Fresno:

- 100-year flood—114,159 people
- 500-year flood— 79,527 people
- Total flood—193,686 people

CRITICAL FACILITIES AT RISK

Critical facilities are those community components that are most needed to withstand the impacts of disaster as previously described. **Table 12. Critical Facilities in the 100- and 500-Year Floodplains: City of Fresno** lists the critical facilities in the City's 100- and 500-year floodplains.

Table 12. Critical Facilities in the 100- and 500-Year Floodplains: City of Fresno

Critical Facility Type	100-Year Floodplain	500-Year Floodplain
Airport Facilities	-	1
Bus Facilities	-	1
Communications	-	4
Electric Power Facilities	-	1
EOC	-	1
Fire Stations	-	6
Medical Care Facilities	-	4
Police Stations	-	5
Railway Facilities	-	1
Schools	-	66
Total	0	90

Source: Fresno County, HIFLD 2017

HAZARDOUS MATERIALS INCIDENT (HIGH)

The following are the primary concerns for the City of Fresno related to hazardous materials release:

- Train derailments
- Kinder-Morgan pipeline
- Chevron petroleum pipelines
- Storage facilities



There have been 141 hazardous materials incidents from 2017-2022 that have occurred in the City of Fresno. Of the 141 incidents, there were 77 railroad non-release, 1 aircraft, 38 fixed, 8 mobile, 3 pipeline, 3 railroad, 10 storage tank, and 1 unknown sheen incident. There were 34 injuries, 24 hospitalizations, \$350,000 in damages, 31 fatalities, and 395 evacuees during the time period.³ There are 28 CalARP hazardous materials facilities located in the City of Fresno.

SEVERE WEATHER: WINDSTORM (MEDIUM)

Fresno's prevailing winds are typically light and from the northwest. High wind conditions are occasionally created by strong weather fronts. Occasionally, there are funnel clouds of low intensity. Past structural damage has been light, infrequent, and very limited in geographic extent. Injuries have been extremely rare. Most of this damage has occurred secondary to large trees being blown over. The City's design wind load, the level of wind force that new structures are required to be engineered to withstand, is 70 mph.

SOIL HAZARDS: LAND SUBSIDENCE (LOW)

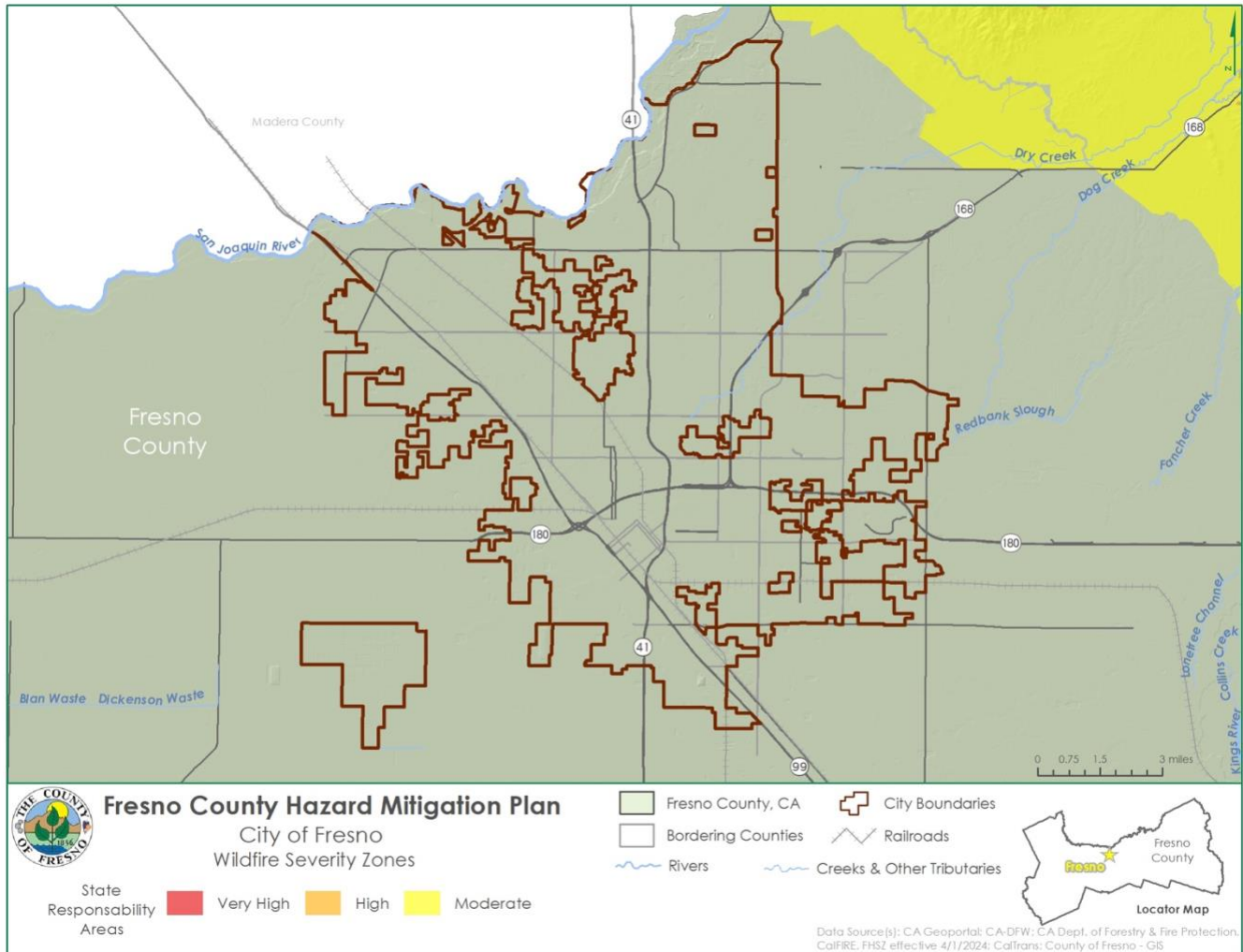
Despite long-term over-drafting of groundwater that has lowered the static water table under Fresno by as much as 100 feet over the past century, ground level subsidence has not been noted in the vicinity of the City (this is probably due to the geologic strata underlying the City, which features layers of clay and hardpan interleaved with sand and gravel layers).

WILDFIRE (HIGH)

Similar to many areas of the County, Fresno has high temperatures in the summer with low rainfall creating fire hazard conditions. There is some wildfire risk in the San Joaquin River Bluff area North of Fresno due to vegetation and steep slopes. However, the Wildfire Hazard Severity Zone outside of jurisdictional boundaries, shown in the figure below. In this recent 2024 update, the City noted during the planning process that wildfires pose a higher risk which is why the risk has increased from medium to high. There have been no known significant fires that have occurred in the past several years. Additionally, there are not any critical facilities in wildfire threat zones in the City of Fresno.

³ California Environmental Protection Agency, California Accidental Release Prevention Program, 2017-2022

Figure 10. City of Fresno Wildfire Hazard Severity Zone



Source: CA Geoportal; CA-DFW; CA Department of Forestry and Fire Protection, CalFIRE ArcGIS Online Portal; CalTrans; County of Fresno - GIS

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 jurisdictional planning representatives used a matrix of common mitigation activities to inventory which of these policies or programs were in place. The team then supplemented this inventory by reviewing additional existing policies, regulations, plans, and programs to determine if they contributed to reducing hazard-related losses.

During the plan update process, this inventory was reviewed by the jurisdictional planning representatives and Witt O'Brien's consultant team 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 Fresno's updated capabilities are summarized below. A summary of the mitigation capabilities is summarized in the following table.

Table 13. City of Fresno Mitigation Capability Summary

Area	Degree of Capability		
	Limited	Moderate	High
Planning and Regulatory Capability			X
Administrative and Technical Capability			X
Fiscal Capability			X
Available Staff			X
Political Support/Interest			X
Community Support			X

REGULATORY MITIGATION CAPABILITIES

Table 14. City of Fresno's Regulatory Mitigation Capabilities lists regulatory mitigation capabilities, including planning and land management tools, typically used by local jurisdictions to implement hazard mitigation activities and indicates those that are in place in Fresno.



Table 14. City of Fresno's Regulatory Mitigation Capabilities

Tool/Program	In Place		Adopted/Updated	Under Development		Expect to Implement
	Yes	No		Yes	NO	
Building Codes (please indicate UCC or IBC + year)	X					
Community Emergency Response Team (CERT)		X				
Community Rating System (CRS Program of the NFIP)		X				
Emergency Management Accreditation Program (EMAP)		X				
Fire Code	X					
Firewise Community		X				
Floodplain Management/Flood Damage Prevention Ordinance		X				
Land Use/Development Planning	X					
National Flood Insurance Program (NFIP)	X					
Post Disaster Redevelopment/Reconstruction Plan/Ordinance		X				
Storm Ready	X					
Stormwater Management Plan/Ordinance	X					
Subdivision Regulations/Ordinance	X					
Two Weeks Ready						
Unified Development Ordinance		X				
Zoning Ordinance	X					

FRESNO GENERAL PLAN (ADOPTED DECEMBER 18, 2014)

The Fresno General Plan is forward-looking, comprehensive, and long-range. It supports the community's vision to preserve the desirable qualities that make the city of Fresno an ideal place to live, work, and play. The Plan recommends strategies to address prevalent existing conditions and



trends that impede achieving and maintaining greater human, community, environmental, and economic health and prosperity. The Plan envisions Fresno as a vibrant, growing city, infused with a sense of heritage and community. The primary purpose of a general plan is to outline a long-range vision for the physical development of the city that reflects the aspirations of the community. Since economic, social, transportation, environmental, public facilities and services, and other outcomes are interrelated with land use and development and are important to the community, the Plan includes applicable policies related to these complementary areas as well. The Plan presents a blueprint to guide economic development initiatives, as well as needed investments in improvements to increase competitiveness and promote economic growth. The general plan includes nine state mandated elements including land use, circulation, housing, conservation, noise, open space, safety, air quality and environmental justice. Relevant elements and information to the hazard mitigation plan are outlined below.

- **Goal 9:** Promote a city of healthy communities and improve quality of life in established neighborhoods.
 - Emphasize supporting established neighborhoods in Fresno with safe, well maintained, and accessible streets, public utilities, education and job training, proximity to jobs, retail services, health care, affordable housing, youth development opportunities, open space and parks, transportation options, and opportunities for home grown businesses.
- **Goal 12:** Resolve existing public infrastructure and service deficiencies, make full use of existing infrastructure, and invest in improvements to increase competitiveness and promote economic growth.
 - Emphasize the fair and necessary costs of maintaining sustainable water, sewer, streets, and other public infrastructure and service systems in rates, fees, financing and public investments to implement the General Plan. Adequately address accumulated deferred maintenance, aging infrastructure, risks to service continuity, desired standards of service to meet quality-of-life goals, and required infrastructure to support growth, economic competitiveness and business development.
- **Goal 16:** Protect and improve public health and safety.

Some of the elements of the General Plan also contain objectives and policies relevant to protecting human health and safety (e.g., supporting objectives and policies in the Public Utilities and Services Element direct that amendments to construction and fire codes to reduce the level of risk to life and property from fire commensurate with the City's fire suppression capabilities and that fire and police services be provided). Because the Noise and Safety Element is the portion of the General Plan most relevant to hazard mitigation, select objectives and policies are extracted and included below.

THE NOISE AND SAFETY ELEMENT

The Noise and Safety Element seeks to reduce deaths, injuries, illnesses, damage to property, and economic and social dislocation that could result from hazards. Of specific relevance to this plan, it addresses seismic and geologic conditions, flooding, hazardous materials, and emergency response.



Seismic and Geologic Hazards

Policy Number	Policy Description
NS-2	Objective: Minimize risks of property damage and personal injury posed by geologic and seismic risks.
NS-2a	Seismic Protection. Ensure seismic protection is incorporated into new and existing construction, consistent with the Fresno Municipal Code.
NS-2b	Soil Analysis Requirement. Identify areas with potential geologic and/or soils hazards, and require development in these areas to conduct a soil analysis and mitigation plan by a registered civil engineer (or engineering geologist specializing in soil geology) prior to allowing on-site drainage or disposal for wastewater, stormwater runoff, or swimming pool/spa water.
NS-2c	Landfill Areas. Require proposed land uses on or near landfill areas to be designed and maintained to comply with California Code of Regulations, Title 27, Section 21190, Post Closure Land Use.
NS-2d	Bluff Preservation Overlay Zone. Per the requirements of the Bluff Preservation Overlay Zone District and Policy POSS-7-f (Chapter 5, Parks and Open Space), the following standards shall be applicable for property located within the Bluff Preservation zone: - Require proposed development within 300 feet of the toe of the San Joaquin River bluffs to undertake an engineering soils investigation and evaluation report that demonstrates that the site is sufficiently stable to support the proposed development, or provide mitigations to provide sufficient stability; and - Establish a minimum setback of 30 feet from the San Joaquin River bluff edge for all buildings, structures, decks, pools and spas (which may be above or below grade), fencing, lighting, steps, etc. An applicant may request to reduce the minimum setback to 20 feet from the bluff edge if it can be demonstrated, to the satisfaction of the City's Building Official and the Planning Director, that the proposed building, structure, deck, pool and/or spas (which may be above or below grade), fencing, steps, etc., will meet the objectives of the Bluff Preservation Overlay Ordinance. In no case shall the setback be reduced to less than 20 feet.

Flooding Hazards

Policy Number	Policy Description
NS-3	Objective: Minimize the risks to property, life, and the environment due to flooding and stormwater runoff hazards.
NS-3a	Stormwater Drainage and Flood Control Master Plan. Support the full implementation of the FMFCD Storm Drainage and Flood Control Master Plan, the completion of planned flood control and drainage system facilities, and the continued maintenance of stormwater and flood water retention and conveyance facilities and capacities. Work with the FMFCD to make sure that its Storm Drainage and Flood Control Master Plan is consistent with the General Plan.
NS-3b	Curb and Gutter Installation. Coordinate with Fresno Metropolitan Flood Control District (FMFCD) to install curbing, gutters, and other drainage facilities with priority to existing neighborhoods with the greatest deficiencies and consistent with the Storm Drainage and Flood Control Master Plan.
NS-3c	Dual Use Facilities. Support multiple uses of flood control and drainage facilities as follows: - Use, wherever practical, FMFCD facilities for groundwater management and recharge; and - Promote recreational development of ponding basin facilities located within or near residential areas, compatible with the stormwater and groundwater recharge functions.



Policy Number	Policy Description
NS-3d	Landscaped Buffer. City will support the development of FMFCD ponding basins including the landscaping and irrigation for the top one third of the side sloped areas consistent with the FMFCD Basin Design Criteria.
NS-3e	Pollutants. Work with FMFCD to prevent and reduce the existence of urban stormwater pollutants pursuant to the requirements of the National Pollution Discharge Elimination Systems Act.
NS-3f	Flooding Emergency Response Plans. Work with responsible agencies to update emergency dam failure inundation plans, evacuation plans and other emergency response plans for designated flood-prone areas, including the San Joaquin river bottom.
NS-3g	Essential Facilities Siting Outside of Floodplains. Avoid siting emergency response and essential public facilities, such as fire and police stations, within a 100-year floodplain, unless it can be demonstrated that the facility can be safely operated and accessed during flood events.
NS-3h	Runoff Controls. Implement grading regulations and related development policies that protect area residents from flooding caused by urban runoff produced from events that exceed the capacity of the Storm Drainage and Flood Control Master Plan system of facilities. Place all structures and/or flood-proofing in a manner that does not cause floodwaters to be diverted onto adjacent property, increase flood hazards to other property, or otherwise adversely affect other property.
NS-3i	New Development Must Mitigate Impact. Require new development to not significantly impact the existing storm drainage and flood control system by imposing conditions of approval as project mitigation, as authorized by law. As part of this process, closely coordinate and consult with the FMFCD to identify appropriate conditions that will result in mitigation acceptable and preferred by FMFCD for each project. Commentary: The City recognizes the expertise and significant role of the FMFCD, and will give the highest deference to its recommendations for mitigation measures, consistent with applicable law.
NS-3j	National Flood Insurance Program. Continue to participate in the National Flood Insurance Program (NFIP) by ensuring compliance with applicable requirements. Review NFIP maps periodically to determine if areas subject to flooding have been added or removed and make adjustments to the Land Use Diagram Figure LU-1.
NS-3k	100-Year Floodplain Policy. Require developers of residential subdivisions to preserve those portions of development sites as open space that may be subject to 100-year flood events, unless the flood hazard can be substantially mitigated by development project design.
NS-3l	200-Year Floodplain Protection. Promote flood control measures that maintain natural conditions within the 200-year floodplain of rivers and streams and, to the extent possible, combine flood control, recreation, water quality, and open space functions. Discourage construction of permanent improvements that would be adversely affected by periodic floods within the 200-year floodplain, particularly in the San Joaquin river bottom.
NS-3m	Flood Risk Public Awareness. Continue public awareness programs to inform the general public and potentially affected property owners of flood hazards and potential dam failure inundation. Remind households and businesses located in flood-prone areas of opportunities to purchase flood insurance.
NS-3n	Precipitation Changes. Work with FMFCD to evaluate the planned and existing stormwater conveyance system in light of possible changes to precipitation patterns in the future.

Hazardous Materials

Policy Number	Policy Description
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NS-4	Minimize the risk of loss of life, injury, serious illness, and damage to property resulting from the use, transport, treatment, and disposal of hazardous materials and hazardous wastes.
NS-4a	Processing and Storage. Require safe processing and storage of hazardous materials, consistent with the California Building Code and the Uniform Fire Code, as adopted by the City.
NS-4b	Coordination. Maintain a close liaison with the Fresno County Environmental Health Department, Cal-EPA Division of Toxics, and the State Office of Emergency Services to assist in developing and maintaining hazardous material business plans, inventory statements, risk management prevention plans, and contingency/emergency response action plans.
NS-4c	Soil and Groundwater Contamination Reports. Require an investigation of potential soil or groundwater contamination whenever justified by past site uses. Require appropriate mitigation as a condition of project approval in the event soil or groundwater contamination is identified or could be encountered during site development.
NS-4d	Site Identification. Continue to aid federal, State, and County agencies in the identification and mapping of waste disposal sites (including abandoned waste sites), and to assist in the survey of the kinds, amounts, and locations of hazardous wastes.
NS-4e	Compliance with County Program. Require that the production, use, storage, disposal, and transport of hazardous materials conform to the standards and procedures established by the County Division of Environmental Health. Require compliance with the County's Hazardous Waste Generator Program, including the submittal and implementation of a Hazardous Materials Business Plan, when applicable.
NS-4f	Hazardous Materials Facilities. Require facilities that handle hazardous materials or hazardous wastes to be designed, constructed, and operated in accordance with applicable hazardous materials and waste management laws and regulations.
NS-4g	Hazmat Response. Include policies and procedures appropriate to hazardous materials in the City's disaster and emergency response preparedness and planning, coordinating with implementation of Fresno County's Hazardous Materials Incident Response Plan.
NS-4g	Hazmat Response. Include policies and procedures appropriate to hazardous materials in the City's disaster and emergency response preparedness and planning, coordinating with implementation of Fresno County's Hazardous Materials Incident Response Plan.
NS-4h	Household Collection. Continue to support and assist with Fresno County's special household hazardous waste collection activities, to reduce the amount of this material being improperly discarded.
NS-4i	Public Information. Continue to assist in providing information to the public on hazardous materials.

Emergency Response

Policy Number	Policy Description
NS-6	Objective: Foster an efficient and coordinated response to emergencies and natural disasters.
NS-6a	County Multi-Jurisdiction Hazard Mitigation Plan. Adopt and implement the Fresno County Multi-Jurisdiction Hazard Mitigation Plan and City of Fresno Local Hazard Mitigation Plan Annex. Commentary: The federal Disaster Mitigation Act of 2000 requires that cities, counties, and special districts have a Local Hazard Mitigation Plan to be eligible to receive FEMA hazard mitigation funds. Cities and counties can adopt and use all or part of a regional multi-jurisdictional plan, such as the one prepared by Fresno County, in lieu of preparing all or part of a Local Hazard Mitigation Plan.
NS-6b	Disaster Response Coordination. Maintain coordination with other local, State, and Federal agencies to provide coordinated disaster response.



NS-6c	Emergency Operations Plan. Update the City's Emergency Operations Plan periodically, using a whole community approach which integrates considerations for People with access and functional needs in all aspects of planning.
NS-6d	Evacuation Planning. Maintain an emergency evacuation plan in consultation with the Police and Fire Departments and other emergency service providers, which shows potential evacuation routes and a list of emergency shelters to be used in case of catastrophic emergencies. Commentary: The evacuation plan will be flexible in order to consider many scenarios and multiple modes of transportation beyond private automobiles. It will provide special provisions for disadvantaged populations, such as those with physical disabilities or those with low or very low incomes, and for areas with fewer resources through neighborhood emergency preparedness programs.
NS-6e	Critical Use Facilities. Ensure critical use facilities (e.g. City Hall, police and fire stations, schools, hospitals, public assembly facilities, transportation services) and other structures that are important to protecting health and safety in the community remain operational during an emergency. • Site and design these facilities to minimize their exposure and susceptibility to flooding, seismic and geological effects, fire, and explosions. • Work with the owners and operators of critical use facilities to ensure they can provide alternate sources of electricity, water, and sewerage in the event that regular utilities are interrupted in a disaster.
NS-6f	Emergency Vehicle Access. Require adequate access for emergency vehicles in all new development, including adequate widths, turning radii, hard standing areas, and vertical clearance.
NS-6g	Emergency Preparedness Public Awareness Programs. Continue to conduct programs to inform the general public, including people with access and functional needs, of the City's emergency preparedness and disaster response procedures.

FRESNO FLOODPLAIN ORDINANCE

The City of Fresno's Flood Plain Ordinance was revised in the late 1990s and formally adopted by the Fresno City Council on September 20, 2005. (In late 2007, the Fresno Municipal Code was republished with its chapters somewhat reorganized. There was no change in the text of the Flood Plain Ordinance at that time, but due to the reorganization of its content, its most recent adoption effective date is January 17, 2008.) The Fresno Flood Plain Ordinance is Article 6 of Chapter 11 of the Fresno Municipal Code.

The purpose of this ordinance is to promote the public health, safety, and general welfare and to minimize public and private losses due to flood conditions in specific areas by provisions 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 generally undertaken at the expense of the general public;
- Minimize prolonged business interruptions;
- Minimize damage to public facilities and utilities such as water and gas mains; electric, telephone, and sewer lines; and streets and bridges located in areas of special flood hazard;
- Help maintain a stable tax base by providing for the sound use and development of areas of special flood hazard so as to minimize future blighted areas caused by flood damage;



- Ensure that potential buyers are notified that property is in an area of flood hazard; and
- Ensure that those who occupy the areas of special flood hazard assume responsibility for their actions.

In order to accomplish its purposes, the ordinance includes the following methods and provisions:

- Restrict or prohibit uses which are dangerous to health, safety, and property due to water or erosion hazards, or which result in damaging increases in erosion or flood heights or velocities
- Require that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction
- Control filling, grading, dredging, and other development which may increase flood damage
- Prevent or regulate the construction of flood barriers which will unnaturally divert flood water or which may increase flood hazards in other areas
- Control the alteration of natural flood plains, stream channels, and natural protective barriers, which help accommodate or channel floodwaters

This ordinance applies to all areas of special flood hazards within the jurisdiction of the City as identified by FEMA's Flood Insurance Study for Fresno County, California and incorporated areas dated September 30, 2005, with accompanying Flood Insurance Rate Maps, and all subsequent amendments and/or revisions. It appoints the building official to administer, implement, and enforce the ordinance by granting or denying development permits in accord with its provisions.

This ordinance includes the following standards of construction related to special flood hazard areas:

- Anchoring
- Construction materials and methods
- Elevation and floodproofing
- Residential construction
- Nonresidential construction
- Flood venting
- Standards for utilities
- Standards for subdivisions
- Standards for manufactured homes
- Standards for recreational vehicles
- Floodways
- Standards for storage of materials and equipment



In conjunction with Fresno's Drainage Fee Ordinance (Fresno Municipal Code Chapter 12, Article 19), which requires local grading and development to conform to the Fresno Metropolitan Flood Control District Master Drainage Plan and to provide proportionate shares of drainage infrastructure, the Fresno Flood Plain Ordinance and its preceding Flood Damage Prevention Ordinance have reduced flood damage losses in the City.

NATIONAL FLOOD INSURANCE PROGRAM/COMMUNITY RATING SYSTEM

The City of Fresno joined the National Flood Insurance Program (NFIP) on December 1, 1982. It has been a member of the Community Rating System (CRS) since October 1, 1992. The City's Floodplain Administrator duties are assigned to the building official. The Building and Safety Division of the Planning and Development Department works to improve the City's CRS rating, which determines the price paid for flood insurance policies issued in the jurisdiction. The rating is based on detailed biannual audits conducted by FEMA and/or a designee agency (currently, the California Department of Water Resources). The primary means of improving and maintaining a good CRS rating is through administration of the Fresno Flood Plain Ordinance. As part of its efforts to improve its community rating, the City of Fresno has hosted periodic FEMA Region IX NFIP/CRS training.

According to the FEMA Community Status Book Report, accessed on March 27, 2024, the City's current CRS rating is Class 8, which includes a 10 percent SFHA discount and 0.05 percent Non-SFHA discount.

SAN JOAQUIN RIVER BLUFF PRESERVATION ORDINANCE, 1980

After an interagency San Joaquin River Reconnaissance Plan was completed in the late 1970s, the City of Fresno adopted the San Joaquin River Bluff Specific Plan to preserve this important open space and habitat feature and to safeguard the bluff face, which is the most unstable geologic feature in the City. The San Joaquin River Bluff Specific Plan was later subsumed by the 1988 Bullard Community Plan, which carried forward protective policies for this area of Fresno.

The regulation of land use, development, and grading in this portion of Fresno is ongoing pursuant to the Bluff Preservation Ordinance. This ordinance, part of the City's zoning regulations, delineates an overlay zone district along the river bluff (the Bluff Preservation Overlay District), established allowable and prohibited land uses, and set forth conditions and requirements for using or modifying property in the district. The regulations of the district are deemed to be necessary for the preservation of the special qualities of the bluffs and for the protection of the health, safety, and general welfare of owners and users of property in the area.

The Bluff Preservation Ordinance is administered by the Fresno Development and Resource Management Department through its special permit process and grading plan checks. Anyone applying for a building permit is required to submit a site plan review with accompanying soil investigation and evaluation report (prepared by an appropriately licensed professional engineer or registered geologist). The Department's Code Enforcement Division also conducts periodic surveillance of bluff properties for grading and construction done without permits and institutes abatement actions when these conditions are discovered.



HAZARDOUS MATERIAL INCIDENT SAFEGUARDS

The Fresno Fire Department works with Fresno County Environmental Health to review hazardous material business plans that detail flammable, explosive, toxic, and otherwise hazardous materials used by businesses in the City. The Fire Department has its own permitting requirement for liquid and gaseous fuel tanks to ensure that they are installed and maintained safely. The City's Hazardous Materials Response Unit (housed in a City fire station) maintains the capability to quickly characterize material releases and spills, to evaluate risks to life and property, and to implement appropriate controls and evacuation measures.

FIRE PREVENTION POLICY

The City of Fresno has some of the most progressive and effective fire prevention policies and regulations in the nation relating to water supply (fire flow) required for development, ingress and egress from developed buildings and subdivisions, on-site automatic fire suppression systems (sprinkler and on-site private hydrants), building addressing to facilitate rapid emergency response, marking of unsafe buildings (those older structures with hazardous conditions or a lack of water supply), and instant aid/mutual aid with adjacent fire departments belonging to Fresno County special districts and the City of Clovis.

In addition to its extensive network of well-trained and well-equipped firefighting stations, the Fresno Fire Department has a Fire Prevention Bureau, under supervision of the City's fire marshal, to administer regulations adopted and referenced by the Fresno Municipal Code Chapter 6, Article 5 relating to fire prevention. The Fire Prevention Bureau carries out these responsibilities by conducting routine inspections of all public and commercial buildings, performing detailed development permit and construction plan checks, and investigating arson.

Another component of the City's overall fire protection program is the administration of its public nuisance ordinances to require properties to be kept clean and free of flammable debris and to annually abate weeds and overgrown vegetation before these materials can dry out in the spring to pose a wildfire hazard (Fresno Municipal Code Chapter 10, Article 6 relating to public nuisance abatement). The Planning and Development Department Code Enforcement Division and Department of Public Utilities Community Sanitation Division coordinate their efforts to enforce the nuisance abatement regulations and provide cleanup services when property owners do not take care of matters themselves.

PLANNING MITIGATION CAPABILITIES

Figure X identifies the plans related to mitigation and loss prevention in Fresno.

Table 15. City of Fresno Planning Capabilities

Regulatory Tool	In Place Yes/No	Under Development Yes/No	Comments
Capital Improvement Plan (CIP)	Yes		
Climate Resiliency or Adaptation Plan	No		



Regulatory Tool	In Place Yes/No	Under Development Yes/No	Comments
Community Wildfire Protection Plan (CWPP)	No		
Comprehensive Emergency Management Plan	No		
Comprehensive Land Use Plan (or General, Master, or Growth Management Plan)	Yes	Yes	Expected completion 12/2024
Continuity of Operations Plan (COOP)	No		
Disaster Recovery Plan	No		
Economic Development Plan	No		
Emergency Operations Plan (EOP)	No		
Evacuation Plan	No		
Flood Response Plan	No		
Floodplain Management Plan/Flood Mitigation Plan	No		
Hazard Mitigation Plan	No		
Historic Preservation Plan	No		
Natural Resources Protection Plan (NRPP)	No		
Open Space Management Plan (Parks and Rec/Greenway Plan)	No		
Threat Hazard Identification and Risk Assessment	No		

CITY OF FRESNO EMERGENCY OPERATIONS PLAN, 2015, UPDATED 2015

The City of Fresno Emergency Operations Plan (EOP) addresses the planned response to extraordinary emergency situations associated with natural disasters, technological incidents, excessive heat/cold, power outages, and national security emergencies in or affecting the City of Fresno. The Plan, which was updated in 2015, does the following:

- Establishes the emergency management organization required to mitigate any significant emergency or disaster affecting the City of Fresno.
- Identifies the policies, responsibilities, and procedures required to protect the health and safety of City communities, public and private property, and the environment from natural or technological disasters.
- Establishes the operational concepts and procedures associated with initial response operations to emergencies, the extended response operations, and the recovery process.



The EOP is designed to establish the framework for implementation of the California Standardized Emergency Management System/National Incident Management System for the City of Fresno, which is located within the California Governor's Office of Emergency Services' Mutual Aid Region V. It is intended to facilitate multi-agency and multi-jurisdictional coordination, particularly between the City of Fresno and the Fresno County Operational Area, including special districts and state agencies, in emergency operations. This plan will be used in conjunction with the Fresno County EOP and the State of California Emergency Plan. The plan is designed to guide the reader or user through each phase of an emergency: preparedness, response, recovery, and mitigation.

OTHER PLANS AND POLICIES

Other hazard mitigation-related policies and plans in place in and observed by the City of Fresno include the following:

- California Code of Regulations Title 23 administrative law for development and use of land in designated floodway areas along the San Joaquin River administered by the Central Valley Flood Protection Board, staffed by the California Department of Water Resources.
- Standards for constructing and maintaining drainage basins and ponds to prevent mosquito breeding and to provide for mosquito control district access for inspection and abatement activities (jointly promulgated by the Planning and Development Department and Public Works Department in fall of 2005).
- Dam failure inundation plans prepared and administered by the U.S. Bureau of Reclamation, the U.S. Army Corps of Engineers, Fresno Metropolitan Flood Control District, Southern California Edison, and Pacific Gas and Electric Company.
- The California Environmental Quality Act, overseen by the Fresno City Attorney's Office and administered by several City departments, requires consideration of health and safety impacts as they may relate to projects, which are defined as any action that may result in a change in the physical environment and that would include public facilities, and private development, and even adoption/amendment of land use plans and ordinances. An analysis of every project is conducted by the appropriate City department (the Development and Resource Management Department does the bulk of these analyses). Inquiries regarding project sites and features are distributed to departments and outside agencies that may have knowledge of, or which may regulate, aspects of the proposed project. The information obtained from these requests for comment and from other staff research is compiled into an informational document for decision-makers and the public. The information is also used to develop a list of mitigation actions to reduce or abate potential adverse impacts of the project. For those projects which may involve federal funds or require federal approvals, a parallel National Environmental Policy Act assessment is also prepared by the City.
- The Development and Resource Management Department administers regulations in the California Building Code and in Uniform Electrical, Plumbing, and Mechanical Codes as those codes are modified through adoption by the state and City. Plan check and inspection activities of the Department ensure structural soundness and compliance with seismic and other regulations.



ADMINISTRATIVE/TECHNICAL MITIGATION CAPABILITIES

Table 16. City of Fresno's Administrative and Technical Mitigation identifies the personnel responsible for activities related to mitigation and loss prevention in Fresno.

Table 16. City of Fresno's Administrative and Technical Mitigation

Staff and Personnel Resources	Yes	No	Department or Single Staff Member	Comments
Emergency Manager	X		City Manager	
Engineers or professionals trained in construction practices related to buildings and/or infrastructure	X		Public Works Director/City Engineering Firm	Engineers are contracted
Fiscal Management or Procurement Specialists	X		Finance Department	
Floodplain Manager		X		
Land Surveyors		X		
Land Use/Management/Development Planning	X		City Planning Firm	Planning firm contracted
Planners or engineers with an understanding of natural and/or human-caused hazards		X		
Resource Development Staff or Grant-writing		X		
Scientists familiar with the hazards of the community		X		
Staff experienced with Geographic Information Systems (GIS)		X		
Staff with education or expertise to assess the community's vulnerability to hazards		X		

FISCAL MITIGATION CAPABILITIES

Table 17. City of Fresno's Fiscal Mitigation Capabilities identifies financial tools or resources that the City could potentially use to help fund mitigation activities.

Table 17. City of Fresno's Fiscal Mitigation Capabilities

Staff or Personnel Resource	Never Used	Previously Used	Currently Used	Comments
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Capital Improvement Programming	X			
Community Development Block Grants (CDBG)			X	
Special Purpose Taxes (or taxing districts)	X			
Gas/Electric Utility Fee	X			
Water/Sewer Fees			X	
Stormwater Utility Fees	X			
Development Impact Fees			X	
General Obligation, revenue, and/or Special Tax Bonds	X			
Partnering Agreements or Intergovernmental Agreements	X			
FEMA Hazard Mitigation Assistance Grants (HMGP, FMA, PDM)	X			
Homeland Security Grants (HSGP)		X		
USDA Rural Development Agency Grants		X		
US Economic Development Administration Grants	X			
Infrastructure Investment and Jobs Act (IIJA)	X			

MITIGATION OUTREACH AND PARTNERSHIPS

The Fresno Department of Public Utilities, in conjunction with other agencies, provides water conservation and stormwater quality protection public information programs. The Fire Department provides personal preparedness outreach for heat and freeze emergencies and shelter-in-place information for hazardous materials emergencies. Additionally, the City has developed public service announcements for smoke detector battery life, canal safety, and fireworks safety.

The City's Joint Information System disseminates information in Spanish, and the City can obtain translation services for other languages when necessary. A Joint Information Center plan is an annex to



the City of Fresno Emergency Operations Plan and provides comprehensive guidance for early warning notification in all languages and specifically the Americans with Disabilities Act (ADA) community.

Preparedness Exercises afford the opportunity to include the City of Fresno ADA Committee. Members of the committee and volunteers from the ADA community role play for realistic first responder training.

OTHER MITIGATION EFFORTS

- The City is a certified StormReady community through the National Weather Service.
- The Fire Department, Police Department, and Solid Waste Division are nationally accredited.
- The City has installed security systems for the wastewater treatment facility and for its surface water treatment plant. Generators are installed in critical groundwater pumping stations and these facilities are secured.

OPPORTUNITIES FOR ENHANCEMENT

Based on the capabilities assessment, the City of Fresno has several existing mechanisms in place that already help to mitigate hazards. In addition to these existing capabilities, there are also opportunities for the City to expand or improve on these policies and programs to further protect the community. Future improvements may include providing training for staff members related to hazards or hazard mitigation grant funding in partnership with the County and Cal OES. Additional training opportunities will help to inform City staff members on how best to integrate hazard information and mitigation projects into their departments. Continuing to train City staff on mitigation and the hazards that pose a risk to the City of Fresno will lead to more informed staff members who can better communicate this information to the public. In addition, the City could work to improve the CRS rating through additional floodplain management program enhancements. This could further lower the cost of flood insurance for residents.



MITIGATION STRATEGY

MITIGATION GOALS AND OBJECTIVES

The City of Fresno adopts the hazard mitigation goals and objectives developed by the HMPC and described in Chapter 5 Mitigation Strategy.

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 Public Works Department may utilize the hazard information when implementing Capital Improvement projects and the Planning and Development Department may utilize the hazard information when reviewing a site plan or other type of development applications. The City will also incorporate this LHMP into the Safety Element of their General Plan, as recommended by Assembly Bill (AB) 2140.

As noted in Chapter 7 Plan Implementation, the HMPC representatives from Fresno 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 HMPC plan review meeting.

CONTINUED COMPLIANCE WITH THE NATIONAL FLOOD INSURANCE PROGRAM

In addition to the mitigation actions identified herein the City will continue to comply with the National Flood Insurance Program as specified in General Plan Policy NS-3-j:

“National Flood Insurance Program. Continue to participate in the National Flood Insurance Program (NFIP) by ensuring compliance with applicable requirements.”

MITIGATION ACTIONS

The planning team for the City of Fresno identified and prioritized the following mitigation actions based on the risk assessment. Background information as well as information on how each action will be implemented and administered, such as ideas for implementation, responsible office, partners, potential funding, estimated cost, and schedule are also included.

In addition to implementing the mitigation actions below the City of Fresno will be participating in the county-wide, multi-jurisdictional action of developing and conducting a multi-hazard seasonal public awareness program. The county-wide project will be led by the County in partnership with all municipalities and special districts. The City agrees to help disseminate information on hazards provided by the County. More information on the action can be found in the base plan Chapter 5 Mitigation Strategy (see Section 5.3.3 Multi-Jurisdictional Mitigation Actions, Action #1. Develop and Conduct a Multi-Hazard Seasonal Public Awareness Program).



1. ESTABLISH POST-DISASTER ACTION PLAN FOR CITY CONTINUITY OF OPERATIONS PLAN

Hazard(s) Addressed: Multi-Hazard: dam failure, earthquake, flood, severe weather, wildfire, hazardous materials

Issue/Background: Establish a post-disaster action plan to be part of the City of Fresno Continuity of Operations Plan (COOP) that will include the following elements:

- Procedures for public information
- Post-disaster damage assessment
- Grant writing
- Code enforcement
- Redundant operations

The plan will also include annexes from local businesses and large employers to improve economic and employment recovery. The plan will also identify a mechanism for the City to help businesses without COOPs develop a COOP to be incorporated, as an annex, into the City's Emergency Operations Plan.

Other Alternatives: No action

Responsible Office: City of Fresno Emergency Preparedness Officer

Priority (High, Medium, Low): High

Cost Estimate: \$150,000

Potential Funding: Local funds, grants

Benefits (Avoided Losses): This will improve response/recovery during an event through pre-planning. A City COOP and local business COOPs will reduce the impact of a disaster to the local economy and employment.

Schedule: Long term

Status: 2009 project, implementation in progress

2. IMPROVE THE CITY'S CAPABILITIES FOR SHELTERING ANIMALS IN A DISASTER

Hazard(s) Addressed: Multi-Hazard: dam failure, earthquake, flood, severe weather, wildfire, hazardous materials

Issue/Background: During a disaster, not only do people need to be rescued, but their pets do also. Hurricane Katrina showed the nation that shelters do not typically allow pets, so pets may be left behind when their owners evacuate. The care of the animals left behind falls to local animal shelters. Currently, the SPCA Animal Shelter does not have the supplies to handle a large scale animal emergency. The



City has approximately 18,000 licensed dogs. If a disaster occurred, they would only be able to house a small percentage of them. Overcrowding of animals usually causes diseases and loss of animal life. Purchasing new cages would alleviate some of the overcrowding created by a disaster.

Other Alternatives: Ask other agencies for supplies, if they have them available.

Responsible Office: City of Fresno Emergency Preparedness Officer

Priority (High, Medium, Low): High

Cost Estimate: \$50,000

Potential Funding: General fund

Benefits (Avoided Losses): This will cut down on the spread of disease and animal loss during an emergency or disaster.

Schedule: Short term

Status: 2009 project, implementation in progress

3. TRAIN AND CERTIFY CITY INSPECTORS TO CONDUCT POST-DISASTER DAMAGE ASSESSMENT

Hazard(s) Addressed: Multi-Hazard: dam failure, earthquake, flood, severe weather, wildfire, hazardous materials

Issue/Background: City inspectors play a vital role in post-disaster building assessment and damage assessment. Pre-training and certification is vital in response and recovery to reduce loss of life, relocate populations, and ensure the rebuilding of local economies.

Other Alternatives: No action

Responsible Office: City of Fresno Emergency Preparedness Officer and Planning and Development Department

Priority (High, Medium, Low): High

Cost Estimate: \$250,000

Potential Funding: Grants

Benefits (Avoided Losses): This will improve response/recovery during an event through pre-training and certification of individuals responsible for performing assessment of structures and facilities impacted by disasters. Certification will also allow qualified staff to mobilize with the State of California Office of Emergency Services (Region 5) Urban Search and Rescue Task Force.

Schedule: Long term

Status: 2009 project, implementation not yet started

4. IMPLEMENT A FLOOD AWARENESS PROGRAM FOR THE PUBLIC



Hazard(s) Addressed: Flood

Issue/Background: The City needs a program to educate flood-prone property owners along the San Joaquin River and in frequent annual flooding areas about the flood threat and how best to prepare, mitigate, and insure their properties.

Other Alternatives: No action

Responsible Office: City of Fresno Emergency Preparedness Officer and Planning and Development Department

Priority (High, Medium, Low): Medium

Cost Estimate: \$15,000/year

Potential Funding: General fund, grants

Benefits (Avoided Losses): This will prevent the loss of human life and economic and property losses.

Schedule: Long term

Status: 2009 project, implementation not yet started

5. SOUTHWEST FRESNO – RECYCLED WATER DISTRIBUTION SYSTEM CONSTRUCTION

Hazard(s) Addressed: Drought

Issue/Background: In 2009, the State of California adopted a recycled water policy establishing a mandate to increase the use of recycled water in California by 200,000 acre-feet per year by 2020 and an additional 300,000 acre-feet per year by 2030. The Recycled Water Master Plan prepared by the City of Fresno, Department of Public Utilities (DPU), identifies opportunities to assist with compliance of this law by reducing groundwater pumping and replacing groundwater with recycled water for non-potable purposes (i.e. outdoor irrigation, dust control, fountains, etc.). On April 11, 2013, the Council adopted the Recycled Water Master Plan and associated environmental documents.

In 2017, the DPU commissioned a 5 MGD Tertiary Treatment Facility at the Fresno-Clovis Regional Wastewater Treatment Facility. DPU is currently constructing a Recycled Water Distribution System in Southwest Fresno to deliver recycled water to parks, cemeteries, schools, agricultural uses, etc., to offset potable water irrigation demands. This will help mitigate drought by enabling the use of recycled water for certain uses instead of tapping potable water supplies.

Other Alternatives: DPU has a Water Shortage Contingency Plan (WSCP) which was updated in the City of Fresno's 2015 Urban Water Management Plan to manage water shortages including drought conditions. The WSCP consists of four stages allowing the City to ultimately reduce its water demand to a level commensurate with the water supplies available to a maximum reduction of 50 percent.

Responsible Office: City of Fresno Department of Public Utilities

Priority (High, Medium, Low): High

Cost Estimate: \$75,000,000

Potential Funding: California State Water Resources Control Board – Clean Water State Revolving Fund



Benefits (Avoided Losses): Reduced ground water pumping by using recycled water for non- potable purposes.

Schedule: Ongoing

Status: 2018 project

6. SUSTAINABLE GROUNDWATER MANAGEMENT ACT COMPLIANCE INCLUDING GROUNDWATER SUSTAINABILITY PLANNING AND IMPLEMENTATION

Hazard(s) Addressed: Drought

Issue/Background: The Kings subbasin underlays the City of Fresno and like many groundwater basins throughout the State, this subbasin is in overdraft condition with underground aquifers adversely impacted by overuse. Such impacts include significant decline in water storage and water levels, degradation of water quality, and land subsidence resulting in the permanent loss of storage capacity. The Sustainable Groundwater Management Act (SGMA) provides for the establishment of local Groundwater Sustainability Agencies (GSAs) to manage groundwater sustainability within groundwater subbasins defined by the California Department of Water Resources (DWR). The City of Fresno has become a joint power authority of the North Kings Groundwater Sustainability Agency, other members of the Agency include the County of Fresno, City of Kerman, City of Clovis, Biola Community Services District, Garfield Water District and International Water District. As a member of the North Kings GSA, the City of Fresno is required to participate in the development and implementation, no later than January 31, 2020, of a Groundwater Sustainability Plan (GSP) to ensure a sustainable yield of groundwater, without causing undesirable results. Failure to comply with that requirement could result in the State asserting its power to manage local groundwater resources. Participation in the North Kings GSA and the implementation of a GSP will allow the City to maintain sustainable groundwater supplies while providing insurance against periods of long-term drought, a high significance hazard for the City of Fresno.

Other Alternatives: None, compliance required by law, failure to meet requirements will result in State intervention and oversight.

Responsible Office: City Engineer and North Kings GSA

Priority (High, Medium, Low): High

Cost Estimate: Varies by GSA for preparation of the required GSP. Further expenses are anticipated to be accrued for the planning and construction of groundwater recharge projects.

Potential Funding: Property owner assessments along with grant funding opportunities from the State.

Benefits (Avoided Losses): Preparation and implementation of the GSP by the respective GSAs will result in the management of groundwater in a manner that is sustainable and avoids undesirable results as defined by the California State Department of Water Resources.

Schedule: GSAs must complete and submit the required GSP to DWR by January 31, 2020, which is to be fully implemented and result in sustainability of the groundwater basin, with no undesirable effects, by the year 2040.



Status: 2018 project

Attachment 3 Resolution Approving the WSCP

Resolution to be included following adoption.